Birla Institute of Technology & Science (BITS), Pilani
Practice School Division
Practice School-II course (5th January – 19 June, 2026)
PS Chronicles (A compilation of student experience during PS-II)



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From the Desk of the Editor

It is my great pleasure to bring forth the 20th edition of the PS-II Chronicles. This edition features over 706 plus articles from students (Pilani, K.K. Birla Goa, and Hyderabad) sharing their experiences during II Semester of 2025-2026. This sustained high numbers of experience sharing are a testimony to the usefulness of the PS- II Chronicles and its increasing popularity, especially during the PS preference form filling process.

The primary aim of the PS-II Chronicles is to record the overall PS-II experiences of all the stakeholders – the students, the PS faculty and the Industry mentors. Currently, this version is the compilation of all student experiences. The objectives of this Chronicles are manifold Prospective PS-II students can get to know about the experiences of their seniors, currently at PS thereby increasing awareness in the student community. Increasing awareness among faculty about the nature of work happening at various PS-II stations. Bring back the experiences gained at PS-II station into academics - making the curriculum more industry relevant.

I would like to thank students for sharing their experiences during their stint at the organization. I would also like to thank the entire PSD team members for reviewing the articles and providing us the valuable feedback. I would also like to extend our sincere thanks to Mr. Om Prakash Singh Shekhawat, Ms. Ankita Duggal, Mr. Shyam Sunder Saini and Mr. Varun Singh of the Practice School Division, of BITS Pilani, Pilani Campus, Pilani for their help in bringing out this edition of PS-II Chronicles.

I would be happy to receive any feedback regarding the Chronicles. Please feel free to email me at psd@pilani.bits-pilani.ac.in or at murugesan@pilani.bits-pilani.ac.in.

The Associate Dean,
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Name: ASHUTOSH KHUNTIA .(2022AAPS0261H) 295
PS-II Station : eVidyaloka Trust, Remote 295
Faculty 295

Name: Perumal Jayakumar 295
Student 296
Name: YESHWANTH MURTHY RAPARTHY .(2022AAPS2024H) 296
PS-II Station : EYGDS-Consulting, , Bangalore/Hyderabad/ NCR 297
Faculty 297
Name: Bhamidipati Vaishali 297
Student 298
Name: SHIROYA JAYDIP DHIRUBHAI(2024H1030090P) 298
Name: KAKARLA R S NAGA BHAVANI SHANKAR(2022AAPS0252H) 299
Name: SHREEDHAR SONI(2024H1120179P) 300
Name: ADITYA CHAUDHARY(2024H1120262P) 302
Name: MUKHE KRISHNA SAI SATVIK(2024H1540805P) 303
Name: SYED LARAIB HASAN(2024H1540831P) 305
Name: ADINATH GHOSH(2024H1540814P) 306
Name: KANDURI USHA RAMANI VENKATA(2024H1540815P) 308
Name: SANKET ASHOKRAO WANDHARE(2024H1540839P) 310
PS-II Station : Feedback Business Insights, Bangalore 311
Faculty 311
Name: Akanksha Bharadwaj 311
Student 311
Name: KUNAPAREDDY DURGA SIVANI(2021A1PS3051H) 311
Name: AKASH RAO PALLEPATI .(2021B3A40800H) 312
PS-II Station : Flam- R&D, Bengaluru 314
Faculty 314
Name: Chetana Anoop Gavankar 314
Student 315
Name: SUNAYANA S MORO(2021B5A82185G) 315
PS-II Station : Flipkart - Software Development Engineering (SDE), Bengaluru 316
Faculty 316
Name: Vineet Kumar Garg 316
Student 316
Name: DHRUV BHANDARI(2021B5A70925P) 316
Name: VAIBHAV GUPTA(2021B3A72786P) 317
Name: GARAPATI SARANYA(2024H1030136G) 318

Name: ISHITA SHARMA(2024H1030123G) 320
Name: SHUBHAM CHAUHAN .(2022A7PS0130H) 321
Name: DHRUTI BHADORIA(2024H1030026G) 323
Name: SHREYA DOKANIA(2024H1030124G) 324
Name: SHIVARAMAKRISHNA KARTHIKEYAN .(2022AAPS0457H) 325
Name: PAWANI AGARWAL(2021B4A72165G) 327
Name: AARIV WALIA .(2022A7PS0052H) 328
PS-II Station : Flipkart Business Analyst, Bengaluru 328
Faculty 328
Name: Bhamidipati Vaishali 328
Student 328
Name: PRASHANT PANJWANI(2022A1PS1360P) 329
PS-II Station : Flipkart Internet Pvt Ltd - Business Development, Bengaluru 330
Faculty 330
Name: Ramesh Venkatraman 330
Student 330
Name: PREYAANSH BARARIA .(2021B2A43215H) 330
PS-II Station : Flipkart Internet Pvt Ltd - Site Reliability Engineering, Bengaluru 332
Faculty 332
Name: Sugata Ghosal 332
Student 332
Name: SALMAN FARIS .(2021B5A70745H) 332
PS-II Station : Flipkart - Asst Manager (Business Development) (BD), Bengaluru 333
Faculty 333
Name: Ramesh Venkatraman 333
Student 333
Name: KOTA ROHITH RAJ(2024H1420098H) 333
Name: ASWATHY M(2024H1420135P) 334
Name: RACHIT SINGLA(2021B4A71098P) 336
Name: AAROHI UNIYAL(2021B1A31316P) 337
Name: VEDANSHEE DHAVAL DAVE(2024H1030050H) 337
Name: SHRIYA SRINIVASAN(2022A4PS0537G) 338
Name: PRANAVKRISHNAA KAUVERI GOBI .(2022A4PS0681H) 339
PS-II Station : Flipkart - Asst Manager (Planning), Bengaluru 340

Faculty 340
Name: Ramesh Venkatraman 340
Student 340
Name: AASTHA MAZUMDAR .(2022A5PS1237H) 340
Name: ARYA MOHAN A(2024H1420134P) 341
PS-II Station : Franklin Templeton (Technology) - AI/ML for GenAI, Hyderabad 341
Faculty 341
Name: Niranjan Swain 342
Student 342
Name: SAARTHEK RAJ .(2022A7PS0137H) 342
Name: CHETAN SURYA REDDY SEERNAM .(2022A7PS0222H) 344
PS-II Station : Future First Info Services (Pvt) Limited ,Bangalore, Bengaluru 346
Faculty 346
Name: Atul Kumar Arora 346
Student 346
Name: VAISHNAVI R CHANNUR .(2022A2PS1428H) 346
Name: YUMIT MORWAL(2022A1PS1283G) 348
PS-II Station : Futures First Info Services (Pvt) Limited - Gurgaon, Gurgaon 349
Faculty 349
Name: Atul Kumar Arora 349
Student 349
Name: OMKAR ASHISH BARVE(2021B5A82950G) 349
Name: ISHAN KOTWANI(2022A7PS0086P) 350
PS-II Station : Futures First Info Services (Pvt) Limited - Jaipur, Jaipur 351
Faculty 351
Name: Atul Kumar Arora 351
Student 351
Name: ARNAV VERMA(2022A3PS0184G) 351
Name: GARVIT BHARDWAJ(2022A4PS1220G) 353
PS-II Station : GE Aerospace, Bengaluru 355
Faculty 355
Name: Srinivas Kota 355
Student 355
Name: AVIRAL SUNDLI(2024H1410099P) 355

PS-II Station : GeoIQ (Quantduo Technologies Private Limited) - Agentic AI, Bengaluru 357
Faculty 357
Name: Febin A Vahab 357
Student 357
Name: AYUSH POPLI .(2022A4PS1489H) 357
PS-II Station : GeoIQ (Quantduo Technologies Private Limited) - Data Science, Bengaluru 358
Faculty 359
Name: Febin A Vahab 359
Student 359
Name: THATHAPUDI HARSHITH(2021B5A83165H) 359
Name: VIKAS V .(2022A3PS1338H) 361
Name: DESHMUKH SANMESH MANISH(2021B5A12576P) 362
PS-II Station : Global Innovation Hub Private Limited -AI,ML, App Development, Hyderabad 363
Faculty 363
Name: Sai Kishor Jangiti 363
Student 364
Name: SRI BALA SURYA SIVA NAGA YASWANTH AMBATI(2022AAPS0363H) 364
PS-II Station : GMDC Science & Research Centre, GSRC, , Ahmedabad 365
Faculty 365
Name: Santosh Khandgave 365
Student 365
Name: PRACHI SHRINIVAS NARDE(2024H1010011H) 365
PS-II Station : Goldman Sachs - , Bengaluru 366
Faculty 366
Name: Akanksha Bharadwaj 366
Student 366
Name: SOHAM KUMAR(2022A8PS1238P) 366
Name: SIDDHANT GOYAL(2022AAPS0260P) 367
PS-II Station : Goldman Sachs - , Hyderabad 368
Faculty 368
Name: Garima Jindal 368
Student 369
Name: AVYAKTH KRISHNA KUMAR(2021B3A71111P) 369
PS-II Station : Google India - Hardware Engineering Winter, Bengaluru 369

Faculty 370
Name: Sanjay Vidhyadharan 370
Student 370
Name: KUMAR KRISHNA(2022A3PS0392P) 370
Name: DEVAM NIKETUBHAI SHETH(2022A3PS1204P) 371
Name: ISHAAN PAVAN GUPTA(2022A7PS1180P) 372
Name: MOHANEESH RAJ PRADHAN(2024H1120190P) 373
Name: ABHINIVESH MITRA .(2022A7PS1311H) 375
Name: MEGHANA SRINIDHI SESHASAI(2021B5A72517G) 376
PS-II Station : Graviton Research Capital- SDE, Gurgaon 377
Faculty 377
Name: Ashish Narang 377
Student 377
Name: SHIKHAR SINGH(2022A7PS1170P) 377
PS-II Station : GREENKO GROUP - , Hyderabad 378
Faculty 378
Name: Mahesh Kumar Hamirwasia 378
Student 378
Name: SIDDHARDHA CHIVUKULA(2024H1430025H) 378
PS-II Station : Greenlight, Bengaluru 379
Faculty 379
Name: Rajesh Kumar Tiwary 379
Student 379
Name: DISHANT SURANA(2021B3A71114G) 379
PS-II Station : Guardian India Operations - Data Science, Chennai 380
Faculty 380
Name: Pradheep Kumar K 380
Student 380
Name: MANAV GANESH(2021B3AA1069P) 380
PS-II Station : HAbOG Consultants Pvt Ltd, Thiruvananthapuram 381
Faculty 381
Name: Benu Madhab Gedam 381
Student 381
Name: HARIMURALI P A(2024H1430031H) 381

Name: FAHMA KHADEEJA(2024H1300035H) 383
PS-II Station : Harness.io, Bengaluru 384
Faculty 384
Name: Akanksha Bharadwaj 384
Student 384
Name: MUDIT GUPTA(2022A7PS0178P) 384
Name: MD SADIQUE(2022A7PS0156P) 385
PS-II Station : Hevo Technologies India Pvt. Ltd. - Backend, Bengaluru 386
Faculty 386
Name: Jyotsana Grover 386
Student 386
Name: SRAVANI BOBBA(2022A7PS1166G) 386
Name: KSHITIZ BHATTA(2022A7PS0049P) 387
Name: T SAKET HATWAR(2022A7PS0214G) 389
Name: VENKATA S VISHNU CHEBOLU(2022A7PS0124P) 390
Name: ARMAAN GUPTA(2022A7PS0145P) 391
PS-II Station : HSBC, Bengaluru/Kolkata 393
Faculty 393
Name: Gaurav Nagpal 393
Student 393
Name: GUZZU ADITYA(2024H1540827P) 393
Name: NIRJA RAJEEV NILIMA(2024H1540801P) 394
Name: SATHEESH M K(2024H1540810P) 396
Name: SAMEER KANTH(2024H1540835P) 397
PS-II Station : HSBC-Analyst Intern, Bengaluru/Kolkata 398
Faculty 398
Name: Uma Nagarajan 398
Student 398
Name: ROHIT KUMAR(2024H1540833P) 398
PS-II Station : IBM - Hardware, Bengaluru/Hyderabad 400
Faculty 400
Name: Sanjay Vidhyadharan 400
Student 400
Name: ANWESHA CHHOTRAY(2024H1240186H) 400

PS-II Station : IBM - Software, Bengaluru / Hyderabad 401
Faculty 402
Name: Reddy Rani Vangimalla 402
Student 402
Name: ARNAV DHAM(2022A7PS1182P) 402
PS-II Station : ICT- Intercontinental Consultants & Technocrats Private Limited, New Delhi 403
Faculty 403
Name: Manoj Kumar 403
Student 403
Name: DUSHANT DEWANAND RAMTEKE(2024H1300048P) 403
PS-II Station : IFB Industries - Goa, Panaji 405
Faculty 405
Name: Pavan Kumar Potdar 405
Student 405
Name: RUDRAKSH ALIAS BHAGWANT MUKUND SURYARAO SARDESAI(2024H1410050G) 405
Name: MEENU S TITTO(2024H1060077G) 407
Name: BANDI AJAY GOUD(2024H1410054G) 408
Name: SUMIT SAKHARAM GHODKE(2024H1410048G) 409
Name: SHIVACHANDRA KACHARLA(2024H1410051G) 410
PS-II Station : Impactsure Technologies Private Limited - Business Analyst, Mumbai 411
Faculty 411
Name: Niranjan Swain 411
Student 412
Name: SWASTHEKA SUBRAMANIYAN(2022A5PS1460P) 412
PS-II Station : INDUS INTERNATIONAL FZC, UAE-Sharjah 413
Faculty 414
Name: Raghuraman S 414
Student 414
Name: YUVRAJ SINGH(2021B1A42937G) 414
PS-II Station : Inferigence Quotient Pvt Ltd, Bengaluru 415
Faculty 415
Name: Shwetha Vittal 415
Student 415
Name: APOORV VUPPULURY .(2022AAPS0504H) 415

PS-II Station : Infineon - Electronics, Bengaluru 416
Faculty 416
Name: Pawan Sharma 416
Student 416
Name: YOGYA CHAWLA(2020HS231776H) 416
PS-II Station : Infineon- Supply Chain, Bengaluru 417
Faculty 417
Name: Pawan Sharma 417
Student 417
Name: SHOBHIT JHA .(2022A8PS1805H) 417
Name: PRANJAL BHARDWAJ .(2022A3PS1858H) 418
Name: SOUMYADEEP BHUNIA(2024H1240042H) 419
Name: CHOTHANI LALITA BIPINCHANDRA(2024H1230089G) 420
Name: MEKALA PATRICK MANOHAR(2024H1400081H) 421
PS-II Station : InMobi Technologies Pvt Ltd - Business/ Product Analytics, Bengaluru 422
Faculty 422
Name: Smitha Sarma Ranganathan 422
Student 422
Name: JANAKIRAM BOLLAPRAGADA .(2021B5A42366H) 422
Name: AYUSH SRIVASTAVA(2021B3A72462G) 424
PS-II Station : Intuit India Product Development Center, Bengaluru 426
Faculty 426
Name: Sangeetha Viswanathan 426
Student 426
Name: CHINMAY RAMDAS RAO(2022A7PS0106G) 426
PS-II Station : ITCONS E-SOLUTIONS LTD, Noida 428
Faculty 428
Name: Sidharth Mishra 428
Student 428
Name: ADIT MITTAL(2022A3PS0484P) 428
PS-II Station : Jacobs Solutions India Pvt. Ltd., Hyderabad 429
Faculty 429
Name: Mahesh Kumar Hamirwasia 429
Student 430

Name: CHIRANTANA(2024H1300036H) 430
Name: SHREYASH YASHPAL PATIL(2024H1300037H) 431
Name: KUNAL SHANKAR MAGDUM(2024H1300146H) 432
PS-II Station : JioStar India Pvt. Ltd - Analytics SDK harmonization across all apps, Bengaluru 433
Faculty 433
Name: Pravin Yashwant Pawar 433
Student 433
Name: ANDODARIYA HRIDAY NILESHBHAI(2022A7PS0113P) 433
PS-II Station : JioStar India Pvt. Ltd - Contextual Ads in Live Linear Streams, Bengaluru 435
Faculty 435
Name: Pravin Yashwant Pawar 435
Student 435
Name: KIRTHNA SURAG(2021B4A81817G) 435
PS-II Station : JioStar India Pvt. Ltd -Video Compositing, Bengaluru 436
Faculty 436
Name: Pravin Yashwant Pawar 436
Student 437
Name: KOTHA SAI VARA PRASAD(2021B5A71541P) 437
PS-II Station : JioStar India Pvt. Ltd., Bengaluru 438
Faculty 438
Name: Pravin Yashwant Pawar 438
Student 438
Name: TARUN SINGH .(2021B5AA3161H) 438
PS-II Station : JPMC - CIB Research & Analytics Program, Banking, Mumbai 438
Faculty 439
Name: Sidharth Mishra 439
Student 439
Name: VIVEK MUDIREDDY .(2022AAPS0292H) 439
Name: M SASHANK SOORYA .(2022A7PS0049H) 439
Name: ATHARVA BHANDAKKAR(2022A1PS0929G) 440
Name: TANISH RATH .(2022A4PS1661H) 441
Name: VINAYAK SRIVASTAVA(2021B1AA2313P) 442
Name: AYUSH SINGH(2022AAPS0222P) 443
Name: DIYA GHARIA(2022A1PS0843G) 443

PS-II Station : JPMC - Data Science Analyst Program, Mumbai 444
Faculty 444
Name: Sandeep Kayastha 444
Student 445
Name: VIKRAM HARIHARAN(2022A7PS0013P) 445
Name: JEERU HARSHITH REDDY .(2022A7PS0233H) 446
Name: ASHISH GOEL(2022A7PS0009P) 447
Name: SAYANTAN BERA(2021B4AA1828G) 450
Name: SURYABHA MUKHOPADHYAY .(2022A7PS0166H) 451
Name: VANSH AGARWAL(2022A7PS1273G) 452
Name: NAZIM AHMED .(2022A7PS0125P) 454
Name: HRIDAY NITIN GADIA(2021B4AA2794H) 455
Name: KETAV CHIRAG SHAH(2022A7PS1265G) 456
Name: SIMRAN SINGH .(2022A7PS0003H) 457
Name: BHUPATHIRAJU VISHAL VARMA .(2022A7PS0174H) 459
Name: KESHAV CHOUDHARY .(2022A7PS0031H) 461
Name: AVISHI HANS(2021B2A70921P) 462
Name: NIKHILESH BALLA .(2022A7PS0040H) 463
Name: SIDHANT BHAT .(2021B3A73036H) 464
Name: ARYAN SHRIVASTAVA .(2022A7PS1653H) 465
Name: ARITRA KHATUA(2022A7PS0184P) 466
Name: DEEPANSHU GARG .(2021B3A72758H) 467
PS-II Station : JPMC – Global R&C - CIO, Treasury & Corporate (CTC) Risk team - Credit Risk and Liquidity Risk, Mumbai 468
Faculty 468
Name: Gaurav Nagpal 468
Student 468
Name: SRIJAN DAGA(2022AAPS0618G) 468
PS-II Station : JPMC – Global R&C - CIO, Treasury & Corporate (CTC) Risk team - Innovation, Mumbai 469
Faculty 469
Name: Gaurav Nagpal 469
Student 469
Name: SAMAAHITH G OKKUNDA(2021B4A72431G) 469
PS-II Station : JPMC - Markets - Trading & Structuring, Mumbai 470

Faculty 470
Name: Sandeep Kayastha 470
Student 470
Name: VIDIT BUBNA(2021B3A72494P) 470
Name: TANISHQ JAIN(2021B3A72941G) 471
Name: TANAY DHIREN SHAH(2021B3A70994G) 472
Name: SRI JAITRA SAKETH GOPARAJU .(2022A7PS0183H) 473
Name: RAGI RAVIKANTH REDDY .(2022A7PS0068H) 474
Name: KHUSH BHUTA .(2022A7PS1333H) 476
Name: KAUSHIK KUMAR PATI(2021B3AA1727P) 477
PS-II Station : Kinara AI Pvt Ltd - Hardware, Hyderabad 478
Faculty 478
Name: Suparna Chakraborty 478
Student 478
Name: MOHAMMAD ZAHID .(2022A3PS0663H) 478
PS-II Station : Kinara AI Pvt Ltd - Software, Hyderabad 480
Faculty 480
Name: Y V K Ravi Kumar 480
Student 480
Name: CHINEPALLI ARJUN REDDY(2021B4A32790H) 480
PS-II Station : Kinara AI Pvt Ltd , Hyderabad 482
Faculty 482
Name: Y V K Ravi Kumar 482
Student 482
Name: SUMANTH ABHINAV ARSHANAPALLY .(2022A8PS0528H) 482
PS-II Station : Knovon Consulting - Founder's Office Intern, Noida 483
Faculty 483
Name: Atul Kumar Arora 483
Student 483
Name: AGARWAL ARYAN SUDARSHAN(2024H1540862P) 483
PS-II Station : Kotak Mahindra Bank, Hyderabad 485
Faculty 485
Name: Arindam Roy 485
Student 485

Name: SOUMITH SIDDARTHA GUDIPUDI .(2022A7PS0198H) 485
PS-II Station : Localbuy Technologies Pvt Ltd (SuperK) - Operations & Finance, Bengaluru 487
Faculty 487
Name: Mridula Goel 487
Student 487
Name: ABHIJEET MALIK .(2021B5A32264H) 487
PS-II Station : Lumos Labs Inc (Lumosity India Private Limited), Bengaluru 488
Faculty 488
Name: Ashish Narang 488
Student 488
Name: ABHINAV MAURYA(2022AAPS0767G) 488
Name: RAJAT SINGHAL(2022A8PS0567P) 489
PS-II Station : Marvell Technology - , Hyderabad 490
Faculty 490
Name: Chennupati Rakesh Prasanna 490
Student 490
Name: AARNAV JP(2024H1030075P) 490
PS-II Station : MathWorks India Private Limited, Bengaluru 491
Faculty 491
Name: Y V K Ravi Kumar 491
Student 491
Name: DIXIT SHREYAS SHIRISH(2024H1400128P) 491
Name: VEDANT DUTTA .(2022AAPS0367H) 493
PS-II Station : MathWorks India Private Limited, Hyderabad 494
Faculty 494
Name: Suparna Chakraborty 494
Student 494
Name: PRIYANK GUPTA(2024H1230093G) 494
PS-II Station : MBB Labs Private Limited (Maybank), Bengaluru 495
Faculty 495
Name: Pravin Yashwant Pawar 495
Student 496
Name: SHREYANSH SHASHWAT(2022A8PS1246P) 496
Name: DHRUV NAND SANTOSH .(2022A3PS1337H) 496

Name: TANAY SHENOY(2022A1PS1445G) 498
PS-II Station : McCain Foods (India) Pvt. Ltd., Gurgaon 499
Faculty 499
Name: Eht E Sham 500
Student 500
Name: NISHTHA BASAK .(2022AAPS0500H) 500
PS-II Station : MediaTek Bangalore Pvt Ltd, Bengaluru 502
Faculty 502
Name: Swapna S Kulkarni 502
Student 502
Name: JIGNESH KISHOR SHIMPI(2024H1400103G) 502
Name: AMAN(2024H1030022G) 503
Name: POOJAN VIMALBHAI SHETH(2024H1030081P) 504
Name: AVINASH SINGH(2024H1400116P) 506
Name: VASUDHA C N(2024H1400070G) 507
Name: AJINKYA SUNIL DESAI(2024H1230092G) 508
Name: KANDI DEVI PRAVALLIKA(2024H1400090H) 508
Name: SRI LALITHA MANASA GARIMELLA(2024H1400067G) 509
Name: SAI ROHIT ARROJU(2024H1230108H) 510
Name: DEVRAJSINH SHRIPALSINH JHALA(2024H1030120G) 511
PS-II Station : Meesho, Bengaluru 512
Faculty 512
Name: Akanksha Bharadwaj 512
Student 512
Name: ROHIT RAJ(2022A7PS0157G) 512
Name: SAMARTH PAWAN .(2022A7PS0091H) 514
PS-II Station : MerQube Inc., Bengaluru 514
Faculty 514
Name: Perumal Jayakumar 514
Student 514
Name: MALPANI GOVIND NANDKISHOR(2021B5A32280H) 514
Name: EKANSH ARYAN SINHA .(2021B3AA3038H) 516
PS-II Station : Mezink (Super Creator Tech Pvt Ltd) - Operations, Bengaluru 517
Faculty 517

Name: Arindam Roy 517
Student 517
Name: ABHAY GARG(2021A4PS3050G) 517
PS-II Station : Microchip-Microsemi, PAN India 518
Faculty 518
Name: Shree Prasad M 518
Student 518
Name: RAKESH RANJAN GUPTA(2024H1230128H) 518
Name: KARTIK BHAGWANSWAROOP BHATNAGAR(2024H1230106H) 520
Name: SANDEEP KANCHAN PANDIT(2024H1030185H) 521
Name: SATYAM SINGH(2024H1400086H) 523
PS-II Station : Micron Supply Chain, Hyderabad 525
Faculty 525
Name: Pawan Sharma 525
Student 525
Name: GURSHANT SINGH RAINA(2024H1420096H) 525
PS-II Station : Micron Technology - , Bengaluru 526
Faculty 526
Name: Pawan Sharma 526
Student 526
Name: DAANYAL(2024H1230084G) 526
Name: ADITYA SHARMA .(2022A3PS1811H) 527
Name: CHORAGUDI VEENA MADHURI(2024H1230168P) 528
Name: DEEPTI MISHRA .(2022AAPS0333H) 529
Name: LOUKIK DARSI .(2022AAPS0478H) 531
PS-II Station : Micron Technology - AL/ML, Hyderabad 532
Faculty 532
Name: Pawan Sharma 532
Student 533
Name: NISHIT GAUTAM(2024H1030085P) 533
PS-II Station : Micron Technology - ASIC Design, , Hyderabad 533
Faculty 533
Name: Pawan Sharma 533
Student 533

Name: KOTHA SRIHITHA(2024H1230109H) 534
PS-II Station : Micron Technology - DEG Verification, Hyderabad 535
Faculty 535
Name: Pawan Sharma 535
Student 535
Name: DEVIREDDY SRINIVASA REDDY(2024H1240040H) 535
Name: ANGAD SINGH(2024H1240313P) 536
PS-II Station : Micron Technology - , Hyderabad 537
Faculty 537
Name: Pawan Sharma 537
Student 538
Name: PRANAV M(2024H1240314P) 538
Name: BURRA MASTAN VEDASAI SAHITYA NITHIN(2024H1400137G) 538
Name: P MANIKANDAN NAIR(2024H1400065G) 540
Name: TEJAS ABHAY TIKEKAR(2024H1230099G) 541
PS-II Station : Micron Technology - NVE DE Firmware, Hyderabad 542
Faculty 542
Name: Pawan Sharma 542
Student 542
Name: MOHITH MOHAN P V(2024H1400115P) 542
PS-II Station : Micron Technology - SSD Validation, Hyderabad 543
Faculty 543
Name: Pawan Sharma 543
Student 543
Name: SREYASH SOMESH MISHRA .(2022A8PS0676H) 543
Name: KASALA NIDHEESH(2024H1230167H) 544
PS-II Station : Morgan Stanley - IAD - Quantitative Model auditor role, Mumbai 545
Faculty 545
Name: Ambatipudi Vamsidhar 545
Student 545
Name: KHUSHI JAIN .(2021B3A33034H) 545
Name: ALI SHAHEEN(2021B4A33044H) 546
PS-II Station : Morgan Stanley Advantage Services - Legal and Compliance, Mumbai 547
Faculty 547

Name: Ambatipudi Vamsidhar . 548
Student 548
Name: YASH GOYAL(2021B2A12764P) 548
PS-II Station : Morgan Stanley Equity Fundamental Research, Mumbai 548
Faculty 548
Name: Ambatipudi Vamsidhar . 548
Student 548
Name: VEDANT VIVEK SHENDE(2021B3A72136G) 549
PS-II Station : Morgan Stanley FID Research roles, Mumbai 549
Faculty 549
Name: Ambatipudi Vamsidhar . 549
Student 549
Name: RUPESH YARLAGADDA(2021B3A70839G) 549
PS-II Station : Morgan Stanley IED GMG – QIS Strats role, Mumbai 550
Faculty 550
Name: Ambatipudi Vamsidhar . 550
Student 550
Name: AARJAV JAIN(2021B3A71178P) 550
PS-II Station : Morgan Stanley Primary Market Research role, Mumbai 551
Faculty 551
Name: Ambatipudi Vamsidhar . 551
Student 551
Name: AMOGH RAVI JOSHI .(2021B3A30605H) 551
PS-II Station : Morgan Stanley Research - Data Strats, Mumbai 552
Faculty 553
Name: Ambatipudi Vamsidhar . 553
Student 553
Name: RAJUL BANGANI(2021B1A32739P) 553
PS-II Station : Morphing Machines Private Limited, Bengaluru 553
Faculty 553
Name: A Rekha . 553
Student 554
Name: KESHAV GAUR(2024H1030062H) 554
Name: PRANAV DILIP MATE(2024H1030196H) 555

Name: SIVAPRASAD P T(2024H1230098G)..... 557
Name: ANSHUL DHIMAN(2022A8PS1094G)..... 558
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Name: Sandeep Kayastha 559
Student 559
Name: SANIKA DEEPAK SURYAVANSHI(2021B2A13062G) 559
PS-II Station : MSCI Services Pvt. Ltd. - NPD - , Mumbai 561
Faculty 561
Name: Krishnamurthy Bindumadhavan 561
Student 561
Name: ANANYAGOMATHI R .(2021B4AA1626H) 561
PS-II Station : MSD Global Capabilities Center India Private Limited, Hyderabad 562
Faculty 562
Name: Gopalakrishnan Venkiteswaran 562
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Name: ABHINAV DEBNATH(2022A8PS1236P)..... 562
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Name: KOTAMBKAR AVNISH MANGESH(2021B5A31753P)..... 564
Name: VAIBHAV KUMAR .(2022AAPS0240H)..... 565
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Faculty 566
Name: Akanksha Bharadwaj 566
Student 566
Name: HRISHIKESH MK .(2022A7PS1538H)..... 566
Name: ASHISH C .(2021B3A73029H) 567
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Name: Arun Maity 568
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Name: SRI SAI SAMPATHKUMAR SALADI(2024H1410061G)..... 568
Name: SANCHIT SAINI(2024H1060155P) 570
Name: SHRAVAN SRI VISHNAV G(2024H1410103P) 570
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Faculty 572
Name: Perumal Jayakumar 572
Student 572
Name: DEVANABANDA KUSHAL(2024H1540860P) 572
PS-II Station : NetApp India Pvt ltd, Bengaluru 574
Faculty 574
Name: Chennupati Rakesh Prasanna 574
Student 574
Name: BURAD PARAM MAHAVIR(2021B3A72113H) 574
Name: PASALA PAVAN SAI(2021B3A72964H) 575
Name: KOTA NAGA SIVA NITHIN(2021B3A72004H) 577
Name: AVIRAL AGARWAL(2021B3A71285P) 578
Name: MANGLE SOHAM SUHAS(2021B3A71068H) 580
PS-II Station : Netision, Noida 581
Faculty 581
Name: Neha Vinayak 581
Student 581
Name: YASH TIWARI(2021B5A32372G) 581
PS-II Station : Netradyne, Bengaluru 581
Faculty 582
Name: Mohammad Saleem Bagewadi 582
Student 582
Name: MOHITH KULALA(2022AAPS0419G) 582
PS-II Station : NetSkope Software India Pvt. Ltd., Bengaluru 582
Faculty 582
Name: A Rekha 583
Student 583
Name: T M V S G PAVAN(2024H1030131G) 583
Name: SHREOSHI SAHAROY(2024H1030018G) 585
PS-II Station : Nielsen - , Bangalore, Gurgaon and , Gurgaon 586
Faculty 586
Name: Parag Rastogi 586
Student 586
Name: ADITYA BIKASH NAIK .(2022A3PS0515H) 586

Name: HARI CHARAN BUDAMAGUNTA .(2022A7PS1378H) 588
Name: SURYADEVSINH HARISHCHANDRASINH ZALA(2024H1030127G) 589
Name: KARTIK MAHESHWARI .(2022A7PS0158H) 589
Name: SUDHANVA S(2024H1120187P) 591
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Faculty 592
Name: Parag Rastogi 592
Student 592
Name: LOKESH SATHISH .(2022A8PS0732H) 592
Name: UMANG .(2022A8PS1543H) 593
Name: KUSHAGRA TANWAR(2022A3PS0349G) 594
PS-II Station : Nokia, Bengaluru 595
Faculty 595
Name: Pawan Sharma 595
Student 595
Name: AMAN GUPTA(2022A3PS0344G) 595
PS-II Station : Nomura Digital Transformation, Mumbai 596
Faculty 596
Name: Ambatipudi Vamsidhar 596
Student 596
Name: SHREYASH VERMA(2021B5A71538P) 596
PS-II Station : Nomura Global Markets Analyst Internship, Mumbai 598
Faculty 598
Name: Ambatipudi Vamsidhar 598
Student 598
Name: ROHAN CHAITANYA NADKARNI(2022A7PS0597G) 598
Name: LADDHA MANAV HARISH(2021B3A71053G) 599
PS-II Station : Nomura Regional CEO Office, Mumbai 601
Faculty 601
Name: Ambatipudi Vamsidhar 601
Student 601
Name: MEGHNA RAVI RAMARATNAM(2022A4PS0915P) 601
PS-II Station : Nomura Risk Management - CEM, Mumbai 602
Faculty 602

Name: Ambatipudi Vamsidhar 602
Student 602
Name: HARSH BHATIA(2021B3AA1060P)..... 602
PS-II Station : Nomura Risk Management - Credit Risk Management (CRM), Mumbai 603
Faculty 603
Name: Ambatipudi Vamsidhar 603
Student 603
Name: AMAN RAHEJA(2022AAPS0251P) 603
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Name: Ambatipudi Vamsidhar 604
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Name: VEDANT GUPTA(2022A3PS0507G) 604
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Name: Ambatipudi Vamsidhar 605
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Name: SHOBHIT RATHI(2021B3A30980P) 605
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Name: Ambatipudi Vamsidhar 605
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Name: YASH PARE .(2022AAPS0325H) 606
PS-II Station : Novartis Healthcare Pvt Limited - Compliance & Quality, Hyderabad 607
Faculty 607
Name: Bharathi R 607
Student 607
Name: GAURI PRADIP KARANDE(2024H1470199P) 607
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Name: Bharathi R 608
Student 609
Name: PRACHEE GOLDIE BAGHMAR(2024H1460284P) 609
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Faculty 611
Name: Bharathi R 611
Student 611
Name: GIRISHANKAR MENON S(2024H1530138H) 611
PS-II Station : Novartis HealthCare Pvt Ltd - Drug Development, Hyderabad 611
Faculty 611
Name: Bharathi R 612
Student 612
Name: ANMOL CHHIPA(2024H1530296P) 612
PS-II Station : Novartis Healthcase Pvt Limited - Associate Analyst, Hyderabad 614
Faculty 614
Name: Bharathi R 614
Student 614
Name: ADITI JAGDISH DEKATE(2024H1440034P) 614
Name: BELLAMKONDA IEESHASREE(2024H1120183P) 616
PS-II Station : Nutanix, , Bengaluru/Pune 617
Faculty 617
Name: Chandra Shekar R K 617
Student 617
Name: PRATYUSH GHOSH(2022A7PS1292P) 617
Name: SIDDARTH RAJAGOPALAN(2022A7PS0003P) 618
Name: PRATYUSH BINDAL .(2022A7PS0119H) 619
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Name: PIYUSH JAJRA .(2021B4A72969H) 622
Name: SWAPNIL YADAV(2021B3A72770P) 623
Name: NAMAN AGRAWAL .(2022AAPS0327H) 624
PS-II Station : Nvidia Graphics - Hardware - , Bengaluru/Hyderabad 625
Faculty 625
Name: Kranthi Kumar Palavalasa 625
Student 625
Name: ARNAV SUNDARA RAMAN(2022A3PS1223P) 625
Name: VANYA GARG(2022A8PS0539P) 626
Name: TANUSH RAM K .(2022A3PS0273H) 627

Name: KANAK GUPTA(2022A3PS1233P) 628
Name: SOUMITRA PODDAR .(2022A3PS1346H) 629
Name: AMBAR BRAHMACHARI(2021B1A82811G) 630
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Name: ASMITA MUKHERJEE(2022AAPS0245G) 635
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Name: AMOD GAWADE(2022AAPS1249G) 643
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Name: MRIDULA B R(2024H1400121P) 645
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Name: HARISH R RAMACHANDRAN .(2022AAPS0310H) 650
Name: VATSAL AGRAWAL(2022A8PS1260P) 651
PS-II Station : NXP India Pvt Ltd, , Noida 652
Faculty 652
Name: Rajesh Kumar Tiwary 652
Student 652
Name: ERRABELLI HEMANTH(2024H1230111H) 653
Name: PRATYUSH KUMAR BINDHANI(2024H1230129H) 653
Name: RAJAMURI SRIVARDHAN REDDY .(2022AAPS0359H) 654
PS-II Station : OfBusiness,Gurugram, Gurgaon 655
Faculty 655
Name: Ashish Narang 655
Student 655

Name: KAPIL DEV(2024H1030028G) 655
Name: YASHKUMAR JAYSUKHBHAI KOTADIYA(2024H1030033G) 657
Name: ANISH SUHAS PATIL(2024H1030042G) 659
PS-II Station : Okta, Bengaluru 661
Faculty 661
Name: Preethi N. G 661
Student 661
Name: NIKITHADEVI KOLLI .(2022A7PS0207H) 661
Name: AYUSHI SHARMA .(2021B3A71737H) 662
Name: ARYAN NAYAN .(2022AAPS0304H) 663
PS-II Station : Onsemi, Bengaluru 664
Faculty 664
Name: Pawan Sharma 664
Student 664
Name: SAKSHAM CHOUDHARY(2024H1230167P) 664
Name: VAIBHAV SHARMA(2024H1230175P) 665
PS-II Station : Oracle, Bangalore, Bengaluru 667
Faculty 667
Name: Srinath R.Naidu 667
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Name: PRATHIK S SHETTY(2021B3A71317G) 667
Name: VAIBHAV DEVRAJ(2021B4A71107P) 668
Name: AAROSHI R RAO(2021B5A72952G) 669
Name: AADI SWAPNIL NESARKAR(2021B3A70967G) 670
PS-II Station : Orbicular Pharmaceutical Technologies Pvt Ltd, Hyderabad 670
Faculty 670
Name: Bharathi R 670
Student 671
Name: SOHAM SHATRUGHNA MULE(2024H1460136H) 671
Name: ANJALI INDIAN(2024H1460223P) 672
PS-II Station : Pegasystems, Hyderabad 673
Faculty 673
Name: Y V K Ravi Kumar 673
Student 673

Name: SHREYAS CHINTAMANI ASHTAMKAR(2024H1120192P) 673
PS-II Station : Petasense Technologies Pvt. Ltd, Bengaluru 674
Faculty 674
Name: Venkateswara Rao Thunuguntla 674
Student 674
Name: ABHINAY AGARWAL(2021B5A82953G) 674
PS-II Station : Pfizer Healthcare India Pvt.Ltd, Chennai 675
Faculty 675
Name: Pradheep Kumar K 675
Student 675
Name: PIYUSH KUMAR(2021B1A40815P) 675
Name: AMAN ALI(2021B1A22735P) 676
Name: SAI KARTHIK VYSYARAJU .(2022AAPS0260H) 678
PS-II Station : PierSight Space - Mechanism Design and Analysis Intern, Ahmedabad 680
Faculty 680
Name: Sudeep Kumar Pradhan 680
Student 680
Name: VISHESH BANSAL(2024H1060143P) 680
PS-II Station : PierSight Space - Signal Processing, Ahmedabad 681
Faculty 681
Name: Swapna S Kulkarni 681
Student 681
Name: ARYAN SHRIVASTAVA(2024H1240144H) 681
PS-II Station : Piramal Group Tech - Customer Excellence, Bengaluru 682
Faculty 682
Name: Ankur Pachauri 682
Student 682
Name: NAMAN DIMRI .(2022AAPS1547H) 682
Name: DEEPAK GAIROLA .(2022A3PS0535H) 683
PS-II Station : Piramal Pharma Limited - CPD, Mumbai 684
Faculty 684
Name: Ankur Pachauri 684
Student 684
Name: SHIVAM GUPTA .(2022A3PS1297H) 684

PS-II Station : Pluss Advanced Technologies Ltd - Plant Process, Gurgaon 686
Faculty 686
Name: Robin C Jayaram 686
Student 686
Name: KUHIKAR DISHA AJAY(2024H1010018P) 686
PS-II Station : Pluss Advanced Technologies Ltd- Product Mapping, Gurgaon 688
Faculty 688
Name: Robin C Jayaram 688
Student 688
Name: NINAD MAHENDRA PATIL(2024H1010021P) 688
PS-II Station : Pocket FM Private Limited - Product Analytics, Bengaluru 689
Faculty 689
Name: Shwetha Vittal 689
Student 689
Name: TUSHAR GANESH BHAVSAR(2024H1030116G) 689
PS-II Station : Prashanu Hospital - Analyst, Palghar 690
Faculty 690
Name: Sandeep Kayastha 691
Student 691
Name: SAAHIL MEHTA(2021B4A71078P) 691
PS-II Station : Prashanu Hospital - Data Analysis, Palghar 692
Faculty 692
Name: Sandeep Kayastha 692
Student 692
Name: NANAVATY AKASH ANISH(2021B4A72322P) 692
PS-II Station : Prashanu Hospital - Supply Chain, Palghar 693
Faculty 693
Name: Sandeep Kayastha 693
Student 693
Name: BANSAL HARSHVARDHAN RAJENDRA KUMAR(2021B5A30896P) 693
PS-II Station : ProteanTecs - Infrastructure Automation, Bengaluru 695
Faculty 695
Name: Swapna S Kulkarni 695
Student 695

Name: AMANAGANTI ROHAN REDDY(2021B4A32377H) 695
PS-II Station : PWC-BSCO, Bengaluru 696
Faculty 696
Name: A Michael Alphonse 696
Student 696
Name: AYUSH KUMAR TIWARI(2022AAPS0196G) 696
PS-II Station : PWC-CEDA, Bengaluru 697
Faculty 697
Name: A Michael Alphonse 697
Student 697
Name: UDBHAV DWIVEDI(2022A3PS0483P) 697
Name: KRITI THACKER(2022A3PS1119G) 698
Name: SAMARTH SINGH(2022A3PS0458P) 699
Name: PIYUSH PATRA(2021B5A31961G) 699
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Faculty 701
Name: Eht E Sham 701
Student 701
Name: RUTHIK REDDY CHITTI .(2022A7PS0204H) 701
Name: SHASHWAT AGRAWAL(2021B1A30811P) 702
PS-II Station : PWC-People Tech, Mumbai 703
Faculty 703
Name: Sai Kishor Jangiti 703
Student 703
Name: DIVYANSHU VASHISHTH(2022AAPS0258P) 703
PS-II Station : Qapita Fintech India Private Limited - Equity Management, Hyderabad 704
Faculty 704
Name: Uma Nagarajan 704
Student 704
Name: ATHARV BARAI(2022AAPS0333G) 704
PS-II Station : QUALCOMM - , Hyderabad 706
Faculty 706
Name: Madhuri Bayya 706
Student 706

Name: SANDEEP KUMAR MAYA NAGARAJAN(2024H1400080H) 706
Name: SHRISTI BIYANI(2024H1230162P) 707
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Name: MONARK BOKADIA(2022A3PS1216P) 718
Name: R V ARUN(2024H1230173P) 719
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Name: HARSH RAI(2022AAPS0431G) 725
PS-II Station : Qube Research and Technology India LLP, Mumbai 726
Faculty 726
Name: Arindam Roy 726
Student 726
Name: ANJANEYA BAJAJ(2022A7PS0164P) 726
PS-II Station : Qure.ai Technologies Pvt. Ltd, Mumbai 727
Faculty 727
Name: Swarna Chaudhary 727
Student 727
Name: ASHIT JAIN(2022A7PS0606G) 727
PS-II Station : Qure.ai Technologies Pvt. Ltd. - Full Stack Engineer (AI Domain), Bengaluru 728
Faculty 728
Name: Swarna Chaudhary 728
Student 728

Name: VIHARI BHUPATHI .(2022AAPS0399H) 728
PS-II Station : Rahi Platform Technologies, Pune 730
Faculty 730
Name: Ankur Pachauri 730
Student 730
Name: SAUMITRA(2021B2A83019G) 730
PS-II Station : Ramboll India Pvt Ltd, Hyderabad 733
Faculty 733
Name: Mahesh Kumar Hamirwasia 733
Student 733
Name: KISHANKUMAR HARESHKUMAR MISHRA(2024H1430024H) 733
PS-II Station : Red Nucleus, Pune 734
Faculty 734
Name: Bharathi R 734
Student 734
Name: NIKITHA S PATEL(2024H1460279P) 734
Name: DELORA HELOISE CARDOSO(2024H1530209P) 735
Name: PATEL AENISH KUMAR ANANT KUMAR(2024H1460222P) 736
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Name: Y V K Ravi Kumar 738
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Name: RAJPUT ROHAN SINGH(2024H1030169H) 741
Name: RISHIKESH SONI(2024H1030180H) 741
PS-II Station : Refroid Technologies, Hyderabad 742
Faculty 742
Name: Naga Vamsi Krishna Jasti 742
Student 743
Name: PREMITH RAJATHESH(2024H1060078G) 743
PS-II Station : Regional Remote Sensing Center-North, NRSC, ISRO, New Delhi 744
Faculty 745
Name: Rajesh Kumar Tiwary 745

Student 745
Name: VAIDIK A SHARMA(2021B5A82509P) 745
PS-II Station : RingCentral India Pvt Ltd, Bengaluru 747
Faculty 747
Name: Raja Vadhana Prabhakar 747
Student 747
Name: YASH KANTAMNENI .(2022A7PS0120H) 747
Name: SHARVIL POTDAR(2022A7PS0724G) 748
Name: MEHAK MAHAJAN .(2022A3PS0585H) 749
PS-II Station : RISA Labs, Inc - Healthcare -Product, Bengaluru 750
Faculty 750
Name: Uma Nagarajan 750
Student 750
Name: PARV ABHIJEET SINGHANIA(2021B1A43004G) 750
PS-II Station : RT Vision Technologies Pvt. Ltd - Design and Implementation, Greater Noida 751
Faculty 751
Name: Harish Kumar J. R. 751
Student 751
Name: HARSH AWASTHI(2024H1400091H) 751
PS-II Station : RT Vision Technologies Pvt. Ltd - Development ICP Algorithm, Greater Noida 753
Faculty 753
Name: Harish Kumar J. R. 753
Student 753
Name: PARAG KANTHED(2024H1400108P) 753
PS-II Station : Rupeeflo (DMA Rupeeflo Technologies Private Limited) - Product Management, Bengaluru 754
Faculty 754
Name: Uma Nagarajan 754
Student 754
Name: HARIOM MAYURE .(2022A3PS0534H) 754
PS-II Station : Sandisk, Bengaluru 755
Faculty 755
Name: Shreyas Suresh Rao 755
Student 755

Name: SAI MANISH REDDY AMBATI(2024H1030045H) 755
Name: MONIKA KARASANI(2024H1230113H) 756
Name: ARIJEET RAKSHIT(2024H1030183H) 758
Name: NYALAM PRADEEP(2024H1230126H) 760
Name: HARSH GUPTA(2022A3PS0418P) 761
PS-II Station : Sarda Metals & Alloys Ltd - Mechanical, Vizianagaram 762
Faculty 762
Name: Panchagnula Jayaprakash Sharma 762
Student 762
Name: PRUDHVI RAJ NEELAM(2022A4PS1460G) 762
PS-II Station : Saviynt, Bengaluru 763
Faculty 763
Name: Raghavendra Singh 763
Student 763
Name: RAGHURAM ALURU(2022A7PS1349G) 763
Name: ISHAAN THAKKAR(2022A7PS0378G) 765
PS-II Station : SBE Engineering & infrastructure PVT. LTD, Jodhpur 766
Faculty 766
Name: Anupam Singhal 766
Student 766
Name: ABUL BASHAR(2024H1440028P) 766
PS-II Station : Schlumberger (SLB), Pune 768
Faculty 768
Name: Samata Satish Mujumdar 768
Student 768
Name: HARSH JAIN(2022A4PS0348G) 768
PS-II Station : Schneider Electric, Mumbai, Mysore, Ahmednagar, Vadodara 768
Faculty 769
Name: Manoj Subhash Kakade 769
Student 769
Name: ADITYA SAMBHAJI GAIKWAD(2022A4PS1001G) 769
PS-II Station : Serum Institute of India Pvt Ltd, Pune 769
Faculty 770
Name: Bharathi R 770

Student 770
Name: SIDDHESH RUPESH MARDA(2024H1290005H) 770
PS-II Station : ServiceNow, Hyderabad / Bengaluru 771
Faculty 771
Name: Gopalakrishnan Venkiteswaran 771
Student 771
Name: ADITYA PRASHANT ARKASALI(2024H1030046G) 772
PS-II Station : SgurrEnergy, Pune 773
Faculty 773
Name: Arun Maity 773
Student 773
Name: SHREYAS RAVINDRA SHINGADE(2024H1430181H) 773
Name: KALLURI SAI GANESH(2024H1430190H) 774
PS-II Station : ShareChat, Bengaluru 775
Faculty 775
Name: Raja Vadhana Prabhakar 775
Student 775
Name: RONIT KUNKOLIENKER(2022A7PS0091G) 775
PS-II Station : Shell India Markets Pvt Limited, Bengaluru 776
Faculty 776
Name: Santosh Khandgave 776
Student 776
Name: ARJUN SHIVAKUMAR .(2022A1PS2006H) 776
Name: SUYASH PRABHU DESAI(2022A1PS0998G) 777
PS-II Station : Siemens EDA India Private Limited- Winter (Digital Profile), Noida 778
Faculty 778
Name: Pawan Sharma 778
Student 778
Name: ANIRBAN NAYAK .(2022A3PS0705H) 778
PS-II Station : Siemens Energy India Limited, Gurgaon 779
Faculty 779
Name: Sudeep Kumar Pradhan 779
Student 779
Name: ANUKRITI SINGH(2022A3PS0316G) 779

PS-II Station : Siemens PLM, , Pune 780
Faculty 780
Name: Pawan Sharma 780
Student 780
Name: VATSAL GOYAL .(2021B1A32325H) 780
PS-II Station : SiFive India Pvt Ltd, Bengaluru 781
Faculty 781
Name: A Rekha 781
Student 781
Name: GANDHALE PARTH SOPAN .(2021B4A32365H) 781
PS-II Station : Sigma Infosolutions Limited - , Bengaluru 782
Faculty 783
Name: Shwetha Vittal 783
Student 783
Name: HRISHIKESH KADAM(2022A3PS1150G) 783
Name: ABHIRAM JUTURU .(2021B4A83143H) 783
PS-II Station : Singlestore India Pvt Ltd, Hyderabad 784
Faculty 784
Name: Sai Kishor Jangiti 784
Student 784
Name: OMKAR SHASHANK SATHE(2021B1A72280G) 784
Name: AMAN KIRITKUMAR PATEL(2022A7PS0152P) 785
Name: PARTH MEHTA .(2022A7PS0043H) 787
Name: HARSH NISHANT LALAI(2021B3A72665G) 788
Name: OM JIGNESH JOSHI(2021B3A70958G) 790
Name: DEV RAVINDRA CHHEDA(2022A7PS0134P) 792
Name: ADITYA AGARWAL(2021B3A70870P) 793
PS-II Station : Skydo - Product Growth, Bengaluru 793
Faculty 793
Name: Smitha Sarma Ranganathan 793
Student 794
Name: SAKSHAM JAIN .(2021B4A82925H) 794
PS-II Station : Smurfit WestRock - Water Treatment process, Valsad 794
Faculty 794

Name: Raghuraman S . 795
Student 795
Name: ROHIT VIJAYKUMAR(2022A1PS1484G) 795
PS-II Station : Snivaa Consulting Engineers, Pune 796
Faculty 796
Name: Rajiv Gupta . 796
Student 796
Name: ANIRUDDHA SANJAY KHAIRE(2024H1430045P) 796
Name: THANEDAR AADITYA ABHAY(2024H1430043P) 797
PS-II Station : Societe Generale Global Solution Center, Bengaluru 798
Faculty 798
Name: Smitha Sarma Ranganathan 798
Student 798
Name: CHIRAG SHARMA .(2022AAPS0301H) 798
Name: HARPREET KAUR GANDHI(2024H1030194H) 799
Name: KRITIN GOYAL .(2022A3PS1660H) 800
Name: SANJANA PRABHUGARI(2024H1030160H) 802
PS-II Station : Sodexo, Pune 802
Faculty 802
Name: Smitha Sarma Ranganathan 802
Student 802
Name: ESWAR PANDURU(2024H1540841P) 803
PS-II Station : Solanova Energy - Data Science, Gorakhpur 804
Faculty 804
Name: Chetana Anoop Gavankar . 804
Student 804
Name: PUPPALA REVANTH KUMAR(2021A7PS2692P) 804
PS-II Station : Solanova Energy - Product, Gorakhpur 805
Faculty 805
Name: Sidharth Mishra . 805
Student 806
Name: SUMIT SINGH RATHORE(2022D2PS1546P) 806
PS-II Station : Sona Comstar,Gurugram, Gurgaon 807
Faculty 807

Name: Sameer Gupta . 807
Student 807
Name: ATUL SHARMA(2024H1410068H) 807
PS-II Station : ST Microelectronics, Noida 808
Faculty 808
Name: Rajesh Kumar Tiwary 808
Student 808
Name: SHARMA DHRUV TARKESHWAR(2024H1230174P) 808
Name: ROHAN ARORA(2021B1A31693P) 809
PS-II Station : Standard Chartered - Data Engineer, Bengaluru 809
Faculty 810
Name: Gaurav Nagpal 810
Student 810
Name: SATYAM KUMAR(2021B1A42813G) 810
PS-II Station : Standard Chartered Modelling and Analytics Centre Pvt Ltd, Bengaluru 812
Faculty 812
Name: Gaurav Nagpal 812
Student 812
Name: MAHIN PATEL(2021B3A41086P) 812
Name: TANISH HORA(2022AAPS0774G) 812
Name: MANAN GUPTA(2021B4A41689P) 814
PS-II Station : STMicroelectronics - Digital Design & Verification, Noida 815
Faculty 815
Name: Rajesh Kumar Tiwary 815
Student 815
Name: VASHISHTH PATEL(2021B4A82781G) 815
Name: KARTHIKEYA KUCHIBHATLA .(2021B3A31024H) 816
PS-II Station : Strand Life Sciences, Bengaluru 816
Faculty 816
Name: Bharathi R 816
Student 816
Name: REJAKSHI CHATTERJEE(2024H1290013P) 816
Name: NAGASHREE S(2024H1290008H) 818
PS-II Station : Synchrony - Backend Developer, Hyderabad 819

Faculty 819
Name: Y V K Ravi Kumar 819
Student 819
Name: SHAH PRIYANK HITESH KUMAR(2024H1030092P) 819
Name: METHUKU SAI PRANEETH(2024H1120186P) 819
Name: ROOPKARAN SINGH(2024H1030039G) 821
PS-II Station : Tata Institute of Fundamental Research, Hyderabad 822
Faculty 822
Name: Sanjay Vidhyadharan 822
Student 822
Name: ATHARVA SHRIKANT DESHMUKH .(2021B5A12538H) 822
PS-II Station : Taurus Asset Management Company Limited, Gurgaon 823
Faculty 823
Name: Sidharth Mishra 823
Student 823
Name: SHUBHANG PRAKHAR(2021B3A82866G) 823
PS-II Station : Teaser, Gurgaon 825
Faculty 825
Name: Bhamidipati Vaishali 825
Student 825
Name: DHANANJAY SHALLEY .(2021A7PS0401H) 825
PS-II Station : Techture Structures, Indore, Indore 826
Faculty 826
Name: Rajesh Kumar 826
Student 826
Name: SAUMYA JAIN(2022A4PS1300G) 826
PS-II Station : Techture Structures, Nagpur, Nagpur 827
Faculty 827
Name: Anshuman 827
Student 827
Name: AMILA DEY(2024H1300055P) 827
PS-II Station : Telus AI - Solution Engineering, Bengaluru 828
Faculty 828
Name: S.P.Vimal 828

Student 828
Name: SYED AMEEN .(2021B5AA3046H) 828
PS-II Station : Telus AI - Product Management, Bengaluru 830
Faculty 830
Name: S.P.Vimal 830
Student 830
Name: BALAGANGADHAR M BHAT(2022A8PS0058G) 830
Name: SAANIDHYA CHARAN .(2022A3PS0533H) 831
PS-II Station : Telus International - Software Engineering, Bengaluru 833
Faculty 833
Name: S.P.Vimal 833
Student 833
Name: ANURAG SINGH(2021B5A72874G) 833
PS-II Station : Tenstorrent, Bengaluru 835
Faculty 835
Name: Shree Prasad M 835
Student 835
Name: HARSHIT SARAF(2021B1A32742P) 835
Name: NIKHIL MAHESH TAMBOLI(2021B2AA1603G) 836
Name: ARYAMAN KUSHWAHA .(2021B5AA2412H) 836
PS-II Station : Texas Instruments - Analog, Bengaluru 837
Faculty 837
Name: Sathisha Shet K 837
Student 837
Name: ISHAN LAKHERA(2022A3PS0616G) 837
Name: HARISH RAGAVENDHAR S K(2024H1230122P) 838
Name: DATE KEDAR ANAND(2021A3B52396P) 839
Name: A VINIL .(2022A3PS1648H) 840
Name: ANANYA TIWARI(2024H1230068G) 840
Name: VARUN REDDY GADIKOTA .(2022A3PS0673H) 841
Name: JATIN YADAV KAVETI .(2022AAPS0404H) 842
Name: ARYAN ASHISH ARORA(2022A3PS0492P) 844
Name: AVYAKTH DEVARAJAN .(2022A3PS0637H) 845
Name: AARYA AMEET AGAVEKAR(2022A3PS0428G) 845

PS-II Station : Texas Instruments - Embedded Software, Bengaluru 846
Faculty 846
Name: Shree Prasad M 846
Student 846
Name: KARTIK VERMA .(2021B3AA0554H) 846
Name: RAHUL SIDDAPPA HIREKODI(2024H1400135G) 847
Name: AARYA VARDHAN SHANDILYA(2022A3PS1734P) 848
Name: ARPIT VARAHMIHIR(2021B4AA1499P) 849
Name: DEBANGSHU PATNAIK .(2022A3PS1468H) 851
PS-II Station : The Affordable Organic Store, Hyderabad 852
Faculty 852
Name: Parag Rastogi 852
Student 852
Name: CHAKINALA ASHISH .(2021B2A83139H) 852
PS-II Station : The Confederation of Indian Industry (CII), Hyderabad 853
Faculty 853
Name: Rakesha Chandra Dash 853
Student 853
Name: HARSH PATEL(2024H1550257P) 853
PS-II Station : The Digital Group, Pune 854
Faculty 854
Name: Pravin Yashwant Pawar 855
Student 855
Name: PARAM SRIVARDHAN P(2021B3A71095P) 855
Name: KHYATI LOYA .(2022A1PS1696H) 855
PS-II Station : Thrissur Expressway Limited, Palakkad district 857
Faculty 857
Name: Mahesh Kumar Hamirwasia 857
Student 858
Name: YASH VIKAS YADAV(2024H1300191H) 858
PS-II Station : Titan Company Limited - Hosur, Hosur 858
Faculty 858
Name: Santosh Khandgave 858
Student 858

Name: PATIL VISHAL VIKAS(2024H1410107P) 859
PS-II Station : Transvolt Mobility Pvt. Ltd - , Mumbai 859
Faculty 859
Name: Arindam Roy 860
Student 860
Name: NANDITA GURU THURAVIL(2021A1PS3067G) 860
PS-II Station : Twilio, Bengaluru 861
Faculty 861
Name: Sangeetha Viswanathan 861
Student 861
Name: NISHANTH M S(2021B3A72176G) 861
Name: SHASHANK SHUKLA .(2022A8PS0765H) 862
PS-II Station : UBER - Data Analytics, , Hyderabad 864
Faculty 864
Name: Akshaya G 864
Student 864
Name: ANUSHKA SHARMA(2022A1PS1476G) 864
PS-II Station : UBER - Data Science, , Bengaluru 865
Faculty 865
Name: Akshaya G 865
Student 865
Name: AKSHAY SHUKLA(2022A7PS0087P) 865
PS-II Station : UBER - Software Engineer, , Bengaluru 867
Faculty 867
Name: Akshaya G 867
Student 867
Name: MADHAV GUPTA(2022A7PS0078P) 867
Name: SIMRAN SESHA RAO .(2022A7PS0002H) 868
PS-II Station : UBS – Graduate Trainee , (Pune / Hyderabad) 869
Faculty 869
Name: Niranjan Swain 869
Student 870
Name: JAYANTH K V R(2022A7PS1102G) 870
Name: NISHTA CHAUDHARY .(2022A3PS0583H) 871

PS-II Station : UBS - RAS Executive Treasury, Pune 872
Faculty 872
Name: Niranjan Swain 873
Student 873
Name: VINEET KRISHNA(2022A7PS1197G) 873
PS-II Station : UBS - RAS GAM, Pune..... 873
Faculty 873
Name: Niranjan Swain 873
Student 874
Name: VEDAANT ACHUTHAN(2021B5A41173G) 874
PS-II Station : UBS- Global Quantitative Risk Modelling, Mumbai 874
Faculty 874
Name: Niranjan Swain 874
Student 875
Name: DAGGUMALLI MANISH(2021B3A31900H) 875
PS-II Station : UBS QRM, Mumbai 875
Faculty 875
Name: Niranjan Swain 875
Student 875
Name: ATHARVA PANKAJ DESHPANDE(2021B4A82309G)..... 876
Name: STITI SAMBHAB DAS(2021B4AA0770P) 877
PS-II Station : UBS-CFO - Group Treasury (LFMG, India), Mumbai 877
Faculty 878
Name: Niranjan Swain 878
Student 878
Name: RACHIT CHOUDHARY(2021B3A42147G) 878
PS-II Station : UBS-FPA&R - PPNR, Mumbai 879
Faculty 879
Name: Niranjan Swain 879
Student 879
Name: VINAYAK HARIVANSH PANDEY(2021B3AA1030P) 879
PS-II Station : UBS-Product Control AMER, Pune 880
Faculty 880
Name: Niranjan Swain 880

Student 880
Name: KETALA SOHAN KUMAR(2022A7PS1233G) 880
PS-II Station : UBS-RC MRR, Pune 881
Faculty 881
Name: Niranjan Swain 881
Student 881
Name: ANAGHA B MENON(2021B5A41535G) 881
PS-II Station : UGX Systems Pvt Ltd., Gurgaon 882
Faculty 882
Name: Harish Kumar Aggarwal 882
Student 882
Name: ADITYA SHARMA(2022A7PS1183P) 882
PS-II Station : UST- COO - Kochi, Cochin 884
Faculty 884
Name: Sindhu S 884
Student 884
Name: BODAPUDI UDAY SHANKAR .(2022A3PS0655H) 884
PS-II Station : UST Infinity labs, Thiruvananthapuram 885
Faculty 885
Name: Sindhu S 885
Student 885
Name: ADITHYAN S NAIR .(2022A8PS0748H) 885
Name: JERIN VARGHESE BIJU(2022A3PS0440G) 886
PS-II Station : Varaha ClimateAg Private Limited - Growth and Strategy, Gurgaon 887
Faculty 887
Name: Gaurav Nagpal 887
Student 887
Name: PRATYAKSH PRADEEV(2021B1A42808G) 887
PS-II Station : VConnecTech, Hyderabad 889
Faculty 889
Name: Rakesha Chandra Dash 889
Student 889
Name: PRADDUMNA RAJENDRA RAUT(2024H1060080G) 889
PS-II Station : VE Commercials, Indore 891

Faculty 891
Name: Glynn John 891
Student 891
Name: OMKAR SUNIL SAHASRA BHOJANE(2024H1060148P) 891
Name: NIRAJ MITTAL(2024H1060156P) 892
PS-II Station : Vegapay Technology Private Limited - Engineering, Bengaluru 894
Faculty 894
Name: Ashish Narang 894
Student 894
Name: SUBHAM SHREYASH(2021B2A82381G) 894
PS-II Station : Vegapay Technology Private Limited - Product Management, Gurgaon 896
Faculty 896
Name: Ashish Narang 896
Student 896
Name: PRISHA AGARWAL(2022A7PS0121P) 896
PS-II Station : Victoria's Secret - MBA Business Analytics, Bengaluru 898
Faculty 898
Name: Smitha Sarma Ranganathan 898
Student 898
Name: SHREYA GUPTA(2024H1540840P) 899
PS-II Station : Viralo - Rigi Careers, Bengaluru 900
Faculty 901
Name: Reddy Rani Vangimalla 901
Student 901
Name: PARITOSH RAJEEV MATHAD(2021B5A31890G) 901
PS-II Station : VISA, Bengaluru 902
Faculty 902
Name: Neha Vinayak 902
Student 902
Name: TEJASVINI GOEL .(2022A7PS1672H) 902
Name: SAMRATH SINGH KHANUJA(2022A7PS1171P) 903
Name: SUCHIT CHEBOLU(2021B1A72281P) 904
Name: SANCHAY KETAN SINHA .(2022A3PS0607H) 905
Name: PRIYANSH R DALSANIA(2024H1030089P) 906

Name: SANA JOSE .(2022A3PS0636H) 907
Name: MEGHADITYA GIRI .(2022A7PS0155H) 908
Name: UDAY SUDANI .(2022A7PS0136H) 910
PS-II Station : Vitalize Healthcare, Pilani 911
Faculty 911
Name: Anjani Srikanth Koka 911
Student 911
Name: KARAN PRATAP SINGH SIKARWAR(2022A2PS1661P) 911
PS-II Station : Viven.ai, Bengaluru 911
Faculty 912
Name: Febin A Vahab 912
Student 912
Name: SARTHAK SOMANI .(2021B1A70793H) 912
PS-II Station : Volvo Eicher Commerical Vehicles, Bhopal 912
Faculty 912
Name: Glynn John 913
Student 913
Name: KRISHNAN NILAKANTAN(2024H1060103H) 913
PS-II Station : Wakefit Technologies , Bangalore 914
Faculty 914
Name: Arindam Roy 914
Student 914
Name: GULLA HARSHAVARDHAN(2024H1540846P) 914
PS-II Station : Walmart Global Tech India, Bengaluru 916
Faculty 916
Name: Monali Tushar Mavani 917
Student 917
Name: AARUSH SRIVASTAVA .(2022A7PS0210H) 917
Name: SUMIT SUBHASH KAPATKAR(2024H1120218P) 918
Name: AMAN RANJAN .(2022A7PS0141H) 919
Name: AJMERA MOKSH CHANDRESHBHAI(2024H1120185P) 921
Name: SAYAN SAHU(2024H1030058H) 922
Name: PRANJAY MALHOTRA(2024H1030072P) 924
Name: MALAVIKA RAMESH(2022A7PS0033P) 925

Name: CHANDRIKA SINGH JADON(2021B1A72939G) 927
Name: KARINGATTIL SAGAR THOMAS .(2022A7PS0156H) 929
Name: GURUMURTHY VENKATAKUPPUSWAMY .(2022A7PS0226H) 930
PS-II Station : Warner Bros - AI-ML Infrastructure Analyst, Hyderabad 931
Faculty 931
Name: Garima Jindal 931
Student 931
Name: ADI MUKHERJEE(2021B5A70776P) 931
PS-II Station : WCB Robotics India Pvt. Ltd. - Electronics, Hyderabad 932
Faculty 932
Name: Sanjay Vidhyadharan 932
Student 932
Name: NILAY KIRAN WANI(2022AAPS0444G) 932
PS-II Station : Wealthy Nivesh, Mumbai 933
Faculty 933
Name: Sidharth Mishra 933
Student 933
Name: ARYAN THAKUR(2021B2A22164P) 933
PS-II Station : WILP - CSIS Projects, Bengaluru 935
Faculty 935
Name: Lucy J. Gudino 935
Student 935
Name: MADALA SRIRAM .(2022AAPS0394H) 935
PS-II Station : WILP- Autocyber security, Hyderabad 937
Faculty 937
Name: Ramya K. 937
Student 937
Name: ADITYA BANSAL(2024H1410100P) 937
PS-II Station : WILP- Communication network lab, Hyderabad 939
Faculty 939
Name: Suparna Chakraborty 939
Student 939
Name: ADITYA SRIVASTAVA(2024H1230154H) 939
PS-II Station : WILP- Electric and hybrid vehicle, Hyderabad 940

Faculty 940
Name: Madhuri Bayya 940
Student 940
Name: K RICHA(2024H1400130G) 940
Name: PENTA JAYAVARDHAN(2024H1060152P) 941
PS-II Station : WILP- Smart Manufacturing Competency, Bengaluru 942
Faculty 942
Name: Prakruthi Hareesh 942
Student 942
Name: VIGNESH A(2024H1410060G) 942
Name: SREELAKSHMI SASI(2024H1240105G) 944
PS-II Station : WILP_Epson Robotics, Bengaluru 944
Faculty 945
Name: Prakruthi Hareesh 945
Student 945
Name: HRADESH SINGH(2024H1060079G) 945
Name: DIBYA GAURI(2024H1400065P) 946
PS-II Station : XcelCrowd Technologies Pvt. Ltd., Hyderabad 948
Faculty 948
Name: Chennupati Rakesh Prasanna 949
Student 949
Name: PRANAV MAREDDY .(2022AAPS2029H) 949
PS-II Station : Yugabyte Software Pvt. Ltd., , Bengaluru 949
Faculty 949
Name: Raja Vadhana Prabhakar 949
Student 950
Name: SATVIK NARULA(2021B3A72482G) 950
Name: VANKA VINAY NAIDU(2021B3A71026H) 951
Name: PRAHARSH VITTA .(2022A7PS0015H) 952
PS-II Station : Zeo - Product Content, Delaware 953
Faculty 953
Name: Uma Nagarajan 953
Student 953
Name: K SAI VINEETH(2021B1A12435H) 953

PS-II Station : Zeo Auto - Product Growth, Delaware 954
Faculty 954
Name: Uma Nagarajan 954
Student 954
Name: DIVYA ARORA(2021B1A12999G) 954
PS-II Station : ZIPPEE, Gurgaon 956
Faculty 956
Name: Neha Vinayak 956
Student 956
Name: OJAS YADAO NIMAJE(2022A5PS1454P) 956
PS-II Station : Zomato - SDE, Gurgaon 957
Faculty 958
Name: Raghavendra Singh 958
Student 958
Name: PRAKHAR KUMAR GUPTA(2022A7PS1145G) 958
PS-II Station : ZS Associates – Data Science, Pune 960
Faculty 960
Name: Chetana Anoop Gavankar 960
Student 960
Name: AGASTYA SANYAL(2022A8PS0061G) 960

PS-II Station : A.T. Kearney Consulting (India) Pvt. Ltd., Gurgaon

Faculty

Name: Anjani Srikanth Koka .

Student

Name: ADITYA RANJAN .(2022A3PS1647H)

Student Write-up

PS-II Project Title: Financial Feasibility Assessment and Supplier Reachout

Short Summary of work done during PS-II : My work during PS was divided into two parts. The first part assesses the financial feasibility of developing a ship repair yard at a strategically located greenfield island site near a major international shipping corridor. It evaluates the locational rationale, defines the relevant vessel-traffic catchments, builds a bottom-up estimate of the addressable market across the Total, Serviceable Available, and Serviceable Obtainable Market layers, benchmarks the proposed facility against established regional repair hubs, and develops a ten-year business plan covering revenue projections, capital and operating expenditure, profitability, and a structured risk assessment. The second part documents a supplier-reachout and business-structuring engagement for a maritime crane manufacturing initiative. It develops a component-level should-cost estimate through a staged supplier-engagement process, evaluates ownership and partnership structures for establishing manufacturing capability, and proposes structured frameworks for evaluating technology providers, component vendors, infrastructure and EPC partners, financial investors, and government stakeholders.

Tool used (Development tools - H/w, S/w) : AI, Microsoft Office, Python, Web scraping

Objectives of the project : undertake a comprehensive evaluation of the feasibility of developing ship repair and shipbuilding facilities at the proposed site

Major Learning Outcomes : I learnt AI, Microsoft Office, Python, Web scraping, and helped client with the outcomes

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Very well maintained offices. Exceeded expectations in terms of opportunities provided

Academic courses relevant to the project : Technical Report Writing, Computer Programming

PS-II Station : Accenture Strategy & Consulting, Bengaluru/Gurgaon

Faculty

Name: Gaurav Nagpal .

Student

Name: SWOBHINEET SWAIN(2024H1540819P)

Student Write-up

PS-II Project Title: Project ATLAS

Short Summary of work done during PS-II : Create Agentic AI for Tail Spend in Supply Chain during Procurement

Tool used (Development tools - H/w, S/w) : Python, LangChain, LangGraph, React, LLM, APIs

Objectives of the project : AI Tail Spend Analysis and Spending Agent

Major Learning Outcomes : Agentic AI

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Professional

Academic courses relevant to the project : Python, Excel

Name: RAJDEEP NATH(2024H1540830P)

Student Write-up

PS-II Project Title: Multi-Agentic Spares Inventory Planner

Short Summary of work done during PS-II : End-to-End development of a full fledged multi-agentic app whose main work is to provide a wide range of analytical tools & critical capabilities

Tool used (Development tools - H/w, S/w) : Python, Co-Pilot, Langchain, DuckDB, parquet storage, database warehouse

Objectives of the project : To develop a full-fledged planner tool that works with AI to deliver industry standard info & capabilities

Major Learning Outcomes : Had a deep exploration into both Agentic AI & After Market verticals in SCM

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Very good & accommodating with high degree of ethics & work focus to provide deliverables

Academic courses relevant to the project : Supply chain management, python programming, sql

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Name: PARVATHI NAIR(2024H1540807P)

Student Write-up

PS-II Project Title: Client project - Building an AI tool for Ultrasound Upgrade Path

Short Summary of work done during PS-II : Worked on a new intelligence tool for a client. My responsibilities initially were to support backend development, later on took complete responsibility of data modelling on Databricks, creating and maintaining ADF pipelines and support in production release of the application.

Tool used (Development tools - H/w, S/w) : Azure Databricks, Azure Data Factory, VSCode, Pyspark, Python, Streamlit, Langfuse, Agentic AI

Objectives of the project : To build an intelligent tool that can suggest upgrade paths possible for different ultrasound machines.

Major Learning Outcomes : Data modelling on Databricks, python, backend development, Streamlit

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : It was a very nurturing environment, got to learn a lot and interact with high achieving individuals. Altogether it was a very enriching learning experience, and I felt very comfortable working there.

Academic courses relevant to the project : Business analytics, Deep learning, NLP, Python

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Name: YASH DWIVEDI(2024H1540853P)

Student Write-up

PS-II Project Title: Generative AI and Agentic AI Solutions

Short Summary of work done during PS-II : During a six-month Data & AI internship at Accenture Strategy & Consulting, I designed, built and deployed a portfolio of agentic and generative AI solutions across two structured phases, reviewed at mid-internship and final checkpoints. In the first phase, I developed a Multi-Agent Catalogue Maintenance Workflow using LangChain, Python and Azure

OpenAI, implementing a master-agent architecture to automate Excel splitting, email dispatch and response consolidation. I followed this with a Catalogue Assistant Chatbot — a full-stack application deployed on Azure Function App with GPT-4o-mini for intent detection, Azure Blob Storage, and a Streamlit frontend for natural-language data operations. I also explored the Riley Sales Outreach Agent to assess AI-driven prospect engagement workflows, and built a Copilot for Sales & Proposal Generator, creating demo videos via Clipchamp and designing an LLM-to-PowerPoint pipeline using python-pptx and Copilot Studio. In the second phase, I built a Copilot Studio Project Assistant for automated documentation population and project Q&A, and cleared the Anthropic Claude Certified Architect – Foundations (CCA-F) examination with a score of 811/1000. The flagship deliverable was MedBridge — a real-time AI-powered bilingual medical translation system for a Dubai healthcare client, featuring a multi-agent pipeline (Orchestrator → STT Agent → Translation Agent → GPT-4o Judge) with parallel best-of-N model selection, validated using WER and BLEU benchmarks across four languages.

Tool used (Development tools - H/w, S/w) : Python, LangChain/LangGraph, Microsoft Azure (OpenAI, Function Apps, Speech SDK), Microsoft Copilot Studio, LLMs, WebSockets

Objectives of the project : Leveraging Generative and Agentic AI for automation tasks, sales workflows and translation systems

Major Learning Outcomes : Acquired practical experience architecting multi-agent and generative AI workflows

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The internship was carried out at Accenture Strategy & Consulting, Gurugram, within the Data & AI practice. The environment was professional and fast-paced, structured around proof-of-concept-driven development with formal review presentations at two key checkpoints — evaluated by a working manager, Senior Manager, and Managing Director.

The company expected interns to function as active contributors — independently identifying business problems, building AI-powered solutions, and presenting outcomes in consulting-style formats. Strong emphasis was placed on translating technical work into business value narratives for senior stakeholders.

Continuous learning was also expected, evidenced through professional certifications, and high standards of documentation and presentation quality were maintained across all deliverables.

Academic courses relevant to the project : Deep Learning, NLP

Name: PULKIT AGRAWAL(2024H1540854P)

Student Write-up

PS-II Project Title: Design and Development of a Gen AI-Merchandising Platform for the Consumer Packaged Goods Industry

Short Summary of work done during PS-II : During my PS-II at Accenture Strategy & Consulting, I worked as a Data & AI Intern within the Sales & Commerce practice(Accenture Song) on a live client engagement for a CPG company. My primary contribution was building and iterating on a Retail Analytics Intelligence Dashboard that enables the client's buying team to monitor and analyse retail performance across divisions, departments, categories, and vendors. I developed several key modules of the dashboard including an AI-powered chatbot that answers business questions using live Databricks data, a vendor insights panel with financial diagnostics and AI-generated recommendations, and a category performance view with an interactive class-level heatmap. I also built a diagnostic tool to identify data inconsistencies across the analytics hierarchy. The technical stack included Python Flask for the backend, Azure Databricks and Unity Catalog for data access, Azure OpenAI GPT-4o for AI features, and JavaScript for the frontend. I worked collaboratively within a team, managing code through Azure DevOps and integrating my features into a shared codebase through structured merges and pull requests.

Tool used (Development tools - H/w, S/w) : Software: Python, Flask, JavaScript, SQL, Azure Databricks, Azure OpenAI (GPT-4o), Azure DevOps, VS Code, Excel, PowerPoint; Hardware: Company laptop, remote access to Azure cloud infrastructure

Objectives of the project : To design and develop an AI-enabled retail analytics dashboard for a CPG client that enables business users/stakeholders to monitor sales performance, analyse vendor insights, and interact with live data through a conversational AI interface, reducing dependence on manual reporting and enabling faster decision-making.

Major Learning Outcomes : Gained hands-on experience integrating Large Language Models (GPT-4o) into a production-grade business application

Learned to work with cloud-based data platforms, specifically Azure Databricks and Unity Catalog, for querying and managing enterprise retail data

Developed full-stack web development skills using Flask, Jinja2, and JavaScript in a client-facing product

Understood real-world data pipeline challenges including ETL inconsistencies and cross-table reconciliation

Learned to collaborate within a professional consulting team, manage feature branches on Azure DevOps, and integrate code across parallel workstreams

Gained exposure to the CPG retail domain including merchandising KPIs, vendor funding structures, and category management

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Accenture Strategy and Consulting operates in a fast-paced, collaborative consulting environment. The team followed an agile working style with regular check-ins, sprint-based task planning, and continuous feedback. As an intern, I was expected to work independently on assigned modules while staying aligned with the broader team through daily standups and code reviews.

The work culture was professional, yet approachable, senior team members were accessible and supportive, and there was a genuine expectation to contribute meaningfully to the client deliverable rather than work on isolated practice tasks. The internship offered real exposure to a live project, which meant navigating actual client requirements, tight timelines, and evolving specifications.

Expectations were clear from the start: deliver functional, well-integrated features, communicate blockers proactively, and maintain code quality consistent with the team's standards. Working remotely and coordinating with team members across different schedules also required strong time management and written communication skills.

Academic courses relevant to the project : Marketing Management, Statistical Modeling, Predictive Analytics, Time Series

Forecasting, Data Visualization, Programming for Analytics, Data Warehousing

PS-II Station : Aditya Birla Science & Technology Company Ltd. (ABSTC) , Mumbai

Faculty

Name: Santosh Khandgave

Student

Name: KAJOL SHIVNATH PRASAD(2024H1010012H)

Student Write-up

PS-II Project Title: Low fibrillation excel fiber

Short Summary of work done during PS-II : Worked in the FTC department, assisting with data analysis, technical documentation, and project-related tasks. Contributed to process improvement activities while gaining exposure to industrial workflows and professional practices.

Tool used (Development tools - H/w, S/w) : WAN, vibro dyne

Objectives of the project : Treatment of lyocell Fiber to reduce fibrillation

Major Learning Outcomes : Gained practical exposure to industrial processes and professional work environments while working on real-world projects. Developed skills in data analysis, technical documentation, problem-solving, and effective teamwork.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment was professional, collaborative, and supportive, providing valuable exposure to industrial practices and project execution. I expected technical guidance, meaningful learning opportunities, and industry-relevant experience to enhance my professional and technical skills.

Academic courses relevant to the project : It is not relevant to my academic projects

Name: VAISHNAV AJIT PATIL(2024H1010019P)

Student Write-up

PS-II Project Title: Decarbonization: Low temperature waste heat recovery recovery

Short Summary of work done during PS-II : Modelling of drying process

Tool used (Development tools - H/w, S/w) : Excel, Matlab

Objectives of the project : Modelling Drying process by using waste heat

Major Learning Outcomes : Computational Skills

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Good

Academic courses relevant to the project : CFD, Mathematical methods for Chemical Engineering

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Name: ROHAN CHOUDHARY(2024H1010024P)

Student Write-up

PS-II Project Title: "A Study on Viscose Manufacturing: Understanding the Effect of Pulp & Process Conditions"

Short Summary of work done during PS-II : During my internship at ABSTC, I worked on the development and characterization of viscose dope for regenerated cellulose fiber production. My work involved studying the complete viscose manufacturing process, including steeping, pressing, shredding, aging, xanthation, dissolution, and ripening. I participated in the preparation of multiple viscose dope batches using different dissolving pulp grades and pulp blends, with a focus on understanding the effect of raw material properties on dope quality. A major part of my work involved analytical characterization of viscose dope and pulp samples. I performed Gel Permeation Chromatography (GPC) analysis to determine molecular weight distributions and monitor cellulose

degradation during processing. I analyzed parameters such as weight-average molecular weight (Mw), molecular weight distribution, and their influence on dope viscosity and processability. I also conducted routine quality evaluations, including measurements of cellulose content, alkali content, ripening index (Kw), refractive index, and viscosity using ball-fall methods. Additionally, microscopy studies were carried out to examine the homogeneity of viscose dope and identify undissolved particles or gel structures. Through this work, I gained practical knowledge of cellulose chemistry, viscose process optimization, polymer characterization techniques, data analysis, and the relationship between pulp properties, molecular weight, and final dope performance.

Tool used (Development tools - H/w, S/w) : Optical microscope, Gel permeation chromatography, excel, python, powerpoint, pulper, xanthator, presser,

Objectives of the project : To increase the efficiency of the viscose dope process

Major Learning Outcomes : How to optimize production process for the plants.

Details of Papers/patents : Na

Brief Description of working environment, expectations from the company : Good

Academic courses relevant to the project : Na

PS-II Station : AECOM, Mumbai

Faculty

Name: Mahesh Kumar Hamirwasia .

Student

Name: AMALENDHU DIPU(2024H1430041P)

Student Write-up

PS-II Project Title: Mumbai Coastal Road Project

Short Summary of work done during PS-II : I worked on the Analysis and Design of the Viaduct Superstructure for the Mumbai Coastal Road Project (North Versova to Dahisar) – Package E. As part of the project, I studied and applied the relevant provisions of IRC:6 and IRC:112, developed Excel-based calculation sheets for load computations, and carried out analysis of the viaduct superstructure using MIDAS Civil. In addition, I reviewed design reports for various steel structures modelled and analysed using STAAD.Pro.

Tool used (Development tools - H/w, S/w) : Midas Civil, Staad Pro, Microsoft excel

Objectives of the project : The objective of this project was to carry out the structural analysis and design of the viaduct superstructure in accordance with the relevant IRC codes, ensuring a safe and efficient bridge design.

Major Learning Outcomes : The internship enabled me to gain hands on experience in the structural modelling and analysis of bridges using MIDAS Civil. It also provided me with practical knowledge of the design and analysis of various steel structural components.

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : Experienced a collaborative and supportive work environment. Interns are given enough time to learn.

Academic courses relevant to the project : Bridge Engineering, Prestressed Concrete Structures, Design of steel structures

PS-II Station : AG&E, Hyderabad

Faculty

Name: Samir Ramdas Kale .

Student

Name: MOHAMED YAMISH M(2024H1430020H)

Student Write-up

PS-II Project Title: Design, Analysis and Optimization of Structural connections in Engineering Projects

Short Summary of work done during PS-II : I began my internship at AG&E in January as a Connection Engineer Intern, where I started gaining practical experience in structural steel connection design and engineering workflows. The internship aims to strengthen my understanding of structural engineering principles, particularly in the design and analysis of steel connections based on the AISC Steel Construction Manual. At the initial stage, the primary focus of the training was on building a strong foundation in steel connection design. I familiarized myself with key sections of the AISC code, including Dimensions and Properties (Part 1), Design Considerations (Part 2), and Bolts (Part 7), along with Chapter J – Limit States. In addition, I performed hand calculations for typical steel connections, such as simple shear tab connections and coped beam connections, to understand load transfer mechanisms and connection behavior. I also learned to use Bluebeam for reviewing drawings, grouping structural elements, and understanding load paths in structural systems. Furthermore, I worked with design spreadsheets to design several connections for project DFW20A, assigned connection IDs, and marked them in the project drawings for proper documentation. Then, I continued expanding my knowledge of steel connection design by studying the braced connection section in the AISC code, which introduced additional concepts related to the design and behavior of bracing systems in steel structures. I also began learning connection design software tools such as IDEA StatiCa and RISA, which are commonly used in structural engineering for analyzing and designing steel connections. These tools helped me understand how software can be used alongside manual calculations to evaluate connection performance and improve design efficiency.

Tool used (Development tools - H/w, S/w) : IDEASTATICA, RAM connections, RISA, MS Excel

Objectives of the project : Familiarize AISC codes and optimization of Steel connection designs

Major Learning Outcomes : Learned the limit states for different types of connections for different joints in a structure

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : The working environment was very good will colleagues and guides to support us and give us valuable suggestions for the projects

Academic courses relevant to the project : Advanced Steel Structures

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Name: ADARSH SANTOSH BONGALE(2024H1430027H)

Student Write-up

PS-II Project Title: Design, Analysis and Optimization of structural connections in Engineering projects

Short Summary of work done during PS-II : AISC Familiarity Steel design standards and specification navigation 02 Bluebeam Navigation Markup, review, and drawing coordination tools 03 Hand Calculations — Limit States Manual verification of critical connection checks 04 Grouping, Spreadsheets & Software Connection grouping logic, calculation sheets, and software introduction including bracing systems

Tool used (Development tools - H/w, S/w) : Risa connection,Ram connection,Idea statica & Excel

Objectives of the project : Efficient design of the steel connection

Major Learning Outcomes : Learned how to design various types of steel connections

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Work culture is good

Academic courses relevant to the project : Advanced steel structures

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Name: SANCHIT SACHIN SAGANE(2024H1430019H)

Student Write-up

PS-II Project Title: Technical Training Report on AG&E

Short Summary of work done during PS-II : • A systematic approach is followed starting with the identification of soil conditions and review of the geotechnical report. This is followed by assessing site-specific factors such as seismic zones, wind speed, and snow conditions. The structural framing system and layout are then studied through schematic drawings to understand the load path. Based on this, a structural model is developed using the given inputs, followed by the application of relevant loads and load combinations. The structure is analyzed to evaluate its behavior, and any errors or inconsistencies are identified and resolved. Finally, detailing and design aspects are reviewed to ensure accuracy and compliance with standard practices.

Tool used (Development tools - H/w, S/w) : Structural Engineering Design tools- TSD, RISA, Bluebeam, Revit

Objectives of the project : • Understanding structural drawings, framing systems, and load path • Application of different types of loads and load combinations • Structural modeling and analysis using specific softwares • Identifying and resolving modeling/design errors • Interpreting design guidelines and detailing practices • Exposure to real-world structural engineering workflows

Major Learning Outcomes : • Understanding structural drawings, framing systems, and load path

- Application of different types of loads and load combinations
- Structural modeling and analysis using specific softwares
- Identifying and resolving modeling/design errors
- Interpreting design guidelines and detailing practices
- Exposure to real-world structural engineering workflows

Details of Papers/patents : .

Brief Description of working environment, expectations from the company : Working

Environment is good

Academic courses relevant to the project : All course that are taught to us

PS-II Station : Aizant Drug Research Solutions Pvt. Ltd., Hyderabad

Faculty

Name: Bharathi R .

Student

Name: Y NAGARAJU KUMAR(2024H1010015H)

Student Write-up

PS-II Project Title: Regulatory Data Extraction and Analytics System for FDA Warning Letters and FOIA Records

Short Summary of work done during PS-II : Webscrapping , usp monographs extraction, fda warning letters extraction.

Tool used (Development tools - H/w, S/w) : Python

Objectives of the project : To decrease the risk assess

Major Learning Outcomes : Python

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Company environment is too good & the staff is very knowledgeable and motivates all the time for new ideas.

Academic courses relevant to the project : Mechanical Operations, Reaction engineering

PS-II Station : Aksha Integrated Design Pvt. Ltd, Goa

Faculty

Name: A Rekha .

Student

Name: JAI ADITYA(2022AAPS0779G)

Student Write-up

PS-II Project Title: Embedded systems intern

Short Summary of work done during PS-II : I would work on products requested by clients for problems like sea pollution or underwater exploration.

Tool used (Development tools - H/w, S/w) : Arduino, stm, soldering tools, kicad, ROS2, gazebo

Objectives of the project : To work on embedded systems for products in the naval space

Major Learning Outcomes : Learning about underwater robotics, types of sensors, limitations of robotics underwater, ways to counteract them, product design and lifecycle, advanced robotics topics like aruco, kalman filters etc.

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : The team here is quite lean, in the sense that there is one person for each role, and the work environment is flexible. I was expected to participate in the decision making process.

Academic courses relevant to the project : Control theory, Microcontroller and processor

Name: S SHANKAR SHRIRAAM(2024H1410055G)

Student Write-up

PS-II Project Title: Debris prevention system on critical infrastructure, remote circuit switch, and underwater propulsion system.

Short Summary of work done during PS-II : Fabricated a few prototypes which finds in application across oil and gas, fisheries, defence etc. Learnt and experinced a prototype developement cycle form abstarct design to embodiment design

Tool used (Development tools - H/w, S/w) : Autodesk Fusion 360, Ultimaker Cura 5, FreeCAD, Electric cutter, Drill bits, Handheld drill machine, Vernier caliper, Inch tape, Punch head, Clamps, Hackswa, PVC Pipes and Adapters, PLA Bobbins, FDM 3D Printer, Hydraulic press brake.

Objectives of the project : To fabricate and deliver Lower fidelity Prototype

Major Learning Outcomes : Learnt and experienced a few prototype development from abstract to embodiment design

Details of Papers/patents : complied a concept and preliminary paper for debris prevention system on critical infrastructure to disclose to client end, Generated 3D components and 3D assembly of Underwater propulsion system via CAD and fabricated them, Generated 3D components.

Brief Description of working environment, expectations from the company : Startup focuses more on development than research on theory and software, you create idea just build it physically and find out through trial and errors,

Academic courses relevant to the project : Materials technology and testing, CAAD, Advanced Composites, Mechanisms and Robotics, Non-destructive testing, Dynamics and Vibrations, CFD, FEM, Smart materials, Product development.

PS-II Station : AlmaConnect, Gurgaon

Faculty

Name: Sidharth Mishra .

Student

Name: KRATIKA GARG(2024H1540855P)

Student Write-up

PS-II Project Title: NA

Short Summary of work done during PS-II : My project involves monitoring, identifying, and publishing news related to institutional clients of AlmaConnect, including colleges, schools, and universities. The objective is to highlight achievements and global recognition of alumni and institutions.

Tool used (Development tools - H/w, S/w) : NA

Objectives of the project : involves monitoring, identifying, and publishing news related to institutional clients of AlmaConnect

Major Learning Outcomes : Improved analytical reading skills
Experience in content verification and content curation
Understanding of alumni engagement platforms• Exposure to operational workflows in a SaaS company
Developed efficiency in handling large volumes of news content
Developed skills in data research and profile building using LinkedIn, news sources, and web resources
Gained experience in tag creation and metadata management for automated news tracking systems
Improved ability to identify and structure relevant information for accurate content tagging

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The mentors were really helpful. Always ready to help, always available whenever any query or issues arose.

Academic courses relevant to the project : NA

Name: ANUSHKA MEWARA(2022A5PS1456P)

Student Write-up

PS-II Project Title: Business Operations Intern

Short Summary of work done during PS-II : During my PS-II as a Business Operations Intern, I was responsible for managing and validating prospect data related to educational institutions. My primary role involved researching institutional information, verifying its accuracy from reliable sources, and updating the database with correct and relevant details. I also identified and published important news and updates related to the assigned institutions to keep their profiles current and informative. Throughout the internship, I worked extensively with large datasets while ensuring data quality, consistency, and completeness. My responsibilities required attention to detail, effective research skills, and timely completion of assigned tasks. This experience provided practical exposure to business operations, data management, and content publishing while improving my analytical thinking, accuracy, and organizational skills. Working in a collaborative environment also strengthened my communication and teamwork abilities.

Tool used (Development tools - H/w, S/w) : Microsoft Excel, Microsoft Office

Objectives of the project : Manage and maintain prospect data for educational institutions. Verify and validate institutional information to ensure data accuracy. Research and publish relevant news and updates for institutions. Improve the quality and reliability of institutional databases. Support business operations through accurate data management and content updates.

Major Learning Outcomes : Developed strong data validation and data management skills.

Improved research and information verification techniques.
Learned to maintain high standards of data accuracy and consistency.
Enhanced attention to detail while handling large datasets.
Strengthened communication, time management, and organizational skills.
Gained practical exposure to business operations and content management.

Details of Papers/patents : .

Brief Description of working environment, expectations from the company : The company provided a professional, collaborative, and supportive work environment where accuracy, consistency, and timely delivery of work were highly valued. Team members were approachable and encouraged continuous learning through regular feedback and guidance. My role required independent research, careful validation of information, and effective coordination with the team to maintain the quality of institutional data. The organization emphasized attention to detail, accountability, and adherence to quality standards, enabling me to gain practical experience in business operations and professional workplace practices.

Academic courses relevant to the project : Principals of Management, Organizational Behavior, Business Communication

PS-II Station : AlphaSense - AI Engineer intern, Bengaluru

Faculty

Name: Seetha Parameswaran .

Student

Name: ADIT RASTOGI .(2022A7PS1330H)

Student Write-up

PS-II Project Title: Hybrid Snippet Reranker Retraining

Short Summary of work done during PS-II : I finetuned a reranker model which performed 2.1x times better than the old model which the company was using. I deployed the model to all the users of Alphasense increasing final answer quality. After this project was completed I was assigned another project in which I have to design context pruning in an AI model harness, this project is still ongoing.

Tool used (Development tools - H/w, S/w) : H/W : Macbook Pro Provided by the company. S/W : Cursor Claude Gemini for Development, AWS and GCP(Google Cloud Platform) for cloud GPU's, GitLab Kubernetes for deployment and scaling.

Objectives of the project : My project objective was to find a strong open source reranker model and fine tune it for reranking task on alphasense proprietary dataset. This model was supposed to replace the old, smaller reranker model which was deployed in the production at the time. This project was more of a research project where I had to do all the tasks from gathering the dataset, cleaning and refining it, fine tuning the model with best strategy, conducting evaluation on high quality dataset. Followed by deploying the model in production and also taking care of latency and scaling up strategies. All the steps were done by me from scratch with the guidance of my mentor and manager.

Major Learning Outcomes : I learned a lot in these 6 months than I could ever learn in college. I learned to gather and parse large amounts of data and create a high quality dataset out of it. Data quality tests, Model training, using cloud services like AWS Sagemaker and GCP(Google Cloud Platform) to fine-tune models. I learned how can we improve latencies using different GPU optimization strategies and scaling up configs. I learned to make something from scratch and take it all the way to deployment among thousands of users.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment is extremely good, the jod is hybrid, there is no compulsion to come to the office everyday, we can work from home whenever we want. Work environment is pretty flexible. The people in the company are very helpful and I could approach anyone for any kind of help at anytime. This company has offices in New York, Finland, Singapore etc so I got to interact with a lot of folk outside of India and even worked in projects with them. The company expectations are to complete the work before the deadline and if you are doing that, then there should be no problem.

Academic courses relevant to the project : Generative AI(by Bhanu sir), Data Mining, Machine Learning, AI, Data Science Minor is a great minor for this.

Name: VISHWAS VEDANTHAM .(2022A7PS0235H)

Student Write-up

PS-II Project Title: LLM-as-a-Judge Evaluator and Preferred-Source Boosting in Image Search Backend

Short Summary of work done during PS-II : Multimodal-image Search: Implemented source-based boosting in the experimental ranking profile so content from preferred sources ranks higher, defined source-preference and relevance metrics to quantify uplift, tuned the source/freshness/content-importance boosts so they reinforce rather than counteract each other, and validated the experimental profile against the full-precision production baseline before rollout. Agentic Evaluator is a quality-evaluation system for an AI search product. It automatically reviews the product's generated answers and grades them on several dimensions—like relevance, accuracy, readability, and how well sources are cited. It can run these checks on curated test sets or on real production samples, then records the results and scores in a central dashboard for tracking over time. The system also generates regression reports to flag quality changes, runs continuous background monitoring, and supports root-cause investigation when scores drop. Overall, it gives the team an automated, consistent way to measure and improve answer quality.

Tool used (Development tools - H/w, S/w) : Cursor, Claude Code, Gitlab CI/CD, ArgoCD, Postman, Linear, Grafana

Objectives of the project : Build a two-layer evaluation setup with live quality monitoring in production plus a daily smoke-test check, Add LLM-based quality scorers and provide on-demand scoring for any individual conversation or trace, with results saved. Add source-based boosting to the image-search pipeline so that content from preferred sources ranks higher. Tune and validate the new setup against the current baseline, measuring both source preference and relevance before rollout.

Major Learning Outcomes : Working with FastAPI endpoints, CI/CD practices and release cycle knowledge, learnt about grid search and other parameter tuning techniques, concurrency control and rate limiting to avoid overloading downstream services.

Details of Papers/patents : No papers were filed based on the work done in PS2

Brief Description of working environment, expectations from the company : The working environment was supportive and relaxed, which made it easy to stay engaged and productive. I had the opportunity to work on projects that had a direct, real-world impact in production rather than peripheral tasks. My project mentor, manager, and colleagues were consistently approachable and helpful — and beyond the knowledge they shared, it was great to connect with them outside of work too, which made the whole experience much more enjoyable. There was a genuine emphasis on learning: I was given space to properly understand the reasoning behind everything I worked on, instead of being rushed toward output. I was also trusted with a real degree of independence, which let me take ownership of my work while knowing support was always there when I needed it.

Academic courses relevant to the project : Machine Learning, Natural Language Processing, Deep Learning

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Name: SRICHANDRA LOLLA .(2022A7PS0051H)

Student Write-up

PS-II Project Title: System Optimization and Maintenance (Optimization, performance testing and reliability of a production generative-search platform).

Short Summary of work done during PS-II : I worked as an AI Engineer Intern with the Gen AI and AI Platform teams at AlphaSense, on the performance, cost and reliability of the company's generative-search products. After a brief onboarding phase, I moved onto the generative-search service and learned the architecture of a large, distributed LLM system. I took ownership of its performance testing, running sustained-load latency tests (TTFT and end-to-end latency at the median and tail) to validate model changes and provider migrations, and reporting regressions. In parallel I contributed to model evaluation and prompt refinement, learning how a model is assessed first for correct behaviour and then for quality. I also supported a platform-wide effort that re-routed model traffic across providers to reduce cost and improve capacity. After fully taking over performance testing, I shifted to production reliability, diagnosing and fixing customer-facing issues that surfaced after a major rollout. The most involved of these required tracing a user-facing failure through the system to its root cause and resolving it end-to-end. This phase sharpened my debugging ability and

gave me a low-level understanding of the whole service. Throughout, I used k6, Testkube, Prometheus and Grafana to keep the work data-driven, and learned to validate a measurement before acting on it.

Tool used (Development tools - H/w, S/w) : Software: Python, LangChain, LangGraph, Docker, Kubernetes, k6, Testkube, Grafana, Prometheus, Langfuse, Snyk, Git/GitLab CI/CD. Hardware/Infra: cloud-hosted Kubernetes clusters (production "research" cluster) for load testing and deployment.

Objectives of the project : - Measure system responsiveness by reporting Time to First Token (TTFT) and end-to-end (E2E) latency of the service and It's parts. ; - Identify where latency and cost accumulate across the pipeline, and implement optimizations. ; - Run the quality and performance evaluations that gate model changes and provider migrations. ; - Diagnose and resolve customer-facing reliability issues in production. ; - Improve the observability and testing that make the platform easier to operate and harder to regress.

Major Learning Outcomes : - Gained a working understanding of how large-scale, production AI systems are built, served and kept reliable, and of the trade-offs (cost, capacity, speed) involved in running them at scale.
- Learned performance engineering: how to design realistic load tests, measure system responsiveness, and interpret the results to tell a genuine problem.
- Developed strong debugging skills for complex distributed systems, learning to trace an issue through to its root cause using logs, metrics and monitoring tools.
- Understood the discipline of model evaluation: assessing a model first for correct behaviour, performance in a production environment then for quality before any change is allowed to ship.
- Built familiarity with professional engineering practice in a fast paced, well established AI product company: CI/CD discipline, working within large existing codebases, and responding to live production issues under time pressure.
- Improved my ability to work effectively within a globally distributed team and to communicate technical findings clearly.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : AlphaSense is a fast-paced, AI product company that deals with AI Market Intelligence, and the AI-Product team I worked with were globally distributed across India, Helsinki and the United States. The culture was professional and collaborative, and I was treated as a full contributing engineer rather than an observer: I owned tickets end-to-end, raised merge requests against production services, and took

part in the incident-response rotation for generative search. Code quality, review discipline and CI/CD rigor were taken seriously, and senior engineers were generous with their time. Because the work touched proprietary systems, it operated under a non-disclosure agreement, with engineers expected to handle internal architecture and data responsibly. The company expected interns to ramp up quickly, work independently once aligned on a task, communicate progress and blockers proactively, and hold a high bar for the systems they touched. The pace could be demanding, especially with live user-facing issues, but the environment was supportive and learning-oriented, and working across time zones built discipline around asynchronous communication and clear documentation. Overall, the central expectation was ownership: to take a problem, investigate it rigorously using data and observability tooling, and carry it through to a deployed, verified resolution while keeping the team informed.

Academic courses relevant to the project : CS F437:GENAI, CS F407:AI, OS, CS F320:Foundations of Data Science, DSA

Name: NAMAH GUPTA(2022A7PS0126P)

Student Write-up

PS-II Project Title: Nodal Evaluator and Multi-Agent System Engineering

Short Summary of work done during PS-II : During my PS-II at AlphaSense Bangalore, I contributed across the GenAI platform stack on three production systems. First, I designed and built the Nodal Evaluator from scratch which is a node-level LLM-as-a-judge that fetches traces from Langfuse, critiques the lead agent, subagent executor, and writer separately, runs prompt-critique on under-performing nodes, and exports findings to Excel for product review. I then integrated this evaluator into the existing Agentic Evaluator service so that node-level scoring runs automatically on sampled production traces and feeds Prometheus and Grafana dashboards via three operational modes (API, cron, and metrics exporter). Second, I extended the Financial Data Agent (a multi-agent LangGraph pipeline) by adding two new specialist agents for institutional shareholders and insider transactions, including orchestrator routing rules and integration tests that protect both new and existing flows from regressions. The internship taught me how to build, evaluate, and ship LLM driven systems reliable enough for customers from prompt design and schema validation to observability and gradual rollout.

Tool used (Development tools - H/w, S/w) : Languages & runtime: Python 3.12, uv, pyproject.toml-based packaging. AI / agent frameworks: LangGraph, LiteLLM, Pydantic v2, MCP (Model Context Protocol). Observability: Langfuse (trace platform), Prometheus + Grafana (metrics and dashboards). Service

Objectives of the project : Design and ship a node-level LLM-as-a-judge evaluation system for a multi-agent research pipeline and integrate it into the team's production evaluation service so that per-stage scoring runs automatically on sampled traces. Extend the team's multi-agent financial data system with two additional specialist agents (institutional shareholders and insider transactions).

Major Learning Outcomes : Designing LLM-as-a-judge systems with structured Pydantic outputs and per-stage critique prompts. Building and reasoning about multi-agent orchestration via LangGraph state machines and MCP tools. Productionising LLM services: FastAPI async patterns, Docker, Kubernetes (Helm), and ArgoCD-based promotion. Observability for AI: Langfuse trace-driven evaluation feeding Prometheus/Grafana dashboards.

Details of Papers/patents : None. The work was internal production engineering; no academic publications or patent filings resulted from the internship.

Brief Description of working environment, expectations from the company : The working environment was good with helpful teammates and mentors and managers. There were reasonable expectations set. The projects given to us were deployed to production concurrently but were ones lower in priority.

Academic courses relevant to the project : Introduction to LLM

PS-II Station : Amazon - ASIC Engineer, Bengaluru

Faculty

Name: Jyotsana Grover

Student

Name: BHANDARE SIDDHI SUDHIR(2024H1400119G)

Student Write-up

PS-II Project Title: DFT Training and Implementation using Agentic AI

Short Summary of work done during PS-II : Implemented the Agentic AI flow for dft automation

Tool used (Development tools - H/w, S/w) : Tessent

Objectives of the project : To automate the dft flow

Major Learning Outcomes : Understood the industry standards for vlsi testing

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Professional and friendly

Academic courses relevant to the project : Vlsi testing

PS-II Station : Amazon Applied Scientist, Bengaluru

Faculty

Name: Jyotsana Grover

Student

Name: ARUSHI GULATI(2021B5A71704P)

Student Write-up

PS-II Project Title: Censored Demand Forecasting for Amazon Now

Short Summary of work done during PS-II : My work involved the exploration of substitution i. censored demand forecasting for Amazon Now.

Tool used (Development tools - H/w, S/w) : GPU's and Claude, Jupyter notebook, AWS EC2 Instance,

Objectives of the project : Explore different ways of censored demand forecasting and come up with a novel approach for publishing in conferences

Major Learning Outcomes : Learnt how to do deep research in a fast paced environment and how to go about publishing a paper

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : It was quite fast paced. Expectations were to get a paper published. We submitted to Amazon machine learning conference and other conferences as well. Research was thorough and deep and exploring a completely new domain. There were regular 1:1's with the mentor which were quite productive. They have the highest tech and GPU's. It is an exciting PS station to work at.

Academic courses relevant to the project : Machine Learning, Deep Learning, NNFL

Name: SAIKRISHNA SUDHARSHAN(2021B5A71645G)

Student Write-up

PS-II Project Title: Adaptive Bidding via in Context Reinforcement Learning

Short Summary of work done during PS-II : During my PS-II internship, I worked on developing an adaptive bidding framework for Real-Time Bidding (RTB) using Transformer-based in-context

reinforcement learning to address the challenges of non-stationary auction environments. The project focused on designing a Transformer-XL context encoder integrated with a PPO-based reinforcement learning agent that dynamically adjusts analytically derived bidding strategies using online interaction history. I systematically investigated different context management strategies, decision frequencies, and JEPA-style auxiliary representation learning objectives to improve adaptation and robustness under distribution shifts. The proposed approach was extensively evaluated on public benchmark datasets (iPinYou and AuctionNet) as well as large-scale real-world advertising platform data, demonstrating improved performance over conventional bidding methods such as LIN, PID, PPO, TD3, and Online Decision Transformer, particularly in out-of-distribution market conditions. The work also included implementing the complete training and evaluation pipeline, conducting extensive ablation studies, performing statistical significance analysis, and documenting the findings for publication

Tool used (Development tools - H/w, S/w) : Python, AWS

Objectives of the project : The objective of this project is to develop a Transformer-XL-based context-conditioned reinforcement learning framework for adaptive real-time bidding that can effectively respond to non-stationary auction environments by learning from within-episode interaction history, while systematically evaluating context management, decision frequency, and auxiliary representation learning techniques to improve bidding performance and generalization under distribution shifts.

Major Learning Outcomes : During my PS-II internship, I developed several Amazon Leadership Principles through practical experience. LP – Ownership: I independently drove the project from research and implementation to experimentation and evaluation. LP – Learn and Be Curious: I explored advanced concepts in reinforcement learning, Transformer architectures, and representation learning to solve complex technical challenges. LP – Dive Deep: I performed extensive experimentation, ablation studies, and statistical analysis to thoroughly understand model behavior and validate results. LP – Invent and Simplify: I designed efficient solutions for adaptive bidding in non-stationary auction environments while simplifying complex learning mechanisms. LP – Deliver Results: The research culminated in the submission of three papers—ECML PKDD, IEEE ICDM, and an Amazon Internal publication—all currently awaiting review results.

Details of Papers/patents : 3 Paper Submissions - ECML PKDD, IEEE ICDM, Amazon Internal - awaiting results

Brief Description of working environment, expectations from the company : The working

environment at Amazon largely depends on the role and the team. As an Applied Scientist Intern, the environment was research-oriented and emphasized independence rather than structured daily task assignments. There were no mandatory daily stand-up meetings or predefined work items; instead, interns were expected to take initiative, identify promising research directions, design experiments, and drive projects independently. Mentors provided high-level guidance, constructive feedback, and regular discussions to refine ideas, but ownership of the research remained with the intern. Performance was evaluated primarily based on deliverables—either impactful research contributions, such as publications and novel algorithms, or production-oriented contributions that create measurable business value. This environment encouraged curiosity, innovation, and deep technical exploration while ensuring that mentors were always available to support well-motivated ideas and help overcome technical challenges.

Academic courses relevant to the project : AI, ML

PS-II Station : Amazon SDE, Bengaluru

Faculty

Name: Sugata Ghosal .

Student

Name: YASH KUMAR(2021B4A32330P)

Student Write-up

PS-II Project Title: Development of LLMWorkbench

Short Summary of work done during PS-II : I worked on various components of LLMWorkbench. It is a tool that builds the components and infrastructure and sets it up in your aws account, so its a managed service for all things LLM. I mainly worked on the quality tooling, data ingestion and core infrastructure creation libraries. All of these problems were super ambigous and some hasn't even been solved in industry yet. My work heavily relied on AWS. Also worked on some data products as

well, these are the tools that people in our org use to access and work with our org's data.Created some new data products, contributed a lot to some others, these are mostly in ktlo though.

Tool used (Development tools - H/w, S/w) : Aws, Java, python, typescript

Objectives of the project : Develop LLM Workbench platform

Major Learning Outcomes : Software development at scale

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment is supportive, but you have to deliver. My team was small so I was also a part of oncall rotation for most of my internship, which used to get hectic at times, but otherwise its manageable.

Academic courses relevant to the project : Object oriented programming, Data structures and Algorithm

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Name: SHREYA KAR(2022A7PS0011P)

Student Write-up

PS-II Project Title: API Migration and Infrastructure Engineering for Grocery Catalog Systems

Short Summary of work done during PS-II : During my PS-II internship with Amazon's Grocery Catalog organization (Quintessence team), I worked on backend service engineering, API migration, and infrastructure improvement initiatives supporting internal grocery platforms. One of my primary responsibilities involved migration efforts away from Frontdesk, a deprecated GraphQL-based service platform. I contributed to the migration planning for the WFM (Whole Foods Market) Price API by coordinating with multiple consumer teams, gathering requirements, analyzing dependencies, and developing several architectural design alternatives to support future migration efforts. I also designed and implemented the migration of the getGCUserProfile API from Frontdesk to GroceryCentralService running on ECS Fargate. The project involved service design, development, integration, testing, and deployment to ensure uninterrupted access to user profile information used across Grocery Central

dashboards. In addition, I helped identify and resolve issues across four internal pipelines, reducing policy-engine and operational risks with the aid of AI-assisted development tools such as Amazon Q and Kiro. I also analyzed multiple legacy pipelines and prepared deprecation assessment documents by evaluating their usage, dependencies, consumers, and resource requirements. The internship provided hands-on experience in large-scale software engineering, distributed services, system design, cross-team collaboration, and cloud-based service development while working on production systems used across Amazon Grocery platforms.

Tool used (Development tools - H/w, S/w) : Development Tools and Technologies Used Programming & Service Development: • Java • Python • GraphQL • Coral Service Framework Cloud Services & Infrastructure: • AWS ECS Fargate • AWS API Gateway • AWS AppSync • AWS Lambda • AWS CloudWatch • AWS Dynam

Objectives of the project : • Migrate critical internal APIs from deprecated platforms to modern service architectures. • Improve reliability, maintainability, and operational efficiency of Grocery Catalog systems. • Support infrastructure deprecation and risk-reduction initiatives. • Design and implement backend solutions for internal Amazon applications. • Collaborate with dependent teams to ensure seamless service transitions.

Major Learning Outcomes : • Developed practical experience in designing, implementing, and migrating backend services in a large-scale production environment.
• Gained exposure to distributed service architectures and service-to-service integration patterns.
• Learned how to evaluate multiple system design alternatives by balancing scalability, maintainability, and business requirements.
• Improved skills in stakeholder management and cross-team collaboration while working with multiple consumer teams.
• Acquired experience in infrastructure deprecation analysis, dependency assessment, and operational risk mitigation.
• Enhanced software development productivity through the use of AI-assisted engineering tools such as Amazon Q and Kiro.
• Strengthened professional software engineering practices including design reviews, documentation, testing, deployment, and operational ownership.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment at Amazon was highly collaborative, supportive, and focused on continuous learning.

Team members were approachable and always willing to provide guidance whenever needed. At the same time, there was a strong emphasis on independent problem-solving, encouraging engineers to thoroughly investigate issues, explore possible solutions, and develop ownership of their work before seeking assistance. This balance helped me build confidence and improve my technical decision-making skills.

Throughout my internship, I was treated as a member of the engineering team and was given meaningful responsibilities. I was encouraged to participate in design discussions, interact with stakeholders from other teams, and contribute to projects that impacted production systems. The dynamic nature of the work exposed me to changing requirements and multiple project pivots, helping me understand how real-world software development often involves adapting to evolving business and technical needs.

My mentor and manager played a significant role in making the experience rewarding. They provided constructive feedback, challenged me to think critically, and supported my professional growth while giving me the autonomy to learn and execute independently. The internship provided valuable exposure to the day-to-day responsibilities of a Software Development Engineer, including technical problem-solving, cross-team collaboration, system design, documentation, and project ownership.

Academic courses relevant to the project : • Object Oriented Programming
• Data Structures and Algorithms
• Database Systems
• Software Engineering
• Design and Analysis of Algorithms

Name: PRADYUMNA R UDUPA .(2022AAPS0475H)

Student Write-up

PS-II Project Title: Heat Mitigation Simulation Framework

Short Summary of work done during PS-II : The objective of this internship is to improve the Heat Mitigation Simulation Framework so that it can accurately model production behaviour and simplify the process of evaluating heat mitigation algorithms. The major contributions completed during the internship include: Structured Logging System Re-factoring the Events Framework and adding new events Integration of Key Performance Indicators (KPIs) 5 Improving scalability - longer simulation

runs. Simulate organic growth of data. Synthetic Data Generation. Data ingestion automation pipeline

Tool used (Development tools - H/w, S/w) : Python, SQL

Objectives of the project : Develop a simulation framework which can rapidly test the Heat Management algorithm for different scenarios.

Major Learning Outcomes : 1. Software development lifecycle - from ideation, to proof-of-concept, to code reviews and revisions to final merging of the feature branches.
2. Python - simulation, data visualization, modelling and analysis

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Daily standup meetings to discuss progress and any blockers. 1:1 meeting with manager once a week to discuss overall progress and direction of the project and resolve other concerns. Timings are mostly flexible though it's advisable for interns to be present everyday for at least 6 hours. Was given deliverables at the start of internship along with soft deadlines. Can setup time to discuss project with mentor and other teammates regularly.

Academic courses relevant to the project : Computer Programming, Foundations of Data Science

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Name: PRAY RASKAPOORWALA(2022A7PS1239G)

Student Write-up

PS-II Project Title: Autonomous AI Agents and Workflow Automation for Privacy Compliance Operations

Short Summary of work done during PS-II : During PS-II I worked as a software engineer on a Tier-2 privacy-compliance platform that serves a large number of internal client services across multiple AWS regions. My two flagship deliverables were: (1) Power Customer Automation — Customers with very large datasets (~1.2 GB) caused processing timeouts because a single compute step could

not transform the data within the time limit, forcing on-call engineers through a ~10-step, half-day manual merge SOP. I redesigned the orchestration Step Function to detect large requests, split them into N chunks, transform them in parallel using an Inline Map state, and automatically merge the chunks into a single, correctly-sorted output. The standard flow was preserved with zero impact, and the solution was validated across multiple scenarios including an 8-chunk stress test and partial-failure redrive. (2) Autonomous On-call AI Agent — The team received ~1,150 tickets/year, ~70% following repetitive runbook patterns consuming ~39 SDE-days annually. I built a multi-agent AI system using the Strands SDK and Amazon Bedrock, deployed as a managed runtime, that classifies tickets, queries AWS resources (CloudWatch, SQS, DynamoDB, Step Functions), diagnoses root cause, and safely redrives or resolves tickets behind feature-flag guardrails. I also handled production exception-handling fixes, built a leadership operational-review dashboard, contributed to a query-service data dictionary, and resolved numerous production on-call tickets. Several deliverables reached production, and the AI agent was recognized in an internal AI solutions program.

Tool used (Development tools - H/w, S/w) : - Software / Services: AWS (Step Functions, Lambda, DynamoDB, SQS, S3, CloudWatch, EventBridge, IAM, Bedrock, AgentCore Runtime, QuickSight), Strands Agents SDK, Java, Python, JSON/CSV processing, CDK (Infrastructure-as-Code), Git-based code review and

Objectives of the project : - Automate the end-to-end processing of large ("power customer") privacy data-access requests that previously exceeded processing time limits and required hours of manual on-call effort. - Design and build an autonomous, multi-agent AI system that can diagnose and resolve repetitive operational tickets (SLA breaches, alarms, dead-letter-queue redrives) with minimal human intervention while safely escalating edge cases. - Reduce mean-time-to-resolution for operational tickets from hours/days to minutes, and reduce recurring on-call engineering toil. - Improve compliance posture by removing manual, error-prone human steps from the data-delivery path.

Major Learning Outcomes : - Designing fault-tolerant, backward-compatible distributed workflows using AWS Step Functions (Inline Map, parallel execution, waitForTaskToken, redrive-from-failure).
- Building production-grade agentic AI systems: multi-agent orchestration, tool design, context-window management, prompt/SOP engineering, and LLM reasoning loops.
- Implementing security guardrails for autonomous systems: least-privilege IAM, tool-level scoping, feature flags, idempotency, and kill-switch/rollback strategies.
- Robust exception handling, retry classification, and root-cause debugging in large-scale event-driven systems.
- Cross-account AWS architecture, cost analysis, gamma/prod validation testing, and operational

excellence (on-call, dashboards, MCM change management).
- Translating ambiguous operational problems into measurable engineering solutions and writing low-level design documents.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The working environment was a fast-paced, ownership-driven engineering team operating a large-scale, customer-facing privacy-compliance platform. Work followed a strong operational-excellence culture: every change moved through code review, automated CI/CD pipelines, and staged deployments (beta → gamma → production) with formal change-management approvals before reaching production. Engineers rotate through on-call duties, giving direct exposure to live production systems, incident response, and runbook-driven debugging.

The expectations were those of a full-time software engineer rather than a passive intern. I was expected to take end-to-end ownership of features — from understanding ambiguous operational problems, writing low-level design documents and comparing alternative approaches, to implementation, testing in pre-production environments, and safe production rollout. Emphasis was placed on backward compatibility, least-privilege security, cost-awareness, thorough testing, and clear written communication through design docs and wikis.

The team was highly collaborative and encouraged proposing and prototyping new solutions, including adopting emerging agentic-AI tooling for operational automation. Mentorship was strong, with regular design reviews and feedback on both code and documentation. Overall, the experience required balancing rapid delivery with the rigor demanded by a compliance-critical, production system, and provided deep hands-on exposure to distributed-systems engineering, cloud architecture, and applied generative AI.

Academic courses relevant to the project : Object Oriented Programming, Network Programming, Operating System

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Name: RAKSHIT GUPTA(2024H1030310P)

Student Write-up

PS-II Project Title: Migaration of Storage Node Tests

Short Summary of work done during PS-II : Migrated entire Legacy Systems to latest Infrastructure capable of supporting new encryption and other latest newly introduced features

Tool used (Development tools - H/w, S/w) : AWS, internal tools for Testing and AI agents.

Objectives of the project : Moving to new Infrastructure capable of supporting new features

Major Learning Outcomes : Delivered Entire Testing Framework

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : AWS Tools

Academic courses relevant to the project : Cloud Computing , Distributed Systems

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Name: CHINMAY PUSHKAR(2021B4A70887P)

Student Write-up

PS-II Project Title: Full Stack Feature Development and Performance Optimization for ML Rule-Evaluation Platforms

Short Summary of work done during PS-II : • Shipped an end-to-end evaluation-count pipeline across three services (BDRT, Lumos, PAM): a new GetEvaluationCount Coral/Smithy API, a cross-account client using STS AssumeRole + IAM, and a UI guardrail — deployed to Beta and three production regions (NA/EU/FE). • Prototyped a count-aware dynamic date-range splitting strategy for the OfflineSimulation pipeline; benchmarked percentile vs. two-phase histogram approaches on ElasticSearch and Apache Pinot, reducing Lambda (MDFL) invocations by ~99% on representative loads. • Provisioned RapidTestOS, the first OS-dedicated FORTRESS RAPID test environment (load balancer, hostclass, Apollo env, Odin material sets, DNS/cert), unblocking end-to-end calibration testing. • Delivered ArrowEverywhere and PIPER workflow enhancements with React/TypeScript +

Cloudscape UI, SNS error-context propagation, and instance-pinned calibration — shipping 30+ code reviews across five interconnected production services.

Tool used (Development tools - H/w, S/w) : Java, JavaScript, TypeScript

Objectives of the project : Multiple features across services of the team

Major Learning Outcomes : Throughout this internship, I significantly scaled both my technical depth and cross-functional professional collaboration,
ultimately achieving full engineering autonomy. This growth enabled me to successfully deliver production-ready features and
optimizations seamlessly across five interconnected core workspaces:

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Environment is very team dependent.
Fortunately i had a very good team, people were approachable and helpful.

Academic courses relevant to the project : Object Oriented Programming

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Name: SANTOSH SOHAN T .(2022AAPS0257H)

Student Write-up

PS-II Project Title: DXF Generator for DC Floorplans, Automated Circuit Update Detection, & Gamma Environment Setup for Automated Position Planner

Short Summary of work done during PS-II : During my PS-II at Amazon, I worked on multiple backend software engineering projects focused on workflow automation, cloud infrastructure, and system reliability. My work involved designing and implementing scalable software solutions to automate previously manual processes, improving operational efficiency and reducing the possibility of human error. I also contributed to the setup and configuration of a cloud-based testing environment to enable safe validation of software changes before deployment. Throughout the internship, I

participated in the complete software development lifecycle, including requirement analysis, system design, implementation, testing, code reviews, deployment, and documentation. The internship provided hands-on experience in building production-quality software, collaborating with cross-functional teams, and applying software engineering principles to solve real-world problems.

Tool used (Development tools - H/w, S/w) : The project was developed using Java and TypeScript as the primary programming languages. Development was carried out using IntelliJ IDEA and Visual Studio Code, with Git for version control and AWS cloud services for application development and deploymen

Objectives of the project : Develop software solutions to automate infrastructure management workflows. Design scalable backend systems to reduce manual effort and improve operational efficiency. Build and deploy cloud-based applications following software engineering best practices.

Major Learning Outcomes : Backend software development using Java and cloud technologies.
Software design and architecture principles.
Infrastructure as Code and cloud deployment.
Writing technical design documents.
Working in agile development and code review processes.
Cross-team collaboration and professional software development practices.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The organization provided a collaborative, fast-paced, and learning-oriented work environment where engineers were encouraged to take ownership of their work and solve real-world problems. Regular design discussions, code reviews, mentoring sessions, and team meetings are conducted. The team emphasized software quality, innovation, teamwork, and customer-focused solutions and also encouraging engineers to follow best coding practices and industry standards. The internship offered valuable exposure to large-scale software systems and professional software engineering workflows.

Academic courses relevant to the project : Object-Oriented Programming, Data Structures and Algorithms, Database Systems, Operating Systems, Computer Networks.

Name: ARNAV GUPTA(2022A7PS1189P)

Student Write-up

PS-II Project Title: Project Wiki Delivery Dashboard Deprecation through Enhancing Visibility and Functionalities of the Shipments Tracking Portal

Short Summary of work done during PS-II : Over the course of this 5.5-month Practice School-II internship, significant optimizations were introduced to the AWS Supply Chain organization. By engineering region-aware routing architectures, building a robust Java/Python automated testing baseline, and modernizing a legacy system via an AWS Step Function multi-service workflow, operational noise was lowered while system testability increased. Navigating the complete software development lifecycle—culminating in the final production release on June 8, 2026—provided invaluable engineering depth in designing scalable, resilient enterprise microservicEs

Tool used (Development tools - H/w, S/w) : IntelliJ, Git, Java, AWS

Objectives of the project : Learning General Software development life cycle

Major Learning Outcomes : AWS, Git, Java, TypeScript, AI

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Very good

Academic courses relevant to the project : OOPS, CP, ML

Name: KOMMASANI LALITH REDDY .(2022A3PS0617H)

Student Write-up

PS-II Project Title: ADAPTIVE BATCH PROCESSING OPTIMIZATION AND RE-ARCHITECTURE

Short Summary of work done during PS-II : I had worked on a tool that performs batch retrieval of documents and does ad-hoc computation on top. I had to re-architect the orchestration to ensure we

observed lesser failures. I had also worked on reducing costs and making the service have a faster response time.

Tool used (Development tools - H/w, S/w) : H/w - Laptop, S/w - AWS, Claude, Java, Python, Git, etc.

Objectives of the project : - Optimizing and reducing cost usage of a tool that performs batch retrieval of documents and other adhoc computations.

Major Learning Outcomes : Software Development, writing clean and manageable code for large organizations, best practices in the industry for software development

Details of Papers/patents : n/a

Brief Description of working environment, expectations from the company : Working environment is good. The company is very fast paced and sometimes it is a struggle to keep up, but gives you a lot of learning.

Academic courses relevant to the project : OOPS, OS, DSA, AI, ML

Name: SOHAN PALEKAR(2022AAPS0554G)

Student Write-up

PS-II Project Title: Software Development

Short Summary of work done during PS-II : I got to work on real world projects

Tool used (Development tools - H/w, S/w) : Coding languages

Objectives of the project : Software Development

Major Learning Outcomes : Got to learn whole development process

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : It was great

Academic courses relevant to the project : Computer Programming

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Name: RONAN COUTINHO(2022A7PS1077G)

Student Write-up

PS-II Project Title: Backfill Management Service

Short Summary of work done during PS-II : When a new video profile or codec (like AV1) is introduced, we don't just apply it to new releases, we often need to update our massive existing catalog. I built this backend service designed for the selective re-encoding and publishing of Prime Video titles on these new profiles. Moving forward, this platform will be used by all the encoding teams to orchestrate these complex workflows seamlessly.

Tool used (Development tools - H/w, S/w) : SW - AWS, Temporal, Kubernetes

Objectives of the project : The primary objective is solving the backfill problem: efficiently re-encoding legacy media assets when new encoding profiles are released.

Major Learning Outcomes : AWS, Temporal, Kubernetes, Video Transcoding

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Good environment and working area

Academic courses relevant to the project : OOPS, DBMS

Name: SAYAN BANERJEE(2021B5A71516P)

Student Write-up

PS-II Project Title: Architectural Simplification of Customer Onboarding

Short Summary of work done during PS-II : The earlier onboarding flow was distributed among four different services, making the onboarding logic complicated, difficult to scale and maintain. The project simplified the flow and aggregated the distributed logic into single service while maintaining Amazons internal coding and design standards.

Tool used (Development tools - H/w, S/w) : AWS

Objectives of the project : To simplify the onboarding flow of customers to Amazon Global Logistics Billing services

Major Learning Outcomes : AWS, Java, Typescript, Distributed Backend System and DevOps

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The company expects you to follow its Leadership Principles thoroughly. Your design and code quality must be top notch. However, you are expected to learn everything on your own and people in company will rarely help you in your internship.

Academic courses relevant to the project : OOPs and DBS

Name: PRACHI RAJ(2021B5AA2188G)

Student Write-up

PS-II Project Title: Secure Boot and TPM Remote Attestation

Short Summary of work done during PS-II : During my Practice School-II internship at Amazon, I worked on enabling **UEFI Secure Boot** for x86-based Point of Sale (POS) devices running a

custom Linux operating system. The project involved studying the Secure Boot architecture, generating and enrolling custom Secure Boot keys (Platform Key, Key Exchange Key, and Signature Database), and implementing a shim-less Secure Boot workflow by signing the bootloader and kernel to establish a trusted boot chain. I also explored **Trusted Platform Module (TPM)**-based security, focusing on **PCR 7** measurements and remote attestation concepts for verifying device integrity before communication with cloud services. In addition to platform security, I contributed to several production engineering initiatives. I developed automated **CloudWatch alarms** for monitoring critical system services, enabling proactive detection of service failures in production. I designed and implemented comprehensive automated sanity tests covering major POS features to improve software quality and reduce regressions during releases. Furthermore, I participated in production software deployments using the **Managed Configuration Management (MCM)** framework, gaining practical exposure to enterprise release engineering and fleet management. Through this internship, I strengthened my understanding of platform security, Linux systems, cloud infrastructure, automation, testing, and large-scale production operations while working on solutions applicable to real-world retail devices.

Tool used (Development tools - H/w, S/w) : Linux (Custom OS) UEFI Firmware GRUB Bootloader OpenSSL (Key Generation & Signing) systemd AWS CloudWatch Managed Configuration Management (MCM) Git Bash Shell Visual Studio Code (or your IDE, if used)

Objectives of the project : 1. UEFI Secure Boot Implementation The primary objective of the internship was to secure the boot process of Amazon's x86-based POS devices by: Studying the architecture and working of UEFI Secure Boot. Implementing Secure Boot on custom POS machines. Generating and managing Secure Boot keys: Platform Key (PK) Key Exchange Key (KEK) Signature Database (db) Signing the bootloader and Linux kernel so that only trusted software executes during startup. 2. TPM-Based Platform Security The second objective focused on hardware-based trust: Understanding the Trusted Platform Module (TPM). Studying Platform Configuration Register 7 (PCR 7) and its role in Secure Boot. Building a remote attestation mechanism using TPM quotes so cloud services (AWS) can verify that a device is running an untampered operating system before allowing communication

Major Learning Outcomes : Gained practical experience in implementing UEFI Secure Boot on a custom Linux-based POS platform, including Secure Boot key management, bootloader/kernel signing, and TPM-based platform attestation.
Developed hands-on expertise in production engineering through infrastructure monitoring, automated sanity testing, and fleet-wide software deployment using AWS CloudWatch and MCM pipelines.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Amazon provided a fast-paced, collaborative, and innovation-driven work environment that emphasized ownership, customer focus, and high engineering standards. I worked as part of the Grocery Ecosystem team, where tasks involved close collaboration with software engineers and mentors through regular discussions, code reviews, design meetings, and sprint planning. The team followed agile development practices, version control, automated testing, continuous integration, and structured production deployment processes, providing exposure to industry-standard software development workflows.

The company expected interns to quickly understand the problem domain, take ownership of assigned tasks, and deliver high-quality solutions with minimal supervision. Emphasis was placed on writing reliable, maintainable, and well-tested code while adhering to coding standards and security best practices. Engineers were also expected to proactively learn new technologies, communicate progress effectively, participate in technical discussions, and contribute to production systems with a strong focus on scalability, reliability, and operational excellence.

The internship provided valuable exposure to real-world engineering practices, including platform security, cloud monitoring, automated testing, and production deployment, while fostering both technical and professional growth in a collaborative environment.

Academic courses relevant to the project : Operating Systems, Computer Networks, Computer programming

PS-II Station : AMD India Pvt Ltd, , Bengaluru/Hyderabad

Faculty

Name: Suparna Chakraborty .

Student

Name: ABHIJITH SESHADRI(2022A8PS0611P)

Student Write-up

PS-II Project Title: Power and Performance verification of AMD owned DMA IP

Short Summary of work done during PS-II : My day to day work was active debugging of power and performance tests used to verify a DMA IP owned by AMD. I was involved in running weekly regressions, result analysis, scripting, and error triaging initially. Over time I began creating custom tests, simple assertion debugs, filling coverage holes etc.

Tool used (Development tools - H/w, S/w) : Synopsys Verdi, Claude Genie, UVM, Ruby

Objectives of the project : To test DMA IP for power and performance metrics using UVM testbenches, creating custom test scenarios as needed for edgecase analysis, coverage and assertion analysis etc.

Major Learning Outcomes : 1) learnt how UVM testbench are built and operated on complex RTL designs
2) created custom tests for specific functional analysis
3) understood standard practices in industry regarding design verification
4) basics of power verification
5) RTL and Testbench modifications

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Excellent environment, really helpful team and coworkers. There is no compulsory work timings as long as work gets done. Help is easily available, but there is no spoonfeeding. Company expects that you work like a full timer, perform your tasks, ask questions and take up initiative.

Academic courses relevant to the project : Computer Architecture, Digital Design

Name: PRANAV DIMRI .(2022AAPS0271H)

Student Write-up

PS-II Project Title: Design of an analog Inverter based PUF

Short Summary of work done during PS-II : We designed an Inverter based PUF and verified it's operation across a range of supply voltages and temperatures

Tool used (Development tools - H/w, S/w) : Cadence Virtuoso, LayoutXL

Objectives of the project : To develop a reliable Physically Unclonable Function

Major Learning Outcomes : Better understanding of Hardware Security Primitives and VLSI design from an industry perspective.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Work environment was relaxed and let me explore the subject on my own. I had frequent meet-ups with all the stakeholders of the project in case I had questions. My mentors made themselves available for any and all doubts I had going forward.

Academic courses relevant to the project : MEC, ITC

Name: TAUSEEF KHAN(2024H1230163H)

Student Write-up

PS-II Project Title: High speed Serdes System for memory interfacing

Short Summary of work done during PS-II : I have learned PDK characterization across technology node for different devices , also design and optimize different flip flop architecture and characterize aperture window for it . Also work on clock tree distribution and have done the automation which reduce the manual effort ...

Tool used (Development tools - H/w, S/w) : Cadence virtuoso, linux , spectre , assembler , Excel , powerpoint

Objectives of the project : To design analog and digital mixed signal blocks for the high bandwidth memory application

Major Learning Outcomes : Flip flop characterization, PDK characterization, designing of flops , Clock tree distribution automation

Details of Papers/patents : T- line Clock tree distribution for low power and low jitter

Brief Description of working environment, expectations from the company : Work culture , Team collaboration is very good

Academic courses relevant to the project : High speed Serdes by sam palremo

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Name: SHARATH CHANDRA SANGEM(2024H1400157H)

Student Write-up

PS-II Project Title: COMPILE TIME REDUCTION TECHNIQUES AND EVALUATION OF MULTI-CORE SIMULATION Optimisation TECHNIQUES IN MODERN SEMICONDUCTOR DESIGN VERIFICATION

Short Summary of work done during PS-II : During my Practice School-II at AMD India Pvt. Ltd., Hyderabad, I worked on optimizing semiconductor design verification workflows by focusing on compile time reduction and simulation acceleration techniques for large-scale SoC designs. The project investigated three major optimization methods: partitioned compilation, parallel compilation, and multi-core simulation. Partitioned compilation divided large designs into independent modules, reducing recompilation effort and incremental build times. Parallel compilation utilized multi-core AMD EPYC servers to compile multiple partitions simultaneously, improving resource utilization and reducing overall compile time. Multi-core simulation techniques were studied to accelerate simulation execution by distributing workloads across multiple CPU threads. The work also involved profiling workloads, benchmarking performance, and analyzing bottlenecks such as synchronization overhead,

memory limitations, and load imbalance. The project provided hands-on experience with SystemVerilog, UVM, Synopsys VCS, Linux, and Perforce while offering valuable exposure to industrial semiconductor verification methodologies.

Tool used (Development tools - H/w, S/w) : Linux, EDA Tool

Objectives of the project : Reducing compile and simulation times in the current AMD projects

Major Learning Outcomes : Gained practical experience in semiconductor design verification by implementing compile time reduction techniques such as partitioned compilation, parallel compilation, and multi-core simulation.
Developed expertise in performance profiling, bottleneck analysis, and industry-standard tools including SystemVerilog, UVM, Synopsys VCS, Linux, and Perforce.

Details of Papers/patents : Na

Brief Description of working environment, expectations from the company : AMD India Pvt. Ltd., Hyderabad provided a highly professional, collaborative, and technology-driven working environment with access to advanced computing infrastructure and industry-standard EDA tools. The company expected interns to understand verification workflows, analyze performance bottlenecks, explore optimization techniques, and contribute towards improving productivity in semiconductor design verification while maintaining technical accuracy, teamwork, and adherence to engineering best practices.

Academic courses relevant to the project : Yes

PS-II Station : Apple - Product Safety Intern, Bengaluru

Faculty

Name: Venkateswara Rao Thunuguntla .

Student

Name: KRISHNENDU MATHUR .(2021B5AA2475H)

Student Write-up

PS-II Project Title: Battery Testing Automation, Video Acquisition Systems, and Failure Analysis for Apple Devices

Short Summary of work done during PS-II : During my PS-II at Apple in the Product Safety team, I worked on the evaluation and testing of power adapters and related accessories to ensure compliance with safety and performance requirements. My work involved studying charging protocols such as USB Power Delivery (PD), PPS, and Apple-specific charging behavior, analyzing test reports, and verifying electrical parameters. I also performed laboratory testing using electronic test equipment, assisted in debugging issues, interpreted measurement data, and documented test results. In addition to hands-on testing, I gained experience with internal tools and databases used for product evaluation and report management. The internship strengthened my understanding of product safety standards, test methodologies, and engineering validation processes. Throughout the program, I collaborated with team members, communicated technical findings, and completed assigned tasks while adhering to quality and documentation requirements. Overall, PS-II provided valuable exposure to industry practices, enhanced my technical knowledge, and improved my problem-solving and professional skills.

Tool used (Development tools - H/w, S/w) : VS Code

Objectives of the project : Evaluate and validate the safety and performance of power adapters and related accessories. Study and verify charging protocols such as USB Power Delivery (USB PD) and PPS. Perform laboratory testing and analyze electrical measurements against design and compliance requirements. Identify, investigate, and document test observations and potential issues. Support the Product Safety team in product validation, technical analysis, and report preparation. Gain practical exposure to industry-standard product safety testing and engineering workflows.

Major Learning Outcomes : Gained practical experience in product safety testing and validation.
Developed a strong understanding of USB Power Delivery (USB PD), PPS, and charging protocols.
Learned to operate and interpret results from laboratory test equipment.
Improved debugging, data analysis, and technical documentation skills.

Enhanced problem-solving abilities through real-world engineering tasks.
Strengthened communication, teamwork, and professional work practices in an industry environment.
Gained exposure to product compliance requirements and engineering validation processes.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Members were approachable and encouraged open communication, making it easy to ask questions and seek guidance whenever required. Regular discussions and feedback sessions helped in understanding project requirements and staying aligned with team objectives.
The company expected interns to be proactive, take ownership of assigned tasks, and continuously learn new concepts relevant to the project. Strong technical skills, attention to detail, effective communication, and the ability to work independently while collaborating with the team were highly valued. Maintaining professionalism, meeting deadlines, and delivering quality work were also important expectations. Overall, the environment provided excellent opportunities to learn, contribute to real-world projects, and gain valuable industry experience.

Academic courses relevant to the project : The project primarily drew upon concepts from Embedded Systems, Microprocessors and Interfacing, Digital Electronics, Communication Systems, and Programming. These courses provided the foundation for understanding hardware interfaces, communication protoc

PS-II Station : Apple - Software Engineering internship role to, for the IS&S Ads team, Bengaluru

Faculty

Name: Venkateswara Rao Thunuguntla .

Student

Name: VANI JAIN .(2021B1A73126H)

Student Write-up

PS-II Project Title: Strengthening Production Stability

Short Summary of work done during PS-II : During my internship with the Apple Ads Product Health Team, I worked on automating the daily production health checks the team had been performing manually twice a day for the past 4 years. I designed and built an end-to-end automated pipeline for this task. The solution reduced the detection window from 12 hours to 1 hour, eliminated roughly 2 hours/day of manual effort, and freed the team to focus on higher-value reliability work. The framework is also extensible, laying the foundation for future auto-resolution and adoption by other teams.

Tool used (Development tools - H/w, S/w) : S/w - Python, AWS S3, Bolt Framework, CI/CD etc

Objectives of the project : To automate the existing health check process for production stability and reduce the MTTD

Major Learning Outcomes : End-to-end system ownership, Reliability and observability at scale, Automation as a force multiplier, Iteration and feedback drive quality, and cross-team collaboration is essential.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment was incredibly supportive and collaborative. mentors and teammates were always approachable, and the culture encouraged open discussions, questions, and independent thinking. From day one, there was a clear expectation that I would take ownership of my project, drive it with minimal hand-holding, and communicate progress proactively. The team trusted me with real, high-impact work, which pushed me to think beyond just writing code and consider design, users, and long-term scalability. This balance of trust, autonomy, and guidance made the experience both challenging and deeply rewarding.

Academic courses relevant to the project : DSA, Database Systems, C programming

Name: PARAS PUNEET SINGH .(2022A7PS0328H)

Student Write-up

PS-II Project Title: Service Modernization and Integration

Short Summary of work done during PS-II : service modernization and upgrading architechture.

Tool used (Development tools - H/w, S/w) : confidential

Objectives of the project : Upgrade, modernize and integrate microservice architechture

Major Learning Outcomes : every project needs planning, approval and a dedicated phased execution. Testing helps you prevent future breakdowns and losses.

Details of Papers/patents : confidential

Brief Description of working environment, expectations from the company : the work environment was very helpful, supportive, you should trust your manager, reach out for help early than delay it, and learn as much as you can from everyone.

Academic courses relevant to the project : All CS courses as well as some of my Data Science minor course were relevant and helpful

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PS-II Station : Apple - System Reliability Engineer -HWE team, Bengaluru

Faculty

Name: Venkateswara Rao Thunuguntla .

Student

Name: PADI SUDEEP(2022A4PS0527G)

Student Write-up

PS-II Project Title: Data-driven enhancements to reliability

Short Summary of work done during PS-II : Tool development to streamline data analysis.

Tool used (Development tools - H/w, S/w) : Python

Objectives of the project : Improvements to current data pipeline and engineer workflow

Major Learning Outcomes : Curiosity

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Good working environment with a drive for innovation

Academic courses relevant to the project : None

PS-II Station : Apple WTE, & , Hyderabad

Faculty

Name: Venkateswara Rao Thunuguntla .

Student

Name: SAI TARUN PENDELA(2022AAPS0419P)

Student Write-up

PS-II Project Title: Machine Learning Frameworks for Predictive Resource Allocation in Cellular Modems

Short Summary of work done during PS-II : During my PS-II internship at Apple India Pvt. Ltd., I worked on a project focused on applying Machine Learning techniques to cellular modem systems for predictive optimization. The work involved developing an end-to-end machine learning pipeline, starting from processing and analyzing large volumes of modem telemetry data, followed by feature extraction, model development, evaluation, and deployment. The project provided exposure to the complete lifecycle of an industrial Machine Learning solution. This included understanding the problem domain, working with real-world data, building predictive frameworks, evaluating different solution approaches, and integrating the final models into an existing software framework. In the later stages, the focus shifted towards deployment and validation, where the selected models were integrated into the target environment and tested for practical usability. The internship also involved close collaboration with engineers and researchers, providing valuable insight into how Machine Learning solutions are developed, deployed, and evaluated in large-scale engineering systems.

Tool used (Development tools - H/w, S/w) : Python (Scikit-learn, PyTorch), C, C++, Git

Objectives of the project : To develop lightweight Machine Learning based predictive frameworks capable of enabling proactive runtime optimization within modem workflows.

Major Learning Outcomes : Applied Machine Learning to real-world engineering problems, gaining hands-on experience in data processing, feature engineering, model development, and performance evaluation for wireless communication systems.
Developed a deeper understanding of 5G cellular modem operations, including how resource allocation, scheduling, and link reliability impact overall system performance.
Learned to balance technical innovation with practical deployment constraints, focusing not only on model accuracy but also on runtime efficiency, scalability, and integration into existing software frameworks.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The working environment at Apple was highly collaborative, supportive, and focused on continuous learning. I had the opportunity to work closely with experts from both the Cellular Communications and Machine Learning domains, who provided guidance and valuable feedback throughout the internship.
The team encouraged curiosity and independent problem-solving, and prior expertise in every aspect

of the project was not expected. Instead, interns were encouraged to learn, adapt, and gradually take ownership of their work. Regular technical discussions and reviews helped me better understand both the problem domain and the engineering process.
The company provided exposure to real-world challenges and emphasized developing practical solutions rather than purely theoretical ones. While there was flexibility to explore different approaches, the ultimate expectation was to deliver a working proof-of-concept demonstrating the potential impact of the proposed Machine Learning solution and its integration into the existing system framework.

Academic courses relevant to the project : Machine Learning, Deep Learning, Communication Networks, Computer Programming, Data Structures and Algorithms (C, C++), Object Oriented Programming

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Name: ALOK DESAI .(2022A7PS1358H)

Student Write-up

PS-II Project Title: Retrieval Augmented Generation Platform for Script Generation

Short Summary of work done during PS-II : Architected and developed an end-to-end automation pipeline from the ground up to streamline and automate script generation

Tool used (Development tools - H/w, S/w) : python, Internal Tools

Objectives of the project : Automate Telecommunication Pipelines

Major Learning Outcomes : Software Dev Lifecycle, Enterprise Level Machine Learning, Exposure to Cellular Systems

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment was positive, collaborative, and fast-paced, with a strong emphasis on continuous learning and growth. The team culture encouraged open communication, knowledge sharing, and

proactive problem-solving, which made it easy to seek guidance whenever needed. I received consistent mentorship and support from senior colleagues, who were always approachable and willing to provide constructive feedback. The company maintained high expectations around ownership and quality of work, while also fostering an atmosphere where questions and new ideas were welcomed.

Academic courses relevant to the project : Generative AI, Machine Learning, Database Systems, Operating Systems

PS-II Station : Apple-Software Development Engineering , IS&T - , Hyderabad

Faculty

Name: Venkateswara Rao Thunuguntla .

Student

Name: GARV GUPTA(2022A7PS0207G)

Student Write-up

PS-II Project Title: ENTERPRISE TAX SYSTEMS AND APPLIED GENERATIVE AI

Short Summary of work done during PS-II : During the internship, I contributed to a production-critical enterprise tax handling platform responsible for processing real-time, jurisdiction-aware tax calculations. My primary technical achievement was the end-to-end development of an automated regulatory data synchronization pipeline designed specifically for Brazil's new Dual VAT municipal regulations. Utilizing Java and Spring Boot, I built a solution to process highly granular, localized data without disrupting existing state-level workflows, while also upgrading the system's notification infrastructure for better operational observability. To address the friction of querying complex legacy APIs, I conceptualized and prototyped a natural language AI agent. Built as a Model Context Protocol (MCP) server, this tool successfully enabled developers to retrieve live tax calculations and sync statuses using plain English. Furthermore, I developed a proof-of-concept job monitoring dashboard

using SAP UI5 and CAPM to optimize the visibility of scheduled background processes. Finally, I participated in an internal hackathon, collaborating cross-functionally to build Gesture, an accessibility application that translates speech into synchronized American Sign Language (ASL). This experience provided deep exposure to rigorous enterprise system design, agile workflows, and the practical application of modern AI tooling.

Tool used (Development tools - H/w, S/w) : SAP BTP, Java, Spring boot, CAP, SAP UI5, SAP Fiori

Objectives of the project : To develop robust automated data pipelines for complex global tax regulations and engineer AI-assisted developer tooling to streamline enterprise data retrieval.

Major Learning Outcomes : Acquired hands-on expertise in full-stack enterprise architecture, SAP ecosystems, and generative AI integration, alongside crucial professional skills in cross-functional collaboration and user-centric system design.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Apple was a very supporting environment, providing initial trainings, and accepting any and all questions. They people are always willing to help and talk about things, in and outside of work. The expectation is more about willingness to learn and put in the work. You can contact anyone including managers and mentors to help you out with any problem.

Academic courses relevant to the project : DSA, Gen AI, OOP

Name: MAHESH PAPPU .(2022A7PS0142H)

Student Write-up

PS-II Project Title: Dashboard Studio

Short Summary of work done during PS-II : Created an application where analysts can build their queries and test it and collaborate with other people and bind them to widgets inside the app so that people mainly analysts don't have the need of going out of the platform and can do it with ease.

Tool used (Development tools - H/w, S/w) : React, FastAPI, Postgresql

Objectives of the project : Build a platform where people can create dashboards on their own with minimal effort

Major Learning Outcomes : Functional understanding of the problem first before the technical aspects.
Breaking bigger requirement into simpler sequential requirements.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Collaborative, supportive and very helpful. Need to finish in time with a thorough testing from our side. Present it clearly to the team, higher executives if needed.

Academic courses relevant to the project : DBMS, OOPS

Name: KUSHAGRA MISHRA .(2021B5A72970H)

Student Write-up

PS-II Project Title: Iceberg at apple

Short Summary of work done during PS-II : Integration of Iceberg

Tool used (Development tools - H/w, S/w) : Spark Iceberg Java

Objectives of the project : Integration of Iceberg at apple

Major Learning Outcomes : Spark Iceberg and Data Engineering

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Try your best if you can't ask for help

Academic courses relevant to the project : DBMS OOPS DSA

Name: PURU GUPTA(2021B5A71748P)

Student Write-up

PS-II Project Title: Not allowed to disclose

Short Summary of work done during PS-II : Not allowed to disclose

Tool used (Development tools - H/w, S/w) : Not allowed to disclose

Objectives of the project : Not allowed to disclose

Major Learning Outcomes : Not allowed to disclose

Details of Papers/patents : Not allowed to disclose

Brief Description of working environment, expectations from the company : The working environment is learning oriented, the company expects you to be proactive and curious. There is little to no pressure of deadlines or objectives. The internship has a high conversion rate. The timings are flexible with 2 days WFH in the week.

Academic courses relevant to the project : OOP, DSA

Name: MUGDHA GUPTA .(2021B3A72724H)

Student Write-up

PS-II Project Title: Image Watermarking and Provenance

Short Summary of work done during PS-II : During my Practice School-II internship at Apple IS&T, Hyderabad, I worked on building an invisible image watermarking system for AI-generated content provenance verification. The system integrates as a post-processing step into the AI image generation pipeline, embedding a unique 100-bit UUID watermark into images imperceptibly before they are delivered to users, enabling later verification of whether an image originated from the AI platform.

I adapted InvisMark, a deep learning-based watermarking model, which uses a U-Net encoder to embed binary watermark payloads as learned residual perturbations and a fine-tuned ConvNeXt-Base decoder to extract them. The watermark payload is protected using BCH error-correcting codes for resilience against bit-level corruption. The system achieves 46–55 dB PSNR and 0.997–0.998 SSIM, outperforming established methods including StegaStamp, TrustMark, and Google's SynthID on image quality metrics.

I implemented a conformal p-value scoring framework for statistically rigorous watermark detection, replacing arbitrary bit-accuracy thresholds with calibrated confidence-based three-way classification (watermarked, not watermarked, uncertain), providing false positive rate guarantees below 0.01%. I further extended the pretrained model through targeted decoder-only fine-tuning to add robustness against 90°/270° rotations while preserving performance across 19 existing transformation categories. For deployment, I built FastAPI-based encode and decode microservices, containerized them using multi-stage Docker builds with CI/CD pipelines, and developed an interactive Gradio demo for real-time watermark embedding, detection, and robustness testing across diverse image transformations.

Tool used (Development tools - H/w, S/w) : Languages: Python; Deep Learning: PyTorch, torchvision, torchmetrics, ConvNeXt-Base, ResNet-18, NumPy, SciPy; Deployment: FastAPI, Uvicorn, Docker; Demo/UI: Gradio; Data: HuggingFace Datasets; Version Control: Git

Objectives of the project : 1. To enable content provenance verification for AI-generated images by embedding invisible, machine-recoverable watermarks that can reliably attribute images to their source platform. 2. To achieve watermark imperceptibility such that watermarked images are visually indistinguishable from originals, maintaining image quality well above the 40 dB PSNR perceptibility threshold. 3. To ensure watermark survivability under real-world image degradations including JPEG compression, cropping, rotation, blur, noise, and color adjustments that images commonly undergo after distribution. 4. To provide a principled, statistically grounded detection mechanism that quantifies confidence in watermark presence rather than relying on arbitrary thresholds for enterprise-grade provenance decisions.

Major Learning Outcomes : 1. Applied Machine Learning System Design — Designed and evaluated a neural encoder-decoder architecture (U-Net encoder + ConvNeXt-Base decoder) for invisible watermark embedding and extraction, achieving 51 dB PSNR and 0.998 SSIM, outperforming state-of-the-art methods (StegaStamp, TrustMark, SynthID).

2. Statistical Detection & Evaluation — Implemented a conformal p-value scoring framework for statistically rigorous watermark detection with explicit false positive rate guarantees (<0.01%), replacing arbitrary bit-accuracy thresholds with calibrated confidence-based classification.

3. Model Fine-Tuning & Robustness Engineering — Extended a pretrained watermarking model through targeted decoder-only fine-tuning to support portrait-to-landscape (90/270-degree) rotations while preserving performance across 19 existing transform categories (JPEG compression, cropping, blur, flips, color adjustments).

4. End-to-End ML Service Development — Developed and deployed production inference services using FastAPI, containerized with multi-stage Docker builds, integrated CI/CD pipelines with security scanning, and built an interactive Gradio demo for real-time watermark embedding and robustness testing.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : I interned with the Applied Machine Learning (AML) team within Apple IS&T. The working environment was highly collaborative and research-driven. I worked closely with my technical mentor, Ye Wang and we followed an iterative development approach; weekly syncs to discuss progress, review experimental results, and align on next steps. There was a strong emphasis on independent problem-solving while maintaining open channels for technical guidance when needed. The company expected me to take ownership of the image provenance and watermarking project end-to-end from understanding the research literature and adapting a state-of-the-art model, to evaluating its performance rigorously, and ultimately deploying it as a production-ready service. Beyond technical delivery, there was an expectation to document work thoroughly, write clean and maintainable code following software engineering best practices, and present findings to the broader team. The internship provided exposure to the full lifecycle of a machine learning project from research and experimentation to production deployment within an enterprise setting.

Academic courses relevant to the project : Machine Learning, Data Structures and Algorithms, Database Systems

Name: VENKATA SAKETH DAKURI .(2022A7PS0056H)

Student Write-up

PS-II Project Title: Confidential

Short Summary of work done during PS-II : Confidential

Tool used (Development tools - H/w, S/w) : S/W

Objectives of the project : Confidential

Major Learning Outcomes : Confidential

Details of Papers/patents : Confidential

Brief Description of working environment, expectations from the company : Confidential

Academic courses relevant to the project : OOPS, DBMS

Name: ANMOL MATHUR(2021B2A82480P)

Student Write-up

PS-II Project Title: Apple

Short Summary of work done during PS-II : Build agent harness framework

Tool used (Development tools - H/w, S/w) : S/w

Objectives of the project : Build a PM agent

Major Learning Outcomes : Agentic ai development

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : A professional, collaborative environment that values teamwork, integrity, and continuous learning. Employees are expected to demonstrate punctuality, accountability, and strong communication skills, meet deadlines, adapt to change, uphold company values, and contribute positively toward shared organizational goals and growth.

Academic courses relevant to the project : Oops

PS-II Station : Argenbright Innovation Lab, Bengaluru

Faculty

Name: Seetha Parameswaran .

Student

Name: JAYA KIRITI DINNUPATI .(2022AAPS0401H)

Student Write-up

PS-II Project Title: SMS-Automation

Short Summary of work done during PS-II : During my PS-2 internship at Chronicles, I contributed to software development tasks involving feature implementation, debugging, testing, and code optimization. I worked with the development team to understand project requirements, develop solutions, and maintain existing applications. The internship provided hands-on experience with industry tools, development workflows, version control systems, and collaborative project management practices. Through this work, I strengthened my technical, problem-solving, and teamwork skills while gaining practical exposure to real-world software development.

Tool used (Development tools - H/w, S/w) : S/w: Cursor,database

Objectives of the project : developing and gettingn. responses from the survey

Major Learning Outcomes : Node.js,React.js

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : My expectations from the company were to gain practical exposure to industry practices, apply the concepts learned during my academic coursework, and develop a deeper understanding of the technologies and processes used in real projects.

Academic courses relevant to the project : OOPS,DSA,DBMS,AI

PS-II Station : Arista Networks India Private Limited, Bengaluru

Faculty

Name: Mohammad Saleem Bagewadi .

Student

Name: TARUN SURESH BABU(2022A3PS0780G)

Student Write-up

PS-II Project Title: Shared Memory Integration

Short Summary of work done during PS-II : So basically we were given three projects, starting from easy to advanced, the easy for refactoring code, implements a feature where if the system becomes a brick which is not able to connect to internet we can do a partition switch to a stable OS which can be connected to internet, and the last one, which is instead of using system calls to communicate with

userspace and kernal we use shared memory to save performance overhead and memory duplication

Tool used (Development tools - H/w, S/w) : C++ and Go

Objectives of the project : Use shared memory for information transfer from kernal to userspace

Major Learning Outcomes : Able to learn the fundamentals of coding, collaboration and communication. Learned how OS is getting built, and am able to build features that OS uses.

Details of Papers/patents : nvm

Brief Description of working environment, expectations from the company : The working environment is good, there is three days work from home and two days work from office on specified days in a week. The people are supportive and I learned a lot from them. The work is very interesting and closely connected to our academic courses.

Academic courses relevant to the project : Operating Systems and Computer Networks

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PS-II Station : ARM Embedded Technologies Private Limited, Bengaluru

Faculty

Name: Manoj Subhash Kakade .

Student

Name: MEHLAM SONGERWALA(2022AAPS0455G)

Student Write-up

PS-II Project Title: Library Characterisation and algorithm development for PPA optimization

Short Summary of work done during PS-II : I worked with my mentor on algorithm development

who guided me with the design flow and running various trials. Analysed various logs to detect discrepancies and ran multiple incremental experiments to achieve results

Tool used (Development tools - H/w, S/w) : Cadence Genus

Objectives of the project : Improve PPA in Synthesis and understand the workings of standard cell libraries

Major Learning Outcomes : Using Cadence Genus tool for Synthesis, running trials on cells for PPA analysis, understanding metrics and variables in real world designs, developing algorithms to improve PPA

Details of Papers/patents : Na

Brief Description of working environment, expectations from the company : The environment was very supportive, the entire team was very welcoming and friendly. The work designated maintained a healthy work life balance and I felt motivated to work harder. My mentor was closely guiding me teaching me along the way

Academic courses relevant to the project : Digital design, analog and digital vlsi design,

PS-II Station : Arup India Pvt. Ltd., Hyderabad

Faculty

Name: Naga Vamsi Krishna Jasti .

Student

Name: HARICHITHRA C(2024H1430017H)

Student Write-up

PS-II Project Title: Software development of oasys geotechnical tools

Short Summary of work done during PS-II : During my internship as a Software Developer Intern in the Oasys Geotechnical team, I gained hands-on experience in professional software development and engineering applications. I worked on an intern assignment involving the development of modular C++ libraries, including DateLib and MatrixLib, where I implemented functionality using object-oriented programming principles, designed reusable components, and structured code using Dynamic Link Libraries (DLLs). I also developed a console application and unit tests, which helped me understand software architecture and the importance of testing and maintainability. In addition to development work, I contributed to improving existing production code by addressing issues identified through static analysis tools such as SonarCloud. This involved refactoring code to reduce complexity, improve readability, and enhance overall code quality. I actively used GitHub for version control, where I managed branches, created pull requests, and resolved merge conflicts, gaining experience in collaborative development workflows. I also worked with Jira to track tasks and understand project management processes in a professional environment. Furthermore, I was involved in customer support activities, where I analyzed and investigated user-reported issues, strengthening my debugging, problem-solving, and communication skills. Overall, the internship provided comprehensive exposure to the software development lifecycle and practical experience in building and maintaining engineering software.

Tool used (Development tools - H/w, S/w) : Oasys Geotechnical Suite, C++, Github, Jira, Servicenow

Objectives of the project : To gain practical experience in professional software development, strengthening C++ programming, problem-solving, and debugging skills, to learn and apply industry-standard tools, workflows, and best development practices and to understand and work with the Oasys Geotechnical Software Suite, including exposure to technical support in software engineering.

Major Learning Outcomes : Developed strong C++ programming skills, software design understanding, and hands-on experience with modular architecture, debugging, and code quality improvement practices.
Gained practical knowledge of the full software development lifecycle, including testing, maintenance, and use of tools like GitHub, SonarCloud, and Jira for collaborative development.
Enhanced problem-solving, analytical thinking, and communication skills through real-world development tasks and customer support activities.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The internship at Arup India Pvt. Ltd. provided a professional and collaborative working environment focused on technical excellence, learning, and innovation. As part of the Oasys Geotechnical software development team, I worked alongside experienced engineers and developers who emphasized knowledge sharing, mentorship, and continuous improvement. Interns were given the opportunity to work on real-world projects, interact with multidisciplinary teams, and gain exposure to industry-standard tools and workflows.

The company's expectations from interns included active participation in development tasks, a willingness to learn new technologies, and adherence to coding standards and best practices. Interns were expected to demonstrate problem-solving skills, take ownership of assigned tasks, and contribute to improving code quality and functionality. Additionally, there was an emphasis on professional conduct, clear communication, and the ability to understand both technical and user perspectives, especially in customer support activities. This structured and supportive environment enabled me to build strong technical skills while also developing professionalism and adaptability required in a real-world software engineering role.

Academic courses relevant to the project : Finite Element Analysis, Foundation Engineering, Structural Analysis

PS-II Station : Astera Labs, Bengaluru

Faculty

Name: Sanjay Vidhyadharan .

Student

Name: ROHITASH PRADHAN(2022A3PS1199G)

Student Write-up

PS-II Project Title: Design Automation

Short Summary of work done during PS-II : Got hands on experience with the Formal Property verification workflow on design blocks involved in live projects. Also worked on the EDA infrastructure to automate workflows

Tool used (Development tools - H/w, S/w) : Cadence JasperGold, Synopsys VC Formal, SystemVerilog, Jenkins, Linux

Objectives of the project : Develop automation procedures and contribute to the verification workflow of the Formal verification team

Major Learning Outcomes : Got hands on experience with the Formal Property verification workflow on design blocks involved in live projects. Also worked on the EDA infrastructure to automate workflows

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Great working environment overall, Senior employees are approachable and supportive. Team environment was also great with everyone being helpful and understanding. The work being done is also good and you are actively involved in live projects with the company expecting you to contribute to it within reasonable expectations.

Academic courses relevant to the project : Digital Design, Computer Architecture (partially)

Name: V SAMSKRUTHI(2021B4A32922H)

Student Write-up

PS-II Project Title: DFT Engineer

Short Summary of work done during PS-II : Focusing on Design for Testability (DFT) methodologies through practical use of industry standard tools like Synopsys TetraMax, Verdi and Tessent tools. Key concepts in ATPG, fault modelling, scan architecture, and simulation workflows

were explored in depth. The completed projects, ranging from Python-based workflows to ATPG implementation, DFT simulation and MBIST and Scan insertion, provided insights into the theoretical and practical aspects of DFT.

Tool used (Development tools - H/w, S/w) : Linux, Tessent tools, Synopsys tools, Python

Objectives of the project : To understand memory test methodologies used in modern semiconductor devices. To learn and implement memory DFT techniques using Synopsys tools. To analyze memory faults and improve test coverage through structured test architectures. To gain hands-on experience with industrial memory testing flows and verification processes.

Major Learning Outcomes : Understanding of Memory Built-In Self-Test (MBIST) architecture and concepts.
Practical exposure to Synopsys Silicon Memory System (SMS) flow.
Knowledge of memory fault models and test algorithms.
Experience in debugging DFT-related issues and analyzing reports.
Improved understanding of semiconductor design and test methodologies.
Enhanced teamwork, communication, and problem-solving skills.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The company provided a professional and collaborative work environment that encouraged continuous learning and innovation. Team members and mentors were approachable and supportive, making it easy to seek technical guidance whenever required. Regular discussions, review meetings, and knowledge-sharing sessions helped enhance my understanding of industry practices.

Academic courses relevant to the project : Digital Design
VLSI Design
CMOS Integrated Circuits
Testing of VLSI Circuits
Computer Architecture
Microprocessors and Interfacing
Electronics Devices and Circuits

PS-II Station : AstraYAN, Gurgaon

Faculty

Name: Rajesh Kumar Tiwary .

Student

Name: YATIN(2024H1230161P)

Student Write-up

PS-II Project Title: Development and Verification of OPC UA Based Alarm and Monitoring Systems for Ship Automation.

Short Summary of work done during PS-II : During PS-II, I worked on the study and verification of alarm monitoring systems used in ship automation applications. Building upon the OPC UA middleware and EtherCAT communication framework developed during mid-sem, I focused on alarm management, signal conditioning, sensor interfacing, and fault-handling mechanisms. The work involved understanding digital alarm generation, threshold management, alarm state machines, and alarm acknowledgement workflows. MATLAB/Stateflow models were analysed to understand state transitions, timeout conditions, alarm activation logic, and recovery mechanisms. Additionally, I studied the integration of alarm systems with OPC UA communication architecture and examined methods used for reliable event reporting and monitoring in marine environments. The project enhanced my understanding of industrial automation practices, embedded control systems, verification methodologies, and real-world engineering workflows used in mission-critical ship automation systems.

Tool used (Development tools - H/w, S/w) : MATLAB/Simulink, Drawio, Excel, word

Objectives of the project : Develop understanding of OPC UA-based monitoring and alarm systems, Study alarm state machines and digital alarm handling, Analyze signal conditioning and sensor interfaces, Validate system behaviour using MATLAB/Stateflow, Improve reliability and fault management in ship automation systems.

Major Learning Outcomes : Understanding of industrial alarm management systems.
Practical exposure to OPC UA alarm and event mechanisms.
Knowledge of signal conditioning for analog and digital inputs.
Design and analysis of alarm state machines.
Experience with MATLAB/Stateflow based verification.
Understanding of fault detection and system reliability concepts.
Exposure to marine automation architecture.

Details of Papers/patents : No papers or patents published.

Brief Description of working environment, expectations from the company : The organization provided a professional engineering environment focused on industrial automation and ship control systems. Regular interactions with mentors and technical teams enabled practical learning through design reviews, technical discussions, and system analysis activities. The company emphasized documentation, quality assurance, verification processes, and teamwork. Interns were expected to actively participate in technical discussions, understand system requirements, complete assigned tasks within deadlines, and continuously develop both technical and professional skills.

Academic courses relevant to the project : Embedded Systems
Control Systems
Industrial Instrumentation
Analog Electronics
Digital Electronics

Name: SANKALP SHARMA(2024H1400113P)

Student Write-up

PS-II Project Title: Engineering Activities for Communication, Control and Integration in Ship Automation

Short Summary of work done during PS-II : During my PS-II at AstraYAN Pvt. Ltd., I worked on Technical Procurement and System Integration activities in the domain of Marine Industrial Automation. My responsibilities included vendor outreach, technical and commercial evaluation of

industrial hardware, procurement coordination, and stakeholder management. I coordinated with multiple vendors for procurement of industrial PCs, CFAST cards, network switches, and EtherCAT components while supporting quotation analysis, BOM preparation, commercial negotiations, and order execution. Following procurement, I coordinated with vendors, middleware teams, and internal stakeholders for shipment execution, customs-related documentation, and logistics management involving multiple suppliers. I also contributed to IT infrastructure initiatives by supporting MSP evaluation, onboarding, endpoint security implementation, user management, and organization-wide data migration planning. In parallel, I participated in government tendering activities including pre-bid meetings, tender documentation, Technical Negotiation Committee (TNC) discussions, Commercial Negotiation Committee (CNC) preparations, compliance reviews, and meeting documentation. Additional responsibilities included employee onboarding support, operational coordination, candidate sourcing, resume screening, and interview scheduling. The internship provided practical exposure to industrial procurement, project coordination, IT operations, government tendering processes, and cross-functional stakeholder management within a startup environment serving the defence and industrial automation sectors.

Tool used (Development tools - H/w, S/w) : Microsoft Excel Microsoft Office Suite Microsoft 365 Administration Tools

Objectives of the project : To support procurement and technical evaluation of industrial automation hardware for marine and defence applications. To coordinate vendor interactions, commercial negotiations, and procurement execution activities. To assist in system integration activities through stakeholder coordination and logistics management. To support IT infrastructure setup, MSP onboarding, endpoint security implementation, and data migration activities. To participate in government tendering processes, including documentation, negotiations, and compliance management. To gain practical exposure to project management, cross-functional coordination, and industrial operations.

Major Learning Outcomes : Understanding of industrial automation hardware procurement lifecycle.
Exposure to marine and defence industry procurement practices.
Experience in technical and commercial evaluation of industrial hardware.
Knowledge of vendor management, negotiations, and procurement execution.
Understanding of IT infrastructure deployment and cybersecurity implementation.
Experience in government tendering, TNC/CNC processes, and compliance documentation.
Development of stakeholder management, communication, and project coordination skills.
Exposure to logistics, shipment management, and operational planning.

Details of Papers/patents : No papers or patents were published as part of the PS-II project. The work primarily focused on industrial procurement, system integration support, IT infrastructure coordination, and tender management activities.

Brief Description of working environment, expectations from the company : AstraYAN Pvt. Ltd. operates in the industrial automation and defence technology domain. The work environment offered flexible working hours, with responsibilities driven by project requirements and deadlines. The internship involved coordination with vendors, management, technical teams, IT service providers, and external stakeholders across procurement, tendering, IT infrastructure, and operational activities. Expectations included timely communication, documentation, follow-ups, stakeholder coordination, and independent execution of assigned tasks. The role provided exposure to industrial procurement processes, government tendering activities, IT operations, and project coordination in a startup setting.

Academic courses relevant to the project : embedded system design

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Name: CHAUHAN RISHABH TARAL(2024H1400114P)

Student Write-up

PS-II Project Title: Development of HMI Middleware for Ship Automation

Short Summary of work done during PS-II : Work primarily focused on communication middleware development and software architecture for industrial automation systems. Activities included the study and implementation of OPC UA-based communication frameworks, client-server communication mechanisms, data acquisition architectures and signal management approaches. Also involved in the development and evaluation of server redundancy concepts aimed at improving communication reliability and system availability. Further contributions included the study of command management frameworks, Stateflow-based command lifecycle modelling and alert management concepts. Additional work was carried out in the migration of communication architectures towards DDS-based frameworks, integration of communication layers with Human-Machine Interface (HMI) applications and the design of software components supporting data exchange and system monitoring functions.

Tool used (Development tools - H/w, S/w) : Visual Studio Code, CMake, Qt Creator, MATLAB Simulink.

Objectives of the project : 1) To study industrial middleware communication protocols such as OPC UA and DDS. 2) To develop prototypes for Data inputs, Command outputs and Alerts using industrial middleware communication protocols for the Autonomous Ship System. 3) To use System Modelling concepts such as Models Based System Engineering to design, test and automate subsystems under the Autonomous Ship System. 4) To navigate constraints associated with system integration across multiple frameworks, protocols, distributed environments and hardware systems for better software system design and development.

Major Learning Outcomes : 1) Middleware level PoC and prototype implementation establishing data communication between remote operator interface systems and ship-based controllers.
2) Grasp over communication protocols such as OPC UA and DDS.
3) Understanding and creating test implementations for System Failover and Redundancy.
4) Understanding of development in Qt framework environment.
5) Simulink based model design and code generation techniques.
6) Code migration from one protocol/library to other as per evolving project requirements.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Remote (Work From Home) internship conducted with weekly progress evaluations (online meetings) of milestones achieved and planned tasks. Also, separate technical discussions with teammates and company mentor for detailed analysis of the work completed and undertaken. Technical documentation of work done for internal company use and also for attending meetings on work being done with other companies.

Academic courses relevant to the project : Software for Embedded Systems (Only UML part mainly and some basic understanding of MQTT PubSub protocol helps).

PS-II Station : ATI MOTORS, Bengaluru

Faculty

Name: Srinivas Kota .

Student

Name: AASHISH KANTED(2021B5A31912G)

Student Write-up

PS-II Project Title: Development of advanced perception and learning-based control architectures for AMRs

Short Summary of work done during PS-II : This project focused on developing core autonomy features for Ati Motors' “Sherpa” Autonomous Mobile Robots (AMRs) used in industrial tractor–trailer operations. The first phase delivered a reliable system for tracking the articulated trailer (trolley) using LiDAR retro-reflector detection and an Extended Kalman Filter (EKF), allowing the robot to estimate the trolley's articulation angle and avoid collisions during autonomous reversing. The principal body of work was the Auto-Hitch module — a hybrid camera–LiDAR perception and docking pipeline that enables the AMR to autonomously couple to a trolley. The module detects the trolley front face (via instance segmentation projected onto the LiDAR cloud, or LiDAR-only clustering), estimates its pose — center, width and yaw — through RANSAC line fitting on radially-thinned points, localizes the hitch coupler with a sliding-bin search, and validates the candidate pose using voxel-based hit/miss/diff scoring. Payload identity is confirmed through depth-aware QR gating before a precision docking routine is commanded and the physical hitch actuated. Deployed at a customer site, the module achieves a hitching success rate of more than 98% when the trolley is staged within the marked floor area.

Tool used (Development tools - H/w, S/w) : Jetson, roboflow, foxglove, nvidia

Objectives of the project : Trolley Reflector Detection & Tracking; Auto-Hitch Payload Perception & Autonomous Docking

Major Learning Outcomes : Robotics

Details of Papers/patents : .

Brief Description of working environment, expectations from the company : It is a decent size startup with a chance to learn a lot about robotics , atleast in the autonomy team

Academic courses relevant to the project : Control systems

PS-II Station : Axis Capital Ltd, Mumbai

Faculty

Name: Uma Nagarajan .

Student

Name: SNEHANSHN NATH .(2022B5PS0864P)

Student Write-up

PS-II Project Title: Equity Research and Investment Banking

Short Summary of work done during PS-II : • Did preliminary research and concall analysis of the Lenskart IE after the inception of its IPO. I was a part of the complete process of the share allotment and post IPO processes of the Bagmane REIT IPO.

Tool used (Development tools - H/w, S/w) : MS Excel, MS Word, MS Copilot, ChatGPT, Claude.

Objectives of the project : Deep insights into the finance world by knowing the sell side brokerage business of Equity Research and Investment Banking.

Major Learning Outcomes : Learned about the major IPO, REIT and M&A deals facilitated by Axis Capital. I was a part of the Lenskart IC report after its IPO in the Research side and the Bagmane REIT IPO in the IB space.

Details of Papers/patents : End of the mid term I did a proprietary analysis of Lenskart IPO which was dissociated from Axis Cap. And End term of the internship I wrote on the Bagmane REIT IPO which was also not associated with Axis Cap.

Brief Description of working environment, expectations from the company : The environment was good and fast paced. Learning into the financial industry was very steep and am expecting to make a career out of this industry.

Academic courses relevant to the project : Fundafin, DRM, FinMan, SAPM, FRAM and BAV

PS-II Station : Axitrust India Pvt. Ltd, Gurgaon

Faculty

Name: Perumal Jayakumar

Student

Name: SHUBHAYAN NANDI(2022A2PS1160P)

Student Write-up

PS-II Project Title: Growth and Business Development in the Surety Bond Ecosystem

Short Summary of work done during PS-II : During my PS-II internship at AxiTrust India Pvt. Ltd., I was embedded within the Growth function to strengthen the company's go-to-market capabilities for its cloud-native SaaS platform. My core contributions focused on data engineering, sales pipeline optimization, and technical workflow automation. I successfully orchestrated a large-scale data consolidation initiative, merging 14 disparate data tracking files into a single, production-ready master dataset. This involved mapping, cleaning, and validating over 74,659 records (encompassing 12,087 unique companies and 41,857 individual director entries) with 100% industry mapping and 68.55% valid PAN coverage. To optimize sales team operations, I mapped out standard sales development cadences and, in collaboration with a senior team member, co-developed an automated account-level

lead-scoring system that routes leads based on data health and richness. On the technical automation front, I built and deployed automated data pipelines using n8n, a self-hosted MySQL database, and GitHub Actions to automatically scrape government procurement portals and sync qualified tender listings directly into the Zoho CRM Sandbox environment. Additionally, I supported high-stakes business operations by assisting in government tender bids, notably the OICL Eligibility Bid, where I rigorously compiled and verified all 25 mandatory compliance items. Finally, I designed an ongoing automated Ticket Management System that integrates Gmail triggers with Gemini Flash AI to parse unstructured invoice attachments and auto-populate structured operational support tickets into Zoho Desk.

Tool used (Development tools - H/w, S/w) : S/w (CRM & Prospecting): Zoho CRM, Zoho CRM Sandbox, Zoho Desk, LinkedIn Sales Navigator. S/w (Data Management & Scripting): Microsoft Excel (Large-scale workbook management), Python (Data cleaning, PAN validation, rule-based classification scripts).

Objectives of the project : Expand Market Intelligence: Systematically identify, research, and catalogue prospective clients across construction, infrastructure, real estate, and MSME verticals. Build a Qualified Sales Pipeline: Construct and maintain a pipeline of thoroughly vetted leads enriched with verified contact details, financial data, and industry classifications. Strengthen CRM Data Architecture: Transform the enterprise Zoho CRM instance into a strategically valuable data asset through consolidation, standardisation, validation, and automated scoring. Automate Repetitive Workflows: Design and deploy technical automations using n8n, Python, and API integrations to eliminate manual data handling. Support High-Stakes Compliance: Assist with documentation, bid preparation, and checklist verification for critical government tender submissions

Major Learning Outcomes : B2B Sales Mechanics: Deep understanding of the B2B sales lifecycle in a regulated financial services context, pipeline velocity metrics, and lead qualification stages (MQL, SQL, SAL). Financial Guarantee Instruments: Acquired core knowledge of the comparative economics of Surety Bonds versus Bank Guarantees, specifically regarding capital efficiency and collateral structures. Enterprise CRM Architecture & Data Governance: Mastered CRM data modeling at an architectural level and learned the practical importance of data governance (completeness, accuracy, and consistency). Technical Automation & Pipeline Integration: Gained technical competence in building multi-step data pipelines connecting APIs, databases, and automation frameworks. Regulatory Framework Awareness: Developed insights into the Indian regulatory landscape, including IRDAI guidelines, MoRTH notifications, and public procurement advisories.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : AxiTrust India Pvt. Ltd. provides a fast-paced, highly collaborative startup environment operating at the intersection of RegTech and InsurTech. Based out of New Delhi, the company is highly agile, flat-structured, and fast-growing. Roles are fluid and resource-conscious, which demands a high degree of individual ownership, adaptability, and self-driven initiative. The company expects interns to operate as full-time members of the growth and commercial squads rather than temporary support. From day one, I was given the autonomy to drive strategic data governance projects, engage in high-stakes tender compliances, and propose technical automation architectures to eliminate manual bottlenecks. The team fosters an intellectually rigorous atmosphere, where cross-functional collaboration between the growth, tech, and compliance teams is the norm. There is a strong emphasis on data-driven decision-making, operational standardisation, and continuous learning, particularly regarding the complex financial and regulatory structures governing the Indian infrastructure and surety bond markets.

Academic courses relevant to the project : Principles of Management

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Name: SHUBHAM CHOUDHARY(2024H1540834P)

Student Write-up

PS-II Project Title: AI automations and Growth

Short Summary of work done during PS-II : Worked with cross-functional team.

Tool used (Development tools - H/w, S/w) : CRM, Sheets, Claude

Objectives of the project : AI automations and Growth

Major Learning Outcomes : Learnt many tools and about the business.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Cool

Academic courses relevant to the project : Yes

PS-II Station : Bain Capability Network (BCN), Industry Consumer Product, Gurgaon / Bengaluru

Faculty

Name: Perumal Jayakumar

Student

Name: ADITYA SAXENA .(2021B5A43163H)

Student Write-up

PS-II Project Title: FCMG Company price optimization

Short Summary of work done during PS-II : The first two engagements were analytical. For Company A, an FMCG food brand, the work centered on pricing and RGM across a portfolio of 3,000+ SKUs across four channels, building structured fact bases, supporting regression-based elasticity estimation, and translating findings into a storyline deck. For Company B, an established consumer brand, the contribution focused on growth-strategy support through market research synthesis and prioritization of strategic options. The later engagements extended into applied tool-building. For Company C, a global beverage brand, an existing promotion ROI dashboard was reverse-engineered and rebuilt from first principles, with every metric validated against the original and documented for handover. For Company D, a consumer durables brand, a web-based promotion simulation and optimization tool was designed and built, backed by an estimation pipeline that produced demand baselines and price elasticities, including a pooled model where per-product data was insufficient. Throughout, the work followed consistent principles: define the decision first, build fact bases carefully rather than relying on averages, treat quantitative results as directional evidence, and insist on numerical proof before accepting any result. The internship strengthened analytical, strategic, and technical capabilities, while teaching the engineering discipline of building tools that are transparent, verifiable, and durable enough to be trusted and maintained by others.

Tool used (Development tools - H/w, S/w) : Python (pandas, scikit-learn, statsmodels) for estimation pipelines and statistical modeling; Next.js/React (browser-based) for the simulation and optimization tool; Excel for data structuring and trade-term economics; PowerPoint for storyline decks — run

Objectives of the project : Optimize shelf price and promotional prices of various FMCG companies

Major Learning Outcomes : Developed end-to-end commercial analytics and decision-support tool-building skills under Revenue Growth Management — combining hypothesis-led problem solving, regression-based elasticity estimation, and software-engineering discipline (small verifiable increments, audit-first reconstruction, and numerical proof before accepting any result).

Details of Papers/patents : nil

Brief Description of working environment, expectations from the company : The internship was with Bain & Company's Consumer Products Group, a team that works with FMCG and adjacent consumer sectors on pricing, promotion and trade optimization, revenue growth management, and growth strategy. The defining characteristic of the environment was the integration of rigorous quantitative analysis with structured problem framing and high-standard executive communication. Analysis was never treated as an end product; it was expected to feed directly into a fact base that informed client decisions.

The team operated in a hypothesis-led manner, continually refining questions as the data and market context revealed more. Deliverables were iterated multiple times for clarity and robustness, and communication standards were high because outputs were meant to drive real commercial choices.

Expectations of me went beyond producing analysis. I was expected to interpret results, derive implications, and present them in a way that advanced the engagement storyline. In the later tool-building phase, the bar shifted toward engineering discipline: reproducing trusted numbers exactly before changing anything, building in small verifiable increments, documenting logic and limitations for handover, and proving every fix against worked numerical examples. Throughout, the environment rewarded attention to detail, comfort with ambiguity, intellectual honesty about uncertainty, and the ability to work effectively in an iterative, feedback-driven setting — translating complex commercial questions into clear, decision-ready outputs that others could trust and maintain.

Academic courses relevant to the project : nil

PS-II Station : Bain Capability Network (BCN), Industry Technology, Media & Telecom, Gurgaon / Bengaluru

Faculty

Name: Perumal Jayakumar

Student

Name: SHREYASI BHARATIYA(2021B1A40793P)

Student Write-up

PS-II Project Title: Analyst intern in TMT CoE

Short Summary of work done during PS-II : • Delivered analytical work on 8 live client engagements across all the three sectors of TMT with high quality execution, spanning Strategy, GTM, Pricing, Corporate/AI strategy, M&A research, ARPU uplift, TAM, network planning, and workflow automation influencing multi-million dollar strategic decisions • Built and refreshed 6 firm-wide Intellectual Property (IP) assets including the Telco M&A Q4 2025, Gaming M&A Outlook 2026, Telecom and Pay TV US Q4 2025 and other assets as reusable Knowledge Management deliverables • Synthesised market and company data from sources including LSEG, S&P Cap IQ, Euromonitor International, Factiva, D&B Hoovers, Literature search into structured insights and recommendations • Owned end-to-end analytical workstreams: market sizing, competitive benchmarking, survey analysis, LLM- assisted research, market research, robust business model development, strategic recommendations, data visualisation on dashboards and geospatial analytics on Lumi • Produced client deliverables: case presentations, excel models, playbooks, Lumi dashboards, efficient alteryx workflows, proposals shipped directly to front-end Bain consulting team

Tool used (Development tools - H/w, S/w) : • Stack: MS Power Point (think-cell), MS Excel, PostgreSQL, Alteryx, Lumi, Tableau, ChatGPT Enterprise, Claude, Python

Objectives of the project : • Embedded as a core analyst on a 5-person delivery team within Bain's TMT (Technology, Media and Telecommunications) Centre of Excellence, directly supporting Bain partners and case teams on client engagements

Major Learning Outcomes : Strategy Consulting working alongside front end team, Data analysis using Excel and Alteryx, Mergers and Acquisitions, Gaming, Business/ GTM/Pricing/ Corporate/AI Strategy, Competitive Benchmarking, Pilot pricing models for subscription plans, TAM Estimation, Geospatial Analytics, Network Coverage and Planning, Surveys, TMT Quarterly and Annual Outlooks, Alteryx workflows, created insightful Bain IPs, market ecosystem overviews

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The work environment is great in general in BCN but it is very team dependent. I got to be a part of two teams one in IP for five months (working environment was not great here but again it is not generalised, very specific to the team) and another in software (Lumi) for a month (good work environment) and the expectations were completely different in both. The working hours are 8 hours 5 days a week, 3 days wfo and 2 days wfh but the working hours may stretch to 11-12 hours depending on the case load.

Academic courses relevant to the project : NA

PS-II Station : Bain Capability Network (BCN), PEG, Gurgaon / Bengaluru

Faculty

Name: Perumal Jayakumar

Student

Name: SASWAT SUMAN DWIBEDI(2021B1A42293P)

Student Write-up

PS-II Project Title: Commercial Due Diligence and Analytics Support for Private Equity Deal Teams

Short Summary of work done during PS-II : During my PS-II at Bain Capability Network (BCN),

Gurugram, I worked as an Analyst on the Private Equity Group (PEG) Americas desk, supporting front-end Bain case teams on commercial due diligence and M&A engagements. My key project was Project Grand Prix — a private credit due diligence for Carlyle's financing of Circuit of the Americas (COTA) — where I built and QC'd survey cut slides using a live loop Excel cutter model with cross-tab breakdowns across four consumer archetypes (TX F1 Fan, TX Non-F1, Non-TX F1, Non-TX Non-F1). I also conducted competitive landscaping and data quality analysis, developing a software taxonomy framework (41 sub-categories across horizontal, vertical, and infrastructure software) and using advanced Excel formulas to flag data discrepancies for PE deal classification. Additionally, I independently developed Survey Studio, an internal AI tool that converts project scopes into structured BDP-compliant surveys, collaborating with two colleagues on survey logic, validation, and testing. Beyond delivery work, I represented BCN in BAIN-A-THON 2026, an internal case competition, leading the conclusions slide for a market expansion recommendation. The internship provided deep exposure to the PE deal lifecycle and sharpened my analytical, communication, and delivery skills in a high-performance consulting environment.

Tool used (Development tools - H/w, S/w) : Microsoft Excel (advanced — live loop models, COUNTIFS, cross-tabs), Microsoft PowerPoint, Claude AI / Anthropic API (Survey Studio development), BCN internal survey and data platforms, Google Workspace

Objectives of the project : To support the Private Equity Group (PEG) Americas desk at Bain Capability Network (BCN) by delivering analytical work across commercial due diligence, M&A scans, competitive landscaping, and survey analytics for Bain & Company front-end case teams.

Major Learning Outcomes : Hands-on experience in PE commercial due diligence; proficiency in survey analytics and cross-tab modeling; understanding of PE deal structures and investment thesis frameworks; advanced Excel skills (live loop models, COUNTIFS); exposure to software taxonomy classification for deal screening; experience synthesizing large datasets into investment-ready insights.

Details of Papers/patents : Not applicable — no papers or patents filed during this internship.

Brief Description of working environment, expectations from the company : BCN Gurugram functions as a high-performance delivery and capability centre supporting Bain & Company's global case teams. The work environment is fast-paced, deadline-driven, and analytically rigorous. Interns work alongside experienced managers on live client engagements and are expected to own analytical workstreams independently. The Americas desk involves coordinating closely with US-based front-end case teams across time zones, requiring flexibility in availability and strong asynchronous

communication. The office follows a hybrid model, with a collaborative in-office culture and structured working hours (approximately 9:30 AM – 6:30 PM IST, with some late sessions during peak project periods). The company expects client-ready deliverable quality, intellectual curiosity, and the ability to deliver under tight turnarounds. BCN provides structured mentorship through direct managers and access to Bain's global knowledge base. The culture is meritocratic and inclusive, with strong emphasis on professional development through live project exposure, internal learning sessions, and events like BAIN-A-THON. For incoming PS-II students, strong Excel skills, structured thinking, and concise communication are non-negotiable. The internship is best suited for those interested in consulting, private equity, or corporate strategy roles.

Academic courses relevant to the project : Financial Management, Engineering Economics, Probability & Statistics, Data Analysis & Interpretation, Operations Research, Management Information Systems

Name: SURYAM MIHIR MANIAR(2022A2PS1076P)

Student Write-up

PS-II Project Title: Strategic Market Research and Private Equity Analysis

Short Summary of work done during PS-II : My PS2 internship at Bain involved supporting Private Equity Group (PEG) case teams across the EMEA region. These projects required quick, defensible synthesis, so my role focused on data extraction, cleaning, interpolation, and analysis, transforming it into slide-ready outputs for due diligence and assessments. The internship was divided into two phases. In the first, I concentrated on adviser and broker analytics using BAAM, involving SEC and IAPD data extraction, AUM trends, joiner and leaver movement, geographic distribution, and acquisition activity. The second phase expanded to market-facing and consumer-oriented analysis, including digital mapping, acquisition tracking, sentiment analysis, and SEO and SEM assessment, supported by secondary research to verify digital and social media figures. I continued to contribute to BAAM work, especially on advisor movement patterns. This transition shifted me from structured database analysis to organising fragmented market information into clear insights for decision-making. Throughout both phases, outputs needed to be analytically sound and presentation-ready on tight deadlines. As part of the PEG EMEA support structure, I prepared datasets and exhibits for client deliverables or internal discussions, ensuring consistency across sources and documenting

assumptions and methods behind each analysis.

Tool used (Development tools - H/w, S/w) : Claude, ChatGPT, Excel, PowerPoint

Objectives of the project : Extract, interpolate, analyse and present key insights for clients.

Major Learning Outcomes : Learned all the new skills mentioned below with a new direction of outcomes along with soft skills improvement due to the professional culture.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Bain Capability Network (BCN) offers integrated consulting support through specialised analytical, research, and capability teams that collaborate with Bain case teams and clients. This collaboration provides scale and depth across various industries and functions. During my time at BCN, I served as an Analyst Intern, supporting Private Equity Group (PEG) engagements in the Europe, Middle East, and Africa (EMEA) region. PEG teams typically assist private equity investors with several key tasks. These include conducting commercial and vendor due diligence (CDD and VDD), which are crucial for evaluating potential investments. Additionally, the teams perform market and competitive assessments to understand the landscape in which the investment operates. Another significant aspect of their work is supporting portfolio companies, which involves enhancing performance, developing growth strategies, and conducting benchmarking to ensure the companies are meeting industry standards. The role emphasised the importance of a fast turnaround, high accuracy, clear assumptions, and quality presentations. These elements were essential to effectively meet the demands of the clients and ensure the success of the engagements. Overall, my experience at BCN was instrumental in developing my analytical skills and understanding of the consulting industry.

Academic courses relevant to the project : Business Communication

PS-II Station : Bhabani Packaging Solutions Pvt. Ltd., Guwahati

Faculty

Name: Sidharth Mishra .

Student

Name: RISHI BIDHAN DEV(2022A4PS1217G)

Student Write-up

PS-II Project Title: Structural & Geometric Design Optimization of Mono-cartons for Pharma & FMCG Packaging

Short Summary of work done during PS-II : I learnt every step of how a Pharma/ FMCG mono-carton is turned into a physical product; starting from its design as a software file, imposition of the image on a plate, offset printing on paperboard (the image is transferred from plate to paper), die punching and eventually pasting; after which the cartons are dispatched after satisfying multiple quality parameters.

Tool used (Development tools - H/w, S/w) : Adobe Illustrator, Esko, MS Excel (for ERP)

Objectives of the project : To improve the design or redesign different types of mono-cartons to improve strength and quality of the cartons.

Major Learning Outcomes : Hands-on experience in the Paper-based FMCG/ Pharma Packaging Industry; Understanding of Offset Printing Technology; Supply Chain Management & Quality Control

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The office environment was great as my colleagues were very friendly. It was a great learning experience under constant guidance from seniors and problem solving through teamwork. The working hours were from 10am - 6pm (Mon - Sat).

Academic courses relevant to the project : Manufacturing Management; Quality Control Assurance & Reliance

PS-II Station : Bharat Electronics Limited (BEL), Bengaluru

Faculty

Name: Shree Prasad M

Student

Name: DEVANGI CHAUDHARY(2021B2A82309P)

Student Write-up

PS-II Project Title: FPGA Implementation of QR Decomposition using the Modified Gram–Schmidt Algorithm

Short Summary of work done during PS-II : This project involved the design and FPGA implementation of a QR decomposition accelerator for 4×4 matrices using the Modified Gram–Schmidt (MGS) algorithm. The work began with a from-scratch Python implementation of MGS without NumPy, which served as a functional reference and deepened understanding of each arithmetic step prior to hardware translation. The hardware design was developed in Verilog and implemented on a Xilinx Artix-7 FPGA (xc7a200tfbg484-2) using Vivado. All matrix values are represented in Q12.20 signed fixed-point format across a 32-bit word. Since Verilog does not support array-type ports, matrix columns are passed as 128-bit flattened vectors and disassembled internally. A set of custom RTL modules was developed for each arithmetic operation: a 3-stage pipelined dot product, a sequential scalar multiply-subtract unit, an L2 norm module combining dot product with a Xilinx CORDIC IP core, and a parallel vector division unit wrapping four Xilinx Divider Generator IP instances. These modules are integrated into a complete datapath controlled by a 17-state FSM. Post-implementation results show timing closure at 100 MHz with a worst negative slack of +7.224 ns and an achievable Fmax of approximately 360 MHz. The full decomposition completes in 365 clock cycles, giving a latency of approximately 1.01 µs at Fmax. Resource utilisation is under 1% for LUTs and registers and 4.86% for DSP48E1 slices. Numerical accuracy against a double-precision Python reference shows mean errors below 0.1% for both Q and R matrices.

Tool used (Development tools - H/w, S/w) : Vivado

Objectives of the project : To design and implement a hardware accelerator for QR decomposition of 4×4 matrices on a Xilinx Artix-7 FPGA using the Modified Gram–Schmidt algorithm with Q12.20 fixed-point arithmetic, targeting low latency and efficient resource utilisation.

Major Learning Outcomes : RTL design and synthesis of arithmetic hardware modules in Verilog including pipelined dot product, CORDIC-based square root, and parallel vector division.
Fixed-point number representation and arithmetic, including Q-format selection, overflow analysis, and precision trade-offs.
FSM-based control design for sequencing multi-cycle datapath operations.
Integration and configuration of Xilinx IP cores (CORDIC, Divider Generator) within a custom datapath.
Timing closure, post-implementation analysis, and resource utilisation reporting in Vivado.
Translation of a software algorithm into a synthesizable hardware architecture.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : BEL PDIC (Product Development and Innovation Centre) operates under strict security protocols befitting a government defence organisation. No personal electronics are permitted inside the compound, and work stations do not have internet access. This creates a working environment that is considerably more challenging than a typical software or tech internship — there is no access to online documentation, forums, or AI tools during working hours. All problem-solving relies on available reference books, datasheets, Vivado's offline documentation, and iterative trial and error.
While initially demanding, this environment proved to be a significant learning accelerator. Every obstacle required independent thinking and a deeper engagement with fundamentals rather than a quick search for a ready-made answer. It also instilled a stronger habit of reading documentation thoroughly and planning designs carefully before implementation, since course-correcting mid-way was costlier without readily available external help. The company expected ownership, initiative, and the ability to work through problems independently — expectations that closely mirror those of a professional engineering role.

Academic courses relevant to the project : Digital Design, Computer Architecture

PS-II Station : Bharti airtel, Mumbai

Faculty

Name: Swarna Chaudhary .

Student

Name: CHINMAY MAANAS TIRUNAGARI(2022A3PS1325G)

Student Write-up

PS-II Project Title: Meta churn analysis and improvement

Short Summary of work done during PS-II : The work carried out during Practice School-II focused on improving the performance of Airtel's mobile network by analysing areas where users were switching to other operators. Network performance data was studied to identify possible reasons for poor user experience and suitable optimisation measures were recommended to improve network quality. This included analysing existing cell towers, suggesting changes to their configuration to improve coverage, identifying locations that would benefit from 5G upgrades, and proposing areas where new towers could be installed. The work involved analysing large datasets, evaluating network performance, and making data-driven recommendations to improve coverage, capacity, and overall customer experience.

Tool used (Development tools - H/w, S/w) : Excel, Qgis, Python, Google Earth, Internal softwares

Objectives of the project : Optimise existing radio network to reduce churn

Major Learning Outcomes : Telecommunication processes, standards, optimisation techniques

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment was professional, collaborative, and learning-oriented. Guidance was provided by mentors and team members, who offered technical support and regular feedback throughout the

internship. The work involved analysing real-world network data, participating in discussions on optimisation strategies, and understanding how engineering decisions are made in an operational environment. The organisation encouraged independent problem-solving while providing the necessary resources and support whenever required. The internship offered exposure to industry practices, teamwork, and the practical application of concepts learned during coursework.

Academic courses relevant to the project : Mobile Telecomm Networks, Communication Systems, Digital Communications

PS-II Station : BigBasket, Bengaluru

Faculty

Name: Smitha Sarma Ranganathan

Student

Name: ADITYA VERMA(2021B1A82997G)

Student Write-up

PS-II Project Title: Associate Product Manager

Short Summary of work done during PS-II : Identified that delivery partners had no cancel option for time-sensitive orders, causing silent 15-min SLA timeouts that burned delivery time and masked root causes in data. Scoped a structured cancellation feature with reason codes and guardrails, reducing rider timeouts by 33%. Shipped a self-serve feature replacing a manual, manager-dependent process, cutting related requests by ~40% in 3 weeks across 5L+ delivery partners.

Tool used (Development tools - H/w, S/w) : Na

Objectives of the project : Reduce friction points in various tasks and provide soln based on them

Major Learning Outcomes : PRD making, task delegation

Details of Papers/patents : Na

Brief Description of working environment, expectations from the company : Good company, helpful peers, great professional working environment

Academic courses relevant to the project : NA

Name: GAURAV GOLCHHA .(2021B2A83135H)

Student Write-up

PS-II Project Title: Optimising search result

Short Summary of work done during PS-II : Nothing much , just redifing in the entire flow via which the whole search is performing right now

Tool used (Development tools - H/w, S/w) : Cursor and inside cursor we used different tools

Objectives of the project : Increase the search quality of the users.

Major Learning Outcomes : Usage of AI with the product

Details of Papers/patents : Nothing

Brief Description of working environment, expectations from the company : It was good and learning environment.

Academic courses relevant to the project : NA

PS-II Station : Biocon Biologics Limited, , Bengaluru

Faculty

Name: Bharathi R .

Student

Name: SUCHETA KARMAKAR(2024H1460134H)

Student Write-up

PS-II Project Title: Comparative Forced Degradation Studies in Biologics: Principles, Applications and Degradation Pathways

Short Summary of work done during PS-II : During my PS-II at Biocon Biologics, I worked on a project titled **"Comparative Forced Degradation Studies in Biologics: Principles, Applications and Degradation Pathways."** The project focused on evaluating and comparing drug substance batches manufactured using the current approved process and a proposed manufacturing process under various forced degradation conditions, including thermal, photo, pH, and oxidative stress. My responsibilities included conducting experiments, preparing and handling samples, generating experimental data, supporting analytical testing, analyzing and interpreting results, and compiling study findings. The degraded samples were evaluated using stability-indicating analytical techniques such as Reverse Phase High Performance Liquid Chromatography (RP-HPLC) and Size Exclusion High Performance Liquid Chromatography (SE-HPLC) to assess critical quality attributes including assay, related substances, high molecular weight protein species (HMWP), and degradation profiles. The study demonstrated comparable degradation behaviour between drug substance batches manufactured using the current approved process and the proposed process under all evaluated stress conditions. Through this project, I gained valuable exposure to biologics development, protein stability assessment, analytical characterization, comparability studies, and industrial research practices. The experience enhanced my technical knowledge, analytical thinking, scientific documentation skills, and understanding of quality and regulatory considerations in the biopharmaceutical industry.

Tool used (Development tools - H/w, S/w) : HPLC (Waters), pH meter, Osmometer, Solo VPE

Objectives of the project : To evaluate the comparability of drug substance batches manufactured using the current approved and proposed processes by subjecting them to temperature, photo, pH, and oxidative stress conditions and assessing their stability, degradation behaviour, and critical quality attributes using stability-indicating analytical techniques.

Major Learning Outcomes : Gained practical experience in forced degradation studies, protein stability assessment, RP-HPLC and SE-HPLC analysis, data interpretation, comparability assessment, scientific documentation, and biopharmaceutical R&D practices while developing a deeper understanding of biologics quality, stability, and regulatory requirements.

Details of Papers/patents : No papers or patents were published or filed as part of the PS-II project. The work contributed to internal technical studies, data generation, analysis, and documentation supporting product stability assessment and process comparability activities within

Brief Description of working environment, expectations from the company : My PS-II experience provided me with the opportunity to work in a professional, collaborative, and highly supportive environment. The workplace encouraged learning, curiosity, and continuous improvement, making it an excellent setting for both personal and professional growth. One of the most positive aspects of the experience was the willingness of colleagues and team members to share their knowledge, provide guidance, and offer help whenever needed. This created a welcoming atmosphere where learning was encouraged and questions were always appreciated.

The organization placed strong emphasis on scientific excellence, quality, teamwork, and integrity. Working on real industry projects allowed me to understand how research, analytical studies, and data-driven decision-making contribute to the development of high-quality biopharmaceutical products. The experience also helped me appreciate the importance of effective communication, collaboration, and attention to detail in a professional setting.

From students and interns, the company expected a willingness to learn, a proactive attitude, professionalism, and a strong sense of responsibility. Technical knowledge provided a foundation, but equally important were qualities such as adaptability, teamwork, problem-solving ability, and commitment to delivering quality work. Overall, the experience was both enriching and rewarding, providing valuable industry exposure while helping me build confidence, technical competence, and a deeper understanding of the biopharmaceutical industry.

Academic courses relevant to the project : • Parenteral Product Development (PPD)

- Advanced Physical Pharmacy (APP)
- Modern Pharmaceutical Analytical Techniques (MPAT)

- Quality Assurance and Regulatory Affairs (QARA)

Name: SUBASREE S(2024H1290002P)

Student Write-up

PS-II Project Title: Molecular biology techniques

Short Summary of work done during PS-II : The internship focused on molecular cloning, genetic engineering, and cell line development. The training successfully bridged comprehensive theoretical knowledge with hands-on industrial bioprocessing application. Theoretical learning covered Chinese Hamster Ovary (CHO) cell biology, diverse cell line engineering methodologies—including targeted editing via Homologous Recombination (HR), CRISPR/Cas9, and Cre-loxP/Flp-FRT systems—and dual metabolic selection markers (DHFR/GS systems). Additionally, the internship provided deep conceptual understanding of high-throughput instrumentation, including cell viability analyzers, automated metabolite trackers, electroporation platforms, single-cell dispensers, and advanced imaging workstations. Practical training and technical assignments involved active participation in upstream cell line development and downstream screening workflows. Responsibilities included shadowing senior bioprocess scientists and assisting with routine laboratory maintenance, such as mammalian cell culture passaging, cryopreservation, and automated cell counting. Core molecular skills were developed in genomic DNA (gDNA) isolation, primer design, Polymerase Chain Reaction (PCR) setup, agarose gel electrophoresis, SDS-PAGE, and Western blotting analysis. Notably, a diagnostic technical assignment was executed using junction-spanning gradient PCR and electrophoretic analysis to successfully screen and identify site-specific HR gene replacement events across approximately 250 single-cell clones. Beyond laboratory protocols, the internship reinforced industry-standard compliance, focusing on strict adherence to Good Laboratory Practices (GLP), aseptic techniques, and electronic Laboratory Notebook (eLN) documentation. Ultimately, this experience provided valuable exposure to a biopharmaceutical R&D ecosystem, equipping the student with the essential competencies required for professional industrial roles.

Tool used (Development tools - H/w, S/w) : Hardware Tools (Instruments) : MaxCyte® Electroporation System, Cytena f.sight™ Single-Cell Dispenser, Solentim (Cell Metric®) Imaging System, Cedex Bio Analyzer, Vi-CELL™ Cell Viability Analyzer, NanoDrop Spectrophotometer, Thermal cycler, Gel Doc &

Objectives of the project : To screen for gene knockout clones

Major Learning Outcomes : Technical Workflow Mastery: Understand and execute core bioprocess stages, including molecular cloning, transfection, pool selection, single-cell sorting, and expansion kinetics.
Instrumentation Competence: Gain hands-on familiarity and operational skills with critical analytical and culture equipment.
Regulatory & Quality Compliance: Master and apply strict industry standards, including Good Laboratory Practices (GLP), Standard Operating Procedures (SOPs), and Good Documentation Practices (GDP).
Professional R&D Integration: Acquire real-world exposure to an industrial biopharmaceutical ecosystem by shadowing senior scientists and assisting in routine laboratory activities.

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : Working Environment
Interconnected Industrial R&D: A fast-paced biopharmaceutical ecosystem linking cell line development, process sciences, and analytical functions.
High-Tech & Automated: A modern laboratory setup utilizing high-throughput, industry-standard instrumentation.
Mentorship-Driven: A supportive, professional environment focused on team collaboration and guidance from senior scientists.
Expectations from the Company
Regulatory Compliance: Strict adherence to Good Laboratory Practices (GLP) and Standard Operating Procedures (SOPs).
Data Integrity: Diligent, precise, and real-time experimental logging using Electronic Lab Notebooks (eLN).
Technical Precision: Flawless execution of molecular workflows and absolute mastery of aseptic techniques.
Data Confidentiality: Uncompromising protection of proprietary experimental data and intellectual property.

Academic courses relevant to the project : BIOG561-ADVANCE
RECOMBINANT
DNA TECHNIQUES,

BIOF418-GENETIC
ENGINEERING
TECHNIQUES,
BIOG642-
EXPERIMENTAL
TECHNIQUES

Name: YASH UDAY KULKARNI(2024H1460148H)

Student Write-up

PS-II Project Title: Impact of Mixing Induced Shear Stress on Physical and Chemical Stability

Short Summary of work done during PS-II : During my PS-II at Biocon Biologics Ltd., I worked on the project entitled “Impact of Mixing Induced Shear Stress on Physical and Chemical Stability” in the Formulation Development department. The study investigated the effect of varying mixing conditions on the stability of monoclonal antibody formulations. Samples were exposed to different mixing speeds to evaluate the impact of shear stress on critical quality attributes. Analytical characterization was performed using Size Exclusion Chromatography (SEC), Ion Exchange Chromatography (IEX), Non-Reducing Capillary Electrophoresis (nr-CE), and viscosity analysis. SEC analysis was used to monitor aggregation and size variants, while IEX was employed to evaluate charge heterogeneity. nr-CE helped assess molecular integrity and fragmentation, and viscosity measurements were performed to study rheological changes. The study demonstrated that increased mixing speeds could influence charge variants and impurity formation, thereby affecting protein stability. The project provided practical exposure to biologics formulation development, analytical characterization techniques, process characterization studies, and critical quality attribute evaluation. Additionally, I gained experience in laboratory documentation, data interpretation, scientific writing, and industrial research practices within a regulated biopharmaceutical environment.

Tool used (Development tools - H/w, S/w) : Weighing Balance pH and Conductivity Meter Waters HPLC System −80°C Freezer Cold Room Centrifuge Viscometer CESI 8000 Instrument

Objectives of the project : The objective of this study was to understand the impact of mixing-induced shear stress on the physical and chemical stability of monoclonal antibodies and to evaluate

the effect of mixing on product homogeneity. The study aimed to determine the influence of varying mixing conditions on critical quality attributes including aggregation, charge variants, molecular integrity, and viscosity.

Major Learning Outcomes : Understanding of monoclonal antibody formulation development.
Knowledge of process characterization studies.
Hands-on exposure to SEC, IEX, nr-CE, and viscosity analysis.
Understanding of critical quality attributes (CQAs).
Experience in analyzing protein stability under stress conditions.
Exposure to biologics manufacturing and formulation development.
Understanding of regulatory concepts related to biologics and biosimilars.
Experience in industrial documentation and analytical interpretation.

Details of Papers/patents : No patents or publications were generated directly from the PS-II project. However, extensive literature review was performed on biologics, biosimilars, process characterization, and monoclonal antibody stability studies.

Brief Description of working environment, expectations from the company : Biocon Biologics provides a highly professional and research-oriented work environment focused on innovation, quality, and scientific excellence. The organization follows strict regulatory and quality standards to ensure product safety and efficacy. Employees and interns are expected to maintain professionalism, integrity, and compliance with Good Laboratory Practices and company guidelines.
The company encourages collaborative learning and provides opportunities to work with advanced analytical instruments and experienced scientists. The work environment emphasizes teamwork, effective communication, documentation practices, and continuous learning.
As an intern, I was expected to demonstrate technical curiosity, maintain proper documentation, follow laboratory safety protocols, and actively participate in project activities. The industrial exposure helped bridge the gap between academic knowledge and practical application in the biopharmaceutical industry.

Academic courses relevant to the project : Pharmaceutical Biotechnology
Biopharmaceutics
Pharmaceutical Analysis
Biopharmaceutical Technology
Pharmaceutical Quality Assurance
Industrial Pharmacy
Protein and Peptide Drug Delivery

Name: SAIPREM GULAB NIHALANI(2024H1530184H)

Student Write-up

PS-II Project Title: Formulation Development of Monoclonal Antibody

Short Summary of work done during PS-II : Worked in the Formulation Development department at Biocon Biologics. Studied biosimilar monoclonal antibody formulation development, preparation of DS and DP formulations, and evaluation of critical quality attributes including pH, osmolality, protein concentration, and purity. Four clones were assessed under different storage conditions. Clone D demonstrated the best stability profile. The project provided exposure to industrial biologics development and analytical characterization.

Tool used (Development tools - H/w, S/w) : Hardware: pH Meter, Osmometer, SoloVPE, SEC-HPLC, Analytical Balance, Magnetic Stirrer. Software: MS Excel, MS Word, MS PowerPoint.

Objectives of the project : Understand formulation development of monoclonal antibodies.| Study factors affecting stability of biosimilar formulations. | Evaluate different mAb clones using analytical techniques.

Major Learning Outcomes : Understanding of biosimilar formulation development.
Exposure to analytical characterization techniques.
Knowledge of stability assessment and clone screening.
Familiarity with GMP and industrial R&D practices.

Details of Papers/patents : No papers or patents generated during the project.

Brief Description of working environment, expectations from the company : A professional and GMP-compliant R&D environment focused on quality, safety, teamwork, and continuous learning. The internship provided exposure to industrial biologics development practices.

Academic courses relevant to the project : Pharmaceutical Biotechnology, Biopharmaceutics,

Pharmaceutical Analysis, Research Methodology, Pharmacology.

Name: TEJAS ASHOK KHOPDE(2024H1460193H)

Student Write-up

PS-II Project Title: OVERVIEW OF THE DEVELOPMENT PROCESS FOR THERAPEUTIC MONOCLONAL ANTIBODIES

Short Summary of work done during PS-II : During my six-month Practice School-II (PS-II) internship at Biocon Biologics in the Formulation Development Laboratory (FDL), I worked on activities related to the formulation development and analytical characterization of biosimilar monoclonal antibodies. The internship provided exposure to various stages of biopharmaceutical product development, including formulation evaluation, stability assessment, and quality characterization. My responsibilities included calibration and operation of analytical instruments such as pH Meter, Digital Osmometer, Solo-VPE, Size-Exclusion Chromatography (SEC), and Cation-Exchange Chromatography (CEX). I performed pH and osmolality measurements of formulation buffers, placebo buffers, process intermediates, and stability samples. I also participated in protein concentration determination using Solo-VPE and assisted in the analysis of protein aggregates and charge variants using SEC and CEX. In addition, I supported stability studies by analyzing samples from different batches and storage conditions, documenting results, and interpreting analytical data. I was involved in buffer preparation, reagent preparation, and maintaining laboratory documentation in accordance with Good Laboratory Practices (GLP). Through this internship, I gained practical knowledge of biosimilar monoclonal antibody development, protein stability, formulation science, and analytical techniques used in the biopharmaceutical industry. The experience enhanced my technical, analytical, and professional skills while bridging the gap between academic learning and industrial application.

Tool used (Development tools - H/w, S/w) : o pH Meter o Digital Osmometer o Solo-VPE o Size-Exclusion Chromatography (SEC) o Cation-Exchange Chromatography (CEX)

Objectives of the project : • To understand the development process of biosimilar monoclonal antibodies. • To gain practical exposure to formulation development activities in the biopharmaceutical industry. •To study the role of formulation components such as buffers, stabilizers,

surfactants, and tonicity-adjusting agents. • To understand pre-formulation studies and stability assessment of protein-based therapeutics. • To perform analytical characterization of biosimilar formulations using industry-standard techniques. • To evaluate critical quality attributes (CQAs) such as pH, osmolality, protein concentration, aggregation, and charge heterogeneity. • To gain hands-on experience with analytical instruments, including pH Meter, Digital Osmometer, Solo-VPE, SEC, and CEX. • To understand regulatory and quality requirements associated with biosimilar product development. • To bridge theoretical pharmaceutical knowledge with practical industrial applications.

Major Learning Outcomes : Gained understanding of biosimilar monoclonal antibody development and formulation strategies.
Learned the importance of critical quality attributes (CQAs) such as pH, osmolality, protein concentration, aggregation, and charge variants.
Acquired hands-on experience with analytical techniques including pH Meter, Digital Osmometer, Solo-VPE, SEC, and CEX.
Developed knowledge of protein stability studies and formulation optimization.
Learned industrial practices related to Good Laboratory Practices (GLP), documentation, and data analysis.
Enhanced problem-solving, teamwork, and communication skills in a biopharmaceutical industry environment.
Bridged the gap between academic concepts and real-world industrial applications in biosimilar product development.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Biocon Biologics was highly professional, collaborative, and focused on quality and innovation. The Formulation Development Laboratory (FDL) provided a structured learning environment where employees and interns worked together to support biosimilar product development. The organization emphasized Good Laboratory Practices (GLP), data integrity, safety, teamwork, and continuous learning. Employees were encouraged to maintain high standards of scientific excellence while adhering to regulatory and quality requirements.
As an intern, I was expected to be punctual, disciplined, and proactive in learning new concepts and techniques. The company expected me to follow laboratory safety procedures, maintain accurate documentation, and perform assigned tasks responsibly. Attention to detail, willingness to learn, teamwork, and effective communication were highly valued. I was also expected to understand the scientific principles behind the experiments, analyze data carefully, and contribute to routine

laboratory activities.

The supportive work culture, guidance from mentors, and exposure to advanced analytical techniques helped me gain valuable industrial experience and develop both technical and professional skills required for a career in the biopharmaceutical industry.

Academic courses relevant to the project : Dosage form design

- Modern pharmaceutical product design
- Quality by Design
- Quality assurance regulatory affair

PS-II Station : BlackRock Services - QAE, Gurgaon

Faculty

Name: Nishit Narang .

Student

Name: SHIVAY GUPTA .(2022A7PS1342H)

Student Write-up

PS-II Project Title: Regression tool

Short Summary of work done during PS-II : Adopting regression tool by different teams, enhancement in the regression tool

Tool used (Development tools - H/w, S/w) : S/w

Objectives of the project : Adopting internal regression tool

Major Learning Outcomes : Back-end

Details of Papers/patents : N/a

Brief Description of working environment, expectations from the company : Great working environment, good team

Academic courses relevant to the project : Oops,dsa

PS-II Station : BlackRock Services - Quant Modelling, AFE, Gurgaon

Faculty

Name: Nishit Narang .

Student

Name: KRISHNA KANT JAIN .(2022AAPS0503H)

Student Write-up

PS-II Project Title: Quant modeling

Short Summary of work done during PS-II : Worked on researching financial domain (CMBS) and building quantitative models for it. Additionally worked on projects for AI integrated analytics dashboards serving a wide range of functions and purposes with embedded AI agents.

Tool used (Development tools - H/w, S/w) : Windsurf, software

Objectives of the project : Worked in financial quant models focused on the commercial mortgage backed securities (CMBS) deals proposed to predict future cash flows and pricing of the bonds and underlying loans

Major Learning Outcomes : Quant modeling, Python, windsurf, agentic ai, financial research

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Very nice

Academic courses relevant to the project : Fin minor

PS-II Station : Board Mastery LLC, Sheridan

Faculty

Name: Arindam Roy .

Student

Name: VIGNESH S .(2022A3PS0688H)

Student Write-up

PS-II Project Title: GROWTH MARKETING AND USER ACQUISITION THROUGH DATA-DRIVEN OUTREACH AND AUTOMATION

Short Summary of work done during PS-II : The major contributions made during the internship include: • Conducted extensive prospect research and database development activities. • Utilized Clay and Apollo for contact discovery, enrichment, and lead management. • Supported email marketing and outreach initiatives targeting potential stakeholders. • Identified and communicated with PR agencies for partnership exploration. • Assisted in developing structured workflows for lead generation and outreach manage- ment. • Contributed to improving data organization and marketing process efficiency. • Supported initiatives aimed at increasing brand visibility and user acquisition opportunities These contributions collectively supported the organization's growth marketing efforts and established a framework for future outreach and business development activities.

Tool used (Development tools - H/w, S/w) : Clay, Apollo, Github, Email Services

Objectives of the project : The Project focuses on growth marketing and user acquisition using digital outreach strategies, data analytics, and workflow automation tools. It involved identifying potential users, executing targeted campaigns optimizing processes to drive engagement and user growth.

Major Learning Outcomes : 1. Understanding of Growth Marketing and User Acquisition Strategies
2. Lead Generation and Prospect Research Methodologies
3. Contact Enrichment and Data Management Techniques
4. Email Marketing and Outreach Campaign Execution
5. Marketing Automation and Workflow Optimization
6. SEO and Backlink Research Fundamentals
7. Data Analysis using Excel and Google Sheets
8. Use of Prospecting Platforms such as Clay and Apollo

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : It was a good experience

Academic courses relevant to the project : Critical Thinking , Basics of Programming

PS-II Station : BorderPlus - Business Analyst, Mumbai

Faculty

Name: Smitha Sarma Ranganathan

Student

Name: DEVASHREE THAKURIA .(2022AAPS0314H)

Student Write-up

PS-II Project Title: PRODUCT AND BUSINESS ANALYSIS FOR AN AI-BASED GERMAN LANGUAGE LEARNING APP TARGETING INTERNATIONALLY TRAINED NURSES

Short Summary of work done during PS-II : During my PS-II, I worked primarily in product and operations, contributing to the development and improvement of a healthcare-focused application. My work involved testing various app features, identifying bugs and usability issues, and coordinating with the tech team to ensure timely resolution. I also worked on product documentation, created PRDs and Jira tickets for new features and improvements, and helped streamline communication between technical and non-technical teams. A significant part of my work involved interacting with app users, particularly nurses, to understand their challenges and gather feedback for improving user experience. I also contributed to user engagement and marketing initiatives by assisting with content creation, email campaigns, and communication strategies aimed at increasing user retention and engagement. Additionally, I worked on data analysis and reporting tasks, including preparing progress reports, tracking user engagement metrics, and organizing information for stakeholders. These responsibilities helped me develop a stronger understanding of product management, user-centric design, cross-functional collaboration, and data-driven decision-making in a professional environment.

Tool used (Development tools - H/w, S/w) : Vscode,Jira,admin dashboards,zoho campaigns,llms

Objectives of the project : The main objectives of the project were to improve the overall functionality, usability, and user experience of the healthcare application while ensuring it effectively met user needs. This included identifying and resolving product issues through testing, enhancing existing features based on user feedback, and supporting the development of new features to improve engagement and learning outcomes. Another key objective was to bridge communication between users, product teams, and technical teams to ensure smooth collaboration and efficient execution. Additionally, the project aimed to analyze user behavior and engagement metrics to support data-driven product decisions and improve overall product performance.

Major Learning Outcomes : The major learning outcomes of my PS-II included gaining practical exposure to product management and understanding how cross-functional teams collaborate in a professional environment. I developed stronger skills in app testing, bug identification, and product documentation through hands-on involvement in feature improvement and quality assurance processes. The experience also enhanced my communication and stakeholder management skills, as I regularly interacted with technical teams, users, and other stakeholders. Additionally, I gained valuable insights into user-centric design, data-driven decision-making, and the importance of balancing technical requirements with user needs to build effective products.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment during my PS-II was collaborative, fast-paced, and highly dynamic. I worked in a cross-functional setup where communication between different teams was a key part of daily operations. The environment encouraged taking ownership, being proactive, and contributing ideas beyond assigned tasks.

There was a strong emphasis on teamwork, problem-solving, and adaptability, as tasks often required coordination with technical teams, product stakeholders, and end users. The company valued clear communication, attention to detail, and the ability to work independently while staying aligned with broader goals.

The expectations from the company included being responsible and accountable for assigned work, maintaining professionalism in communication, and demonstrating a willingness to learn. They also expected me to approach challenges with a solution-oriented mindset, actively participate in discussions, and contribute meaningfully to ongoing projects. Overall, the experience helped me understand the importance of balancing technical knowledge with practical communication and collaboration skills in a professional setting.

Academic courses relevant to the project : Tech in social research

PS-II Station : BorderPlus - Engineering, Bengaluru

Faculty

Name: Sugata Ghosal .

Student

Name: ANKITA BEHERA .(2021B2A83133H)

Student Write-up

PS-II Project Title: PRODUCT ENGINEERING, DATA ANALYSIS, AND FEATURE DEVELOPMENT

Short Summary of work done during PS-II : full spectrum of a product's lifecycle — from backend infrastructure and compliance engineering to user research and content strategy. Played a significant part in identifying workflows for the product team, which was then taken up by tech team

Tool used (Development tools - H/w, S/w) : Github, Pycharm, antigravity, claude, google sheets, docs, remote desktop, teamviewer,

Objectives of the project : Product management, software developer

Major Learning Outcomes : full spectrum of a product's lifecycle — from backend infrastructure and compliance engineering to user research and content strategy.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : I got a lot to learn. Starting from Software development to having significant contribution in feature development and engaging with users.

Academic courses relevant to the project : DSA, DBMS, PM courses

PS-II Station : Bread Financial - Data Governance, Bengaluru

Faculty

Name: Anjani Srikanth Koka .

Student

Name: EDSON GEORGE REBELLO(2021B2A81247G)

Student Write-up

PS-II Project Title: Data governance - Data Quality Analyst

Short Summary of work done during PS-II : Made dashboard and got role of admin in collibra

Tool used (Development tools - H/w, S/w) : Excel, mstr and collibra

Objectives of the project : Make dashboard

Major Learning Outcomes : Learnt data governance

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Very awesome company

Academic courses relevant to the project : Na

PS-II Station : Cadence Design Systems, Bengaluru

Faculty

Name: Sanjay Vidhyadharan .

Student

Name: HARSHVARDHAN MANISH SINGHEE(2022A8PS1235P)

Student Write-up

PS-II Project Title: ACCELERATED EDA WORKFLOWS FOR ROBUST ELECTRONIC SYSTEM DESIGN

Short Summary of work done during PS-II : Role: Application Engineer Intern (Bengaluru) Work Profile & Phases The six-month internship focused on mastering the system design and RTL-to-GDS-II flows across three distinct phases: Phase I (EDA & Package Design): Created a comprehensive design flow to realize the physical PCB and package for the BQ76920 Analog Front-End IC. Phase II (Functional Verification): Transitioned to the System Verification Group. I co-created a verification plan for a programmable Sous Vide controller, personally implementing 8 out of 40 test cases. I executed these tests by transitioning baseline environments into a scalable Universal Verification Methodology (UVM) architecture using Xcelium and SimVision. Phase III (AI Automation): Utilized Cadence's cutting-edge ChipStack AI agent to automate repetitive UVM testbench creation and aggressively minimize manual verification bottlenecks. Key Advice: Master the Core Stack: Focus heavily on acquiring hands-on proficiency in Verilog, SystemVerilog, UVM, and standard Cadence simulation tools. Avoid "Rabbit Holes": Do not get distracted by low-level compilation mechanics or syntax trees early on, as this can derail your timeline. Focus on practical application. Adopt an Industry Mindset: Establish a routine for continuous revision, trust your mentor's guidance completely, and live by the motto: "look to serve, not get served".

Tool used (Development tools - H/w, S/w) : Xcelium, SimVision, Verisium Debug, Allegro PCB Editor, Allegro Advanced Package Designer

Objectives of the project : aiding Cadence achieve better electronic system design by developing optimized tool workflows. Key achievements include configuring an Allegro PCB workflow specifically tailored to handle noisy automotive environments, implementing robust UVM architectures for accelerated functional verification, and evaluating the ChipStack AI agent to deliver further automated and accelerated verification workflows.

Major Learning Outcomes : I learnt how the to:

1. Use EDA tools to design a PCB, specifically for the case of a PCB in a noisy, automotive environment.
2. Accelerated Design Verification using present tools - specialized software, hardware-based acceleration, nascent use of AI for optimizing debugging
3. Outlook for Accelerated verification: increasing role of AI in automating debugging workflows

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The work environment is very friendly. People are very welcoming and willing to lend a helping hand.
However, you too must turn in the work in the set deadlines. Flexibility is given, but then it is expected

also that you will make responsible use of it.

Academic courses relevant to the project : Digital Design, Microelectronics, ADVD (most important), Computer Programming, Electromagnetic Theory

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Name: ADAMYA TRIPATHI .(2022A8PS1302H)

Student Write-up

PS-II Project Title: Sous-Vide Controller ASIC Design & QoR Optimization using Cadence Genus

Short Summary of work done during PS-II : The project focused on the synthesis and Quality of Results (QoR) optimization of the digital portion of a Sous-Vide Controller ASIC using Cadence Genus. The design implements temperature monitoring and heater control functionality required for precision cooking applications. Initially, the RTL design was synthesized using the Cadence Rapid Adoption Kit (RAK) environment to obtain baseline QoR metrics. Timing, power, and area reports were generated and analyzed to establish a reference implementation. Subsequently, frequency scaling experiments were performed by reducing the clock period from 1000 ns to 500 ns. This increased the operating frequency and enabled analysis of timing robustness and power-performance trade-offs. The impact of higher operating frequency on critical path slack and dynamic power consumption was evaluated through detailed QoR reports. To address the increase in power consumption, clock-gating techniques using Integrated Clock Gating (ICG) cells were implemented. The design was re-synthesized and compared against previous configurations. The results demonstrated that frequency scaling improved performance capability but significantly increased dynamic power consumption. Clock gating effectively reduced dynamic power while maintaining timing closure. The project provided practical exposure to industrial ASIC synthesis methodologies and highlighted the importance of balancing power, performance, and area in modern digital design.

Tool used (Development tools - H/w, S/w) : Software Tools: • Cadence Genus Synthesis Solution • Linux Operating System • TCL Scripting Environment • Cadence Rapid Adoption Kit (RAK) Input Design Files: • SystemVerilog RTL files • SDC timing constraint files • Liberty (.lib/.ldb) technology librari

Objectives of the project : • To understand and implement the RTL-to-Gate synthesis flow using

Cadence Genus on a practical digital design. • To analyze and optimize Quality of Results (QoR) metrics such as timing, power, and area. • To study the impact of timing constraints and frequency scaling on design performance. • To apply low-power optimization techniques such as clock gating and evaluate their effectiveness.

Major Learning Outcomes : • Gained hands-on experience with Cadence Genus synthesis flow and industry-standard ASIC design methodologies.
• Learned RTL elaboration, technology mapping, logic optimization, and timing constraint handling.
• Developed understanding of QoR analysis, including timing slack, area utilization, and power consumption.
• Understood the trade-offs between performance and power through frequency scaling experiments.
• Learned implementation and analysis of clock-gating based power optimization techniques.
• Improved understanding of ASIC design flow and synthesis-level optimization strategies.

Details of Papers/patents : Papers Published: Nil
Patents Filed/Published: Nil
Research Publications: Nil

Brief Description of working environment, expectations from the company : The Practice School-II station at Cadence Design Systems provided exposure to an industry-oriented ASIC design environment. The organization follows a structured workflow involving design implementation, synthesis, verification, and physical design using industry-standard Electronic Design Automation (EDA) tools.
The working environment encouraged independent learning, problem solving, and technical exploration. Regular interactions with mentors and technical experts helped in understanding practical challenges encountered during digital implementation and signoff flows. Access to Cadence training material, Rapid Adoption Kits (RAKs), and tool documentation enabled systematic learning of synthesis methodologies.
The company expected interns to understand the assigned design flow, complete technical tasks independently, document observations, and present results in a professional manner. Emphasis was placed on analytical thinking, debugging skills, understanding QoR metrics, and interpreting timing, power, and area reports. The experience provided valuable insight into industrial ASIC design practices and professional engineering workflows.

Academic courses relevant to the project : • Analog and Digital VLSI Design • Microelectronic Circuits • Electronic Devices • Semiconductor Fabrication Technology • Digital Design • Digital Signal Processing (fundamental digital concepts) • Computer Architecture (digital system understanding)

PS-II Station : Carrier Technologies India Limited - AIML, Analytics, Hyderabad

Faculty

Name: Garima Jindal

Student

Name: ABDUL RAHMAN YAKOOB .(2022A7PS0021H)

Student Write-up

PS-II Project Title: PE CDT Cloud

Short Summary of work done during PS-II : During PS-II at Carrier Technologies India Limited, I worked on PE CDT Cloud, a cloud-native diagnostic platform developed to replace a legacy standalone CAN Diagnostic Tool. My work involved contributing to the frontend using React and TypeScript, improving the UI based on Figma designs, and ensuring responsiveness across devices. I also worked on understanding and integrating the real-time telemetry flow, where data from an on-device worker service is sent to the backend, stored in Amazon DocumentDB, and pushed to the frontend using ASP.NET Core SignalR. In addition, I contributed to historical telemetry visualization using Chart.js and studied performance issues related to rendering sparse long-range time-series data. Midway through the internship, I shifted focus to PE Firmware Hub, where I developed key parts of the App Access Management workflow. This included implementing request approval/rejection flows, group selection through a hierarchical structure, role and license assignment, and coordination with two backend systems for user provisioning. Overall, the internship gave me practical exposure to cloud migration, full stack development, system integration, and real-world industrial software workflows.

Tool used (Development tools - H/w, S/w) : Hardware: Laptop/PC, CAN-connected diagnostic setup, PCAN interface. Software/Development Tools: React, TypeScript, Material UI, Chart.js,

ASP.NET Core (C#), SignalR, Axios, Git, AWS S3, AWS CloudFront, AWS Elastic Beanstalk, Amazon DocumentDB, Figma.

Objectives of the project : The main objectives of the project were to transform the legacy monolithic CAN Diagnostic Tool into a cloud-native application, centralize telemetry storage, enable real-time and historical data visualization, improve the user interface and user experience, and support scalable deployment on AWS. An additional objective was to contribute to PE Firmware Hub by developing an App Access Management workflow for user provisioning, approval/rejection of access requests, and role/license/group assignment.

Major Learning Outcomes : I learned how to redesign a legacy monolithic application into a decoupled cloud-native system with separate frontend, backend, and database layers. I gained hands-on experience in React, TypeScript, ASP.NET Core, SignalR, and AWS services such as S3, CloudFront, Elastic Beanstalk, and DocumentDB. I also learned how to implement real-time communication, historical data visualization, JWT-based authentication, and role-based access control. In addition, I understood practical engineering trade-offs involving performance, scalability, and integration across multiple backend systems.

Details of Papers/patents : No papers or patents were published as part of this PS-II work.

Brief Description of working environment, expectations from the company : The working environment at Carrier Technologies India Limited was professional, structured, and highly supportive. I worked as part of a development team under the guidance of my manager, mentor, and team members, who regularly reviewed progress, clarified requirements, and provided technical direction. The work culture encouraged learning, accountability, and practical problem solving. Expectations from the company included understanding the business context of refrigeration diagnostics, adapting to existing development workflows, contributing effectively to real project modules, and maintaining code quality and professional discipline. I was expected to learn the technology stack quickly, participate in implementation tasks independently, and communicate progress clearly. The company also provided exposure to industrial software practices such as cloud migration, role-based product development, and integration with internal enterprise systems. Overall, the environment helped me bridge the gap between academic knowledge and real-world software engineering practice.

Academic courses relevant to the project : Object Oriented Programming, Data Structures and Algorithms, Database Systems, Operating Systems, Computer Networks, Software Engineering, Web Development, Cloud Computing, Distributed Systems, and Human-Computer Interaction.

Name: DEVANSH SHARMA(2021B4AA2636G)

Student Write-up

PS-II Project Title: AI for Requirements - Standalone tool

Short Summary of work done during PS-II : During my PS-II internship at Carrier Technologies India (AIML & Analytics), I worked on an AI-assisted requirements engineering framework aimed at improving requirement analysis, diagram generation, document processing, and MBSE workflow automation. My work involved developing backend functionalities in Python for processing requirements, generating UML and SysML diagrams using PlantUML and Mermaid, and validating generated outputs. I contributed to the implementation of a document-processing pipeline that converts PDF and Word documents into Markdown, performs content chunking and validation, and stores information in a FAISS vector database for semantic retrieval. I also worked on Jira integration using APIs to extract and update requirement-related information from stories and sub-tasks. Additionally, I developed features for generating IBM Rhapsody-compatible XMI code from diagram descriptions, enabling integration with professional MBSE tools. The project also included AI-assisted generation of system-level and software-level requirements using contextual information from documents, standards, and user inputs while maintaining traceability to source documents. Through this work, I gained practical experience in AI applications, requirements engineering, Python development, API integration, document processing, semantic search, model-based systems engineering, debugging, testing, and software deployment practices.

Tool used (Development tools - H/w, S/w) : LLM, Langchain, Postman, API, Python

Objectives of the project : To reduce time for any tasks which involves reading something from a pdf/word and develop a tool hitch helps company employee to do these tasks fast

Major Learning Outcomes : Using LLM models

Details of Papers/patents : Not applicable

Brief Description of working environment, expectations from the company : The working

environment at Carrier Technologies India was professional, collaborative, and learning-oriented. The AIML & Analytics team encouraged innovation, problem-solving, and independent thinking while providing guidance whenever required. Team members were approachable, and regular discussions helped in understanding project requirements, resolving technical challenges, and tracking progress. The company expected interns to take ownership of assigned tasks, learn new technologies quickly, communicate effectively, and deliver high-quality work within deadlines. Interns were encouraged to explore solutions independently, perform thorough testing and validation, and actively contribute to project discussions. Attention to detail, continuous learning, and a proactive attitude were highly valued.

During my internship, I worked on an AI-assisted requirements engineering framework involving requirement analysis, diagram generation, document processing, Jira integration, and MBSE workflow automation. The organization provided exposure to real-world engineering problems, modern development practices, API integrations, cloud deployment concepts, and AI-based automation. Overall, the experience helped me strengthen both my technical skills and professional competencies while working in an industry environment.

Academic courses relevant to the project : • Object Oriented Programming (OOP)
• Data Structures and Algorithms
• Database Systems
• Software Engineering
• Artificial Intelligence / Machine Learning
• Natural Language Processing (concepts used in requirement analysis)
• Computer Programming and Py

Name: HARDIK RATHI(2022A3PS1232P)

Student Write-up

PS-II Project Title: Development of an AI-Based Intuitive GUI Tool for Developer Testing and Automated GTest Generation

Short Summary of work done during PS-II : During my six-month PS-II internship at Carrier Technologies India Ltd., I developed an AI-assisted desktop GUI application to streamline the

developer testing workflow for embedded firmware projects. The application integrated the complete testing pipeline—from compilation and execution to report generation, code coverage analysis, and documentation—into a single interface. The tool was built in Python using Tkinter and integrated industry-standard tools including CMake, Ninja, GoogleTest, gcovr, and Doxygen. I implemented automation features such as automatic CMake target resolution, source-under-test detection, browse-based test registration, Excel-backed data management, and one-click execution of the complete testing pipeline. I also designed a custom HTML code coverage reporting engine, automated documentation generation, and implemented several enhancements to improve usability and reliability. Additionally, I explored AI-assisted unit test generation using Carrier's Unit Test Generator (UTG), evaluated its integration with existing embedded firmware projects, and documented the associated workflows and challenges. The project significantly reduced manual configuration, improved developer productivity, and established a scalable testing framework that can be extended with future AI capabilities and additional automation features

Tool used (Development tools - H/w, S/w) : Software Python Tkinter Embedded C/C++ GoogleTest (GTest) CMake Ninja Build gcovr Doxygen Git Microsoft Excel (backend database) Visual Studio Code Windows

Objectives of the project : Develop a desktop-based GUI tool to simplify embedded firmware developer testing. Automate the complete unit testing workflow including compilation, execution, reporting, code coverage, and documentation.

Major Learning Outcomes : Developed an industrial-scale Python automation desktop application.
Learned embedded firmware unit testing using GoogleTest.
Gained practical experience with CMake, Ninja, build systems, and software compilation workflows.
Understood code coverage generation and analysis using gcovr.
Worked with Doxygen for automated documentation generation.
Designed modular and scalable software architectures.
Implemented workflow automation, multi-stage pipelines, and background task execution.
Explored AI-assisted unit test generation and its practical challenges.
Improved debugging, software integration, and problem-solving skills in a production codebase.
Learned software engineering practices such as version control, modularity, and maintainable code design.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Carrier

Technologies India Ltd. provided a professional and collaborative software development environment within the Software & Controls Centre of Excellence. Interns worked closely with experienced architects and engineering teams on real industrial projects rather than isolated academic assignments.

The work emphasized software quality, modular design, testing, automation, debugging, and maintainable coding practices. Regular discussions with mentors, design reviews, and iterative feedback helped guide project development and encouraged independent problem-solving.

Students are expected to quickly learn unfamiliar technologies, understand existing codebases, communicate effectively with mentors, and take ownership of assigned modules. Strong programming fundamentals, willingness to debug complex issues, and the ability to work independently are highly valued. Familiarity with Python, C/C++, software testing concepts, and basic build systems is advantageous, although many domain-specific concepts are learned during the internship.

Overall, the internship provides excellent exposure to industrial software engineering workflows, embedded firmware testing, automation, and collaborative product development, making it particularly suitable for students interested in embedded systems, software engineering, or test automation.

Academic courses relevant to the project : Microprocessors & Interfacing
Computer Programming
Digital Design
Embedded Systems
Computer Architecture
Object Oriented Programming (OOP)
Data Structures & Algorithms

Name: PRABHLEEN KAUR(2022A8PS0596G)

Student Write-up

PS-II Project Title: Data-Driven Modelling of Faults in HVAC Systems

Short Summary of work done during PS-II : During my Practice School-II at Carrier Technologies India, I worked on multiple research and development projects focused on applying Artificial Intelligence and Machine Learning to HVAC systems. Initially, I developed an embedded audio anomaly detection solution for predictive maintenance by deploying machine learning models on

STM32 microcontrollers using TinyML techniques. Subsequently, I investigated Deep Kalman Filter (DKF)-based transfer learning methods for physics-preserving chiller fault detection and virtual sensing, involving literature review, model development, data preprocessing, and performance evaluation on real-world datasets. I also worked on data-driven cooling tower performance prediction using time-series forecasting techniques. In addition to technical research, I contributed to automation tasks by developing scripts for multilingual HTML translation using AWS Bedrock and collaborated on internal AI tools to improve team productivity. Throughout the internship, I gained hands-on experience with embedded AI, data analytics, deep learning, model optimization, and industrial software development while documenting results through technical reports, presentations, and an invention disclosure.

Tool used (Development tools - H/w, S/w) : Hardware: STM32 Microcontroller Development Board, Laptop/Workstation. Software: Python, TensorFlow, TensorFlow Lite (TFLite), STM32CubeIDE, STM32CubeMX, VS Code, Git/GitHub, Tera Term, NanoEdge AI Studio, Microsoft 365 Copilot, AWS Bedrock, Microsoft Po

Objectives of the project : To develop and investigate data-driven methods for fault detection and diagnostics in HVAC systems by implementing embedded AI-based anomaly detection solutions, exploring advanced Deep Kalman Filter techniques for state estimation, and studying predictive models for cooling tower performance to improve system reliability, efficiency, and predictive maintenance.

Major Learning Outcomes : Gained hands-on experience in developing AI-based solutions for HVAC fault detection and predictive maintenance using embedded systems and machine learning. Enhanced skills in data analysis, model development, edge AI deployment, and advanced state estimation techniques.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Carrier Technologies India provided a collaborative and professional working environment that encouraged continuous learning and innovation. The organization offered flexible working hours, enabling effective work-life balance while ensuring timely completion of project milestones. Daily stand-up meetings with the team and mentor facilitated regular progress updates, technical discussions, and prompt resolution of challenges. Team members were approachable and supportive, fostering a culture of knowledge sharing and collaboration.

Academic courses relevant to the project : Artificial Intelligence, Machine Learning, Probability and Statistics

PS-II Station : Carrier Technologies India Limited - Electrical COE, Hyderabad

Faculty

Name: Gopalakrishnan Venkiteswaran .

Student

Name: VAISHAK BHAT(2024H1410073H)

Student Write-up

PS-II Project Title: 1. fea of tubesheet in evaporator. 2. Oscillating plate FSI. 3. Reed valve FSI in rotary compressor

Short Summary of work done during PS-II : Refer above

Tool used (Development tools - H/w, S/w) : Ansys

Objectives of the project : Perform fea and cfd simulation

Major Learning Outcomes : Workflow

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Good

Academic courses relevant to the project : All

PS-II Station : CEG Limited, Jaipur Head Office, Jaipur

Faculty

Name: Dipendu Bhunia .

Student

Name: RAJ KUMAR SANWARIYA(2024H1300049P)

Student Write-up

PS-II Project Title: Ahmedabad Rajkot Greenfield expressway

Short Summary of work done during PS-II : The role include the design of roadway and suggestions for Alternative alignment and network study and Analysis for calculation of Diverted traffic

Tool used (Development tools - H/w, S/w) : Autodesk Civil 3D, VISUM Modeling, QGIS

Objectives of the project : Improve connection between Ahmedabad and Rajkot as the traffic is increasing

Major Learning Outcomes : Hand on experience in software like Autodesk Civil 3D and QGIS and got industrial exposure

Details of Papers/patents : No

Brief Description of working environment, expectations from the company : Everyone is friends

Academic courses relevant to the project : Transportation engineering

PS-II Station : Celestica Electronics (M) Sdn Bhd, Johor

Faculty

Name: Benu Madhab Gedam

Student

Name: GAUTAM RAMAN(2022A4PS0625G)

Student Write-up

PS-II Project Title: Manufacturing Analytics, RPA Workflows, and Deterministic Enterprise AI Diagnostic Systems

Short Summary of work done during PS-II : Worked on automation and analytics projects within the SMT manufacturing environment. Developed RPA workflows for automated data extraction and reporting, reducing manual effort and improving data availability. Created Power BI dashboards for real-time monitoring of KPIs such as yield, throughput, downtime, and defect trends. Developed a retrieval-grounded AI diagnostic system to support engineering troubleshooting and knowledge retrieval. Participated in Kaizen and continuous improvement initiatives, supporting cost reduction and process optimization activities. Also assisted engineering teams in defect analysis, root cause investigation, and manufacturing data analytics.

Tool used (Development tools - H/w, S/w) : Microsoft Power BI, Python, SQL Databases, Gemini Enterprise, Microsoft Excel, RPA Tools, Manufacturing Execution Systems (MES)

Objectives of the project : Develop automated data pipelines, real-time manufacturing dashboards, and AI-assisted diagnostic tools to improve production visibility, troubleshooting efficiency, and process optimization.

Major Learning Outcomes : Developed RPA workflows, Power BI dashboards, manufacturing analytics skills, AI-assisted troubleshooting systems, process improvement methodologies, and cross-functional collaboration experience.

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : Worked in a high-volume electronics manufacturing environment focused on SMT and PCBA production. The role involved collaboration with process, quality, manufacturing, and engineering teams. Expectations included identifying automation opportunities, developing analytical solutions, supporting continuous improvement initiatives, and delivering data-driven insights to improve operational efficiency and manufacturing performance.

Academic courses relevant to the project : Manufacturing Management.

PS-II Station : Centre for DNA Fingerprinting & Diagnostics, Hyderabad

Faculty

Name: Bharathi R .

Student

Name: VARSHA S(2024H1290176H)

Student Write-up

PS-II Project Title: IDENTIFICATION OF APPROVED DRUG CANDIDATES TARGETING TAF1IN HIV LATENCY VIA COMPUTATIONAL REPURPOSING

Short Summary of work done during PS-II : During the PS-II project, an integrated computational workflow was employed to identify potential repurposed drug candidates targeting TATA-box Binding Protein Associated Factor 1 (TAF1), a host protein associated with the regulation of HIV latency. The study commenced with the preparation of the TAF1 crystal structure (PDB ID: 5I29), followed by the compilation of FDA-approved compounds from publicly accessible chemical databases. Drug-likeness screening based on Lipinski's Rule of Five was performed to obtain compounds with favorable pharmaceutical properties. The filtered compounds underwent structure-based virtual

screening and molecular docking using the CDOCKER protocol in BIOVIA Discovery Studio. Binding affinities and protein–ligand interactions were analyzed to identify compounds exhibiting strong interactions with key active-site residues. The most promising candidates were subsequently evaluated for pharmacokinetic characteristics through ADMET prediction and safety profiling using TOPKAT toxicity models. Based on these computational assessments, Glibenclamide, Nisoldipine, and Labetalol were shortlisted for further investigation. Molecular dynamics simulations were then conducted to examine the structural stability and dynamic behavior of the protein–ligand complexes under simulated physiological conditions. RMSD and RMSF analyses were used to evaluate conformational stability and residue flexibility throughout the simulation. The project provided practical experience in computational drug discovery and demonstrated the effectiveness of drug repurposing strategies for identifying potential TAF1 inhibitors. The findings establish a computational foundation for future experimental validation and contribute to the ongoing search for novel therapeutic approaches to manage HIV latency.

Tool used (Development tools - H/w, S/w) : Hardware: Windows-based desktop/laptop (Intel Core processor, 8–16 GB RAM). Software: BIOVIA Discovery Studio 2021, BIOVIA Discovery Studio Simulation Module,Microsoft Word, Microsoft Excel. Databases: Protein Data Bank (PDB), PubChem, ChEMBL, DrugBank,

Objectives of the project : To retrieve and prepare the target protein. ➢ Curate and prepare ligand datasets. ➢ To Evaluate drug-likeness. ➢ Perform virtual screening and molecular docking. ➢ Analyze protein–ligand 3D interactions. ➢ Assess pharmacokinetic and toxicity profiles. ➢ Validate complex stability through molecular dynamics simulation

Major Learning Outcomes : 1.Gained practical experience in computational drug repurposing, including virtual screening, molecular docking, and protein–ligand interaction analysis using BIOVIA Discovery Studio.

2.Developed expertise in evaluating drug-likeness, ADMET properties, TOPKAT toxicity, and molecular dynamics simulation to assess the stability and therapeutic potential of candidate molecules.

3.Enhanced understanding of HIV latency mechanisms, the role of TAF1 as a therapeutic target, and the application of structure-based drug discovery approaches in identifying potential repurposed drugs.

4.Hands on expertise in Plasmid isolation and Transformation of Bacterial cells.

Details of Papers/patents : No research paper has been published or patent filed based on this

project as of the date of submission. The outcomes of the study are intended to serve as a foundation for future experimental validation and subsequent scientific publication.

Brief Description of working environment, expectations from the company : The PS-II internship was carried out at the Centre for DNA Fingerprinting and Diagnostics (CDFD), Hyderabad, in a research-focused environment that emphasized scientific excellence, innovation, and interdisciplinary collaboration. The laboratory provided access to advanced computational facilities, scientific databases, and specialized software required for structure-based drug discovery and molecular modeling. The research environment encouraged independent learning while offering continuous guidance from the Principal Investigator, research scholars, and laboratory staff. Regular discussions, progress reviews, and scientific interactions fostered critical thinking and strengthened the ability to interpret computational results systematically.

The internship provided an opportunity to gain practical experience in computational drug repurposing, molecular docking, protein–ligand interaction analysis, ADMET prediction, toxicity assessment, and molecular dynamics simulation. The laboratory maintained high standards of scientific integrity, reproducibility, and documentation, enabling the development of a disciplined and methodical approach to research.

The expectations from CDFD included active participation in the assigned research project, timely completion of experimental and computational tasks, independent review of scientific literature, and accurate interpretation of research findings. Interns were also encouraged to develop analytical thinking, problem-solving ability, scientific writing, and presentation skills while adhering to ethical research practices. Overall, the internship at CDFD provided valuable exposure to computational biology and drug discovery research, significantly enhancing both technical competence and research aptitude for future academic and professional pursuits.

Academic courses relevant to the project : The knowledge acquired through courses such as Molecular Biology, Biochemistry, Microbiology,Bioinformatics, Computational Biology,Drug Discovery and Development, Molecular Modeling, Biostatistics, and Research Methodology provided the theoretical foundat

Name: KAMLIKAR SAIKANTH(2024H1530302P)

Student Write-up

PS-II Project Title: Development of Genomic Resources for Spice Crops to Accelerate Molecular Breeding and Varietal Improvement

Short Summary of work done during PS-II : During my PS-II at CDFD Hyderabad, I worked on the project titled “Development of Genomic Resources for Spice Crops to Accelerate Molecular Breeding and Varietal Improvement.” The work mainly focused on collecting, organizing, and integrating genomic resources for six important spice crops: Capsicum annuum, Coriandrum sativum, Zingiber officinale, Curcuma longa, Vanilla planifolia, and Apium graveolens. The project involved collection of genome data, annotation files, SSR marker information, primer details, GO terms, pathway-related information, and gene evidence. These datasets were processed and arranged in a structured database using MySQL. A web-based platform named Spice Genomic Resource Database was developed to allow users to search and access crop-specific genomic information. The database included modules such as Species, SSR Explorer, Primer Explorer, Gene Evidence Explorer, GO Dashboard, Annotation Explorer, Statistics, Genome Browser, and Crop Comparison. Through this work, I gained practical exposure to bioinformatics, database development, Linux commands, Python-based backend development, and web interface design. The project helped me understand how genomic resources can support molecular breeding, marker-assisted selection, trait discovery, and varietal improvement in spice crops.

Tool used (Development tools - H/w, S/w) : Hardware: Desktop workstation/computer system Operating System: Linux/Ubuntu Software and tools: Python, FastAPI, MySQL, HTML, CSS, JavaScript, Chart.js, Uvicorn server, GitHub basics, NCBI genome resources, genome annotation files, SSR and primer dataset

Objectives of the project : The main objective of the project was to develop genomic resources for selected spice crops and organize them in a structured database format. The project aimed to collect genome, annotation, SSR marker, primer, gene evidence, GO annotation, and pathway-related information for important spice crops. Another objective was to develop a user-friendly web-based genomic resource platform that can help researchers access crop-specific genomic data, molecular markers, and functional annotation information for future breeding and varietal improvement studies

Major Learning Outcomes : During PS-II, I learned the basics of Linux, Python, MySQL, FastAPI, HTML, and bioinformatics data handling. I understood how genome files, GFF annotation files, CDS files, protein files, SSR markers, primers, GO terms, and gene evidence are collected, processed, and organized. I also learned how to design a biological database, integrate backend and frontend components, and present genomic information in a user-friendly web interface. This project helped

me understand the practical application of computational genomics in crop improvement and molecular breeding.

Details of Papers/patents : No patent was filed during the PS-II period. The project work is suitable for future manuscript preparation related to development of genomic resources and a web-based database for spice crops

Brief Description of working environment, expectations from the company : The working environment at CDFD Hyderabad was research-oriented, disciplined, and focused on scientific learning. The Laboratory of Genome Informatics provided good exposure to computational biology, genomics, and bioinformatics-based research. The work involved regular learning, data collection, analysis, database development, and discussion of project progress with the mentor.
The expectations from the organization were to understand the assigned project, learn the required technical skills, complete the given tasks on time, and maintain proper documentation of the work. Since my background is M.Pharm Pharmacology, the initial phase involved learning Linux, Python, database basics, and bioinformatics concepts. Gradually, I was able to apply these skills in developing the Spice Genomic Resource Database.
The experience helped me improve both technical and professional skills. I learned how to work in a research laboratory environment, how to solve problems step by step, and how to communicate project progress clearly. Overall, the PS-II experience at CDFD was highly useful for understanding interdisciplinary research involving life sciences, genomics, and computational tools.

Academic courses relevant to the project : Pharmacology, Molecular Biology, Biotechnology, Bioinformatics, Genomics, Research Methodology, Biostatistics, Computer Applications in Pharmaceutical Sciences

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Name: PRANJALI INDIAN(2024H1530294P)

Student Write-up

PS-II Project Title: PlantGeneAtlas: An AI-Enabled Knowledgebase of Experimentally Validated Plant Genes for Trait Discovery and Genomic Engineering

Short Summary of work done during PS-II : The project began with the collection of raw genomic

and biological data for 11 species using Python-based web scraping techniques. Challenges encountered during data retrieval were identified and resolved through script optimization and data validation procedures. Subsequently, genome sequences, coding sequences (CDS), proteome datasets, and corresponding GFF3 annotation files for all 11 species were downloaded from public biological repositories. These datasets were processed and mapped with GFF3 annotations to generate refined and standardized genomic datasets. The refined datasets were organized into a structured SQLite database. Database schema design, data normalization, indexing, and query optimization were performed to enable efficient storage and retrieval of genomic information. A full-stack web application was then developed to host the database and provide user-friendly access to genomic data. The platform was enhanced by integrating advanced bioinformatics tools including: • Multiple Sequence Alignment (MSA) • Phylogenetic Tree Construction and Analysis • MEME Suite for Motif Discovery • Pathway Enrichment Analysis • BLAST Sequence Similarity Search • AI-Powered Search Chatbot • Email-based User Query System • Google Maps-based Visitor Tracking and User Analytics Through this project, extensive knowledge was gained in bioinformatics data acquisition, genome annotation processing, comparative genomics, database design, SQL management, backend and frontend web development, integration of computational biology tools, deployment of scientific databases, and AI-assisted biological data exploration.

Tool used (Development tools - H/w, S/w) : SQLITE, PYTHON, CODEX, LINUX

Objectives of the project : to make a web application which is useful to users about the information of cloned and categorized genes

Major Learning Outcomes : Python and SQL and how to make a web application as well as learning of linux environment

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The expected working environment is a research-oriented, innovative, and collaborative workplace that encourages continuous learning, scientific exploration, and the application of advanced technologies to solve real-world problems. I look forward to being part of an organization that promotes teamwork, knowledge sharing, ethical research practices, and opportunities to work on challenging projects involving data analysis, computational biology, artificial intelligence, and technology-driven solutions.
From the company, I expect a supportive environment that provides opportunities for professional growth, skill enhancement, and practical exposure to industry standards. I value organizations that encourage employees to take initiative, contribute innovative ideas, and develop expertise through

hands-on experience, mentorship, and collaborative projects.
I seek a workplace where my technical skills in bioinformatics, data analytics, database development, programming, and scientific research can be effectively utilized to contribute to organizational goals. I also expect access to modern tools, resources, and learning opportunities that help improve my capabilities and enable meaningful contributions to research, development, and innovation.
Overall, I aim to work in an environment that values dedication, adaptability, creativity, and continuous improvement while allowing me to contribute to impactful projects and grow as a professional.

Academic courses relevant to the project : No Courses

Name: BHARAT BABULAL RATHOD(2024H1460150H)

Student Write-up

PS-II Project Title: A Hybrid Intelligent Framework for Automated Functional Annotation and Biological Narrative Generation

Short Summary of work done during PS-II : During PS-II at CDFD, I developed ProNarrator-AI, a web-based platform that automates protein functional annotation by integrating DIAMOND, UniProt, InterPro, eggNOG, and AI-based interpretation. The platform processes protein sequences, generates biological insights, and provides downloadable reports through an easy-to-use interface.

Tool used (Development tools - H/w, S/w) : Hardware: Intel Core i5/i7 PC with 8 GB RAM; Software: Python, Flask, HTML, CSS, JavaScript, Biopython, DIAMOND, UniProt API, InterPro, eggNOG, AHRD, Git, VS Code, and ReportLab.

Objectives of the project : To develop a web-based platform for automated protein functional annotation. To integrate multiple bioinformatics resources into a single framework. To generate AI-assisted biological interpretations of protein sequences. To simplify protein analysis through automated report generation. To improve the accessibility and efficiency of protein annotation for researchers.

Major Learning Outcomes : Gained hands-on experience in bioinformatics, protein annotation,

Python and Flask development, AI integration, biological databases, software design, research methodology, and scientific documentation.

Details of Papers/patents : No papers or patents were published or filed during the Practice School-II period.

Brief Description of working environment, expectations from the company : CDFD provided a collaborative and research-oriented environment where I worked closely with experienced researchers, gained practical exposure to bioinformatics, and improved my technical, analytical, and research skills through mentorship and teamwork.

Academic courses relevant to the project : Bioinformatics, Pharmaceutical Biotechnology, Molecular Biology, Computer Applications in Pharmacy, Research Methodology, and Python Programming.

Name: B PRIYANKA BHAVIKATTI(2024H1290172H)

Student Write-up

PS-II Project Title: IDENTIFICATION OF GENETIC VARIANTS AND SANGER SEGREGATION ANALYSIS

Short Summary of work done during PS-II : During my PS-II internship, I worked on the identification and validation of clinically relevant genetic variants using Whole Exome Sequencing (WES) data. The project combined bioinformatics analysis with molecular biology techniques to identify potential disease-causing variants and experimentally validate selected candidates. The bioinformatics workflow involved variant annotation, filtering, and prioritization based on functional impact, population frequency, pathogenicity prediction scores, Human Phenotype Ontology (HPO)-based phenotype correlation, and OMIM gene–disease associations. Candidate variants were shortlisted for further validation. The laboratory work included primer design, genomic DNA isolation, DNA quantification, primer standardization, PCR amplification, agarose gel electrophoresis, gel purification, and Sanger sequencing. Sequencing chromatograms in ABI (.ab1) format were analyzed using FinchTV to confirm the presence of the selected genetic variants. This integrated workflow demonstrated the importance of combining computational genomics with molecular validation for

accurate variant identification. The internship provided hands-on experience in genomic data analysis, molecular biology techniques, and sequence interpretation while enhancing my understanding of genetic diagnosis, inherited disorders, and precision medicine. The project also strengthened my skills in variant interpretation, experimental validation, and the practical application of next-generation sequencing technologies in clinical genomics.

Tool used (Development tools - H/w, S/w) : OMIM, NCBI, Primer-BLAST, OligoCalc, FinchTV, Human Phenotype Ontology (HPO), and Whole Exome Sequencing datasets.

Objectives of the project : To identify and prioritize clinically relevant genetic variants from Whole Exome Sequencing (WES) data using bioinformatics tools and databases. To analyze and interpret candidate variants based on functional annotation, phenotype correlation, and gene–disease associations. To validate selected genetic variants using molecular biology techniques, including PCR amplification and Sanger sequencing. To integrate bioinformatics and laboratory approaches for accurate variant detection and support genetic diagnosis in precision medicine.

Major Learning Outcomes : Tools and Databases: OMIM, NCBI, Primer-BLAST, OligoCalc, FinchTV, Human Phenotype Ontology (HPO), and Whole Exome Sequencing datasets.
Laboratory Techniques: DNA Isolation using Magnetic Bead Method, NanoDrop Quantification, Primer Design and Standardization, PCR, Agarose Gel Electrophoresis, PCR Product Purification, Gel Extraction, Sanger Sequencing, and Variant Validation.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment at BRIC–Centre for DNA Fingerprinting and Diagnostics (CDFD) was highly professional, collaborative, and conducive to learning. The organization maintained a positive work culture where mentors and colleagues were approachable, supportive, and encouraged knowledge sharing. I was given the opportunity to work in both bioinformatics and molecular biology laboratories, which provided valuable hands-on exposure to advanced genomic technologies and experimental techniques.
The internship offered an excellent balance of theoretical understanding and practical application. Regular guidance from experienced scientists helped me strengthen my technical skills in genomic data analysis, variant interpretation, PCR, Sanger sequencing, and other molecular biology techniques. The well-equipped laboratory facilities and structured workflow enabled me to gain confidence in handling research-oriented tasks independently.
I expect the organization to continue providing similar opportunities for interns to work on real-world

clinical genomics projects, interact with experts, and learn emerging technologies. Such exposure greatly enhances technical competence, research aptitude, and professional development. Overall, the internship was an enriching experience that significantly improved my practical knowledge, problem-solving abilities, and understanding of clinical genomics and precision medicine.

Academic courses relevant to the project : Molecular Biology, Recombinant DNA Technology, Bioinformatics, Cell Biology, Biotechnology Laboratory Courses.

Name: KUCHIBHOTLA ANANYA KIRTHI(2024H1290011P)

Student Write-up

PS-II Project Title: Studying the Genetic Interactions of Spindle-Associated Genes to Understand Their Role in Cell Division Process

Short Summary of work done during PS-II : India has an ever-exploding population, which necessitates enhancement in the production of food grains in order to meet the growing demand to satiate hunger of millions. Though traditional breeding practices have performed satisfactorily to achieve significant agricultural produce, the advent of technology has raised the benchmark even higher and today, the human mind revolves around the multiple ways in which food production can be increased, by the use of various genetic engineering tools. Viewing 'production of apomictic seeds' as the ultimate objective, this project is one of the subsets, where we essentially tried to understand the mechanism of MDKIN2 function by creating and examining double mutants in conjunction with other kinesin genes. This strategy will subsequently assist in uncovering genetic interactions, functional redundancy, and the pathways through which MDKIN2 plays a role in plant development and reproductive processes. The rationale behind this study is to determine the combination of genes which could be mutated for a possible circumvention of meiosis II, giving rise to diploid cells which could retain the vigor over generations together. This objective, if reached, can potentially boost agriculture strategies and lessen the burden on farmers to purchase HYV (High-yielding Variety) seeds. This project is driven by extensive research combining plant science with molecular biology tools and techniques. It involves intensive genotyping experiments performed to obtain double mutants whose observable phenotypic defects (when compared to the single mutants) can be studied in future. In order to know the specific allele (for a gene) the plant(s) carry- wild type or a mutant- we

perform Allele-specific PCR to determine their genotype. This way, we can differentiate them and understand the function of a gene or that of multiple genes together and look for the phenotypic defects and their intensity when one of them or both of them are mutated. Additionally, cloning experiments were also carried out involving mutation of a restriction site in a vector and transfer of a gene cassette from one vector to another, utilizing several advanced methods like Gibbson Assembly, LR clonase reaction, etc.

Tool used (Development tools - H/w, S/w) : Not Applicable

Objectives of the project : With “production of apomictic seeds” as the eventual intent, this project aims to understand the interactions between several genes associated with spindle assembly, chromosome segregation, spindle-kinetochore attachment, etc. and thereby discern their role in the process of cell division. In a wider scenario, this would help us identify certain genes which, when mutated, can transform meiotic division into mitosis-like, and give rise to diploid seeds. These come with lots of potential to revolutionize agriculture and plant breeding strategies.

Major Learning Outcomes : Major learning outcomes include a fairly decent and trained hand at carrying out molecular biology experiments, the skillset required to present data and the work done, oratory skills, networking with group of individuals at both professional and personal level, the framework of employability, and conceptualizing thoughts into a doable/workable hypothesis.

Details of Papers/patents : Not Applicable

Brief Description of working environment, expectations from the company : Being a research maniac, CDFD is a highly ambitious organization which aims for impactful research and so maintains a high vigour. Ranging from the people at high-ranking posts to we "interns", it ensures that there's something you carry home at the end of the day, besides leaving your mark at the place. The particular lab where I interned was a blend of all flavours. The initial phase of joining felt like a slice of cake-sweet and soft. But as I moved along, I realized that it was more than that. It required a goal oriented, dearly determined, and sincerely devoted "me" to work on the project assigned to be able to produce fruitful results, acquire the skill, and earn a good name. The fact that this lab was established just two years back was a topping on the cake to fuel my effort. A budding lab expects you to give yourself away for them to meet the expectations laid by the organization. Although most of the times I successfully devoted myself, it felt a little revolting at times since you don't find time for yourself. But that's how the practical world probably works. I must acknowledge the support and affection of my lab mates which kept me positive and anchored. The lab has PhD scholars and project associates working in teams on a couple of projects and everyone was empathetic enough to understand our

limitations and adjust accordingly. Of course, their chivalrous chides helped me troubleshoot many of the issues en route and develop the analytical mind to assess them. Overall, it was a dreamy job which, when ended, felt nostalgic.

Academic courses relevant to the project : Plant Biotechnology, Genetic Engineering Techniques, Molecular Mechanisms of Gene Expression, Recombinant DNA Technology

PS-II Station : Ceremorphic Technologies Pvt Ltd - Digital Design, Hyderabad

Faculty

Name: Nilanjan Mukherjee

Student

Name: YASH RUSTOGI(2022A3PS1235G)

Student Write-up

PS-II Project Title: ASIC Design & Verification of LPDDR5/5X/6 Memory Controller

Short Summary of work done during PS-II : Complete end-to-end ownership of blocks inside LPDDR Memory Controller incharge of Architecture, MicroArchitecture, RTL design and Functional Verification using UVM environment. This was followed by Synthesis for LPDDR top for all timing checks.

Tool used (Development tools - H/w, S/w) : VCS, DC, Spyglass, DVE, Verdi, UVM, Gvim, Sublime

Objectives of the project : End-to-End Digital IP development across Architecture, MicroArchitecture, RTL Design & Functional Verification of LPDDR Memory Controller

Major Learning Outcomes : Architecture, MicroArchitecture, RTL design, Functional Verification

using UVM environment

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Young Startup culture with complete ownership of your work. Fixed standard working hours expected to be completed by the HR department. Flexible working depending on the team. Work from home available, leave not granted to interns. Huge focus on weekly milestones with Syncup calls with the Project managers daily.

Academic courses relevant to the project : Analog & Digital VLSI design, FPGA based system design, Computer Architecture, Digital Design

PS-II Station : Cisco Systems India Pvt LTD - Software Engineering, Bengaluru

Faculty

Name: Raja Vadhana Prabhakar .

Student

Name: SUJAY SURESH PATIL(2024H1030174H)

Student Write-up

PS-II Project Title: Webex Engineering Media Analytics

Short Summary of work done during PS-II : Worked on improving the Webex Media Analytics ecosystem within Cisco. The project focused on enhancing the Media Analytics Framework used to process Webex media-quality telemetry. I studied the existing SIP MQR pipeline and implemented improvements in call-path classification using stateful Flink processing. The work reduced the number of UNKNOWN call-path records and made media-quality data more actionable for analytics and

troubleshooting. I also contributed to a dynamic E2E testing framework for the SIP MQR pipeline by generating aligned EPQM, CDR, and CMQR test events and validating final outputs through Pinot markers. In addition, I worked on WxCAS data federation to route configuration data to correct regional WAP buckets. I explored the Webex Analytics and Insights Hub, which uses an LLM-assisted workflow with deterministic MCP tools for faster root-cause analysis. Another part of the project involved Apache Pinot schema optimization by identifying unused or empty columns to reduce storage and query overhead. Overall, the work improved processing accuracy, validation reliability, regional correctness, troubleshooting efficiency, and operational maintainability of the Webex Media Analytics platform.

Tool used (Development tools - H/w, S/w) : Software tools: Apache Flink, Apache Kafka, Scala, Apache Pinot, Apache Iceberg, OpenSearch/ElasticSearch, Spark, Jenkins, GitHub, IntelliJ IDEA / Cursor, Google ADK, MCP tools, Cisco LLM Proxy.

Objectives of the project : Determine Callpath of the Webex Call, Reduce database disk utilization, Federation of Webex Calling Data

Major Learning Outcomes : Gained hands-on experience in large-scale streaming data processing using Apache Flink, Kafka, and Scala. I understood how Webex media-quality telemetry flows from events to create various reports output used for analytics and troubleshooting. I learned stateful stream processing, event correlation, pipeline validation, regional data routing, and schema optimization in Apache Pinot. I also learned how LLM-based agentic workflows can support root-cause analysis when combined with deterministic tools and enterprise data sources.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The working environment at Cisco was highly collaborative, technically challenging, and industry-oriented. I worked in an engineering team dealing with real-time analytics, large-scale telemetry, and production-grade data pipelines. The work involved understanding existing systems, discussing requirements with mentors and team members, debugging complex pipeline behavior, and validating results using real production-like data flows.
The environment encouraged independent ownership while also providing regular technical guidance. Code quality, scalability, reliability, and operational impact were given high importance

Academic courses relevant to the project : Distributed Data System, Computer Networks, NLP

Name: VISWESH SURI .(2022A7PS0077H)

Student Write-up

PS-II Project Title: DefectOps: FROM BUG TO VALIDATED PR WITH AGENTIC AUTOMATION

Short Summary of work done during PS-II : During PS-II at Cisco, I worked on Trace ID Unification and DefectOps. The first part improved observability by normalizing x-nd-traceid at service ingress, preserving the same value through request context, propagating it on outbound calls, and standardizing logs on traceId. This helps engineers follow one user request across multiple services using a single identifier. The second part, DefectOps, was a human-in-the-loop bug lifecycle platform. It converts a raw defect into a structured workspace with case intake, artifacts, duplicate and past-fix discovery, repro, RCA, fix planning, implementation, build, patch, validation and PR creation. I also worked on BugRAG, a local similar-bug retrieval service over historical CDETS defects using hybrid BM25 and dense retrieval, so Codex and developers can use prior bug context. In parallel, I explored a SonarQube-driven Codex workflow for improving Go unit test coverage through targeted test generation and validation.

Tool used (Development tools - H/w, S/w) : Go, React, FastAPI, Python, Codex, Git, GitHub Enterprise, SonarQube, Bruno, Ollama/BGE-M3 embeddings, BM25 retrieval, dev containers, logs, grep, coverage tools and internal Cisco development environments.

Objectives of the project : To improve developer productivity for distributed microservice debugging and bug resolution. The work focused on unifying Trace ID propagation across services, standardizing logs on a common traceId, and building DefectOps, a human-in-the-loop agentic workflow that moves a bug from intake and evidence analysis to RCA, fix planning, validation and PR creation.

Major Learning Outcomes : Learnt how large distributed systems are debugged using request tracing, logs and service context. Gained hands-on exposure to Go services, request-scoped context propagation, logger normalization, AI-assisted engineering with Codex, retrieval-augmented workflows, artifact-backed debugging, Git worktrees, validation flows and communicating engineering impact through demos and reports.

Details of Papers/patents : No papers or patents were filed as part of this PS-II work.

Brief Description of working environment, expectations from the company : The working environment at Cisco was collaborative, engineering-focused and mentor-driven. I worked with the NDO/MSO engineering context, where the emphasis was on solving practical developer productivity problems rather than building isolated prototypes. The expectations were to understand the existing system, respect engineering constraints, validate changes carefully, communicate progress clearly and make the work useful for real debugging and bug resolution workflows. Mentors and team members provided technical direction, review feedback and context whenever needed. The work also required independent learning because the project touched distributed tracing, Go services, retrieval, Codex workflows and developer tooling. Overall, the environment encouraged experimentation, but with a strong focus on reliability, auditability and engineering usefulness.

Academic courses relevant to the project : Data Structures and Algorithms, Object Oriented Programming, Operating Systems, Database Systems, Software Engineering, Computer Networks, Cloud Computing and courses involving AI/ML fundamentals.

Name: MAHIR JIMIT GHADIALI(2022A7PS1274G)

Student Write-up

PS-II Project Title: Agentic MCP-Powered Multi-Agent System for Cisco APIC Automation and UI Test Orchestration

Short Summary of work done during PS-II : During the internship, an MCP-powered multi-agent automation system was developed to simplify Cisco APIC operations through natural language interactions. The work involved studying and implementing MCP architecture, LangGraph-based agent orchestration, APIC automation tools, and Playwright-based UI testing. Multiple automation services were integrated into a unified conversational interface capable of configuration management, state retrieval, test execution, and UI validation. The project also included system testing, workflow optimization, and evaluation of the architecture's effectiveness in improving automation and operational efficiency.

Tool used (Development tools - H/w, S/w) : Cursor

Objectives of the project : Agentic MCP-Powered Multi-Agent System for Cisco APIC Automation and UI Test Orchestration

Major Learning Outcomes : building agents to navigate and test complex ui workflows

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : During the internship, an MCP-powered multi-agent automation system was developed to simplify Cisco APIC operations through natural language interactions. The work involved studying and implementing MCP architecture, LangGraph-based agent orchestration, APIC automation tools, and Playwright-based UI testing. Multiple automation services were integrated into a unified conversational interface capable of configuration management, state retrieval, test execution, and UI validation. The project also included system testing, workflow optimization, and evaluation of the architecture's effectiveness in improving automation and operational efficiency.

Academic courses relevant to the project : NA

Name: SARANG S(2021B3A70966G)

Student Write-up

PS-II Project Title: E2E Browser Automation for Webex Calling SDK and Log Analyzer

Short Summary of work done during PS-II : Wrote e2e tests for Webex Calling SDK and Built a multi agent framework for log analysis across microservices

Tool used (Development tools - H/w, S/w) : Typescript, Google ADK, Playwright

Objectives of the project : To automate browser and perform e2e for the WebEx Calling SDK suite.

Major Learning Outcomes : Software Development Lifecycle

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Very helpful team, pretty good work life balance.

Academic courses relevant to the project : Intro to Programming, OOPS

PS-II Station : ClearView Healthcare Partners, Gurgaon

Faculty

Name: Bharathi R .

Student

Name: HASRATJOT SINGH SAINI(2024H1460200P)

Student Write-up

PS-II Project Title: PS - ll End Semester Report

Short Summary of work done during PS-II : The PS – II engagement at ClearView Healthcare Partners encompassed multiple consulting projects across business development, new product planning, and launch strategy. The assignments included prioritization of high potential therapy indications, validation of asset positioning in evolving treatment landscapes, analogue analysis of biotechnology companies scaling from single asset to commercial stage, integration of disease landscape insights into launch planning, and development of a single source of truth (SSoT) with a commercial model for a novel therapy. Methodologies combined structured secondary research, targeted primary research with healthcare professionals, and AI driven landscape analysis. These approaches enabled the narrowing of broad therapeutic universes to priority opportunities, clarification of credible development pathways, synthesis of comparative case studies of commercialization journeys, and consolidation of strategic imperatives into a draft launch blueprint. The outcomes of these diverse projects provided clients with rigorous, evidence based recommendations that reduce organizational risk, sharpen competitive positioning, and inform long term strategic planning. The

collective work demonstrates the value of structured problem solving and synthesized insights in addressing complex challenges within the pharmaceutical consulting domain.

Tool used (Development tools - H/w, S/w) : Powerpoint, Excel, Several different secondary research databases, AI tools

Objectives of the project : Life Sciences Consulting Projects

Major Learning Outcomes : Primary Research, Secondary Research

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : My internship at ClearView Healthcare Partners provided a truly enriching and supportive working environment. From the very beginning, I was welcomed into a culture that values learning, collaboration, and professional growth. The mentors were consistently encouraging, offering guidance that not only clarified complex tasks but also inspired me to approach challenges with confidence. The projects I was involved in were engaging and intellectually stimulating, allowing me to apply academic knowledge to real-world consulting problems. What stood out most was the balance between independence and support: I was trusted with responsibility, yet always had access to constructive feedback and advice. This environment fostered continuous development, sharpened my analytical skills, and strengthened my ability to work within a team. Overall, the internship was a fantastic learning experience, and the work culture played a pivotal role in shaping my growth throughout the engagement.

Academic courses relevant to the project : Pharma Syllabus

Name: KRITIKA TRIPATHI(2024H1460203P)

Student Write-up

PS-II Project Title: End sem report

Short Summary of work done during PS-II : The PS-II Practice School internship undertaken at ClearView Healthcare Partners, encompassing six consulting projects across the pharmaceutical and

biotechnology sector. The projects spanned across several pharmaceutical market nuances tapping across various dimensions of a New pharmaceutical product planning (NPP), Business Development (BD), Pricing and Market Access (PMA), and Strategy Analytics (SA), offering comprehensive exposure to both therapeutic and diagnostic strategy. Work included indication prioritisation for BD, an ex-U.S. HTA-informed pricing and market access assessment across key European markets, a demand assessment for a novel oncology regimen, development of BD pitch materials for diagnostic partnerships, qualitative pathologist research on biomarker testing workflows across EU4 and the UK, and survey programming for a primary research study. Methodologies combined secondary landscape research, primary qualitative interviews, and quantitative survey design. Collectively, the projects integrated clinical, commercial, and payer perspectives to generate evidence-based strategic recommendations, reinforcing skills in HTA evaluation, research synthesis, and consulting-grade communication.

Tool used (Development tools - H/w, S/w) : Excel, AI , PowerPoint, templyfy,thinkcell

Objectives of the project : Real world life science consulting

Major Learning Outcomes : Primary and secondary research

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Overall positive working environment

Academic courses relevant to the project : M pharm

Name: RITWIK SHARMA(2024H1530210P)

Student Write-up

PS-II Project Title: DRIVING COMMERCIAL SUCCESS IN HEALTHCARE: A CONSULTING PERSPECTIVE ON PRICING, ACCESS, AND PIPELINE PRIORITIZATION

Short Summary of work done during PS-II : This report brings together three healthcare consulting

projects covering indication prioritization, pricing and market access, and commercial opportunity assessment. The first project pinpointed the most attractive neurological indication for investment and highlighted pipeline assets that could be explored for acquisition or in-licensing. The second assessed regulatory, pricing, reimbursement, and target population dynamics for Product X across key geographies to inform launch strategy. The third examined the market potential of Product Y in three indications by refining the addressable population, validating the client's forecast model, and identifying pricing options linked to sales potential. Taken together, the projects used a blend of secondary and primary research to generate evidence-based recommendations that support strategic decision-making in the pharmaceutical sector

Tool used (Development tools - H/w, S/w) : Microsoft Powerpoint, Excel, Word

Objectives of the project : 1. Identify the neurological indication with the highest unmet need and best development potential 2. Build a global pricing and market access strategy for Product X launch 3. Define target population and optimize commercial potential for Product Y

Major Learning Outcomes : 1. Learned how to assess unmet need and commercial attractiveness across multiple indications in a structured way
2. Improved ability to triangulate secondary and primary research for stronger decision-making
3. Strengthened slide-making and insight synthesis skills for strategy recommendations
4. Learned how pricing and market access frameworks vary across geographies
5. Gained practical understanding of how primary research can refine pricing and reimbursement insights
6. Improved ability to convert complex market access findings into concise business recommendations

Details of Papers/patents : 1. Griva, E., Butorina, I., Sidorov, A., & Senchenko, P. (2022). Analysis and Forecasting of Sales Funnels. Mathematics, 11, 105. https://doi.org/10.3390/math11010105

Brief Description of working environment, expectations from the company : The working environment is exceptionally positive, fostering a culture where every team member feels valued. It provides a genuine safe space to learn, experiment, and grow professionally without fear of judgment. Strong teambuilding is a core focus, resulting in a tight-knit group that consistently demonstrates a collaborative, helping-each-other attitude where colleagues are always ready to share knowledge and lend a hand. Alongside this highly supportive foundation, there is a dynamic current of healthy

competition. This friendly rivalry naturally pushes everyone to innovate, excel, and accelerate their career development, creating an ideal balance of mutual support and ambitious growth.

Academic courses relevant to the project : Research Project

Name: EESHA KANCHARLA(2024H1460202P)

Student Write-up

PS-II Project Title: Atu based analysis of a drug in the oncology space

Short Summary of work done during PS-II : During my PS-II at ClearView Healthcare Partners, I worked on multiple pharmaceutical consulting projects involving market research, strategic analytics, and healthcare data analysis. I conducted secondary research using industry databases to evaluate disease landscapes, market opportunities, pipeline assets, reimbursement scenarios, and competitive dynamics. I also participated in primary market research activities, including preparing discussion guides, testing surveys, and interacting with healthcare professionals (HCPs). I contributed to the development and validation of data output files, analysis of HCP survey responses, report generation, and client presentations. My responsibilities included data cleaning, quality control, coding and debugging Excel-based outputs, slide population, and deriving strategic insights from survey findings. I was involved in both pre-launch and post-launch oncology projects, supporting activities such as survey programming in Qualtrics, baseline analyses, and tracking studies. Through these projects, I gained exposure to consulting workflows, client interactions, commercial strategy, and evidence-based decision-making in the pharmaceutical industry.

Tool used (Development tools - H/w, S/w) : Microsoft Excel, Microsoft PowerPoint, Qualtrics, think-cell, GlobalData, Evaluate Pharma, Navlin, UpToDate, AI-based research tools

Objectives of the project : Support pharmaceutical consulting projects through market research and data analytics. Generate actionable insights from HCP surveys and secondary research. Assist in strategic decision-making for commercialization and business development.

Major Learning Outcomes : Gained hands-on experience in primary and secondary market research, healthcare data analysis, and strategic insight generation. Developed proficiency in tools

such as Excel and Qualtrics while improving problem-solving, client communication, and presentation skills in a consulting environment.

Details of Papers/patents : No papers published or patents filed as part of the PS-II project.

Brief Description of working environment, expectations from the company : ClearView Healthcare Partners provided a collaborative and fast-paced consulting environment where teams worked closely on solving strategic challenges for pharmaceutical and biotechnology clients. The work culture emphasized analytical thinking, attention to detail, effective communication, and continuous learning. Regular interactions with Project Leads, Leadership Team members, and cross-functional teams helped create a supportive environment for professional growth.
The company expected interns to quickly understand project requirements, take ownership of assigned tasks, maintain high-quality deliverables, and proactively seek solutions to problems. Strong analytical skills, willingness to learn new tools, adaptability to feedback, and effective teamwork were essential for contributing successfully to client engagements.

Academic courses relevant to the project : Clinical Research, Pharmaceutical Administration and Management

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Name: DIKSHIT AYUSHI ASHISH KALPITA(2024H1470221P)

Student Write-up

PS-II Project Title: Pharmaceutical Strategy Consulting

Short Summary of work done during PS-II : Indication triage and prioritization, clinical development benchmarking, KOL interview synthesis, payer value proposition design, and global diagnostic pricing and market access (P&MA) landscape analysis

Tool used (Development tools - H/w, S/w) : Mainly Excel, PowerPoint, ClinicalTrials.gov, PubMed, GlobalData, Evaluate Pharma, multi-criteria scoring rubrics, KOL discussion guide frameworks, analog benchmarking methodologies, reimbursement landscape trackers

Objectives of the project : To learn about consulting in healthcare sector as an analyst intern

Major Learning Outcomes : Built multi-criteria scoring frameworks to objectively compare disease areas across market size, unmet need, pipeline intensity, regulatory precedent, and trial feasibility; Gained expertise in sourcing and interpreting Phase 2/3 analog trial designs and translating them into actionable development pathway recommendations for early-stage assets; Practiced designing discussion guides, tagging verbatim quotes, and clustering thematic insights into evidence-backed unmet need narratives and strategic watchouts.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment is very flexible and employee friendly. Hoping to grow more into the role of analyst and further through the learnings and feedback provided frequently.

Academic courses relevant to the project : Clinical Research

PS-II Station : CommerceIQ, Bengaluru

Faculty

Name: Sangeetha Viswanathan .

Student

Name: SRIYA GUDIPATI .(2021B4A73151H)

Student Write-up

PS-II Project Title: Agentic Platfrom Automation and LLM Engineering

Short Summary of work done during PS-II : I helped in Building, modifying and evaluating the performance of various agentic workflows. I also helped in creation of datasets, chatbots and

automating frequently used, time consuming workflows.

Tool used (Development tools - H/w, S/w) : Langgraph, Langsmith, opik, python, cursor, claude, databricks, aws

Objectives of the project : To Build inteligent AI agents capable of performing various e-commerce related tasks.

Major Learning Outcomes : Real time applications of core CS course, AI , ML and data science
Agentic ai
agentic workflows

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Very friendly atmosphere, lots of new , niche things related to AI and data science can be experienced here. company expects dedicated work but also has a mostly relaxed schedule with 3 days a week being wfh.

Academic courses relevant to the project : FODS, AI, ML, basic python and java programming

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PS-II Station : Commvault Systems (India) Private Limited, Bengaluru

Faculty

Name: Pradheep Kumar K .

Student

Name: MANISH VASIREDDY .(2022A7PS0145H)

Student Write-up

PS-II Project Title: Software Development

Short Summary of work done during PS-II : Automation of testcases for Azure NetApp Files, Resolving Customer tickets, Developing Internal tool for integrating changes

Tool used (Development tools - H/w, S/w) : Python, C++, Git

Objectives of the project : Automation of testcases, Developing Internal tool

Major Learning Outcomes : Python, C++, Git

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Commvault provided a collaborative and learning-focused environment, encouraging hands-on work with real-world systems. Interns were expected to be proactive, detail-oriented, and deliver reliable technical solutions. Regular guidance from mentor and teammates were deeply helpful.

Academic courses relevant to the project : OS

PS-II Station : Confluent India Pvt Ltd - , Bengaluru

Faculty

Name: Pravin Yashwant Pawar .

Student

Name: PRANAV SIBY(2022A7PS0356G)

Student Write-up

PS-II Project Title: Enabling DSP on audit logs

Short Summary of work done during PS-II : The audit logs emitted by kafka brokers and various services are all sent to a single kafka topic. Since the logs come from many sources, the data schema is convoluted and incompatible with Confluent Schema Registry and managed Flink. I had to convert the existing loose protobuf schema to a tighter, JSON format schema. Additionally, the logs themselves needed to be processed to become compatible with the new schema. I wrote a Kafka Streams application to do the processing and write it to a new Kafka topic. I also worked towards making the log data compatible with Flink and Confluent Tableflow for use on audit logs internally and by external customers.

Tool used (Development tools - H/w, S/w) : Java, Apache kafka, Flink, Iceberg, Prometheus, grafana

Objectives of the project : Fixing the schema issues and changing the data pipeline to support Confluent's data streaming products on audit logs.

Major Learning Outcomes : I learnt about event-driven architecture, kafka, Flink, and observability.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The internship was fully remote, and we were trusted with finishing work on time. The environment was very flexible and we were allowed to take leave whenever we wanted. The work culture is really flexible, and everyone is friendly. We were expected to stay in Bangalore during the internship though.

Academic courses relevant to the project : DSA, Operating Systems, Object Oriented Programming

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Name: ANANYA JALAN .(2021B3A72963H)

Student Write-up

PS-II Project Title: Improving the reliability of K2 group Coordinator

Short Summary of work done during PS-II : Automated nightly performance testing for K2 Group Coordinator, improving test repeatability, accelerating regression detection, and reducing manual validation effort through streamlined performance benchmarking workflows. • Enhanced observability across K2 services by introducing client-level metrics, dashboard visualizations, and alerting pipelines, while refining OpenSearch-based monitoring to reduce alert noise and improve signal quality. • Designed and productionized a feature-flag-driven bin packing strategy for K2-GC, targeting approximately 50% infrastructure cost savings through improved resource utilization, safe incremental rollouts, and data-driven analysis of latency, timeout, and workload characteristics.

Tool used (Development tools - H/w, S/w) : Java,Git,Grafana,JIra

Objectives of the project : -Make the K2-GC production ready by working on the existing gaps and testing to find new gaps, Improving the observability of the service

Major Learning Outcomes : Software Development, Observality,System Design

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : - There is plenty of guidance available through out the internship and while the workload is not light, sufficient time is given and the expectations are not unreasonable.

Academic courses relevant to the project : OOPs,DBMS,DSA,OS

PS-II Station : Couture.ai, Bengaluru

Faculty

Name: S.P.Vimal .

Student

Name: AMOGH AGRAWAL(2021B4A32870G)

Student Write-up

PS-II Project Title: Engineering Operational and Financial Analytics Platforms: Backend Optimization, Multi-Agent Systems, and Full-Stack Development

Short Summary of work done during PS-II : The five-month Practice School-II internship provided comprehensive exposure to modern backend engineering, full-stack development, and analytics platform design in a production environment. A major focus of the internship was backend performance engineering, where database queries across PostgreSQL and ClickHouse were profiled, optimized, and redesigned to improve response times under realistic workloads. A Redis-based caching layer was implemented to minimize redundant computation and reduce database load. The internship also involved strengthening application security by integrating Authentik with JSON Web Tokens (JWT) to establish a secure, consistent authentication and authorization mechanism across backend APIs developed using FastAPI. A significant achievement during the internship was the design and implementation of the ARP Console, a supply-chain control tower built around a LangGraph-based multi-agent orchestration framework. This involved creating specialized agents capable of collaborating to solve complex operational queries while integrating PostgreSQL, ClickHouse, and Neo4j behind a unified API. Working with Neo4j also provided practical experience in graph-based modeling and route analysis for supply-chain networks. Another major contribution was the architecture of the FinOps Console, where strict product contracts and performance objectives were defined to ensure every financial metric contained meaningful contextual information while meeting specified latency targets. A stub-first development strategy was adopted to enable early demonstrations and iterative development. The internship further strengthened full-stack development skills through the creation of modular React interfaces featuring reusable components, centralized API clients, shared state management, and interactive dashboards. Equally important, it reinforced professional engineering practices such as understanding large existing codebases, measuring system performance before optimization, testing changes in isolation, documenting technical work, collaborating effectively with cross-functional teams, and making well-reasoned design decisions. Overall, the internship established a strong foundation in scalable software engineering, distributed systems, data engineering, and AI-enabled analytics platforms.

Tool used (Development tools - H/w, S/w) : FastAPI, PostgreSQL, ClickHouse, Redis, Neo4j, LangGraph, Authentik, JWT, REST API, React, Multi-Agent Systems, Query Optimization, Alembic, Docker, Financial Analytics

Objectives of the project : To design, develop, and optimize secure, scalable backend systems and analytics platforms. To gain end-to-end experience in building production-ready software using industry-standard engineering practices.

Major Learning Outcomes : Successfully optimized production backend systems and designed end-to-end analytics platforms, strengthening expertise in backend engineering, distributed systems, and AI-driven application development.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The internship was carried out in a collaborative and fast-paced software development environment focused on building production-grade AI and analytics solutions. The engineering team followed modern development practices, with work organized into clearly defined milestones, regular code reviews, and continuous discussions on architecture and design decisions. Interns were treated as integral members of the development team and were entrusted with ownership of substantial features rather than isolated learning tasks. This provided exposure to real-world engineering challenges, including maintaining existing systems, designing new components, debugging production issues, and collaborating across multiple technology stacks.

The company encouraged independent problem-solving while providing guidance through regular technical discussions and mentorship whenever required. Expectations from interns included writing clean, maintainable, and well-documented code, understanding and extending large existing codebases, adhering to established coding standards, testing changes before deployment, and communicating progress effectively with the team. Emphasis was placed on delivering reliable, scalable, and production-ready solutions instead of merely completing assigned tasks. The working environment promoted continuous learning, technical ownership, and professional responsibility, enabling practical exposure to modern backend engineering, distributed systems, data engineering, and full-stack application development while contributing to products intended for real-world use.

Academic courses relevant to the project : Computer Programming, Object Oriented Programming, Graphs and Networks, Operation Research, Optimisation

PS-II Station : CRED (Dreamplug technologies private limited), Bengaluru

Faculty

Name: Srinath R.Naidu .

Student

Name: TARUN CHAUHAN(2022A7PS0025G)

Student Write-up

PS-II Project Title: AI

Short Summary of work done during PS-II : Solved small production bugs, built features end to end.

Tool used (Development tools - H/w, S/w) : Claude code

Objectives of the project : Get industry exposure

Major Learning Outcomes : Work on real life problems and solve them end to end

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : We are expected to give 100 percent in the company work. We have to take the extra step and ask for more work and ask questions curiously.

Academic courses relevant to the project : DSA

PS-II Station : Crimson Energy Experts Pvt. Ltd - Project-1, Mumbai

Faculty

Name: Santosh Khandgave

Student

Name: PATIL YUKTA VRINDESH(2024H1010025P)

Student Write-up

PS-II Project Title: Designing of heat exchanger and designing of reflector cover gas system

Short Summary of work done during PS-II : I was involved in multiple projects here at crimson energy experts private limited some of them included designing of heat exchanger, designing of reflector cover gas system for Isotope Production Reactor

Tool used (Development tools - H/w, S/w) : Auto cad and micro soft excel and WASP

Objectives of the project : Better understanding of chemical engineering

Major Learning Outcomes : Complete understanding of reflector cover gas system, the equipments invovled and the flow of system, learnt the bacis of chemical engineering from industry point of view

Details of Papers/patents : Not Applicable

Brief Description of working environment, expectations from the company : It was a great experience as the company is relatively new I got to learn everything from process calculations to mechanical calculations to fatigue calculations and as the work force is mostly young it is a happy atmosphere around

Academic courses relevant to the project : Heat transfer
Mass transfer
Process designings
Mathematical methods in chemical engineering
Computational fluid dynamics
Advance transportation phenomenon

PS-II Station : CSIR - Central Road Research Institute (CRRI) - INFRA, New Delhi

Faculty

Name: Ravi Kant Mittal .

Student

Name: Y E MAYURESH(2021A2PS3055H)

Student Write-up

PS-II Project Title: CASE STUDY OF CRRI IPR PORTFOLIO

Short Summary of work done during PS-II : The idea is to study each patent, filed or granted, and find out the usefulness and impact of the patent on ground situations and commercialization of it. In addition to it, analysis of patents filed and granted to counterpart organizations of CRRI (National Institutions) such as SERC, CBRI etc. and foreign bodies such as NTRO (formerly ARRB), TRL etc. will also be studied and parallels will be drawn along the lines of research output, efficiency, frequency, quality of research, so on and so forth.

Tool used (Development tools - H/w, S/w) : Online Research

Objectives of the project : To assess the patents, trademarks and technologies licensed under CRRIs intellectual property portfolio and study its effectiveness in the commercial aspect and technical viability. Additionally, to analyze the implication of the technology in the industry.

Major Learning Outcomes : -

Details of Papers/patents : Various (Stated in their respective websites)

Brief Description of working environment, expectations from the company : Usually busy, well established workplace with ample support from the staff.

Academic courses relevant to the project : -

Name: SUDHANSHU MODI(2022A2PS1703P)

Student Write-up

PS-II Project Title: Effect of Aggregate Emulsion and Grout Variability on the Performance of Cement Grouted Bituminous Mixes (CGBM)

Short Summary of work done during PS-II : During my PS-II internship at CSIR-CRRI within the Flexible Pavement Division, my work focused on evaluating the performance, durability, and material variability of Cement Grouted Bituminous Mixes (CGBM). CGBM represents a hybrid pavement technology that integrates the flexible characteristics of asphalt with the high structural rigidity of cement concrete. My primary research responsibilities involved investigating how variations in grout fluidities, structural configurations, and material designs influence the overall mechanical strength and stability of the mix. Additionally, I focused on evaluating the inclusion of marginal aggregates treated with bitumen emulsions to assess their viability as sustainable alternative pavement materials. A significant component of the project was dedicated to analyzing pavement durability under extreme environmental conditions. I helped formulate a targeted laboratory testing framework to simulate cold-climate stressors, specifically focusing on freeze-thaw cycles, to evaluate how these modified composite mixes withstand severe seasonal distresses characteristic of mountainous regions like Jammu & Kashmir. Through this, I conducted extensive material characterization tests—including aggregate evaluation, bitumen property tests, and grout fluidity measurements using marsh cone viscometers—and systematically analyzed the resulting experimental data scatter to document the performance thresholds of the modified CGBM layers.

Tool used (Development tools - H/w, S/w) : Hardware & Lab Equipment Marsh Cone Viscometer: Used to measure the fluidity and discharge time of the cement grout mixes. Marshall Stability Apparatus: Utilized for casting, compacting, and testing the stability and flow values of the bituminous mixes.

Objectives of the project : Evaluate Composite Material Performance: To analyze the mechanical properties, stability, and durabmility of Cement Grouted Bituminous Mixes (CGBM) as a hybrid paveent solution. Assess Parameter Variability: To study how variations in grout fluidity, design

configurations, and material proportions affect the overall structural integrity of the mix. Investigate Alternative Materials: To determine the performance and viability of utilizing marginal aggregates treated with bitumen emulsions within the CGBM matrix. Simulate Environmental Stressors: To develop and execute a laboratory testing framework that evaluates the durability and cracking resistance of these modified mixes under extreme climatic conditions, such as freeze-thaw cycles in hilly regions.

Major Learning Outcomes : Advanced Material Characterization: Mastered hands-on laboratory protocols for testing aggregate properties, evaluating bitumen emulsions, and measuring composite mix metrics like stripping and cracking resistance.
Experimental Data Analysis: Developed proficiency in handling real-world material variability, analyzing laboratory data scatter, and managing experimental tolerances beyond textbook theory.
Research Methodology: Gained experience in conducting systematic literature reviews, structuring official technical reports, and documenting scientific data for senior research panels.
Environmental Simulation: Learned to design and implement specialized laboratory frameworks to evaluate pavement material durability under simulated extreme climatic distresses, such as freeze-thaw cycles.

Details of Papers/patents : Possibility of Research Paper: High; the experimental findings on grout variability and freeze-thaw durability are currently being compiled into a technical manuscript for submission to a peer-reviewed transportation engineering journal.

Brief Description of working environment, expectations from the company : The working environment at CSIR-Central Road Research Institute (CRRI) is highly academic, disciplined, and research-driven. Operating within the Flexible Pavement Division (FPD) provides direct access to premier, state-of-the-art testing facilities, specialized pavement equipment, and a wealth of historical infrastructure data. The atmosphere encourages intellectual curiosity and systematic scientific inquiry, making it an exceptional space for students looking to understand real-world material performance and engineering challenges.
The organization expects high levels of self-motivation, professional integrity, and precision from its interns. Rather than just acting as passive assistants, interns are expected to take active ownership of their laboratory assignments, maintain rigorous and accurate experimental logs, and handle advanced testing apparatus with care. Scientists and mentors expect you to dive deep into relevant IS, IRC, and ASTM codes independently and come prepared to analyze data scatter or testing deviations critically.
The culture highly respects proactive individuals. While the workload requires consistent discipline and methodical laboratory hours, the mentors and chief scientists are incredibly approachable and

supportive. If you demonstrate a genuine eagerness to learn and contribute to the project's objectives, they willingly offer valuable technical mentorship, involve you in complex research discussions, and encourage independent analytical thinking.

Academic courses relevant to the project : Transportation Engineering / Highway Engineering (Core principles of pavement materials, mix design, and structural layers)
Mechanics of Materials / Strength of Materials (Understanding stress, strain, and mechanical behavior of composite structures)

PS-II Station : CSIR- IIP - Indian Institute of Petroleum - Chemical, Dehradun

Faculty

Name: Santosh Khandgave

Student

Name: KHUSH SHARMA(2022A1PS1178G)

Student Write-up

PS-II Project Title: PROCESS SIMULATION AND ANALYSIS OF PROPANE/PROPYLENE SEPARATION BY CONVENTIONAL AND OTHER ENERGY-EFFICIENT DISTILLATION CONFIGURATIONS

Short Summary of work done during PS-II : During my Practice School II internship at CSIR-IIP, Dehradun, within the Modelling and Simulation department, I executed a comprehensive process simulation, energy integration, and techno-economic evaluation for high-purity propane/propylene separation. Using Aspen Plus, I first established a validated conventional multi-stage fractional distillation baseline across industrially authentic feed compositions to meet the strict market benchmark for polymer-grade propylene purity . To break the reliance on energy-intensive, once-through thermal utilities, I transitioned the optimal design basis into Aspen HYSYS to synthesize a process-intensified, modified Vapor Recompression (VRC) configuration. This open-loop heat pump

architecture utilizes a centrifugal compressor to upgrade the latent heat of overhead vapors, successfully reducing net operating thermal utility consumption (OPEX) by 85% I then compiled a detailed financial model in Microsoft Excel to weigh the initial Capital Expenditure (CAPEX) penalties of the advanced mechanical equipment against these massive long-term utility savings, validating a superior commercial ranking and shortened payback horizon for the VRC system. Finally, to translate the discrete parametric simulation data into a continuous mathematical asset, I executed multi-variable non-linear regression modeling within Polymath using a 30-run simulation matrix. This empirical polynomial framework establishes a rapid design shortcut capable of accurately predicting theoretical stage counts, column heat duties, and structural capital costs simultaneously without requiring active simulation software access

Tool used (Development tools - H/w, S/w) : Aspen plus, Aspen HYSYS, Aspen economic analyser, Aspen Properties, Microsoft Excel, Polymath professional

Objectives of the project : The primary objective of this report is to simulate both the conventional and Vapor Recompression (VRC) distillation processes to analyze and compare their performance across economic viability, environmental impact, and energy efficiency. Additionally, this study aims to develop a robust multi-variable empirical regression model exclusively for the conventional configuration. This predictive polynomial framework translates discrete simulation outputs into a continuous mathematical utility, enabling future researchers and engineers to immediately estimate column installation costs and utility energy requirements without the need to execute active, software-dependent process simulations.

Major Learning Outcomes : During my internship at CSIR-IIP, I mastered advanced chemical engineering process simulation by constructing steady-state digital twins in Aspen Plus and Aspen HYSYS to achieve high-purity, polymer-grade propylene separations. I gained a profound understanding of vapor-liquid equilibrium thermodynamics in close-boiling hydrocarbon systems , and learned the principles of process intensification by successfully executing a modified Vapor Recompression loop that upgrades latent heat via a centrifugal compressor to drastically reduce thermal utility loads. Furthermore, I developed comprehensive techno-economic asset auditing skills using Microsoft Excel to weigh initial capital equipment expenditures against long-term operational savings. Finally, I acquired critical mathematical data analytics competencies by deploying Polymath non-linear regression solvers to translate complex discrete simulation data arrays into continuous predictive polynomial shortcut utilities.

Details of Papers/patents : This project was not included in a paper but a future research project

Brief Description of working environment, expectations from the company : The working environment within the department at the research institute was highly collaborative, professional, and intellectually stimulating. Operating as a structured and focused engineering space, the department provided seamless access to high-compute workstations and industry-standard process simulation suites required to handle intensive thermodynamic computations. The scientific staff and research colleagues fostered a supportive learning atmosphere, offering expert technical guidance on industry best practices and algorithmic troubleshooting whenever process loop complexities arose. The expectations from the host organization were exceptionally fair, clear, and well-aligned with the milestones of an engineering internship. The institution expected regular technical progress, professional accountability, a disciplined commitment to project timelines, and the precise execution of steady-state process simulation models. Additionally, there was a strong emphasis on maintaining a rigorous standard of research integrity and computational accuracy, particularly when validating thermodynamic packages and extracting raw simulation datasets for downstream techno-economic auditing. Overall, the balance between professional autonomy and structural oversight was completely satisfactory, creating an excellent workspace to bridge the gap between academic chemical engineering foundations and real-world industrial research applications.

Academic courses relevant to the project : Thermodynamics, Separation processes I and II and Fluid mechanics

PS-II Station : CSIR- IIP - Indian Institute of Petroleum - Mechanical, Dehradun

Faculty

Name: Santosh Khandgave

Student

Name: PRASANTH SIVA SATYANARAYANA ASAPU(2024H1410049G)

Student Write-up

PS-II Project Title: Method Development for Simulating Tribological Effects in Lubricated Ball Joints

Short Summary of work done during PS-II : Developed a MATLAB and FEA-based simulation framework to study the tribological behavior of lubricated automotive ball joints. Investigated contact mechanics, friction, stiffness, wear, manufacturing effects, lubrication influence, and fatigue life under varying loads, temperatures, materials, and articulation angles to create a predictive virtual validation model.

Tool used (Development tools - H/w, S/w) : Ansys Workbench and MATLAB

Objectives of the project : Physical testing is always becoming a choice to study and understand failure. A Simulation model is needed to be built with a proper correlation with Tests conducted and which can help us predict the ball joint failure.

Major Learning Outcomes : Graphs and value of Breakaway Torque, Running Torque and Stiffness characteristic curves in presence of Manufacturing parameters like Rolling and Tempering and Tribological parameters like Wear, friction and Lubrication are obtained.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : I worked in a professional research environment at the Advanced Tribology Research Centre, CSIR, under the guidance of experienced scientists and engineers. The work culture encouraged analytical thinking, independent problem-solving, and collaboration. My project involved developing simulation models for lubricated ball joints using MATLAB and engineering principles related to tribology, contact mechanics, wear, friction, and fatigue. Regular technical discussions, progress reviews, and access to research facilities helped me gain practical exposure to industrial research methodologies and engineering analysis.I expected the organization to provide technical guidance, domain expertise, and opportunities to apply theoretical knowledge to real-world engineering problems. The company met these expectations by offering a structured learning environment, mentorship, and exposure to advanced research tools and practices. The experience enhanced my technical skills, research aptitude, and understanding of simulation-driven product development while preparing me for future challenges in mechanical and automotive engineering.

Academic courses relevant to the project : Machine Design, Tribology and Surface Engineering, Finite Element Methods (FEM), Strength of Materials, Manufacturing Processes, Contact Mechanics.

PS-II Station : CSIR-National Aerospace Laboratories, Bengaluru

Faculty

Name: Sameer Gupta .

Student

Name: NITINCHAITANYA PRAHASITH MADDURY(2024H1060102H)

Student Write-up

PS-II Project Title: Development of Functional Screen Printed Joule Heaters for Aircraft De-Icing And Fabrication of Metal-Supports for MS-SOFCs

Short Summary of work done during PS-II : The de-icing heater project successfully demonstrated the fabrication of a functional Joule heater, validated through thermal analysis as a viable replacement for conventional de-icing systems — paving the way for future development of zonal, flexible heater arrays. While a fully functional MS-SOFC substrate could not be realized within the scope of the trials conducted, the sintering and tape-casting experiments yielded critical insights: key temperature profiles were identified, common fabrication errors were documented, and actionable recommendations were established to achieve improved porosity in subsequent iterations.

Tool used (Development tools - H/w, S/w) : Graphite furnace,

Objectives of the project : To fabricate and characterise 2 different projects' outcomes i.e. functional joule heaters for aircraft de-icing and metal supports for MS-SOFC

Major Learning Outcomes : Working in the research industry and the DOE of experimentation and documentation has been really valuable

Details of Papers/patents : no papers or patents have been published or been discussed about

Brief Description of working environment, expectations from the company : the working environment was tough, engaging and sometimes routine, but the assigned work was too good to pass up on, so it was motivating to work through any other distractions

Academic courses relevant to the project : Advanced Composites (for microstructure analysis), FEM and product design

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Name: AAYUSHI BHATNAGAR(2024H1400214P)

Student Write-up

PS-II Project Title: Advanced Methodologies for Safety-Critical Systems

Short Summary of work done during PS-II : During the internship at CSIR-NAL, I worked on multiple projects related to safety-critical aerospace systems, software verification, and AI-assisted engineering workflows. The primary focus was on performing Software Safety Assessment (SSA) activities for aircraft subsystems using ANSYS Medini Analyze. This involved architectural modeling, guideword analysis, Functional Hazard Assessment (FHA), Failure Modes and Effects Analysis (FMEA), Fault Tree Analysis (FTA), and traceability establishment. I also contributed to the development and enhancement of an AI-assisted verification framework for automated requirement verification, compliance checking, and relevance analysis using NLP and Large Language Models (LLMs). Additionally, I worked on a framework for automated generation of verification artifacts and test cases from FHA data using retrieval-based techniques and prompt engineering. As part of research-oriented activities, I contributed to surrogate modeling workflows, GUI implementation, technical documentation, and manuscript preparation. The internship provided exposure to Model-Based Systems Engineering (MBSE), Verification & Validation (V&V), safety engineering methodologies, AI-assisted verification, and safety-critical system development practices. Overall, the internship enabled me to apply concepts from Embedded Systems, Software Safety, and Verification Engineering to real-world aerospace applications while gaining experience in research, development, and technical documentation.

Tool used (Development tools - H/w, S/w) : ANSYS Medini Analyze, VSCode, Python, Ollama, Sentence-BERT, NLP and LLM Frameworks, MSOffice Suite

Objectives of the project : To perform Software Safety Assessment (SSA) activities for safety-critical aerospace systems using MBSE methodologies and ANSYS Medini Analyze. To contribute to development of AI-assisted verification frameworks for automated requirement verification and compliance checking. To develop LLM based approaches for generating verification artifacts and safety test scenarios from safety assessment data. To support research and development activities related to surrogate modeling, and GUI implementation for engineering applications.

Major Learning Outcomes : Gained practical experience in SSA for safety-critical aerospace systems using FHA, FMEA, FTA and traceability analysis. Acquired knowledge of Verification and Validation processes, requirement verification, compliance checking, and traceability management. Learned to apply AI and LLMs for automated verification, requirement analysis, and verification artifact generation. Gained exposure to surrogate modeling techniques and their role in reducing computational complexity in engineering workflows. Enhanced skills in research, technical documentation, workflow integration, and GUI development for engineering applications.

Details of Papers/patents : Contributed to an extended abstract submitted to the AIAA conference. Also contributed to the preparation of two case-study-based research manuscripts related to software safety assessment, currently submitted as draft manuscripts.

Brief Description of working environment, expectations from the company : The internship was carried out in a research-oriented and collaborative environment focused on safety-critical aerospace systems, verification engineering, and advanced software methodologies. The work involved interaction with researchers and engineers engaged in system safety assessment, Model-Based Systems Engineering (MBSE), verification and validation, and AI-assisted engineering solutions. The environment encouraged independent learning, technical discussions, documentation, and hands-on involvement in ongoing research and development activities.

The primary expectation from the organization was to understand the assigned problem domains, contribute to project activities, maintain technical documentation, and actively participate in research and development tasks. The internship required learning new tools and methodologies, performing safety assessment activities, supporting verification framework development, and contributing to research-oriented projects. The experience provided valuable exposure to industry practices, safety-critical system development, and the application of AI techniques in engineering workflows.

Academic courses relevant to the project : Embedded Systems, Software Verification and Validation (V&V), System safety Engineering, Computer Architecture, Real Time Systems, Artificial Intelligence, Machine Learning, Embedded Software Development for Safety-Critical Systems.

Name: SASTHA VELAVAN S(2024H1410106P)

Student Write-up

PS-II Project Title: Kinematic Synthesis & Stochastic Uncertainty Analysis of Mechanisms for Aerospace application.

Short Summary of work done during PS-II : The project focused on the design and evaluation of an internal boarding ladder mechanism for a next-generation fighter aircraft. The overall mechanism was decomposed into three functional subsystems: the ladder deployment mechanism, step articulation mechanism, and connection mechanism. Classical kinematic synthesis techniques, including Chebyshev spacing and Freudenstein's equation, were employed to determine the required linkage dimensions. A MATLAB-based computational framework was developed to automate mechanism synthesis, validation, and design filtering. The synthesized mechanisms were implemented as a three-dimensional CAD model in SolidWorks and analyzed using MSC ADAMS to verify deployment kinematics and evaluate dynamic stability under representative boarding loads. Additionally, Monte Carlo Simulation was performed to quantify the effect of manufacturing tolerances on mechanism performance and reliability. The results demonstrated that the proposed mechanism satisfies the requirements of compact storage, reliable deployment, operational stability, and design robustness for aerospace applications.

Tool used (Development tools - H/w, S/w) : Solidworks, ADAMS, Catia V5, MATLAB

Objectives of the project : To design and validate a compact internal boarding ladder mechanism for fighter aircraft that achieves reliable deployment under stringent space and manufacturing constraints.

Major Learning Outcomes : Gained practical experience in the kinematic synthesis of aerospace mechanisms using classical linkage design techniques such as Freudenstein's equation and Chebyshev spacing, supported by MATLAB-based computational modeling.
Developed proficiency in CAD modeling and multibody dynamic simulation using SolidWorks and MSC ADAMS to evaluate mechanism deployment behavior and structural stability under operational loading conditions.
Acquired knowledge of uncertainty quantification through Monte Carlo simulation, enabling

assessment of the influence of manufacturing tolerances on mechanism reliability and robustness for aerospace applications.

Details of Papers/patents : nil

Brief Description of working environment, expectations from the company : CSIR–National Aerospace Laboratories (CSIR-NAL) provided a professional and research-oriented working environment that encouraged technical learning and independent problem solving. The internship offered exposure to advanced engineering tools, simulation software, and collaborative research practices within the Systems Engineering Division. The work culture emphasized analytical thinking, innovation, and systematic project execution while providing guidance from experienced scientists and researchers. Expectations from the organization included understanding real-world aerospace engineering challenges, applying theoretical knowledge to practical problems, developing proficiency in computational and simulation tools, and contributing effectively to ongoing research activities. The internship also provided valuable insight into the standards, methodologies, and interdisciplinary approach followed in aerospace research and development.

Academic courses relevant to the project : Kinematcis of Machines, Dynamics of Machines, CAD/CAM

Name: ACHU KULANGARA(2024H1410057G)

Student Write-up

PS-II Project Title: REDUCED ORDER AEROLASTIC ANALYSIS OF AN AIRCRAFT WING

Short Summary of work done during PS-II : During PS-II at CSIR–NAL, I worked on the reduced-order aeroelastic analysis of an aircraft wing. The project involved studying the structural dynamics of beam-like wing structures and formulating the governing equations for bending, torsional, and coupled vibrations using Euler–Bernoulli beam theory. Analytical and numerical methods were used to determine natural frequencies and mode shapes, which were validated through finite element analysis in ANSYS. A two-degree-of-freedom typical section aeroelastic model was developed in MATLAB to investigate flutter behaviour. Parametric studies were carried out to examine the influence of air density, torsional stiffness, and center of mass location on flutter speed and aeroelastic stability. The

work provided practical exposure to aeroelastic modelling, numerical simulation, finite element analysis, and flutter prediction techniques used in aerospace engineering.

Tool used (Development tools - H/w, S/w) : Software: MATLAB, ANSYS Workbench, ANSYS APDL, MSC Nastran/Patran, SolidWorks, Microsoft Word

Objectives of the project : To develop and validate a reduced-order aeroelastic model of an aircraft wing by studying its structural dynamics and flutter behaviour using analytical methods, MATLAB simulations, and finite element analysis. The project aims to predict flutter conditions and evaluate the influence of key aeroelastic parameters on system stability.

Major Learning Outcomes : Understanding of structural dynamics and aeroelasticity.
Development of reduced-order flutter models using MATLAB.
Validation of analytical results using ANSYS finite element analysis.
Investigation of flutter behaviour and key influencing parameters.
Application of numerical and analytical methods for aerospace structures.

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : The working environment at CSIR–NAL was highly professional, research-oriented, and conducive to learning. I had the opportunity to work with experienced scientists and researchers, which provided valuable exposure to aerospace research and engineering practices. The organization offered access to advanced computational resources, software tools, and technical guidance necessary for carrying out the project effectively.
My expectations from the organization were to gain practical experience in aerospace engineering, enhance my understanding of structural dynamics and aeroelasticity, and develop skills in numerical simulation and finite element analysis. These expectations were successfully met through the project work, technical discussions, and exposure to real-world engineering challenges in a research environment.

Academic courses relevant to the project : ME G512 – Finite Element Method
DE G611 – Dynamics and Vibration
ME G641 – Theory of Elasticity and Plasticity
ME G535 – Advanced Engineering Mathematics

PS-II Station : Cyient Semiconductor, Hyderabad

Faculty

Name: Suparna Chakraborty .

Student

Name: RAHUL VASANTH GARRE .(2022A8PS1546H)

Student Write-up

PS-II Project Title: Design of Analog Power On Reset

Short Summary of work done during PS-II : Studied and developed a strong theoretical foundation in analog circuit design, including operational amplifiers, feedback systems, oscillators, Bandgap References (BGR), and Low Dropout Regulators (LDOs). Gained hands-on experience with Cadence Virtuoso by designing, simulating, and analyzing a wide range of analog circuits, including both folded cascode and telescopic cascode operational amplifiers. Worked on the design and analysis of an Analog Power-on Reset (POR) block, performing circuit-level verification and evaluating its performance under different operating conditions.

Tool used (Development tools - H/w, S/w) : Cadence Virtuoso

Objectives of the project : POR design with desired Specs and fully functioning under PVT Variations and Monte Carlo Simulations

Major Learning Outcomes : Various Analog Design challenges and strategies to overcome them

Details of Papers/patents : Cant disclose due to NDA

Brief Description of working environment, expectations from the company :Environment is good. Get to learn many things.

Academic courses relevant to the project : Micro Electronics Devices (MEC) and Analog Electronics (AE) are very very important. You work with knowledge from these course everyday. Analog and VLSI Design (ADVD) would also be useful

PS-II Station : CynLr (Vyuti Systems Pvt Ltd), Bengaluru

Faculty

Name: Raghavendra Singh

Student

Name: VIVAAN JAIN(2022AAPS0725G)

Student Write-up

PS-II Project Title: Design and Devolopment Training

Short Summary of work done during PS-II : Designed and Developed

Tool used (Development tools - H/w, S/w) : Designer and Developer

Objectives of the project : To Design and Develop

Major Learning Outcomes : Designing and Developing

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : nice

Academic courses relevant to the project : Control Systems, Digital Signal Processing and Signals

and Systems

Name: ARYAN ABHIJIT MATHURE(2022A3PS0093G)

Student Write-up

PS-II Project Title: Robotic application systems

Short Summary of work done during PS-II : Over the course of my internship at CynLr, I have primarily worked on developing robotics software, force-control algorithms, and automation systems for industrial robotic applications. My work has included designing dual-arm compliance and tool-swap systems, implementing PID-based force control for material characterization, developing vision algorithms for object localization and rotation estimation, and contributing to the LabVIEW architecture of the LAM platform. I have also worked extensively with Git and Azure DevOps in a large multi-repository codebase, integrating robotics software with vision, motion planning, and hardware interfaces while gaining hands-on experience in building reliable, production-ready automation systems.

Tool used (Development tools - H/w, S/w) : Labview, python, Mujoco

Objectives of the project : Build robotic systems for client end use cases

Major Learning Outcomes : Home to build robust electronic systems which are customer ready and reliable for deployment

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Amazing company great people small and hardworking team. Extremely high exposure to robotics and all department not just in engineering. Everyone is extremely supportive and amazing at building tech. Loved my time at this company.

Academic courses relevant to the project : All electronics courses

PS-II Station : D. E. Shaw India Private Limited - Project 1, Hyderabad

Faculty

Name: Gopalakrishnan Venkiteswaran .

Student

Name: ADITYA AGARWAL(2022A7PS0050G)

Student Write-up

PS-II Project Title: Software Development

Short Summary of work done during PS-II : Adding and improving features to an internal website built for automating and easing the work for the traders in the firm

Tool used (Development tools - H/w, S/w) : Cursor, GitHub, Claude Code, DBeaver

Objectives of the project : Maintanence and enhancements for an internal website

Major Learning Outcomes : Web development, Industry standard coding practises, corporate culture, time management, integrating AI to work effectively

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Friendly, helpful

Academic courses relevant to the project : NA

Name: DEEPANKAR BANSAL(2021B4A71070P)

Student Write-up

PS-II Project Title: Data Lakehouse

Short Summary of work done during PS-II : Build infrastructure for a data lakehouse

Tool used (Development tools - H/w, S/w) : Claude, VS code, AWS

Objectives of the project : Build a data lakehouse

Major Learning Outcomes : Learnt about Spark and iceberg

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Worked on building data pipelines for quant traders

Academic courses relevant to the project : OS, Computer networks

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PS-II Station : Daimler Truck Innovation Center, Bengaluru

Faculty

Name: Shree Prasad M

Student

Name: TUSHAR NAIR(2022A3PS1192G)

Student Write-up

PS-II Project Title: ISiL Development

Short Summary of work done during PS-II : Development of virtual ECUs for testing.

Tool used (Development tools - H/w, S/w) : dSpace toolchain

Objectives of the project : Building virtual ECUs

Major Learning Outcomes : Automotive Software in Loop testing

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Mostly relaxed, goal driven

Academic courses relevant to the project : Computer Programming, Embedded Systems

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PS-II Station : DBOI - CB Transformation- /, Pune/Bengaluru

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: GUNGUN VANJANI(2021B1A42477P)

Student Write-up

PS-II Project Title: Front-to-Back Transformation: Business Process Mapping, Requirement Analysis & Testing Enablement in Investment Banking

Short Summary of work done during PS-II : During my Practice School-II at Deutsche Bank (DBOI),

Bangalore, I worked as a Business Analyst within the Front-to-Back (F2B) Transformations team in the Investment Banking division. My work primarily focused on supporting strategic transformation initiatives aimed at improving operational efficiency, data quality, and system integration. I contributed to Project SPR (Single Prime Record) by analyzing existing trade workflows, gathering business requirements from Operations and Technology teams, and developing As-Is and To-Be process maps to support the transition from legacy systems to a centralized data repository. I also participated in stakeholder discussions to understand business processes and facilitate requirement validation. As part of the Cash Settlement Engine (CSE) transformation, I prepared and executed User Acceptance Testing (UAT) test cases, tracked testing progress, documented defects, and collaborated with cross-functional teams to ensure successful system validation. Additionally, I analyzed the existing margin management process, identified operational bottlenecks, and proposed optimized To-Be workflows to improve process efficiency and reduce manual intervention. The internship provided hands-on experience in business analysis, requirement engineering, process mapping, stakeholder management, and testing within a global investment banking environment, strengthening my analytical, communication, and problem-solving skills.

Tool used (Development tools - H/w, S/w) : Microsoft Excel, Microsoft PowerPoint, Microsoft Word, JIRA, Confluence, Microsoft Visio

Objectives of the project : Analyze and optimize investment banking processes to support front-to-back transformation initiatives. Gather, analyze, and document business requirements through collaboration with Operations and Technology teams. Develop As-Is and To-Be process maps to identify inefficiencies and recommend improvements. Support system transformation projects through requirement validation and User Acceptance Testing (UAT). Enhance operational efficiency, data quality, and process standardization across business workflows.

Major Learning Outcomes : 1. Developed practical knowledge of investment banking operations and trade lifecycle processes.
2. Gained hands-on experience in business analysis, including requirement elicitation, process mapping, and documentation.
3. Learned to collaborate effectively with cross-functional Operations and Technology teams.
4. Acquired experience in User Acceptance Testing (UAT), including test case preparation, execution, and defect tracking.
5. Enhanced analytical, problem-solving, and stakeholder communication skills while contributing to large-scale transformation initiatives.
6. Understood the role of technology-driven process optimization in improving operational efficiency and reducing risk within a global financial institution.

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : Deutsche Bank (DBOI), Bangalore provided a collaborative, professional, and technology-driven working environment that encouraged continuous learning and practical application of business analysis concepts. As a member of the Front-to-Back (F2B) Transformations team, I worked closely with Operations, Technology, and Business stakeholders on strategic transformation initiatives within the Investment Banking division. The organization promoted open communication, cross-functional collaboration, and a structured approach to problem-solving through regular meetings, knowledge-sharing sessions, and stakeholder interactions. This enabled me to understand complex business processes, contribute to requirement analysis, process mapping, and User Acceptance Testing (UAT), while gaining exposure to large-scale transformation programs. My expectations from the organization were to gain practical exposure to investment banking operations, understand how business analysis is applied in real-world projects, develop professional communication and analytical skills, and learn industry best practices for process optimization and technology transformation. The internship successfully fulfilled these expectations by providing meaningful project responsibilities, continuous mentorship, and opportunities to contribute to impactful business initiatives.

Academic courses relevant to the project : Operations Management
Business Communication
Probability and Statistics

Name: PRABHALA SREEJIT .(2021B5A43175H)

Student Write-up

PS-II Project Title: Automation of reporting dashboards

Short Summary of work done during PS-II : Worked on HR analytics and operational dashboards by automating monthly reports using Excel, Power Query, and the Excel Data Model. Consolidated data from multiple sources, created KPIs and visualizations, improved reporting efficiency, and supported business stakeholders with accurate, timely insights.

Tool used (Development tools - H/w, S/w) : Ms Excel

Objectives of the project : Automating HR data dashboards

Major Learning Outcomes : 1 Learnt how a bank functions
2 in a technical sense I have learnt about data modelling and power query in excel

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Good working environment and the mentors are really supportive

Academic courses relevant to the project : N/A

PS-II Station : DBOI – MVRM Ex Vals, Mumbai

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: ANSH GARG(2022A8PS1360G)

Student Write-up

PS-II Project Title: MARKET RISK ANALYSIS AND CONTROL (MRAC) AUTOMATION AND RISK VALIDATION

Short Summary of work done during PS-II : During my internship at Deutsche Bank in the Market Risk Analysis & Control (MRAC) team, I worked with the Credit Trading business, monitoring and validating market risk metrics across Origination & Advisory (O&A) and Capital Release Unit (CRU) portfolios. My responsibilities included verifying the completeness of trading books, ensuring the

accuracy of risk data flowing from front-office systems, and monitoring key metrics such as 1-day VaR, 10-day VaR, and 10-day Stressed VaR. I analyzed risk threshold breaches, investigated material changes, and supported daily risk sign-off by assessing whether exceptions required escalation or could be accepted. Additionally, I developed an interactive Tableau dashboard, supported by Python-based data processing, to automate risk reporting and visualize portfolio-level risk metrics for the CRU business. This reduced manual effort, improved reporting efficiency, and enhanced the team's ability to identify and analyze significant risk movements.

Tool used (Development tools - H/w, S/w) : Python,Excel,Jupyter

Objectives of the project : Daily BAU Responsibilities: Performed validation of VaR numbers for the CRU, Investment Banking and Capital Markets businesses. This required assessment of daily VaR movements, identification of driving scenarios, and analysis of sensitivities such as delta, gamma, vega, vol/skew, and various credit curve shifts. Validation was performed using in-house tools - providing hands-on experience with enterprise-grade risk platforms. Python Automation: Developed Python scripts to automate risk analysis and reporting processes. Key projects included creating tools for day-over-day (DoD) VaR movement analysis across trading desks and risk classes, enabling efficient identification of major risk drivers and supporting ad-hoc Market Risk Management (MRM) investigations. Additionally, Python was used for data extraction, processing, report generation, and workflow automation, reducing manual effort and improving accuracy and consistency. Tableau Integration: Designed and enhanced Tableau dashboards for market risk reporting and analysis. Developed analytical dashboards to monitor month-over-month (MoM) Cross Gamma and RNIPST changes, providing improved visibility into risk trends and portfolio movements. Gained hands-on experience with Tableau features such as parameters, calculated fields, interactive visualizations, dashboard publishing, and Tableau Server integration for automated reporting.

Major Learning Outcomes : Technical Advancements:
Strengthened Python programming skills through the development of automation and analytics tools for market risk reporting. Gained hands-on experience in data manipulation, workflow automation, report generation, and dashboard-driven analysis. Enhanced Tableau proficiency through the creation of interactive dashboards, use of parameters and calculated fields, and deployment through Tableau Server for automated reporting.
Business Understanding:
Developed a comprehensive understanding of Market Risk Analysis and Control (MRAC) processes, particularly VaR validation and risk sign-off procedures. Built expertise in analyzing VaR movements, identifying key scenario drivers, interpreting risk sensitivities such as delta, gamma, vega, and credit curve shifts, and understanding the impact of these factors on trading desk risk profiles.

Quantifiable Impact:

Successfully developed Python-based analytics solutions for day-over-day (DoD) VaR movement analysis at desk and risk-class levels, enabling faster identification of key risk drivers and supporting ad-hoc risk investigations. Additionally, designed Tableau dashboards to analyze month-over-month (MoM) Cross Gamma and RNIPST changes, providing enhanced visibility into portfolio risk trends and supporting management reporting. These solutions reduced manual effort, improved reporting efficiency, and increased the consistency and accuracy of risk analysis.

Professional Growth:

The internship provided valuable exposure to the practical application of market risk concepts within a global investment bank. It strengthened analytical and problem-solving skills, improved the ability to communicate findings with risk managers and stakeholders, and enhanced proficiency in working with time-sensitive financial data and reporting processes.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Deutsche Bank provided a highly professional, collaborative, and learning-oriented work environment. From the beginning of the internship, I was encouraged to take ownership of tasks while receiving continuous guidance from my manager and team members. The team maintained a strong focus on accuracy, accountability, and timely delivery, reflecting the high standards required in financial risk management.

The company expected interns to be proactive, analytical, and detail-oriented. I was encouraged to understand business processes, ask questions, and contribute to solving real-world problems rather than simply completing assigned tasks. Regular interactions with experienced professionals helped me gain insights into market risk, credit trading, and the practical application of financial concepts.

The work culture emphasized teamwork, effective communication, and continuous learning. I had access to modern analytical tools such as Python and Tableau, enabling me to automate reporting processes and build interactive dashboards. Constructive feedback from mentors played an important role in improving both my technical and professional skills.

Overall, the internship offered an excellent balance of learning and responsibility. It provided valuable exposure to the functioning of a global investment bank while helping me develop analytical thinking, problem-solving abilities, and professional workplace etiquette.

Academic courses relevant to the project : FRAM,DRM

Name: GOURA SINGH .(2021B1A43129H)

Student Write-up

PS-II Project Title: Kannon Migration Project

Short Summary of work done during PS-II : Mostly did file processing and understanding of the flow of risk from upstream ie. The traders to our market risk managers and how we review the different market risk for various portfolios.

Tool used (Development tools - H/w, S/w) : Sql , Kannon Risk Viewer

Objectives of the project : Onboarding multiple portfolios onto Kannon

Major Learning Outcomes : Learned the internal workings of the bank , understood different types of market risk

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working environment was extremely friendly, everyone is willing to help and are extremely supportive except the manager. Timings are strictly 11am-8pm , work is less for an intern but please make sure you ask beforehand for the ppo details.

Academic courses relevant to the project : Derivatives and risk management

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Name: BIBHU SMARAN RATH .(2022A1PS1409H)

Student Write-up

PS-II Project Title: Quantitative Risk Control and Independent Price Verification (IPV) for Global Asset Portfolios

Short Summary of work done during PS-II : During my six-month winter internship at Deutsche Bank (DBOI), Mumbai, I served as an analyst within the Market Risk and Valuation Management

(MRVM) / Independent Price Verification (IPV) unit. My core responsibilities revolved around executing and managing critical valuation control frameworks for diverse asset portfolios, including Statutory Liquidity Ratio (SLR) bonds, Indian Government Securities (GCT), and structured US Loans. Throughout the Weekly IPV (WIPV) and Month-End IPV (MIPV) cycles, I orchestrated data ingestion pipelines to reconcile internal front-office transaction prices against independent external market parameters. I regularly managed the end-to-end data flow through proprietary data-gateway and reporting tools (Mercury and Spider), analyzing price variances to establish risk validation thresholds and identify valuation anomalies. My role required strict adherence to tight regulatory and financial reporting timelines, transitioning from rapid operational runs during the intensive BD1–BD5 month-end close to formal variance escalation up to BD10. Post-mid-sem, I advanced into high-complexity risk domains, gaining deep functional exposure to the BD12 ComplexCash pricing pipeline designed for structured and illiquid positions. I mastered the underlying architecture of data aggregation, where override templates and raw asset populations are systematically mapped to execute target overrides within a relational database reporting system. Additionally, I focused on data governance and upstream risk engineering by performing cross-dataset variance analysis using Risk Viewer (Kannon) and utilizing credit mapping reference files to proactively catch data anomalies. This experience provided me with a comprehensive understanding of financial data lineage, internal control infrastructure, and global market risk practices.

Tool used (Development tools - H/w, S/w) : Excel, Access, Spider, Mercury, Kannon, Sledge

Objectives of the project : End-to-end execution and optimization of advanced valuation controls within the Independent Price Verification (IPV) framework

Major Learning Outcomes : Gained comprehensive exposure to risk governance by executing Independent Price Verification (IPV) and Month-End valuation workflows across diverse asset classes like SLR bonds and structured corporate loans. Learnt the operational lifecycle of cross-dataset variance analysis, data lineage auditing, and middle-office risk validation frameworks to ensure balance sheet accuracy.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment was quite friendly and seniors were very supportive during the learning phase.

Academic courses relevant to the project : Finance minor courses specifically FRAM and some middle office IB concepts

PS-II Station : Delightful Gourmet Private Limited, Licious, Bengaluru

Faculty

Name: Ankur Pachauri

Student

Name: SRIKRISHNA VARDHAN MUTTANGI(2021B2A43140H)

Student Write-up

PS-II Project Title: Microcity - Expansion and Operations

Short Summary of work done during PS-II : Increased service coverage, enabled customers to see new products by promising faster delivery, increased operation hours. Opened 12 new hubs. Created various dashboards to track KPIs of newly opened hubs and to track performance of several revenue initiatives. Built a map to visually understand our current coverage. Worked on designing a new network of hubs to maximize 15 minute delivery time.

Tool used (Development tools - H/w, S/w) : Python, SQL, Excel.

Objectives of the project : Increasing Service Coverage, Revenue, and Profitability.

Major Learning Outcomes : Last Mile Logistics

Details of Papers/patents : N.A.

Brief Description of working environment, expectations from the company :
A well-organized organization with good coordination and communication among teams.
I had a positive experience with the company. The team is cooperative and responsive.

Academic courses relevant to the project : None

PS-II Station : Development Consultants Pvt. Ltd. (DCPL) - Civil & Structural, Navi Mumbai

Faculty

Name: Mahesh Kumar Hamirwasia .

Student

Name: SHUBHAM SAURABH(2024H1430051P)

Student Write-up

PS-II Project Title: Structural design

Short Summary of work done during PS-II : What we studied in Bits is applicable here.

Tool used (Development tools - H/w, S/w) : Staad pro

Objectives of the project : application based learning

Major Learning Outcomes : Foundation design

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Nice Culture, very elder dept. hod and experienced

Academic courses relevant to the project : Yes

PS-II Station : DevRev Cloud India Pvt. Ltd., Bengaluru

Faculty

Name: Mohammad Saleem Bagewadi .

Student

Name: ANIRUDH JAYAKISHAN(2021B3A70979G)

Student Write-up

PS-II Project Title: Content Extraction from PDFs for AI Agents

Short Summary of work done during PS-II : I was improving upon DevRev's existing pipeline to extract content from PDFs for indexing. I built a dataset of PDFs, evaluated several different tools using it on several metrics, and selected one of them (GLM OCR, which is a VLM). I then worked on serving this model on a GPU to handle the scale that we would expect. I also worked on the upstream part of this pipeline, which actually sent the PDFs to the model. All in all, I was working on the end to end content extraction flow.

Tool used (Development tools - H/w, S/w) : Python, Baseten Truss, Go, Rego, Terraform.

Objectives of the project : Extracting content from PDFs to store as context for an agent

Major Learning Outcomes : VLM inference
ML model serving
Indexing pipeline architecture

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The company culture is very good. The people are smart and very helpful. The work can get a bit hectic sometimes, especially if there is a deadline. Sometimes, there are also some last minute plan changes which makes it even more hectic.

Academic courses relevant to the project : AI

PS-II Station : Dezerv Investments - Analytics, Bengaluru

Faculty

Name: Reddy Rani Vangimalla .

Student

Name: SATYA VENKATA GUDURU(2021B4A82503H)

Student Write-up

PS-II Project Title: Data Analytics

Short Summary of work done during PS-II : During my internship at Dezerv Investments, I worked on data analytics and business intelligence projects focused on improving reporting and decision-making in wealth management. My work involved developing and enhancing dashboards for tracking assets, revenue, client acquisition, engagement, retention, and churn metrics. I designed and optimized SQL pipelines that integrated data from multiple sources, automated refresh cycles, and improved reporting efficiency. I also built cohort models and conducted trend analyses to study user behavior, investment patterns, and AUM movement over time. In the later stages of the internship, I developed payback and profitability models by projecting revenues and costs to support long-term business planning. Additionally, I identified and resolved data quality issues such as duplicates, missing records, and timing mismatches, improving the reliability of analytical outputs. I also created ad-hoc analyses and reports to support finance teams and leadership decision-making.

Tool used (Development tools - H/w, S/w) : Snowflake, Apache Superset, Python, Excel, Swarm

Objectives of the project : Creating dashboards, building data pipelines, creating scripts to automate fee calculation logic, fixing data architecture according to product requirements

Major Learning Outcomes : Gained hands-on experience in data analytics for wealth management, including SQL development, dashboarding, data validation, and financial modeling. Improved analytical problem-solving skills while developing business insights from large-scale financial and client datasets.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Dezerv Investments was collaborative, fast-paced, and highly focused on data-driven product and business decisions. As part of the Product team, I worked closely with product managers, finance stakeholders, and business leaders to develop reporting systems and analytical solutions that supported decision-making across the organization. The environment encouraged ownership, independent problem-solving, and cross-functional collaboration, while also providing guidance and feedback whenever required.

The company expected interns to understand both the technical and business context of their work and contribute meaningfully to ongoing initiatives. Emphasis was placed on accuracy, reliability, and scalability, as analytical outputs were used for leadership reporting and strategic planning. I was expected to build robust data pipelines, validate results carefully, and communicate insights in a clear and actionable manner.

The role also required adaptability to evolving business requirements and the ability to translate product and business needs into analytical solutions. Overall, the experience provided valuable exposure to real-world product analytics challenges within the wealth management domain and significantly enhanced my technical and business understanding.

Academic courses relevant to the project : NA

PS-II Station : Ditto Insurance, Bengaluru

Faculty

Name: Perumal Jayakumar

Student

Name: HARSH JAIN(2021B4A42868G)

Student Write-up

PS-II Project Title: DATA ANALYTICS AND DASHBOARD DEVELOPMENT FOR DITTO INSURANCE

Short Summary of work done during PS-II : I made a central data repository (just for our team) and the dashboards for this, I analysed the sales and marketing data to find out the reason behind the stagnant sales.

Tool used (Development tools - H/w, S/w) : Google workspace, antigravity, claude, excel, python libraries, matlab.

Objectives of the project : To create and maintain a data repository for the whole team and get everyone proper access to it. And automate the process behind this.

Major Learning Outcomes : I learned to code in javascript. I saw how a company of this scale functions and does its business. Seeing how to manage people.

Details of Papers/patents : na

Brief Description of working environment, expectations from the company : The working environment is really good and healthy, and focus is always on work. Respecting everyone's opinions and overall a very constructive space.

Academic courses relevant to the project : PnS, ASM, SIA, Mathematical Modelling, Numerical Analysis, Cross Cultural Studies

PS-II Station : Divgi TorqTransfer Systems Pvt. Ltd - Shivare, Pune

Faculty

Name: Ravi Shrikrishna Reosekar .

Student

Name: ATHARVA JITENDRA WEDHANE(2024H1060104H)

Student Write-up

PS-II Project Title: DATA-DRIVEN VALIDATION, STANDARDIZATION AND FINE-TUNING OF MACHINING PROCESS PARAMETERS ACROSS MULTI-MACHINE AND MULTI-COMPONENT MANUFACTURING SYSTEMS AT DIVGI TORQTRANSFER SYSTEMS Ltd, SHIVARE.

Short Summary of work done during PS-II : The work involved detailed study of machining processes, tooling systems, grinding wheels, dressing tools, fixtures, jaws, mandrels, chucks, cycle times, operation times, tool life, suppliers, and other process-related parameters. Comprehensive process datasheets were created in a standardized digital Excel format by consolidating information from multiple sources and validating it through shop-floor observations and engineering records. In addition, newly installed turning machines were studied and their process information was integrated into the standardized database. Time studies were conducted to analyze operation and cycle times, identify process variations, and support process improvement initiatives. The project helped improve data accessibility, consistency, and traceability while establishing a structured framework for process parameter management. The internship provided valuable exposure to manufacturing engineering practices, process standardization, industrial data analysis, and continuous improvement methodologies in an automotive component manufacturing environment.

Tool used (Development tools - H/w, S/w) : Hardware: CNC Turning Machines, CNC Grinding Machines, Shop-floor Computer Systems, Measuring and Inspection Instruments, Manufacturing Fixtures, Jaws, Mandrels, and Chucks. Software: Microsoft Excel (Data Collection, Analysis, and Standardization), Mi

Objectives of the project : The primary objective of this study is to establish a validated and standardized database of machining process parameters by systematically comparing actual shop-floor data with documented standards. The specific objectives include: 1) Verification of process parameters across different machines and operations. 2) Identification of variations between

documented and real data. 3) Compilation of structured process data for multiple components. 4) Establishment of digital database for process parameters. 5) Identification of potential areas of process improvement.

Major Learning Outcomes : The internship provided practical exposure to machining processes, process parameter validation, and manufacturing data management in an automotive manufacturing environment. Through data collection, standardization, and time study analysis across multiple machines and components, valuable insights were gained into process optimization, digitalization, and continuous improvement practices in manufacturing engineering.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment was highly professional, collaborative, and focused on continuous improvement in manufacturing processes. The department provided exposure to real-time production activities, machining operations, process planning, tooling systems, and engineering documentation. Regular interactions with manufacturing engineers, operators, supervisors, and quality personnel facilitated practical learning and enhanced understanding of industrial practices.

The company provided the necessary resources, technical guidance, and access to manufacturing data required for successful completion of the project. Opportunities were provided to study multiple machines, analyze process parameters, conduct time studies, and participate in process improvement activities. The supportive work culture encouraged independent learning, problem-solving, and effective communication across departments.

The primary expectation from the company was continued guidance and knowledge sharing to help bridge the gap between academic concepts and industrial applications. Exposure to advanced manufacturing technologies, digitalization initiatives, and continuous improvement projects greatly contributed to the overall learning experience. The internship successfully provided practical insights into manufacturing engineering and prepared a strong foundation for future professional responsibilities.

Academic courses relevant to the project : Manufacturing Processes,
Machine Tool Engineering,
Computer Aided Analysis and Design,
Production Planning and Control,
Quality Control, Assurance and Reliability,
Statistical Process Control (SPC),
Operations Research,

PS-II Station : Divgi TorqTransfer Systems Pvt. Ltd. - Bhosari, Pune

Faculty

Name: Ravi Shrikrishna Reosekar .

Student

Name: VINAYKARTHIK J(2024H1410175H)

Student Write-up

PS-II Project Title: NVH Control of EV Transmission using Microgeometry Optimization

Short Summary of work done during PS-II : The NVH analysis and design validation of the EV gearbox were successfully completed using ANSYS, Romax, and MASTA software. Modal analysis was performed on the first reduction stage, second reduction stage, and the complete gearbox assembly to determine the natural frequencies and mode shapes. The simulation results were validated through analytical calculations, with an error of less than 2%, confirming the accuracy of the developed models. Structural stress analysis demonstrated that the induced stresses under operating conditions remained below the allowable limits, ensuring the structural integrity and reliability of the gearbox design. Forced vibration analysis further provided insights into the dynamic behavior of the system and helped identify critical vibration modes. Various operating conditions, including Varying Torque Drive, Varying Torque Coast, Varying Torque Reverse, and Durability load cases, were analysed in Romax to evaluate gear mesh forces and load distribution characteristics. Subsequently, detailed NVH analysis was carried out in MASTA, where multiple microgeometry optimization iterations were performed to minimize transmission error, the primary source of gear whine and vibration. The optimized gearbox design exhibited a significant reduction in transmission error, resulting in improved NVH performance. Acoustic response analysis predicted a maximum noise level in the range of 70–80 dB, which correlated well with analytical calculations yielding approximately 75 db. Overall, the project successfully achieved gearbox design validation, transmission error reduction,

and NVH optimization while satisfying structural and dynamic performance requirements.

Tool used (Development tools - H/w, S/w) : MASTA, ROMAX, ANSYS

Objectives of the project : To reduce the transmission error, Misalignment and reduce the noise

Major Learning Outcomes : How the NVH plays a crucial role in terms of Battery Electric Vehicle

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Company is good and my mentor Mr. Rajendra Jadhav, have helped me a lot to complete my project. And the environment also fine. I'm in CAD/CAE department every one is friendly and very helpful persons

Academic courses relevant to the project : Machine Design, Strength of Materials

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Name: SIDHANT PRAKASH(2024H1060147P)

Student Write-up

PS-II Project Title: Design, Architecture, Analysis & Validation of Automatic Transmission

Short Summary of work done during PS-II : The project is about the design, architecture, analysis, and validation of the internal components of the Simpson 4 speed AT, 6L50, Aisin AA80E automatic transmission, with a focus on planetary gear sets and clutch packs. The study excludes torque converter design and instead concentrates on the mechanical power transmission system within the gearbox. The architecture of the 6L50 transmission is analyzed in terms of its compound planetary gear arrangement, gear ratio generation, and clutch engagement strategy. Power flow across different gears is studied to understand how various clutch combinations produce six forward speeds.

Tool used (Development tools - H/w, S/w) : MS Excel, Siemens NX, Romax Concept, MASTA, MATLAB

Objectives of the project : Study of Transmission Architecture ,Analysis of Planetary Gear Systems,

Understanding Clutch and Brake Operations, Gear Ratio Determination and Simulations

Major Learning Outcomes : Learnt how to design an transmission, its working and different aspects that needed to consider while designing

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Company is good and my mentor Mr. Abhijeet Pingale, have helped me a lot to complete my project. And the environment also fine.

Academic courses relevant to the project : Finite Element Analysis, Theory of Machines

PS-II Station : Divgi TorqTransfer Systems Pvt. Ltd. Sirsi, Karnataka - Sirsi, Sirsi

Faculty

Name: Ravi Shrikrishna Reosekar .

Student

Name: VYSAKH. K. M(2024H1410097P)

Student Write-up

PS-II Project Title: CFD Analysis of EV Transmission

Short Summary of work done during PS-II : The major work i have done during the course of PS-II was the project named CFD Analysis of EV Transmission, given by the company. In addition to that i have done the general works such a preparing CAD models required for the day to day operations of the company. I helped my teammates to complete the CAD modelling of multiple components used in transmission system such as gears, shafts etc. Basic cad modelling i completed was the forging

drawings given by the customer. From my project i was learning more about the working of EV Transmission and was trying to model the same for analyzing the effect of oil lubrication at different rotational speed of transmission system.

Tool used (Development tools - H/w, S/w) : Siemens NX

Objectives of the project : Analyze Lubrication Performance, Assess Thermal Behavior, Evaluate Efficiency Losses, Optimize Transmission Design

Major Learning Outcomes : This project provides a strong understanding of Computational Fluid Dynamics (CFD) and its application to EV transmission systems. It develops skills in modeling, meshing, and simulating fluid flow and heat transfer within the transmission. The project enhances the ability to analyze lubrication, cooling performance, oil flow, and efficiency losses, while interpreting simulation results for engineering decisions. It also improves problem-solving, analytical thinking, and design optimization skills, enabling the development of efficient, reliable, and high-performance EV transmission systems.

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : The organization provided a friendly and collaborative working environment where team members were supportive and encouraged learning. Effective communication, teamwork, and guidance from mentors helped in developing both technical and professional skills. The workplace promoted discipline, knowledge sharing, and a positive attitude toward problem-solving, creating an excellent environment for gaining practical experience and improving confidence.

Academic courses relevant to the project : Nil

PS-II Station : Dorsch Consult India Pvt Ltd, Mumbai

Faculty

Name: Mahesh Kumar Hamirwasia .

Student

Name: WALLABH UDAY RANADE(2024H1060166H)

Student Write-up

PS-II Project Title: MEP

Short Summary of work done during PS-II : Study of design of the onging project, what and where equipments are needed in the design. Create Design basis report with RFP (request for proposal) issued by client. Finding or observing the process of project completion on site.

Tool used (Development tools - H/w, S/w) : Autocad, e20 form sheet, revit

Objectives of the project : Use of MEP in construction industry

Major Learning Outcomes : Detailed knowledge about how HVAC System works in big projects

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The seniors and colleagues are very supportive and nice. Encourage and clear any doubts wherever needed.

Academic courses relevant to the project : HVAC

PS-II Station : Dr Reddy's Laboratories, Hyderabad

Faculty

Name: Reddy Rani Vangimalla .

Student

Name: ROHIT IYER .(2022AAPS0358H)

Student Write-up

PS-II Project Title: AI-Assisted Computational Platform for Analytical Workflows

Short Summary of work done during PS-II : During my PS-II at Dr. Reddy's Laboratories, I worked on the development of an AI-assisted computational platform designed to automate analytical workflows through the integration of multiple machine learning and deep learning models. The project focused on building an intelligent system capable of selecting, coordinating, and executing relevant AI models based on user requirements while optimizing computational efficiency. My contributions primarily involved backend development, AI workflow orchestration, API design, authentication mechanisms, database integration, and real-time communication services. I participated in the integration of several AI models into a unified framework and contributed to the development of rule-based planning and execution mechanisms for efficient model utilization. The project also involved studying explainability techniques, model evaluation methodologies, and approaches for improving the interpretability of AI-generated outputs. Through this work, I gained practical exposure to deploying AI solutions in a production-oriented environment, integrating research-based models into usable software systems, and building scalable AI-driven applications. The experience provided valuable insights into how modern AI systems are developed, deployed, monitored, and maintained in an industrial setting while emphasizing the importance of software engineering principles in AI product development.

Tool used (Development tools - H/w, S/w) : Hardware:Workstations with GPU-enabled computing resources. Software : Python, FastAPI, SQLite, Docker, Git/GitHub, REST APIs, PyTorch, Visual Studio Code, Postman, Linux and Windows Development Environments.

Objectives of the project : To develop an AI-assisted computational platform that automates complex analytical workflows using multiple machine learning models and intelligent orchestration techniques. The objective was to improve workflow efficiency, scalability, and decision support through AI-driven analysis.

Major Learning Outcomes : Design and development of AI-enabled analytical platforms.
Integration and orchestration of multiple AI/ML models.
Backend development using FastAPI and REST APIs.
Workflow automation and intelligent decision-making systems.
Model deployment, optimization, and performance evaluation.

Software engineering practices including modular design, authentication, logging, and database management.
Exposure to industry-scale AI development workflows.

Details of Papers/patents : No papers or patents were published or filed as part of my direct contributions during the PS-II period.

Brief Description of working environment, expectations from the company : The working environment at Dr. Reddy's Laboratories was collaborative, professional, and learning-oriented. Team members were encouraged to take ownership of their tasks while receiving guidance and support from mentors and domain experts. Regular discussions, technical reviews, and feedback sessions promoted continuous learning and helped maintain alignment with project objectives.
The organization provided exposure to real-world AI applications and industry-standard software development practices. Working alongside professionals from diverse technical backgrounds enhanced my understanding of interdisciplinary collaboration and problem-solving in an industrial setting.
My expectation from the company was to gain practical exposure to large-scale AI systems, understand how research ideas are translated into production-ready solutions, and strengthen my technical and professional skills. The experience met these expectations by providing opportunities to work on challenging problems, interact with experienced professionals, and contribute to meaningful projects with real-world impact.

Academic courses relevant to the project : Machine Learning, Deep Learning, Artificial Intelligence, Database Systems

PS-II Station : EA Games - Customer Platform Enablement, Hyderabad

Faculty

Name: Y V K Ravi Kumar .

Student

Name: YATHIN S(2022A7PS0132G)

Student Write-up

PS-II Project Title: MORPHEUS SCOUT - INTELLIGENT SLACK BOT FOR CLOUD

Short Summary of work done during PS-II : This project covered the full software development lifecycle from initial concept to production- ready deployment: • System architecture design and technology stack selection • Backend service implementation using Python and FastAPI • Integration with Slack Events API and Large Language Models • Development of automated testing suites • Performance optimization and scalability testing • Deployment configuration using Docker and Kubernetes • Observability setup with Grafana, Loki, and Prometheus • Technical and functional documentation

Tool used (Development tools - H/w, S/w) : Github copilot, VS code, docker, etc

Objectives of the project : Automated L2 Support

Major Learning Outcomes : Multi-agent routing,

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The offices are awesome and full of passionate people, it's a lenient five day a week in office policy. The work-life balance is actually great, and they actively protect your time so you don't burn out. On the job, they expect you to be a team player who can collaborate across different time zones, try bold ideas rather than playing it safe.

Academic courses relevant to the project : NLP, AI

PS-II Station : EarnIn - Software Engineering (Backend), Bengaluru

Faculty

Name: Raja Vadhana Prabhakar .

Student

Name: TANAY RAJESH GARDE .(2022A3PS0610H)

Student Write-up

PS-II Project Title: HomeState Automation Framework

Short Summary of work done during PS-II : Learnt software engineering and working in a MNC in a critical live microservice.

Tool used (Development tools - H/w, S/w) : Cursor, JetBrains Rider, Github, Datadog, Databricks

Objectives of the project : Create a event based testing suite using Testcontainers

Major Learning Outcomes : Software Engineering

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : very comfortable, intern based project expectations and accomodating

Academic courses relevant to the project : OOPS, DBMS, Software Engineering

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PS-II Station : EarnIn, Bengaluru

Faculty

Name: Raja Vadhana Prabhakar .

Student

Name: SHOURYA KALPESH KOTHARI(2021B3AA1526G)

Student Write-up

PS-II Project Title: Payroll setup automation

Short Summary of work done during PS-II : Worked on automating the payroll setup of consumers using their pay stubs and using an llm powered logic system to setup payroll more accurately and faster than humans

Tool used (Development tools - H/w, S/w) : Sagemaker, cursor, mL flow python

Objectives of the project : Automating the payroll setup of consumers to reduce 3rd party costs and delay

Major Learning Outcomes : Prompt engineering

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Good environment to learn, helpful colleagues

Academic courses relevant to the project : Dsa, oops, ML

PS-II Station : Eaton India Innovation Center - Electronics, Pune

Faculty

Name: Manoj Subhash Kakade .

Student

Name: SIDDHARTHA BHATTACHARJEE(2022A8PS0224G)

Student Write-up

PS-II Project Title: Hybrid Occupancy Sensor using PIR+mmWave/Microwave Sensing

Short Summary of work done during PS-II : During my PS-II at Eaton, I worked on the development of a hybrid occupancy sensing system aimed at overcoming the limitations of conventional PIR-based occupancy sensors. The project involved evaluating multiple sensing technologies, including PIR, microwave radar, and mmWave radar, to improve occupancy detection accuracy while minimizing false alarms under varying environmental conditions. The initial phase focused on technology research, sensor evaluation, comparison studies, and preparation of a Pugh matrix to identify the most suitable sensing solution. Subsequently, system architectures were developed, suitable evaluation boards and PIC18 microcontrollers were selected, and occupancy detection algorithms were designed using sensor fusion concepts. I developed firmware in Embedded C using MPLAB X IDE and implemented custom occupancy detection logic for integrating PIR and microwave radar sensors. The work also involved developing communication drivers, testing different detection strategies, and optimizing the sensing algorithm based on practical observations. The hardware was integrated into a ceiling-mounted lighting fixture, followed by laboratory testing, environmental testing, and field testing. Performance evaluations were carried out for occupancy detection, range testing, steam interference, and real-world operating conditions. Throughout the internship, I gained valuable experience in embedded systems, sensor technologies, hardware integration, testing methodologies, technical documentation, and industrial product development practices.

Tool used (Development tools - H/w, S/w) : JTAG Flashing, MPLAB X IDE, PIC18 Microcontrollers, Vscode

Objectives of the project : Develop an occupancy sensor system that overcomes PIR limitations by integrating different concepts and sensors. The goal is to achieve high-accuracy detection with minimal false alarms across extreme temperature ranges.

Major Learning Outcomes : Gained hands-on experience in the complete product development cycle, including requirement analysis, technology evaluation, system architecture design, hardware integration, firmware development, testing, and validation.

Developed a strong understanding of occupancy sensing technologies such as PIR, microwave radar, and mmWave sensors, along with their advantages, limitations, and practical applications.
Learned to evaluate sensors, microcontrollers, and development platforms using technical datasheets, research papers, and industry standards.
Acquired practical experience in embedded systems development using PIC18 microcontrollers, MPLAB X IDE, MPLAB Code Configurator, and Embedded C.
Designed and implemented custom occupancy detection algorithms using sensor fusion techniques to improve detection accuracy and reduce false alarms.
Gained experience in hardware prototyping, PCB testing, soldering, fixture assembly, and system integration.
Performed laboratory and field testing, including environmental testing under varying conditions such as temperature changes and steam interference.
Developed skills in technical documentation, experimental analysis, troubleshooting, and engineering problem-solving in an industrial environment.

Details of Papers/patents : None, but if project enters development cycle later patent can be applied

Brief Description of working environment, expectations from the company : The working environment at Eaton was professional, collaborative, and conducive to learning. The project assigned to me was both interesting and technically enriching, providing valuable exposure to real-world engineering practices and problem-solving approaches.
Throughout my internship, I received continuous support and guidance from my mentors and team members. Although there were occasions when team members were occupied with their own responsibilities and project deadlines, they were always willing to help whenever assistance was required. This ensured that I was able to make steady progress and gain meaningful insights from the project.
The company maintains high standards regarding intellectual property (IP) protection and data confidentiality. As a result, any documents or reports that need to be shared externally, including submissions to the college, undergo a verification and approval process before release. While this may sometimes increase the time required for document approvals, it reflects the company's strong commitment to safeguarding proprietary information and maintaining professional standards.
Overall, my experience at Eaton was highly positive. The project, guidance from the team, and exposure to industry practices significantly contributed to my technical and professional development.

Academic courses relevant to the project : Signals and Systems, Microprocessors and Interfacing, Digital Design, Analog Electronics

PS-II Station : Eightfold AI India Pvt. Ltd., Noida

Faculty

Name: Febin A Vahab .

Student

Name: DAKSH JAIN .(2022A7PS0201H)

Student Write-up

PS-II Project Title: Enterprise Talent Acquisition Platform Development and Optimization

Short Summary of work done during PS-II : I contributed to the development and enhancement of recruiter-facing workflows within the large-scale platform of Eightfold AI. My work involved both frontend and backend engineering using technologies such as React, TypeScript, Redux, Redis, Solr, and microservice-based APIs. I developed and enhanced multiple production features, including bulk actions for recruiter workflows, accessibility improvements for assistive technology users, communication workflow automation through email autofill systems, and template filtering mechanisms based on user groups and tags. These projects required frontend development, backend integrations, testing, and collaboration with cross-functional teams. I also participated in production support activities involving issue investigation, root-cause analysis, debugging, and customer support. I also worked on performance analysis initiatives to evaluate system latency, memory utilization, and search efficiency using various monitoring and diagnostic tools. The internship provided exposure to the complete software development lifecycle, including requirement analysis, design discussions, implementation, testing, deployment, performance optimization, and operational support. It enabled me to gain practical experience in enterprise software engineering while contributing to customer-facing features used in production environments.

Tool used (Development tools - H/w, S/w) : Development Workstation, React, TypeScript, Redux, JavaScript, Redis, Solr, Git, AWS, Playwright, JIRA, Confluence, NVDA, HTOP, Browser DevTools, Claude VSCode Agent, Claude LSP.

Objectives of the project : Develop recruiter-facing enterprise software features, improve workflow efficiency through automation, enhance performance, gain exposure to full-stack software development and production systems.

Major Learning Outcomes : Full-stack development, enterprise software architecture, distributed systems, accessibility engineering, performance optimization, production debugging, cross-functional collaboration, software development lifecycle.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Fast-paced and collaborative environment focused on building large-scale solutions. The work culture emphasized on ownership, continuous learning, technical excellence, and collaboration among engineering, product, design, and customer-facing teams. Engineers were encouraged to participate actively in design discussions, code reviews, testing, debugging, and production support activities.

Academic courses relevant to the project : Object Oriented Programming, Data Structures and Algorithms, Database Systems, Operating Systems, Computer Networks, Software Engineering, Web Technologies, Distributed Systems, Human Computer Interaction.

Name: SURAJ PAL(2021B2A72755P)

Student Write-up

PS-II Project Title: User Group based permission framework, Rippling Integration

Short Summary of work done during PS-II : In first half, worked on User Group based roles and permission framework which can manage access at granular level dynamically based on different attributes. In second half, Worked on the integration of Rippling HRIS with Eightfold.ai's Talent Tracking platform by implementing multiple write-back and sync workflows.

Tool used (Development tools - H/w, S/w) : Python, React with TS, EC2 machine, etc

Objectives of the project : 1. To create a system by which access, roles and permissions can be managed using User Groups. 2. To integrate Rippling HRIS with EF Talent Tracking system

Major Learning Outcomes : 1. In depth knowledge of Robust Software development
2. Scaling and managing large softwares
3. Access control and security management
4. Solving realtime customer problems

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment leaned towards ownership, independent problem-solving, and adaptability. It was fast-paced and focused on continuous learning. Teams emphasised code quality, scalability, effective communication, and taking responsibility for assigned tasks.

Academic courses relevant to the project : OOP, DBMS, ML, etc

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Name: JAINAM SHAH(2022A7PS1182G)

Student Write-up

PS-II Project Title: Enhancements to Approval Workflows and Workflow Automation in a Talent Acquisition Platform

Short Summary of work done during PS-II : During my internship at Eightfold AI, I worked on the Talent Acquisition platform and developed five production features related to approval workflows and workflow automation. My work included automated approval reminders, configurable approval workflows, a requisition control panel, a reusable workflow operator framework, and an AI-powered workflow creation assistant. I contributed across the full stack, including backend services, React frontend, testing, and production rollout, while ensuring backward compatibility and scalability.

Tool used (Development tools - H/w, S/w) : Software: React, TypeScript, Python, Flask, Redux Toolkit, LangGraph, Apache Solr, PyTest, Playwright, Git

Objectives of the project : Improve approval workflows and workflow automation in the Talent Acquisition platform. Reduce manual effort through automation. Build scalable, production-ready features. Enhance user experience using AI-assisted workflow creation.

Major Learning Outcomes : Built and deployed production-grade full-stack features.
Learned enterprise system design and safe feature rollouts.
Worked with LLMs and workflow automation.
Improved debugging, testing, and code review skills.
Experienced working in a collaborative engineering team

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : I worked with the Talent Acquisition engineering team at Eightfold AI in a collaborative development environment. The work involved designing, implementing, testing, and deploying production features while participating in design reviews and code reviews. The company expected ownership, code quality, teamwork, and adherence to engineering best practices.

Academic courses relevant to the project : OOP, DBMS, Cloud Computing

PS-II Station : Eli Lilly, Bengaluru

Faculty

Name: Bharathi R .

Student

Name: MAHDEEN AHMED SHEIKH(2024H1460201P)

Student Write-up

PS-II Project Title: Global Scientific Communications

Short Summary of work done during PS-II : During the PS-II internship within the Global Scientific Communications (GSC) division at Eli Lilly, work was successfully executed across three core operational streams: Quality Review (QR), Regulatory Writing, and Publications. In the Quality Review domain, I performed rigorous data-verification and compliance audits on critical regulatory documents, including Clinical Study Reports (CSRs), Investigator's Brochures (IBs), and protocols. This involved meticulously cross-referencing summary tables against raw statistical source data to eliminate errors and ensure strict adherence to internal Lilly style manuals and AMA guidelines. For the Regulatory Writing team, I assisted in drafting, formatting, and updating clinical submission documents. I supported the documentation lifecycle by implementing feedback from multi-disciplinary review loops, ensuring seamless document progression. Concurrently, on the Publications team, I contributed to external-facing scientific literature. This involved executing targeted literature searches, managing extensive reference databases via EndNote, and helping format and edit manuscripts, congress abstracts, and poster presentations destined for peer-reviewed journals and international medical conferences. Collectively, this role demanded high precision, data confidentiality, and cross-functional alignment with global teams to maintain Lilly's gold standard of scientific documentation.

Tool used (Development tools - H/w, S/w) : MS Word, Excel, PowerPoint

Objectives of the project : To master the medical writing, quality review, and compliance processes within Eli Lilly's Global Scientific Communications department. The core focus was to ensure clinical data integrity, technical accuracy, and strict regulatory alignment across high-stake regulatory documents and external scientific publications.

Major Learning Outcomes : Through hands-on experience, I mastered key industry compliance guidelines including ICH-GCP, ICMJE, and Good Publication Practices.
I developed advanced data-auditing skills by cross-verifying complex statistical results between source files and final summaries.
I learned to effectively translate intricate clinical trial data into clear, structured, and audience-appropriate medical communication.
I gained high proficiency in utilizing specialized corporate document management platforms and reference tools like EndNote.
I acquired vital cross-functional collaboration skills by interfacing regularly with global medical fellows, biostatisticians, and research scientists.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Eli Lilly operates in a highly collaborative, fast-paced, and globalized environment within the Global Scientific Communications (GSC) division. The corporate culture demands exceptional data integrity, strict compliance with international regulatory frameworks, and seamless cross-functional teamwork across global timelines.

Regarding program expectations, a primary objective of embarking on this PS-II internship was the mutual understanding of a potential pathway toward a Pre-Placement Offer (PPO) and transitioning into permanent full-time employment. While vacant positions existed within the departments, an ongoing company-wide hiring freeze and a strict non-backfilling policy—implemented prior to the hiring cycle—ultimately prevented the extension of official employment offers.

Despite these macroeconomic constraints halting immediate corporate conversion opportunities, Eli Lilly maintained exceptionally high performance expectations. The company expected interns to operate with the same level of accountability as full-time employees, requiring absolute precision in data auditing, strict adherence to internal style guides, and the agility to integrate feedback from complex, multi-disciplinary review loops. Ultimately, while the freeze restricted the immediate availability of a PPO, the environment successfully demanded and cultivated a standard of work required for global corporate readiness.

Academic courses relevant to the project : Quality Assurance and Regulatory Affairs (QARA), Clinical Research (CR)

Name: SNEHA PRUTHI(2024H1530301P)

Student Write-up

PS-II Project Title: Role as a Medical Writer

Short Summary of work done during PS-II : My work involved creating, revising, and managing scientific training content for global sales and marketing teams across disease areas like cardiometabolic health, oncology, immunology, and neuroscience. I also went through training in AMA-style referencing, literature search, clinical trial design, and disease-specific topics like diabetes and oncology. On a day-to-day basis, my tasks included content chunking, managing citations, preparing reference packages, and working through reviewer comments. I contributed to several live projects and made sure deliverables were completed properly and on time by staying in regular

contact with the relevant stakeholders.

Tool used (Development tools - H/w, S/w) : AI tools

Objectives of the project : To work with business stakeholders to understand what they need and help put together learning solutions that are useful for the Marketing and Sales teams. This means keeping in mind how adults learn best, so the content helps people build real skills and apply them in their work. • To complete all the required training modules and build the skills needed to carry out medical writing tasks properly as part of the CLS team. • To get a real sense of how the pharmaceutical industry works, particularly around how products are developed and promoted.

Major Learning Outcomes : This internship helped me grow in scientific writing, understanding regulatory
requirements, and working with different teams. It also gave me a real look at how medical communication works in the industry and how product training is built from the ground up.
Most importantly, it helped me get better at getting complicated medical information and turning it into something clear and easy to use.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The culture is quite good and all the folks are so welcoming.

Academic courses relevant to the project : Clinical Research, Biostatistics, Advanced Pharmacology

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Name: ANUSHA SHANMUGAM(2024H1530202H)

Student Write-up

PS-II Project Title: Internship experience at Eli Lilly

Short Summary of work done during PS-II : I had gained hands on experience in QR within GSC , working around with document samples wi th a focus on consistency, in scientific writing had worked

on learning the structured authoring objectives and also applying them into regulatory documents , the last phase included the publication which is closely to dissemination of information to the public.

Tool used (Development tools - H/w, S/w) : MS word , Microsoft edge

Objectives of the project : To understand the role of GSC in the drug development process and gain hands - on experience in the quality review, scientific writing and publication training's ensuring accuracy, consistency and compliance with ICH guidelines and internal standards.

Major Learning Outcomes : 1) building confidence in understanding and interpreting data
2)precise and clear commenting
3) documentation and record retention
4)structured authoring
5) document flow and life cycle
6) publications life cycle

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : Very good environment, supportive team mates

Academic courses relevant to the project : Nil

Name: ANKIT SINGH TOMAR(2024H1470198P)

Student Write-up

PS-II Project Title: PHARMACEUTICAL BUSINESS INTELLIGENCE: ENTERPRISE OPERATIONS, COMPLIANCE, AND ADVANCED CLINICAL ANALYTICS

Short Summary of work done during PS-II : The deployment of interactive surveillance dashboards, the consolidation of fragmented competitor data sources into a unified landscape view, and the development of reusable automation skills directly enhanced the function's visibility, coordination, and strategic foresight. The surveillance dashboards and structured secondary research provided the

team with a tangible operational advantage, enabling proactive anticipation of competitor moves rather than reactive reporting.

Tool used (Development tools - H/w, S/w) : Microsoft suite, Power BI, Databases

Objectives of the project : To develop and deploy interactive enterprise dashboards for pipeline and competitive surveillance, design reusable automation templates for intelligence production, and establish structured secondary research workflows for competitive benchmarking and patent landscape analysis to inform executive-level strategic decisions.

Major Learning Outcomes : This internship successfully bridged the gap between theoretical academic knowledge and modern, data-driven operational intelligence. It proved that domain knowledge in pharmaceutical chemistry, when coupled with advanced enterprise technical skills and effective executive communication, yields scalable enterprise data solutions that drive real organizational value.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : During my 24-week immersion into pharmaceutical competitive intelligence at Eli Lilly, I operated in a dynamic, highly structured, and data-driven corporate environment centered around a global compliance framework. The culture emphasized precision, cross-functional collaboration, and continuous learning, leveraging advanced digital ecosystems like Microsoft 365, SharePoint, and Power BI. As an intern, I was expected to rapidly transition from comprehensive onboarding—which included mastering institutional IT infrastructure and stringent regulatory obligations—to delivering actionable strategic insights. My core expectations revolved around executing daily secondary research and surveillance of clinical registries, patent databases, and competitor deal activities to evaluate pharmaceutical pipeline assets. I was routinely expected to synthesize this complex, multi-source clinical data into clear executive briefings and competitive landscape assessments to support business development strategy. Furthermore, the company expected me to drive team efficiency by developing interactive data dashboards and reusable automation workflows, culminating in a formal knowledge transfer to ensure the sustained adoption of these technical capabilities across the broader team.

Academic courses relevant to the project : IPR, CR, AMC.

Name: NUPUR GUPTA(2024H1460133H)

Student Write-up

PS-II Project Title: Schizophrenia cliniql trial landscape analysis using public resources

Short Summary of work done during PS-II : PS-II involved conducting a comprehensive clinical trial landscape analysis of schizophrenia, structured as a 14-chapter report covering disease epidemiology, unmet need, current standard of care, mechanism of action review across novel drug classes, and a detailed assessment of late-stage and emerging assets in the global pipeline. The analysis included profiling of key molecules such as Brenipatide SC (Eli Lilly), KarXT, Emraclidine, Ulotaront, and other muscarinic, TAAR1, and GlyT1 agents, alongside benchmarking of trial design, endpoints, and competitive positioning. A dedicated chapter on USFDA regulatory pathways and expedited approval designations was developed to contextualize the route-to-market for pipeline candidates. Findings were validated against ClinicalTrials.gov, company filings, and peer-reviewed literature, then summarized into a 12+ slide PowerPoint with editable grouped flowcharts, updated drug data, and revised statistical visualizations. The project strengthened skills in clinical trial database navigation, structured therapeutic-area assessment, and translating raw trial data into actionable competitive intelligence outputs aligned with Lilly's strategic interests.

Tool used (Development tools - H/w, S/w) : MS Excel, MS PowerPoint, MS Word, Power BI, ClinicalTrials.gov, PubMed, company investor presentations & SEC filings, LLM-based research automation tools (ChatGPT/Claude).

Objectives of the project : Secondary research, validation and analysis

Major Learning Outcomes : Learnt to read clinical trial website extract information from it validating the information and doing analysis

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Eli Lilly's Catalyze360 team in Bengaluru operates as a fast-paced Business Intelligence function focused on identifying emerging biotech partnerships. The working culture is highly collaborative, data-driven, and outcome-oriented, with daily exposure to cross-functional stakeholders across competitive intelligence, business development, and strategy teams. Interns are treated as contributing members rather than observers, with ownership of deliverables from day one. Expectations included building

deep familiarity with primary data sources (ClinicalTrials.gov, company pipelines, deal databases, regulatory filings), independently profiling biotech assets and companies, developing Power BI dashboards for ongoing pipeline tracking, and contributing to LLM-based research automation workflows.

Academic courses relevant to the project : DFD, QARA, APP, PKCP, ADDS

Name: VAISHNAVI SACHIN KOTHAWALE(2024H1460153H)

Student Write-up

PS-II Project Title: ALS Clinical Trials Analysis (Disease Landscape)

Short Summary of work done during PS-II : I undertook a structured review of the ALS clinical trial landscape using multiple pharmaceutical intelligence databases. The work involved identifying and categorizing trials across development phases, analyzing therapeutic trends, and compiling findings into a standardized deliverable. Through this project, I developed practical skills in secondary research, pharmaceutical database navigation, data validation, data analysis, competitive intelligence methodology, and professional report writing and presentation in an industry setting.

Tool used (Development tools - H/w, S/w) : MS Excel, MS PowerPoint, MS Word, MS Outlook and MS Teams along with other paid CI databases

Objectives of the project : To construct a comprehensive disease landscape for ALS, mapping the full industry- sponsored clinical trials to identify strategic trends, unmet needs, and key 2026 milestones.

Major Learning Outcomes : I undertook a structured review of the ALS clinical trial landscape using multiple pharmaceutical intelligence databases. The work involved identifying and categorizing trials across development phases, analyzing therapeutic trends, and compiling findings into a standardized deliverable. Through this project, I developed practical skills in secondary research, pharmaceutical database navigation, data validation, data analysis, competitive intelligence methodology, and professional report writing and presentation in an industry setting.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Lilly's culture is very inclusive, and it's a great place to start your career, with much more to learn.

Academic courses relevant to the project : DFD, QARA, IPR, ADDS, etc

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Name: SARVESH S D(2024H1290015P)

Student Write-up

PS-II Project Title: Competitive Intelligence

Short Summary of work done during PS-II : Surveillance of pahrama companies asset in clinical Trial

Tool used (Development tools - H/w, S/w) : Clinical trial.gov,patbase

Objectives of the project : Surveillance of pahrama companies asset in clinical Trial

Major Learning Outcomes : Learned the work of competitive Intelligence

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : Nil

Academic courses relevant to the project : Nil

Name: RUTUJA SUHAS BHOSALE(2024H1460135H)

Student Write-up

PS-II Project Title: Parkinson's Disease: Pathogenesis, Therapeutics, and Market Landscape

Short Summary of work done during PS-II : Worked on the assignments assigned, presented those assignments

Tool used (Development tools - H/w, S/w) : MS Excel, MS PowerPoint, MS Word

Objectives of the project : To develop a comprehensive understanding of the disease by analyzing its pathophysiology, epidemiology, diagnostic approaches, treatment options, and market dynamics through structured research and competitive intelligence.

Major Learning Outcomes : Understand the disease pathology and key mechanisms.
Interpret epidemiological data.
Evaluate current diagnostic approaches.
Assess available and emerging treatment options.
Develop competitive intelligence and market analysis skills.
Apply structured research and data analysis methodologies.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The work environment promotes collaboration, continuous learning, and innovation, enabling individuals to contribute effectively to organizational goals. It encourages professional development, and a culture of inclusivity and excellence.

Academic courses relevant to the project : Quality Assurance and Regulatory Affairs, Biostatistics and Research Methodology

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Name: CHANDANI D MANIK(2024H1530152H)

Student Write-up

PS-II Project Title: Internship experience at Eli Lilly

Short Summary of work done during PS-II : During my PS-II internship at Eli Lilly and Company, I supported the operational execution of seven concurrent Phase II–IV clinical trials across metabolic, immunology, and oncology therapeutic areas spanning multiple countries. My responsibilities included managing Trial Master File (TMF) documentation using Veeva Vault Clinical, conducting quality reviews of essential study documents such as Financial Disclosure Forms and Delegation of Authority Logs, and contributing to inspection-readiness activities. I collaborated with global study teams, vendors, and cross-functional stakeholders to ensure timely study execution and uninterrupted investigational product availability. Additionally, I supported the preparation and filing of Clinical Study Report appendices and other regulatory documents while maintaining study tracking records and assisting in issue management activities. Through these responsibilities, I gained comprehensive exposure to clinical trial operations, regulatory compliance requirements, and the processes involved in delivering high-quality clinical studies in accordance with ICH-GCP guidelines

Tool used (Development tools - H/w, S/w) : Software Veeva Vault Clinical (eTMF/CTMS) eCTS Investigator Space Hibbert Microsoft Office Suite (Excel, PowerPoint, Word) Hardware Standard enterprise computing systems and collaboration platforms

Objectives of the project : To gain end-to-end exposure to clinical development operations within a global pharmaceutical organisation

Major Learning Outcomes : Gained practical exposure to global Phase II–IV clinical trial operations.
Developed expertise in eTMF management using Veeva Vault Clinical.
Learned regulatory documentation requirements and inspection-readiness practices.
Enhanced stakeholder management and cross-functional collaboration skills.
Acquired understanding of investigational product supply management and vendor coordination.
Strengthened problem-solving abilities through operational issue resolution and study tracking activities.

Details of Papers/patents : None during PS-II

Brief Description of working environment, expectations from the company : The work environment was highly collaborative, quality-focused, and compliance-driven, involving regular interactions with global study teams and cross-functional stakeholders. The organization emphasized attention to detail, regulatory compliance, proactive communication, accountability, and timely delivery of study milestones while maintaining inspection-ready documentation.

Academic courses relevant to the project : Pharmacology

Clinical Research Methodology
Biostatistics
Regulatory Affairs
Drug Development
Research Methodology
Pharmaceutical Biotechnology

Name: KAMDA KACHROO(2024H1290001P)

Student Write-up

PS-II Project Title: Global Scientific Communications internship at Eli Lilly and Company.

Short Summary of work done during PS-II : The six-months internship at Eli Lilly, Bengaluru as a global scientific communication intern was mainly based on gaining exposure to the three oillars of GSC with hands-on experience in quality check of regulatory documents, scientific writing, and publication workflows to understand the regulatory framework in a global pharmaceutical company. The internship was divided into 3 strategic 2-month training in each business units of GSC, namely- Document delivery hub (DDH), Regulatory writing, and publications. The exposure to theser 3 pillars helped me to establish a strong interest in regulatory workflows and with the prior experience and knowledge of scientific writing I was able to learn quicker. In each of the transitioning in these 3 business units I was assigned the assignments which were thoroughly reviewed by the trainers who provided the constructive feedback. Every feedback helped me understand better. I mainly worked on clinical documents, DSURs, Briefing documents etc. I thoroughly understood the guidelines set by FDA and other regulatory authorities to write a document. The overall experience directed me to my area of interest in the pharmaceutical company.

Tool used (Development tools - H/w, S/w) : Microsoft 365

Objectives of the project : To gain experience on regulatory workflow and documentation in global pharmaceutical company.

Major Learning Outcomes : 1. Gained hands-on experience on regulatory documentation and reviewing processes.

2. Established keen interest in scientific writing.
3. Learnt the use of generative AI in documentation and quality review.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Lilly is calm and stable. Lilly follows strict compliance policies and stand strong against any injustice. Lilly's working environment is comfortable and provides a work-life balance to it's employees.

Academic courses relevant to the project : Genomic and Proteomics, Bioethics and Biosafety, Advanced recombinant DNA technology, Research Practice (RP).

Name: HEMAN SINGH(2024H1530211P)

Student Write-up

PS-II Project Title: Medical Writer Intern GCH

Short Summary of work done during PS-II : Worked on medical communication deliverables

Tool used (Development tools - H/w, S/w) : Claude

Objectives of the project : Industrial exposure

Major Learning Outcomes : Industrial exposure

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Good work culture

Academic courses relevant to the project : Advance Pharmacology

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PS-II Station : Enfinity, Hyderabad

Faculty

Name: Samir Ramdas Kale .

Student

Name: FEBA ANN VARUGHESE(2024H1430034H)

Student Write-up

PS-II Project Title: Integrated Study of Utility scale Solar and Wind Energy Projects

Short Summary of work done during PS-II : During my Practice School-II at Enfinity Global, I gained comprehensive exposure to the development and execution of utility-scale solar and wind energy projects. My work involved understanding the complete project lifecycle, including land acquisition, project development, engineering, procurement and construction (EPC), commissioning, and asset management. I reviewed and interpreted engineering documents related to civil, structural, geotechnical, electrical, and hydrological aspects of large-scale solar projects. I studied site investigation reports, soil characterization, and foundation design criteria for Module Mounting Structures (MMS), and prepared structural design calculations for pile foundations and the Main Control Room (MCR) in accordance with relevant Indian Standards. I also developed an understanding of switchyard layouts, single-line diagrams, electrical system coordination, and the integration of structural and electrical components.As part of the wind energy division, I learned the principles of wind resource assessment, including site screening, wind data analysis, micrositing, energy yield estimation, and uncertainty analysis for wind farm development. In addition, I gained practical knowledge of SCADA systems, plant performance monitoring, and asset management used to optimize the operational efficiency of renewable energy plants.Overall, the internship strengthened my technical knowledge, multidisciplinary engineering perspective, and practical understanding of renewable energy infrastructure through engineering document review, design activities, and field exposure.

Tool used (Development tools - H/w, S/w) : Excel, AutoCad, Google Earth Pro, Microsoft Office Suite

Objectives of the project : 1) To understand the end-to-end development and execution of utility-scale solar and wind energy projects. To study the integration of civil, structural, geotechnical, and electrical engineering in renewable energy infrastructure 2) To evaluate the design and performance of Module Mounting Structures (MMS) and Main Control Room (MCR). 3) To understand wind resource assessment and project development methodologies. 4) To gain practical exposure to engineering documentation, construction practices, SCADA monitoring, and asset management for renewable energy projects.

Major Learning Outcomes : 1) Gained end-to-end knowledge of utility-scale solar and wind project development.
2)Understood the integration of civil, structural, geotechnical, and electrical engineering.
3) Acquired practical experience in structural design, foundation assessment, and engineering documentation.
4) Learnt wind resource assessment, SCADA-based monitoring, and asset management concepts.
5) Enhanced project coordination and real-world engineering problem-solving skills through site exposure and cross-functional collaboration.

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : Enfinity Global provided a professional, collaborative, and technically enriching work environment that encouraged continuous learning and practical application of engineering concepts. The organization promotes a multidisciplinary approach, enabling interaction with teams involved in project development, civil, structural, geotechnical, electrical, procurement, construction, and asset management. Regular technical discussions, engineering document reviews, and site visits provided valuable exposure to real-world renewable energy projects and industry practices. The company expected us to demonstrate professionalism, eagerness to learn, analytical thinking, and attention to detail while reviewing engineering reports, performing design calculations, and understanding project workflows. We were encouraged to actively participate in technical discussions, ask questions, and contribute to assigned tasks while adhering to engineering standards and project requirements. Emphasis was placed on teamwork, effective communication, timely completion of assignments, and maintaining accuracy in engineering documentation.
Overall, the internship offered an excellent learning platform by combining technical knowledge with practical industry exposure. The supportive work culture, guidance from experienced professionals, and opportunities to work on utility-scale solar and wind energy projects significantly enhanced my understanding of renewable energy engineering and strengthened my technical and professional

skills.

Academic courses relevant to the project : Structural Analysis
Reinforced Concrete Structures
Design of Steel Structures
Foundation Engineering & Geotechnical Engineering
Advanced Structural Analysis
Project Management

PS-II Station : Engati Technologies Private Limited - AI Agents Development, Bengaluru

Faculty

Name: Chetana Anoop Gavankar .

Student

Name: ARINDAM CHATTERJEE(2022AAPS0028P)

Student Write-up

PS-II Project Title: ENGINEERING A CUSTOM LLM AGENT MICROSERVICE AND ROBUST SPEECH FRONT-END FOR A REAL-TIME VOICE AGENT PLATFORM

Short Summary of work done during PS-II : During my six-month PS-II at Engati Technologies, Bengaluru, I worked on two projects within the company's conversational AI platform. In Phase 1 (Jan–Mar 2026), I strengthened the voice agent's speech front-end by building a handcrafted overlap speech detector combining spectral and pyknogram-inspired branches, fused with an adaptive frame-level decision layer that uses energy, SNR, and spectral-band cues for robustness across call conditions. I also self-initiated an adaptive per-call turn detection improvement using EWMA-based archetype classification. In Phase 2 (Apr–Jun 2026), I designed and built a custom LLM agent microservice from scratch to power tool-using, multi-tenant agents for messaging-channel business

support, inspired by studying open-source harnesses like OpenClaw and Codex. It features a six-step harness pipeline, a two-level conversation cache, lazy-loaded artifact management, and an atomic handover flow to human agents. The service was rolled out to multiple production tenants. This work deepened my understanding of real-time signal processing, agentic LLM systems, and production microservice engineering.

Tool used (Development tools - H/w, S/w) : Python, FastAPI, Harness Architecture, langchain, Kafka, MongoDB, DuckDB, Kibana (Painless/KQL/DSL), Git, Linux

Objectives of the project : To design and implement core voice AI infrastructure for real-time conversational systems, including adaptive voice activity detection, overlap speech detection, turn-taking logic, and LLM agent orchestration, and to support production integration of the Meta BizAI founding partner engagement.

Major Learning Outcomes : production-grade signal processing (RMS, spectral flatness, ZCR-based classification), adaptive statistical modeling (EWMA-based archetype classification), distributed systems debugging (Kafka, MongoDB, DuckDB), observability tooling (Kibana, Painless scripting), building a customer grade llm orchestrator/harness pipeline for text agents

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Working at Engati's Bengaluru office felt like being a real part of the AI & Research team, not just an intern on the sidelines. Under Anwesh Roy, I got genuine ownership over features — from research and design through to shipping them in production, not just small assigned tasks.
I was glad to get opportunities to work across different parts of the company — sometimes on voice, sometimes on text-based systems — and even got to work on projects involving Meta. I was trusted to figure things out independently — reading up on open-source agent harnesses before building my own, or debugging unfamiliar systems like Kafka and DuckDB when something broke in production. Since my work went live for real customers, deadlines actually mattered.

Academic courses relevant to the project : Signals and System, Digital signal Processing, Computer Architecture, AI

PS-II Station : Epicor, Hyderabad

Faculty

Name: Chennupati Rakesh Prasanna .

Student

Name: SUHANI TIMBADIA(2022AAPS0063G)

Student Write-up

PS-II Project Title: Agent Evaluation and Observation framework for conversational AI agents in PRISM

Short Summary of work done during PS-II : During the Practice School - II engagement at Epicor Software, the engineering work focused on productionizing a comprehensive evaluation, retrieval, and observability framework for Prism, a multi-agent conversational AI ecosystem operating over enterprise ERP data fabrics. To eliminate opaque application debugging, a multi-page **Traceability Export Framework** was engineered. This pipeline automatically captures raw query inputs, generated responses, baseline golden answers, and deep stage-level diagnostic telemetry, consolidating them into a unified Excel spreadsheet report. This single source of truth eliminated manual database log parsing and drastically reduced failure categorization and regression analysis times for engineering teams. To improve retrieval quality, an intermediate validation and scoring engine was integrated between the raw vector search and the LLM inference step. This directly addressed multi-candidate selection ambiguity caused by closely clustered similarity scores across deeply normalized ERP database schemas. By implementing explicit score thresholds, dynamic confidence windows, and structural tie-breaking mechanics, ambiguity-related source selection failures were reduced by **75%** across both the List and Metric Query agents. Additionally, architectural research was conducted into the **Model Context Protocol (MCP)** to evaluate decentralized tool orchestration. A functional Proof of Concept (POC) successfully addressed complex enterprise challenges, including multi-tenant credential ownership, permission propagation, and tenant isolation, establishing a secure deployment blueprint for onboarding external workflows onto Prism. Finally, a controlled **Dataset Lifecycle Management** purging system was implemented using strict referential integrity constraints, eliminating database clutter and optimizing cloud

workspace storage.

Tool used (Development tools - H/w, S/w) : OpenAI SDK, Langchain, Torch, HuggingFace, SentenceTransformers

Objectives of the project : Evaluation of the existing agent framework and creation of an observability framework for the same for efficient error handling

Major Learning Outcomes : Observability: Achieved complete telemetry visibility with a non-blocking asynchronous writing overhead of less than 12ms per execution loop.
Evaluation: Implemented a Traceability Export Framework that automated trace-integrated data generation into Excel, significantly reducing regression analysis and failure categorization time.
Retrieval Quality: Reduced ambiguity-related source selection failures by approximately 75% across the List and Metric Query agents using post-retrieval ranking rules and explicit confidence boundaries.
MCP Integration: Successfully validated decentralized tool orchestration by establishing a functional Proof of Concept (POC) and a secure blueprint for Model Context Protocol (MCP) deployment.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Epicor has a small, open-plan office with a friendly and focused setup. Everyone has big desks with multiple monitors for coding and plenty of whiteboards for sketching out system designs. There are a few small meeting rooms where the team gathers for quick daily stand-ups, brainstorming sessions, and code reviews. The overall vibe is quiet and collaborative, making it easy to focus on development work while still being able to quickly ask teammates for help. We have daily standups with the updates for the team. The work expectations demanded a strong commitment to production-quality code, requiring the development of strict, architecturally decoupled designs suitable for an enterprise-scale software environment.
Additionally, full integration into the team's agile workflow was expected, requiring active participation in daily standups and deep architectural reviews.

Academic courses relevant to the project : Computer Programming

Name: ABHISHEK DHEKANE(2022A7PS0453G)

Student Write-up

PS-II Project Title: Prism dev

Short Summary of work done during PS-II : Broad development of the core, including frontend, backend, database, agent configs, agent functionalities, user action flows

Tool used (Development tools - H/w, S/w) : python, azure, mongo

Objectives of the project : Develop prism, a platform hosting agents for the product

Major Learning Outcomes : Core agentic architecture, SDLC

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Great work life balance, with proper trainings
Friendly colleagues, very approachable and helpful

Academic courses relevant to the project : Any related to software dev and AI apps

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PS-II Station : Ericsson R and D, Bengaluru

Faculty

Name: Lucy J. Gudino

Student

Name: RISHIK SRIVATSAL MALYALA(2024H1030046H)

Student Write-up

PS-II Project Title: OmC health check service

Short Summary of work done during PS-II : Created a microservice using go lang , kubernetes, docker. It checks the health(snapshot) of OMC current status including all the pods, resources consumption etc using metrics.

Tool used (Development tools - H/w, S/w) : Go lang, kubernetes, docker

Objectives of the project : Create a microservice using Go lang

Major Learning Outcomes : Go lang , kubernetis, docker

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Good mentors and co workers, Encourages you to try different things, No one points you out even if did a mistake.

Academic courses relevant to the project : Cloud

Name: TANIKELLA SAI CHARAN(2024H1030138G)

Student Write-up

PS-II Project Title: Health monitoring service

Short Summary of work done during PS-II : Build a Microservice with different end points and deploy the microservice in Kubernetes to monitor the health of OMC

Tool used (Development tools - H/w, S/w) : Kubernetes , helm ,docker , Linux

Objectives of the project : To monitor the health of OMC which is the native cloud platform of Ericsson

Major Learning Outcomes : Learnt about kubernetes, Docker,helm and Rest APIs

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Good

Academic courses relevant to the project : Distributed systems

PS-II Station : Ernst & Young Services Pvt. Ltd, Bengaluru

Faculty

Name: Bhamidipati Vaishali .

Student

Name: MANAS VUDAYAGIRI(2021A7PS0016P)

Student Write-up

PS-II Project Title: Strengthening Organizational Cyber Resilience: An Integrated Approach to Information Security

Short Summary of work done during PS-II : Thorughout my internship, i have been involved in client engagements to assess their security posture in a GRC perspective.

Tool used (Development tools - H/w, S/w) : Usage of SIEM, vulnerability management tools and documentation tools

Objectives of the project : To understand how to better organization's security posture and highlight the various governanace standards which are the industry standards to compliant with.

Major Learning Outcomes : Foundational knowledge on Governance, Risk and Compliance, deep understanding further domains such as application security, network security and secure coding practices

Details of Papers/patents : Detailed descriptions of the standards used for information security like ISO 27001:2022, NIST CSF and new standards to be implemented in the field of AI such as ISO 42001:2023 and NIST AI RMF

Brief Description of working environment, expectations from the company : The working environment and work culture is very ideal. Work timings are hybrid and also the team that I worked with is very helpful.

Academic courses relevant to the project : Cryptography, Computer networks

PS-II Station : ERP-Non Tech, Hyderabad

Faculty

Name: Anjani Srikanth Koka .

Student

Name: GANGA SHARMA(2022D2PS1555P)

Student Write-up

PS-II Project Title: PROJECT MANAGEMENT

Short Summary of work done during PS-II : PS-2 Project Summary: Non-Tech ERP & Project Management## Overview Conducted during the final year of the first-degree program at BITS Pilani, Hyderabad Campus, this 5.5-month Practice School II (PS-2) project focused on the functional, operational, and managerial lifecycle of Enterprise Resource Planning (ERP) systems. Operating entirely within a non-technical, business-analyst capacity, the project centered on process mapping,

module optimization, and cross-departmental data workflows rather than software coding. ## The Role of Mentors Industry Mentors acted as project sponsors and strategic guides. They defined the functional boundaries of the ERP modules, cleared internal organizational roadblocks, and bridged the communication gap between technical IT infrastructure and non-technical business units. Through structured feedback loops, they accelerated the transition from academic theory to corporate execution. ## Major Learning Outcomes (LOs) * Project & Change Management: Mastered the art of requirement gathering, business process mapping, and managing user adaptation during system rollouts. * Functional Architecture: Gained deep operational insights into how data flows across corporate finance, supply chain, and resource management pipelines. * Cross-Functional Communication: Developed professional stakeholder-management capabilities by collaborating fluidly with diverse department heads to solve live business bottlenecks.

Tool used (Development tools - H/w, S/w) : Tools and Software UsedCore ERP Platforms: Used industry-standard enterprise systems (such as SAP, Oracle Cloud, Microsoft Dynamics, or Salesforce) to navigate business modules, configure settings, and pull operational reports.Project Management & Collabo

Objectives of the project : the key focus areas for delivering outcomes) and Industry/Subject-Matter Domains

Major Learning Outcomes : 1. Technical Learning Outcomes

* Contextual Comprehension: Achieving the ability to maintain conversational thread continuity across multiple complex turns.
* Tool Integration: Successfully executing real-time API handoffs, such as dynamically triggering search queries or code execution based on user intent.
* Response Scaling: Balancing high information density with conversational simplicity for diverse, global audiences.

2. Project Management Learning Outcomes

* Value-Driven Metrics: Shifting from strict software performance metrics (speed) to user-centric qualitative metrics (scannability and clarity).
* Adaptive Lifecycles: Utilizing a hybrid development approach to roll out incremental safety guardrails while maintaining constant availability.
* Risk Management: Mitigating data inaccuracies and alignment errors through continuous human-in-the-loop training feedback.

Details of Papers/patents : Details of Papers/Patents

Status: ERP-NONTECH BITS PILANI HYDERABAD CAMPUS

Details:

The PS-2 project was carried out within a live, production-grade corporate Enterprise Resource Planning (ERP) ecosystem under strict Non-Disclosure Agreements (NDAs).

The

Brief Description of working environment, expectations from the company : Working Environment & Company Expectations

The working environment during this PS-2 internship was a dynamic, fast-paced corporate office operating under a hybrid model. As a non-tech ERP project management intern, I was embedded within a cross-functional business operations team. The atmosphere was highly collaborative yet structured, requiring daily communication with diverse departments, including finance, supply chain, and IT infrastructure. The culture emphasized data accuracy, data-driven decisions, and strict corporate confidentiality due to our exposure to sensitive enterprise resources and internal workflows.

The host company maintained high professional expectations from day one, treating interns as full-time business analysts. Key performance expectations included:

* Autonomy and Adaptability: Quickly understanding complex business processes and learning the functional architecture of the ERP platform with minimal hand-holding.
* Effective Stakeholder Management: Acting as a bridge between technical developers and non-technical business users to gather precise module requirements.
* Process Ownership: Taking charge of process mapping, identifying operational bottlenecks, and documenting standard operating procedures (SOPs).
* Professional Accountability: Adhering to strict corporate timelines, maintaining a strong work ethic, and delivering accurate data analysis for management review.

Through the continuous guidance of my industry mentors, I met these expectations by actively contributing to the organisation’s digital transformation goals while aligning my deliverables with BITS Pilani's academic evaluation standards.

Academic courses relevant to the project : Project Management (BITS F437 / MGTS F437)

Management Information Systems (BITS F225 / MGTS F225)

Operations Research (BITS F312 / Operations Management)

Supply Chain Management (BITS F418)

Corporate Finance / Financial Management (ECON F212 / BITS F315)

PS-II Station : Es Magico Experiences Pvt Ltd - PM Intern, Mumbai

Faculty

Name: Chetana Anoop Gavankar .

Student

Name: ANSHUMAN DEWANGAN(2021B1A42279P)

Student Write-up

PS-II Project Title: AI Engineer Intern

Short Summary of work done during PS-II : Building AI-native products, like RAG, conversational AI, etc

Tool used (Development tools - H/w, S/w) : All tech tools: python, docker, fastapi, gemini, langchain, etc

Objectives of the project : AI product development

Major Learning Outcomes : Deep understanding of AI products & Ownership of work

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Working enviroment is very good, but fluctuating. People are understanding enough.

Academic courses relevant to the project : N/A

PS-II Station : ET Money, Gurgaon

Faculty

Name: Harish Kumar Aggarwal .

Student

Name: ASHUTOSH KHUNTIA .(2022AAPS0261H)

Student Write-up

PS-II Project Title: Android Developer

Short Summary of work done during PS-II : developed ui for app screen , unit tested

Tool used (Development tools - H/w, S/w) : android studio

Objectives of the project : Develop software

Major Learning Outcomes : composure , preparedness

Details of Papers/patents : na

Brief Description of working environment, expectations from the company : cool , flexible

Academic courses relevant to the project : DSA , OOps , DBMS

PS-II Station : eVidyaloka Trust, Remote

Faculty

Name: Perumal Jayakumar

Student

Name: YESHWANTH MURTHY RAPARTHY .(2022AAPS2024H)

Student Write-up

PS-II Project Title: M&E Analysis

Short Summary of work done during PS-II : During my Practice School-II internship at eVidyaloka Trust, I designed and developed a comprehensive Impact Analytics Dashboard to support Monitoring and Evaluation activities across the organization. The project involved integrating educational and operational datasets into a centralized analytics platform capable of providing actionable insights to stakeholders. The dashboard was developed using Python, Streamlit, Pandas, and Plotly. Major modules included Learning Outcomes Analysis, Longitudinal Analysis, and the Operations & Impact Command Center. The platform enables users to analyze baseline and endline assessment performance, monitor student learning improvements, track volunteer engagement, evaluate centre performance, and measure operational effectiveness through interactive visualizations and KPI dashboards. I implemented advanced filtering mechanisms, student cohort matching, longitudinal tracking, and secure Google OAuth authentication. In addition, I developed data processing pipelines to clean, transform, and validate large educational datasets. Extensive testing, debugging, and deployment activities were carried out to ensure reliability and usability. The completed solution significantly reduced manual reporting efforts and enabled data-driven decision-making within the organization by providing a centralized, scalable, and user-friendly analytics platform.

Tool used (Development tools - H/w, S/w) : Python • Streamlit • Pandas • NumPy • Plotly • Google OAuth • Git • GitHub • Microsoft Excel • CSV/Excel Data Sources

Objectives of the project : 1. Design and develop a centralized Impact Analytics Dashboard for eVidyaloka Trust. 2. Analyze educational performance using Baseline and Endline assessments. 3. Implement longitudinal analysis to track student learning outcomes across academic years. 4. Develop operational analytics for volunteer engagement and centre performance monitoring. 5. Implement secure user authentication using Google OAuth. 6. Enable data-driven decision-making through interactive dashboards and visualizations.

Major Learning Outcomes : 1. Developed expertise in Python-based dashboard development using Streamlit.

2. Learned advanced data cleaning, preprocessing, and transformation techniques.
3. Gained hands-on experience in educational analytics and KPI design.
4. Implemented secure authentication systems using Google OAuth.
5. Improved skills in interactive visualization using Plotly.
6. Learned software testing, debugging, deployment, and stakeholder management.
7. Enhanced problem-solving, communication, and project management abilities.

Details of Papers/patents : No papers or patents were published as part of this internship project.

Brief Description of working environment, expectations from the company : eVidyaloka Trust provided a collaborative and learning-oriented remote work environment focused on improving educational outcomes for rural students across India. The organization encouraged innovation, ownership, and independent problem-solving while providing continuous guidance and feedback throughout the internship period.

The work involved regular interactions with stakeholders to understand business requirements, analyze data challenges, and develop practical analytics solutions. The organization expected interns to contribute effectively to real-world projects, maintain professional standards, meet project deadlines, and proactively address technical challenges.

The remote setup required effective communication, self-discipline, and time management. Team members were approachable and supportive, creating an environment that facilitated both technical learning and professional growth. Overall, the experience provided valuable exposure to software development, educational analytics, and organizational decision-making processes.

Academic courses relevant to the project : • Data Structures and Algorithms• Database Management Systems• Probability and Statistics• Machine Learning• Technical Report Writing• Essentials of Strategic Management

PS-II Station : EYGDS-Consulting, , Bangalore/Hyderabad/ NCR

Faculty

Name: Bhamidipati Vaishali .

Student

Name: SHIROYA JAYDIP DHIRUBHAI(2024H1030090P)

Student Write-up

PS-II Project Title: AI-Powered Legacy Code Conversion Platform using Multi-Agent AI and Parser-Assisted Workflow Orchestration

Short Summary of work done during PS-II : During PS-II at EY Global Delivery Services, I worked on developing an AI-powered code conversion platform aimed at accelerating legacy system modernization. The platform supports conversion of ATL/BODS, PL/SQL, Teradata/BTEQ, and Informatica workflows into modern cloud-native technologies such as PySpark, Databricks ETL, and HANA SQL. A major focus of the project was Informatica workflow conversion. Since Informatica workflows are represented as XML files containing complex mappings and transformations, a parser-assisted architecture was designed to extract structured lineage and metadata before AI processing. This structured representation significantly improved conversion quality compared to direct prompting approaches. The solution leveraged Azure OpenAI, LangGraph, and LangChain to orchestrate multiple AI agents responsible for analysis, conversion, validation, optimization, and reporting. A validation framework with retry mechanisms was incorporated to improve reliability and reduce hallucinations. The platform provides a unified user interface for uploading source artifacts, generating converted code, validating outputs, and downloading metadata and documentation. The project successfully demonstrated how structured context and workflow orchestration can improve the scalability, maintainability, and accuracy of AI-driven code modernization systems.

Tool used (Development tools - H/w, S/w) : Hardware: • EY Corporate Laptop Software & Technologies: • Python • Streamlit • Azure OpenAI • LangChain • LangGraph • XML Parser Libraries • Git/GitHub • VS Code • Databricks • PySpark • JSON • REST APIs

Objectives of the project : Automate migration of legacy enterprise technologies to modern cloud-native platforms. • Convert ATL, PL/SQL, Teradata BTEQ, and Informatica workflows into PySpark/HANA SQL. • Reduce manual effort, migration time, and conversion errors. • Improve conversion accuracy using parser-assisted AI workflows and validation mechanisms. • Build a scalable multi-agent architecture for enterprise modernization.

Major Learning Outcomes : Understanding of enterprise-scale legacy modernization challenges.

• Hands-on experience with Azure OpenAI, LangChain, and LangGraph.
• Design and implementation of multi-agent AI systems.
• Development of parser-assisted workflows for structured context generation.
• AI validation and retry-loop implementation.
• Streamlit application development and deployment.
• End-to-end project design, implementation, testing, and presentation.

Details of Papers/patents : No papers or patents were filed during the PS-II period.

Brief Description of working environment, expectations from the company : EY GDS provides a highly collaborative and professional working environment focused on solving real-world enterprise problems. The organization encourages innovation, continuous learning, ownership, and teamwork. During PS-II, I had opportunities to interact with experienced professionals, solution architects, and AI practitioners working on enterprise-scale projects.
The expectations included understanding business requirements, developing scalable solutions, maintaining code quality, participating in project discussions, preparing technical documentation, and delivering presentations to stakeholders. Regular mentor interactions and knowledge-sharing sessions helped bridge the gap between academic learning and industry practices. The experience significantly improved my technical, analytical, communication, and professional skills.

Academic courses relevant to the project : Machine Learning
• Artificial Intelligence
• Data Mining
• Data Structures and Algorithms
• Database Systems
• Software Engineering
• Distributed Computing
• Cloud Computing
• Object Oriented Programming
• Advanced Data Analytics

Name: KAKARLA R S NAGA BHAVANI SHANKAR(2022AAPS0252H)

Student Write-up

PS-II Project Title: Code refactoring and finding practical accuracy metrics of LLM tools.

Short Summary of work done during PS-II : Worked on optimizing existing codebases through refactoring to improve readability, maintainability, execution efficiency, modularity and scalability. Analyzed performance metrics for evaluating LLM-based tools. Gained hands-on experience with Agentic AI systems, multi-agent frameworks, workflow orchestration, and performance evaluation techniques during the project work.

Tool used (Development tools - H/w, S/w) : Python , VS Code, Toolprocessor

Objectives of the project : Code refactoring and finding accuracy metrics of LLM tools.

Major Learning Outcomes : Code refactoring and finding accuracy metrics of LLM tools.

Details of Papers/patents : NO Papers/patents in internship

Brief Description of working environment, expectations from the company : The company provides a positive and professional working environment that encourages learning and growth. Employees receive proper training and guidance to enhance their technical and professional skills. The managers and team members are friendly, approachable, and always willing to help whenever support is needed. The workplace promotes teamwork, open communication, and continuous improvement, making it a comfortable and productive environment for employees.

Academic courses relevant to the project : ML, AI

Name: SHREEDHAR SONI(2024H1120179P)

Student Write-up

PS-II Project Title: BDX Data Standardization using Agentic AI

Short Summary of work done during PS-II : During PS-II, I worked on BDX Data Standardization using Agentic AI. The project aimed to standardize inconsistent insured company names and map

correct industry classifications and NAICS codes for insurance BDX datasets. The workflow included data ingestion, company name normalization, web research, LLM-based analysis, structured data extraction, confidence scoring, quality checks, and final output generation. Azure OpenAI, LangGraph, Pandas, OpenPyXL, Requests, and BeautifulSoup were used to build the solution. The final output was a clean, standardized dataset ready for dashboards, reporting, and analytics. The project helped reduce manual effort, improve data consistency, support compliance needs, and enable better risk and market analysis.

Tool used (Development tools - H/w, S/w) : Python, Microsoft Azure Cloud Platform, LangGraph, ReAct Agent, Pandas, OpenPyXL, Requests, BeautifulSoup, Azure OpenAI API, Excel, Power BI

Objectives of the project : The objective of the project is to standardize BDX insurance data using Agentic AI. The project aims to reduce manual effort in data cleaning, improve data quality, support regulatory compliance, and create dashboard-ready standardized datasets for better concentration risk and market trend analysis.

Major Learning Outcomes : Through this project, I learned how Agentic AI can be used to automate complex data standardization workflows. I gained practical understanding of LLM-based research analysis, web search integration, data standardization, confidence scoring, and quality assurance mechanisms. I also learned how to design an end-to-end AI pipeline involving data ingestion, extraction, validation, human-in-the-loop review, and final structured output generation. The project improved my understanding of insurance data, regulatory compliance needs, dashboard-ready data preparation, and the use of tools.
My project and presentation were selected among the top 10 interns projects by the company leadership.

Details of Papers/patents : No paper or patent was filed for this project.

Brief Description of working environment, expectations from the company : The PS-II working environment was professional, collaborative, and learning-focused. It involved understanding business requirements, analyzing real-world data issues, and building an AI-based solution aligned with industry needs.I got the opportunity to interact with various senior employees of the company who shared their valuable experience working with Me.
The company provided project guidance, domain knowledge, sample data, technical mentorship, and regular feedback. The experience helped improve my problem-solving, ownership, communication, and understanding of how AI and data analytics solutions are developed in a corporate environment.

I am also happy to share My project and presentation were recognized by the company leadership as being among the top 10 across all interns.

Academic courses relevant to the project : SS G515 : Data Warehousing
BITS F471: Intro To Large Language Models
SS G527 : Cloud Computing

Name: ADITYA CHAUDHARY(2024H1120262P)

Student Write-up

PS-II Project Title: Automated Risk Assessment System using Multi-Agent Architecture

Short Summary of work done during PS-II : During PS-II at EY GDS, Hyderabad, I designed and developed an Automated Risk Assessment System (ARAS) that leverages Large Language Models and a multi-agent pipeline to autonomously evaluate software system architectures for security risks. The system accepts natural language architecture descriptions or uploaded diagrams as input and processes them through a sequence of specialized AI agents built using LangGraph: an Ingestion Agent with a self-critic refinement loop, a Threat Voting Agent using STRIDE-based reasoning, a Risk Generation Agent for threat-to-risk mapping, a Control Agent for control recommendations, a Current Risk Agent, a Recommendations/Residual Risk Agent, a Report Generation Agent, and an optional LLM-as-Judge evaluation layer. The frontend was built using React and TypeScript, while the backend was implemented with FastAPI and Python with Pydantic for data validation. Cloud infrastructure on Microsoft Azure — including Blob Storage for file artifacts, Table Storage for metrics, and Cosmos DB for per-state document storage — provided scalable persistence. The project was initially prototyped on Google Cloud Platform before being migrated to Azure for better OpenAI service integration. The system was tested across multiple architecture scenarios and demonstrated significant reduction in manual security review effort while producing structured, actionable risk reports.

Tool used (Development tools - H/w, S/w) : React, TypeScript, FastAPI, Python, Pydantic, Uvicorn, LangGraph, Azure OpenAI (GPT-4), Azure Blob Storage, Azure Table Storage, Azure Cosmos DB, Google Cloud Platform (initial prototype), VS Code, Git

Objectives of the project : To automate risk identification in software system architectures using

LLMs; to analyze architecture descriptions and diagrams and extract structured information; to implement a multi-agent LangGraph workflow for modular analysis; to provide actionable risk insights and mitigation recommendations; and to deploy the system on Microsoft Azure for scalable and reliable use.

Major Learning Outcomes : Gained hands-on experience designing and deploying a multi-agent AI pipeline using LangGraph; learned to build production-grade REST APIs with FastAPI and Pydantic; understood cloud-native deployment on Microsoft Azure using Blob Storage, Table Storage, and Cosmos DB; applied security frameworks like OWASP and STRIDE in an automated context; and developed skills in prompt engineering, self-critic LLM loops, and full-stack AI application development.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working environment was very good all seniors and managers were very supportive and helpful

Academic courses relevant to the project : Software Engineering, Artificial Intelligence, Cloud Computing, Object-Oriented Programming, Database Systems, Information Security, Computer Networks

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Name: MUKHE KRISHNA SAI SATVIK(2024H1540805P)

Student Write-up

PS-II Project Title: Intelli Bots Platform and Multi Agent Error Resolution Application

Short Summary of work done during PS-II : During my internship at EY Global Delivery Services (EY GDS), I worked on two enterprise-focused Generative AI projects aimed at improving AI adoption and software engineering productivity. I built a Persona-Driven Structured Prompt Generation System as part of a No-Code AI Bot Studio platform. I designed and implemented functionalities that transform high-level business requirements into structured prompts using prompt engineering frameworks, while enabling persona-based AI behavior customization and integration with Azure OpenAI services. I also worked on another usecase i.e. design and development of a Multi-Agent Error Resolution

Application, an AI-driven framework that automates software debugging workflows. The system leverages multiple specialized agents to analyze application logs, identify root causes, generate code fixes, validate solutions through automated testing, and create GitHub pull requests. I worked with technologies such as LangChain, FastAPI, Streamlit, Azure OpenAI, and GitHub automation to support the end-to-end workflow. The experience strengthened my understanding of scalable AI system design, software engineering best practices, and the practical application of AI technologies to solve real-world business and engineering challenges.

Tool used (Development tools - H/w, S/w) : Python, FastAPI, Streamlit, GitHub, HTML/CSS/JavaScript, LLMs, Agentic AI frameworks

Objectives of the project : To develop enterprise AI solutions leveraging Large Language Models and Agentic AI frameworks, including a no-code chatbot development platform and a multi-agent debugging system, aimed at improving automation, developer productivity, and AI adoption within software engineering workflows.

Major Learning Outcomes : Developed practical expertise in Generative AI, Prompt Engineering, Azure OpenAI, RAG, and Agentic AI systems. Gained hands-on experience in FastAPI, Streamlit, LangChain, GitHub automation, and multi-agent application development. Strengthened knowledge of enterprise software architecture, automated debugging workflows, and responsible AI implementation.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : EY GDS provided a highly structured and professional learning environment that facilitated a smooth transition from academic learning to enterprise application development. The working environment emphasized continuous learning, collaboration, and innovation. The guidance from leaders and mentors helped create an environment where questions, experimentation, and knowledge sharing were encouraged. One of the key expectations was to always think from the client's perspective. Every solution was expected to address a genuine business problem, deliver measurable value, and align with the client's strategic objectives. Beyond technical implementation, emphasis was placed on understanding the business impact of the solution and how it contributes to organizational growth and operational efficiency.

Academic courses relevant to the project : ML, DL, NLP, Gen AI, Agentic AI frameworks

Name: SYED LARAIB HASAN(2024H1540831P)

Student Write-up

PS-II Project Title: Multi Agent Document Process and Multi Agent Financial Advisor

Short Summary of work done during PS-II : Worked on Multi Agent Document Processing Tool which retrieves information on documents uploaded related to Wealth and Asset Management, multiple specialised agents for breaking down the complex tasks, planning the user query, executing the tasks, processing the documents. Scenario based question on basis of documents uploaded and web agent tool to search the internet and find relevant and real time data. Multiple specialised tools for different domains such as Financial Planning Agent, Investment Agent, Tax Saving Agent . The next project I worked on was Multi Agent Financial Planner and advisor which has agents to pull real time market data, news sentiments, research agents and then recommend the portfolio to user based on profiling. Recommending stocks based on user request and recommend tax saving strategies

Tool used (Development tools - H/w, S/w) : LangChain, LangGraph, RAG, VS Code, Docker

Objectives of the project : To analyse and retrieve wealth asset management document and build a financial planner and advisor

Major Learning Outcomes : 1. Learnt about Generative AI and agentic AI , got hands on using frameworks such as Langchain, LangGraph etc

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment was really good. Everyone was really supportive and helped me in getting the project early and helped during the course of the project. I was able to contact my Senior Manager easily and we used to connect every week to demo the updates get the feedback and then work on it. All the people were reachable help me get API keys, details of the work and expectation from the manager.

Academic courses relevant to the project : 1. Predictive Modelling 2. Natural Language Processing 3. Deep Learning for Business

Name: ADINATH GHOSH(2024H1540814P)

Student Write-up

PS-II Project Title: 1) Multimodal Healthcare RAG Assistant using Azure OpenAI 2) AI-Powered Smart Support Ticket Triage System using LangGraph & Agentic AI 3) Pharmacovigilance Multi-Agent System with MCP Tool Integration using Agentic AI

Short Summary of work done during PS-II : During PS-II at Ernst & Young Global Delivery Services India LLP, I worked on multiple Generative AI and Agentic AI initiatives focused on solving real-world business challenges. I developed a Multimodal Healthcare RAG Assistant using Azure OpenAI to provide evidence-grounded responses from healthcare documents containing text, tables, and images. I also designed and implemented an AI-Powered Smart Support Ticket Triage System using LangGraph and Agentic AI to automate ticket categorization and routing within ServiceNow environments. Additionally, I worked on a Pharmacovigilance Multi-Agent System with MCP Tool Integration, leveraging Agentic AI to automate adverse event seriousness classification with explainable and traceable decision-making. Alongside project delivery, I successfully completed all mandatory organizational compliance trainings and actively pursued continuous learning through Udemy courses and an intensive GenAI training program conducted at the PS Station over a period of approximately 30 days. These learning initiatives significantly enhanced my understanding of Generative AI, Large Language Models, Agentic AI frameworks, Retrieval-Augmented Generation (RAG), and enterprise AI solution design. Beyond technical contributions, I actively supported team operations by coordinating the distribution of goodies for the AI & Data practice at the Hyderabad office, serving a team of over 600 members. This involved maintaining inventory records, managing distribution logistics, coordinating with stakeholders, and ensuring smooth execution of the activity over a period of nearly three months while effectively tracking and maintaining the remaining stock inventory.

Tool used (Development tools - H/w, S/w) : Laptop/Workstation, Microsoft Azure Cloud Services, Python, Visual Studio Code, Git/GitHub, Azure OpenAI Service (GPT-4o, GPT-4o-mini), LangChain, LangGraph, Streamlit, Retrieval-Augmented Generation (RAG), Vector Databases (FAISS/Azure AI Search), Text E

Objectives of the project : The main objective of all the 3 projects were to automate the work, reduce manual effort and build an AI assistant with zero hallucinations for different business fields.

Major Learning Outcomes : The project on Pharmacovigilance Literature Extraction provided valuable hands-on experience in applying Generative AI to solve a real-world IT Service Management (ITSM) challenge. Through the development of an AI-Based Ticket Classification System, I gained a strong understanding of enterprise ticketing workflows, including ticket creation, categorization, routing, and resolution within ServiceNow environments. The project enhanced my knowledge of Large Language Models (LLMs) and their practical use in automating manual business processes through intelligent text classification. I learned how to design and integrate AI-powered REST APIs, implement prompt engineering techniques, perform ticket text preprocessing, and develop scalable batch-processing solutions capable of handling large volumes of tickets. The project also provided exposure to confidence-based validation mechanisms and enterprise system integration using ServiceNow APIs. Additionally, I developed skills in designing modular, layered solution architectures and understanding how AI can deliver measurable business value by reducing manual effort, improving routing accuracy, accelerating resolution times, and enhancing overall operational efficiency in support organizations.

Details of Papers/patents : No research papers were published or patents filed during the PS-II period. However, significant work was undertaken in the areas of Generative AI, Agentic AI, Retrieval-Augmented Generation (RAG), and enterprise AI solution development.

Brief Description of working environment, expectations from the company : The working environment at Ernst & Young Global Delivery Services India LLP was highly professional, collaborative, and conducive to learning. Team members were approachable and supportive, fostering a culture of knowledge sharing, innovation, and continuous improvement. The organization provided access to modern technologies, learning platforms, and structured training programs, enabling exposure to emerging domains such as Generative AI, Agentic AI, Large Language Models, and Retrieval-Augmented Generation (RAG). Regular interactions with mentors and project teams helped in understanding industry best practices, enterprise solution development, and professional work ethics.

The company encouraged self-learning and skill development through mandatory compliance trainings, specialized technical courses, and dedicated GenAI training sessions. Employees were expected to demonstrate professionalism, accountability, effective communication, and a willingness to learn and adapt to new technologies. The organization also emphasized teamwork, ownership, adherence to quality standards, and timely delivery of project milestones. Overall, the experience provided an excellent platform to enhance both technical and professional competencies while

contributing to meaningful, industry-relevant projects and organizational activities.

Academic courses relevant to the project : Artificial Intelligence, Machine Learning, Deep Learning, Predictive Analytics, Prescriptive Analytics and Natural Language Processing

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Name: KANDURI USHA RAMANI VENKATA(2024H1540815P)

Student Write-up

PS-II Project Title: LangGraph-Based Code Translation Pipeline and MSME Loan Decision Engine

Short Summary of work done during PS-II : During my PS at EY GDS, I worked within the AI & Data Consulting team on the development of AI solutions focused on code automation and financial decision intelligence. My primary contribution involved designing and implementing a LangGraph-based multi-agent code translation pipeline capable of translating code across programming languages while maintaining functionality and contextual accuracy. The solution leveraged Large Language Models through Azure OpenAI services and incorporated workflow orchestration mechanisms to improve reliability and scalability. In parallel, I contributed to the development of an MSME Loan Decision Engine aimed at supporting credit evaluation and lending decisions. The project involved integrating business rules, data-driven insights, and AI capabilities to assist in risk assessment and recommendation generation. Throughout the internship, I worked extensively with Python-based development frameworks, cloud AI services, and collaborative software engineering practices. The experience provided hands-on exposure to enterprise-scale AI implementation, stakeholder interactions, agile project execution, and consulting methodologies while strengthening both technical and professional competencies.

Tool used (Development tools - H/w, S/w) : Python, LangGraph, Azure OpenAI, FastAPI, Databricks, Streamlit, Jupyter Notebook, Visual Studio Code, Git/GitHub

Objectives of the project : 1. Design and develop a LangGraph-based multi-agent workflow for automated code translation across programming languages. 2. Build an AI-driven MSME Loan Decision Intelligence System to assist in credit assessment and decision-making. 3. Integrate Large Language Models (LLMs) with enterprise data workflows to improve automation, accuracy, and explainability. 4. Develop scalable and modular AI solutions aligned with business requirements and

industry best practices.

Major Learning Outcomes : 1. Understanding of Agentic AI architectures and multi-agent orchestration using LangGraph.
2. Practical experience with Azure OpenAI services and LLM integration.
3. Development of scalable AI applications using Python and FastAPI.
4. Exposure to financial analytics and credit decision-making frameworks.
5. Improved software engineering practices including version control, testing, and deployment workflows.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : EY GDS provided a professional, collaborative, and learning-oriented work environment. The organization promotes innovation, continuous learning, and knowledge sharing while encouraging employees to take ownership of their work. Team members were approachable and supportive, enabling smooth collaboration across technical and business functions.
The work culture emphasized quality, accountability, and client-centric problem-solving. Regular interactions with mentors and project teams provided valuable guidance and exposure to industry best practices. The organization also offered opportunities to work on emerging technologies such as Generative AI, cloud platforms, and data analytics.
The company expected interns to demonstrate initiative, adaptability, professionalism, and a willingness to learn. Strong analytical thinking, effective communication, and collaboration skills were highly valued. Overall, the experience helped bridge academic knowledge with real-world business applications and enhanced my readiness for professional consulting and technology roles.

Academic courses relevant to the project : Business Analytics
Database Systems
Python Programming
Financial Analytics
Data Visualization
Statistical Methods

Name: SANKET ASHOKRAO WANDHARE(2024H1540839P)

Student Write-up

PS-II Project Title: LLM-Based Multi-Agentic Code Translation System

Short Summary of work done during PS-II : During my PS-II, I worked in the Data & AI practice on a Generative AI project focused on legacy code modernization. The project involved developing a multi-agent architecture to automate code translation between one programming language to other modern technologies.

Tool used (Development tools - H/w, S/w) : Python, LangGraph, LLM

Objectives of the project : Design and develop a multi-agent framework for code translation. Improve translation accuracy using specialized AI agent. Validate generated code using automated verification techniques.

Major Learning Outcomes : Gained practical exposure to enterprise Generative AI applications. Learned to design and implement multi-agent AI workflows using LangGraph. Improved prompt engineering techniques for LLM-based solutions.Improved technical documentation and presentation skills.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : EY GDS provided a highly collaborative and professional work environment focused on continuous learning and innovation.Employees are encouraged to learn emerging technologies and contribute to solving real business problems. Throughout my internship, I received continuous guidance from experienced professionals. The company expected interns to understand business requirements, complete assigned tasks within deadlines and continuously improve technical skills. Self-learning, ownership of tasks, problem-solving ability and professional ethics were highly valued.

Academic courses relevant to the project : Python, Neural Networks,

PS-II Station : Feedback Business Insights, Bangalore

Faculty

Name: Akanksha Bharadwaj .

Student

Name: KUNAPAREDDY DURGA SIVANI(2021A1PS3051H)

Student Write-up

PS-II Project Title: Full Stack Developer

Short Summary of work done during PS-II : During my internship, I contributed to the development and documentation of the PULSE-Survey Platform by preparing a comprehensive user manual and documenting the APIs used within the platform. In the later stages of the internship, I developed a small weather-based application by integrating a weather API to fetch and display weather forecasts. Additionally, I completed courses covering Introduction to Python, Linux fundamentals, and GitHub version control to enhance my technical skills. I also assisted fellow team members in various small-scale projects, gaining exposure to collaborative development practices and understanding the workflow of software projects in a professional environment.

Tool used (Development tools - H/w, S/w) : POSTMAN, GitHub, Worked Breifly on MongoDB

Objectives of the project : Build new modules and enhance existing features across: o Respondent list management (import/export, segmentation, tagging) o Survey creation tools (question types, logic, validation) o Response tracking &; analytics (response rate improvement, reminders) o Campaign &; survey distribution (email, SMS, automation workflows) o Reporting dashboards (visualizations, filtering, performance metrics)

Major Learning Outcomes : Hands-on experience in end-to-end product development in a B2B environment.
Opportunity to work on a live platform impacting real research operations.
Mentorship from experienced developers and product engineers.

Practical exposure to modern tech stacks, cloud deployment, and agile workflows.

Details of Papers/patents : NONE

Brief Description of working environment, expectations from the company : Throughout my internship period, I was primarily involved in assisting fellow team members and handling backend-related tasks. While these responsibilities provided me with valuable technical exposure and helped me understand the workflow, the experience was somewhat different from my initial expectations. I was more inclined towards working collaboratively with the team, participating in discussions, and gaining greater exposure to the overall project lifecycle. Additionally, I would have appreciated opportunities to interact with clients, as such interactions would have helped me better understand industry practices, client requirements, and the dynamics of working in a corporate environment.

Academic courses relevant to the project : C Prgramming, GitHub, Data Science, Python, OOP

Name: AKASH RAO PALLEPATI .(2021B3A40800H)

Student Write-up

PS-II Project Title: Information Security Governance, ISMS Documentation, Risk Register Development, SOP Structuring and Automation-Assisted Survey Data Workflow Support

Short Summary of work done during PS-II : During my PS-II internship at Feedback Business Insights Pvt. Ltd., I worked on information-security governance, ISMS documentation, risk management, SOP structuring and automation-assisted survey-data workflows. A major part of the project involved understanding the organisation's business processes, information assets and data flows. Based on this understanding, I supported the identification, classification and evaluation of information-security risks. I worked on structuring risk registers that documented assets, threats, vulnerabilities, existing controls, likelihood, impact and proposed risk-treatment measures. I also developed a Risk Exposure Gradient framework that classified organisational exposure across data, systems, decisions, external interactions and strategic information. The framework helped relate employee roles and access levels to different categories of information-security exposure. Another component of the internship involved reviewing and restructuring Standard Operating Procedures to make them consistent, usable and suitable for internal review. I also supported survey-research

operations by consolidating datasets, validating records and developing automation-assisted workflows for reviewing and coding survey responses. The internship allowed me to combine information-security concepts, risk-based thinking, structured documentation, data analysis and process improvement. It also provided practical exposure to organisational governance, client-oriented research workflows and cross-functional collaboration.

Tool used (Development tools - H/w, S/w) : Microsoft Excel, Microsoft PowerPoint, Microsoft Word, Google Sheets, Google Docs, Google Drive, Python, Pandas, Jupyter Notebook, LaTeX, AI-assisted research and coding tools, survey-data processing tools, email and online collaboration platforms.

Objectives of the project : The primary objective of the project was to strengthen information security governance and create structured, audit-ready documentation within the organisation. The work involved understanding business processes, identifying information assets and data flows, supporting information-security risk identification and scoring, and developing structured risk registers. Another objective was to review and organise Standard Operating Procedures so that organisational processes could be documented in a consistent and review-friendly format. The project also aimed to improve the reliability and efficiency of survey-data processing through structured validation, data consolidation and automation-assisted coding and review workflows. The overall objective was to integrate information-security principles, operational documentation and data-workflow improvements into practical systems that could support organisational governance and decision-making.

Major Learning Outcomes : The major learning outcomes included understanding how information-security governance is implemented within an organisation and how an Information Security Management System is supported through structured documentation.

I learned to identify information assets, examine organisational data flows and evaluate risks based on exposure, likelihood and potential business impact. I also gained experience in preparing risk registers, structuring SOPs and linking operational controls to identified risks.

The project strengthened my ability to consolidate and validate large datasets, examine inconsistencies across multiple data sources and use automation-assisted workflows for survey-data review and thematic coding. I also developed a better understanding of the relationship between technical controls, employee responsibilities, business processes and organisational decision-making.

In addition, I improved my professional communication, documentation, presentation, prioritisation and stakeholder-management skills.

Details of Papers/patents : No paper or patent was filed as part of the PS-II project.

The work produced internal organisational documents, including information-security risk registers,

governance frameworks, SOP documents, data-validation outputs and automation-assisted survey.

Brief Description of working environment, expectations from the company : Feedback Business Insights provided a professional, collaborative and project-oriented working environment. The organisation works on business research, customer and stakeholder studies, survey programmes, data analysis and strategic insights for clients. The working environment required coordination across research, data-processing, project-management and information-security activities.

The organisation expected interns to take ownership of assigned tasks, understand the business context behind each deliverable and maintain accuracy while working with organisational and client information. Since several projects involved confidential datasets and external clients, attention to data security, access control, documentation quality and professional conduct was important.

The work also required flexibility because assignments could involve information-security documentation, data consolidation, survey validation, research, coding workflows and presentation development. Interns were expected to communicate progress clearly, adhere to timelines and seek clarification when requirements were uncertain.

The environment encouraged independent problem-solving while also providing opportunities to interact with mentors and members of different project teams. The internship helped me understand how structured research, information governance and operational processes are integrated in a professional consulting and business-insights organisation.

Academic courses relevant to the project : The project was primarily related to the professional work of the host organisation rather than to one specific academic course.

However, the following courses and academic areas were useful:

* Computer Programming
* Applied Econometrics
* Business Anal

PS-II Station : Flam- R&D, Bengaluru

Faculty

Name: Chetana Anoop Gavankar .

Student

Name: SUNAYANA S MORO(2021B5A82185G)

Student Write-up

PS-II Project Title: Talking head video generation

Short Summary of work done during PS-II : Worked as part of the AI R&D team on research and development related to audio-driven talking head video generation. The work involved studying and experimenting with modern generative AI techniques for speech-conditioned facial animation, including diffusion models, GANs, and portrait animation frameworks. Contributed to the development and evaluation of components involved in audio feature processing, facial motion representation, and video generation pipelines. Read and analyzed recent research papers, assisted in implementing and testing experimental models, and evaluated outputs for visual quality and lip synchronization. Due to the proprietary nature of the project, implementation details and internal methodologies are confidential. The internship provided hands-on experience in applied machine learning research, software engineering practices, and collaborative AI product development.

Tool used (Development tools - H/w, S/w) : Ubuntu Linux, Python, PyTorch, CUDA, Git, GitHub, Docker, VS Code, Jupyter Notebook, Hugging Face Transformers, ONNX Runtime

Objectives of the project : Talking head video generation

Major Learning Outcomes : Gained practical exposure to generative AI for talking head video generation.
Developed an understanding of diffusion models, GANs, audio-driven facial animation, and speech-to-video synthesis.
Learned to work with large AI codebases, research papers, and experimental pipelines.
Improved skills in model evaluation, debugging, and collaborative software development in an R&D environment.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The work was carried out in a collaborative AI R&D environment focused on applied research and product

development. Team members worked closely on research discussions, experimentation, code reviews, and implementation of generative AI systems. The company encouraged independent learning, ownership of assigned tasks, and continuous exploration of recent research. Expectations included maintaining code quality, documenting progress, collaborating effectively with team members, and contributing to ongoing research while adhering to confidentiality requirements for proprietary work.

Academic courses relevant to the project : -

PS-II Station : Flipkart - Software Development Engineering (SDE), Bengaluru

Faculty

Name: Vineet Kumar Garg .

Student

Name: DHRUV BHANDARI(2021B5A70925P)

Student Write-up

PS-II Project Title: RCA Pod restart

Short Summary of work done during PS-II : Found the root cause which was unkown from past 2 years during which multiple SDE 2s and SDE 3 have worked to find it

Tool used (Development tools - H/w, S/w) : VisualVM , Eclipse MAT

Objectives of the project : Kubernetes pods of a service were getting restarted from past 2 years and the root cause was not known

Major Learning Outcomes : Found the root cause

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Good

Academic courses relevant to the project : NA

Name: VAIBHAV GUPTA(2021B3A72786P)

Student Write-up

PS-II Project Title: Infrastructure Modernization and Health-Check Observability for Ad Ingestion Systems

Short Summary of work done during PS-II : Contributed to ad ingestion infrastructure modernization (Aerospike, Kafka, Java 17 upgrades) and health-check observability (failure reporting + validation rule), alongside a targeting feature, automations, RCAs, alerting hygiene, and on-call at Flipkart Ad Tech.

Tool used (Development tools - H/w, S/w) : Java 17, Python 3, Dropwizard, Maven, Docker, Kubernetes, Aerospike, MySQL, HBase, Apache Kafka.

Objectives of the project : Modernize ad ingestion infrastructure via client/runtime upgrades (Aerospike, Kafka, Java 17) and build health-check observability through failure reporting and early validation rules.

Major Learning Outcomes : Production-grade backend engineering, event-driven systems (Kafka), key-value storage (Aerospike), Java 17 migration, failure analysis, and sprint-based engineering practices.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Fast-paced, production-grade Ad Tech team with sprint cadence, PR-based reviews, staged rollouts, and intern

treated as a full individual contributor.

Academic courses relevant to the project : OOP, Database Systems, Computer Networks, Operating Systems, Data Structures & Algorithms

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Name: GARAPATI SARANYA(2024H1030136G)

Student Write-up

PS-II Project Title: Design, Development and Deployment of Scalable Backend Systems

Short Summary of work done during PS-II : During my Practice School-II internship at Flipkart, I worked on multiple backend engineering projects related to configuration management, traffic routing, distributed tracing, and deployment reliability. I contributed to the migration of services from a legacy configuration framework to a centralized configuration and secret management system, improving security and maintainability. I also worked on implementing a controlled user migration mechanism that enabled selective routing of users between legacy and new workflows for safe production validation. In addition, I gained exposure to distributed tracing systems and worked on improving observability across microservices using Java instrumentation-based tracing solutions. Another key project involved a data-driven canary deployment framework that enabled targeted production testing through rule-based traffic routing. These projects provided hands-on experience with microservices architecture, Kubernetes-based deployments, cloud-native technologies, and large-scale distributed systems. The internship helped me understand how production-grade applications are designed, deployed, monitored, and maintained in an enterprise environment.

Tool used (Development tools - H/w, S/w) : Software Tools: IntelliJ IDEA Visual Studio Code Git Maven MySQL Postman Docker Kubernetes Chrome Developer Tools Technologies/Frameworks: Java 17 Spring Boot Dropwizard Google Guice JAX-RS Lombok JDBC Hardware: Development workstation/laptop

Objectives of the project : ### Objectives of the Project The objective of this internship was to gain practical experience in developing and maintaining scalable backend systems in a production environment. The internship focused on understanding microservices architecture, cloud-native technologies, configuration management, traffic routing, and observability while contributing to real-

world engineering projects. It also aimed to strengthen technical, problem-solving, and software development skills through hands-on industry experience.

Major Learning Outcomes : Gained practical experience in developing and maintaining large-scale backend systems, working with microservices architecture, Kubernetes, and cloud-native technologies. Learned modern deployment and observability practices, including configuration management, distributed tracing, traffic routing, and production-grade system design. Improved problem-solving, debugging, and collaboration skills through hands-on involvement in real-world engineering projects.

Details of Papers/patents : No papers or patents were produced during the internship period.

Brief Description of working environment, expectations from the company : The working environment at Flipkart was highly collaborative, professional, and learning-oriented. Team members actively supported knowledge sharing through technical discussions, code reviews, design reviews, and regular mentoring sessions. The organization follows modern software engineering practices with a strong emphasis on code quality, scalability, reliability, and operational excellence.
Interns were expected to quickly understand existing systems, learn new technologies, contribute to ongoing projects, and actively participate in team discussions. The work environment encouraged ownership, problem-solving, and continuous learning while providing exposure to large-scale production systems. The internship offered valuable opportunities to interact with experienced engineers and gain practical insights into industry-standard development workflows and engineering practices.

Academic courses relevant to the project : Software Engineering
Object-Oriented Programming
Database Systems
Computer Networks
Operating Systems
Distributed Systems
Cloud Computing
Data Structures and Algorithms

Name: ISHITA SHARMA(2024H1030123G)

Student Write-up

PS-II Project Title: Design and Development of a Rule Engine Management Platform and AI-Native Control Tower for Flipkart Supply Chain

Short Summary of work done during PS-II : During my PS-II internship at Flipkart Internet Private Limited, I worked on REP Studio, a no-code/low-code platform developed for managing Task Graphs and Drools business rules used by the GSM Rule Engine. The platform was built from scratch and included a Graph Explorer, Graph Builder, and Simulation Sandbox. My contributions involved frontend development using React and TypeScript, backend API integration, implementation of graph onboarding and editing workflows, simulation support, authentication and authorization integration, and deployment activities. I developed APIs to support simulation workflows, implemented multi-tenant role-based access control, configured CI/CD pipelines, onboarded the project to SonarQube, worked with Helm charts, and deployed the application to pre-production and production environments. During production rollout, I identified and resolved a multi-pod authentication issue by designing a hybrid cookie-based session management approach. I also contributed to CT Copilot, an AI-native control tower platform for Supply Chain, through architecture discussions, UI architecture design, and development of frontend prototypes. The internship provided extensive exposure to large-scale distributed systems, supply chain platforms, DevOps practices, security mechanisms, and cross-functional engineering collaboration.

Tool used (Development tools - H/w, S/w) : React 18 TypeScript Node.js Express.js Java Git SonarQube Helm Kubernetes Axios Redux Toolkit JointJS Dagre Jira Confluence Postman VS Code

Objectives of the project : Design and develop REP Studio, a visual platform for managing Rule Engine configurations. Enable graph-based workflow creation, editing, onboarding, and simulation. Implement secure authentication and authorization mechanisms. Deploy and maintain the platform in production environments. Contribute to the design and planning of CT Copilot, an AI-native supply chain control tower platform.

Major Learning Outcomes : Full-stack software development using React, TypeScript, Java, and Node.js.
Authentication and authorization design for multi-tenant platforms.
CI/CD pipeline setup, SonarQube onboarding, Helm chart configuration, and production deployments.
Production debugging in distributed multi-pod environments.

System design, architecture discussions, and stakeholder communication.
Exposure to large-scale supply chain and logistics systems.

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : Flipkart provided a highly collaborative engineering environment where interns worked alongside Software Engineers, Product Managers, Architects, and Engineering Leaders. Interns were treated as full members of the team and were expected to participate in design discussions, sprint planning, code reviews, testing, deployment activities, and stakeholder presentations.
The work culture emphasized ownership, rapid learning, independent problem-solving, and production-quality engineering. Regular interactions with mentors and senior engineers enabled continuous feedback and learning. Exposure to large-scale supply chain systems, production deployments, architecture reviews, and cross-functional collaboration provided valuable practical experience beyond classroom learning.

Academic courses relevant to the project : Data Structures and Algorithms
Object Oriented Programming
DBMS
Operating Systems
Computer Networks
Distributed Computing
Network Security

Name: SHUBHAM CHAUHAN .(2022A7PS0130H)

Student Write-up

PS-II Project Title: Systems Optimization and AI Automation at PayEx

Short Summary of work done during PS-II : During my internship in Flipkart's PayEx team, I focused on high-concurrency backend systems, Zero-Trust security, and AI-driven operations. I successfully migrated five critical Tier-0/Tier-1 microservices, including the Payments Orchestrator, to a dynamic Machine Identity system. This eliminated plaintext secrets from the codebase and elevated the

platform's security posture. I also modified core backend routing logito propagate offer details to the Transaction Manager engine, enabling Smart Routing across payment instruments and directly improving the Payment Success Rate (PSR). Furthermore, I designed custom Model Context Protocols (MCPs) to securely bridge internal tools like Kibana and Zenduty with LLMs. This powered automated Root Cause Analysis workflows and an On-Call Report Generator, which is now officially mandated by engineering management, significantly reducing MTTR for critical incidents.

Tool used (Development tools - H/w, S/w) : Java, Dropwizard, MySQL, Git, Flow, reposvc, JFrog Artifactory, Kibana, Grafana, Zenduty, Astral, Model Context Protocol (MCP), Cursor.

Objectives of the project : Migrating Tier-0 microservices to a dynamic Machine Identity framework. Optimizing checkout routing via the Ultron engine and architecting fault-tolerant payment flows. Developing custom AI workflows to automate Root Cause Analysis (RCA) and reduce Mean Time to Recovery (MTTR).

Major Learning Outcomes : Gaining profound practical insights into high-scale software development and cross-functional engineering workflows. Developing high-performance RESTful web services using Dropwizard. Understanding Zero-Trust enterprise security architecture and executing environment-based authentication rollouts.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Flipkart is highly collaborative and operates at an extreme enterprise scale. The engineering culture is fast-paced, utilizing Agile methodologies and strict version control workflows. Expectations from the company are high; interns operate with the responsibilities of full-time engineers and are expected to take end-to-end ownership of high-blast-radius features. This involves not just writing code, but authoring Technical Solutioning Documents, navigating cross-functional dependencies across multiple teams, and adhering to strict zero-downtime execution standards in production. There is a strong expectation to proactively drive operational excellence, identify system vulnerabilities, and implement scalable, fault-tolerant solutions.

Academic courses relevant to the project : Object-Oriented Programming, Database Systems, Operating Systems, Computer Networks.

Name: DHRUTI BHADORIA(2024H1030026G)

Student Write-up

PS-II Project Title: Agentic Observability

Short Summary of work done during PS-II : During my internship with the Observability team at Flipkart, I deployed 2 production-grade AI Powered observability tools using MCP. One for Grafana and another for Victoria Metrics. This enables the on call engineers to perform incident triage through natural language instead of manual dashboard navigation, reducing MTTR. The VM MCP connects the AI agent directly to tsdb of the org, Together both the MCPs enable end-to-end RCA within a single conversation. Also completed othert ad-hoc tasks and POC that help me deepen my understanding of the Observability concepts and tech stack

Tool used (Development tools - H/w, S/w) : Languages like Go, Python and Java. Observability tech stack : Grafana, Victoria Metrics and Prometheus etc. Protocols like JSON-RPC 2.0 etc, Kubernetes clusters etc.

Objectives of the project : AI integration in Observability to enhance Automated and Agentic root cause analysis and reduce MTTR

Major Learning Outcomes : Learnt about observability tech stack, metrics, Kubernetes architecture

Details of Papers/patents : I have published some one pagers in the internal Flipkart collection, but no public patents or papers have been made.

Brief Description of working environment, expectations from the company : The environment at Flipkart is truly positive and will constantly encourage you and motivate you to be better at what you do, not because you want prove others but majorly because you would want to work with all the wise, talented people and would want to make a suggestion and input that has value.

Academic courses relevant to the project : Distributed systems,
Reliability and Software Development life cycle

Name: SHREYA DOKANIA(2024H1030124G)

Student Write-up

PS-II Project Title: Backend Engineering and System Optimization at Flipkart

Short Summary of work done during PS-II : During my PS-II internship at Flipkart, I worked on multiple backend engineering projects within the Pricing and Promotions organization. My work included implementing streaming capabilities, optimizing Redis-based services, integrating Machine Identity (Grayskull), Authentication (AuthN), and JDK upgrades across production services, executing zero-downtime database migrations using Percona Toolkit, and contributing to Minutes Automation initiatives. I actively participated in development, testing, production deployments, monitoring, and on-call activities while collaborating with cross-functional teams to deliver scalable and reliable backend solutions.

Tool used (Development tools - H/w, S/w) : Java, IntelliJ IDEA, Git, GitHub, Maven, Kubernetes, MySQL, Redis, Kafka, Prometheus, Grafana, Postman, Swagger, Percona Toolkit, Jira, Confluence, Linux

Objectives of the project : Develop, optimize, test, and deploy scalable backend services while improving system performance, reliability, and operational efficiency.

Major Learning Outcomes : Backend service development and optimization
Distributed systems and microservices architecture
Production deployments and monitoring
Database migration and performance optimization
Authentication and machine identity integration
End-to-end testing and incident management

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : The internship was carried out in a collaborative Agile development environment where engineers worked closely through sprint planning, code reviews, KT sessions, and daily Scrum meetings. The work involved developing, testing, deploying, and monitoring production services while maintaining high quality and reliability standards. The organization encouraged ownership, continuous learning, teamwork, and proactive problem solving.

Academic courses relevant to the project : Operating Systems, Database Systems, Distributed Systems, Computer Networks, Software Engineering, Object-Oriented Programming

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Name: SHIVARAMAKRISHNA KARTHIKEYAN .(2022AAPS0457H)

Student Write-up

PS-II Project Title: Data Platform Engineering: Workflow Orchestration, Dataproc Migration, and API Development

Short Summary of work done during PS-II : During my Practice School II internship at Flipkart Internet Pvt Ltd, a leading Indian e-commerce company, I worked with the organization's internal data platform engineering team, which manages large-scale batch and stream data processing infrastructure. My key contributions included converting legacy Java-based workflow code into Python-based dynamic workflows on Apache Airflow with cloud-storage-based caching, which was my first production deployment. I designed and implemented backend pagination for an internal data-synchronisation service in Java, reducing bulk retrieval of over 1,000 records to chunks of 200 per API call, which improved response times and system stability. I developed two production-grade REST APIs for an internal orchestration platform, enabling programmatic version and configuration management of processing pipeline metadata without manual database intervention. I also deployed a metadata-synchronisation API, created and deployed a Bigtable (NoSQL) resource configuration, and built a BigQuery resource artifact for analytical storage. A major long-term assignment involved migrating batch data-processing jobs — including data snapshots, long-running housekeeping jobs, and the top highest-priority business-metric pipelines — from an on-premise Hadoop/YARN cluster to Google Cloud Dataproc, debugging failures and validating data consistency throughout. I also contributed to upgrading the Spark SQL version used across processing pipelines and applied configuration updates using APIs I had built. Additionally, I developed multiple Python automation scripts for job-status monitoring and mentored a new intern on the cloud migration effort, ensuring continuity of the work.

Tool used (Development tools - H/w, S/w) : Languages: Java, Python, SQL, YAML Big Data Frameworks: Apache Spark, Apache Hadoop, Apache Hive, Apache Flink, Apache YARN, HDFS Cloud (GCP): Google Cloud Storage, Google Cloud Dataproc, Google Cloud Composer, BigQuery,

Bigtable, Pub/Sub Orchestration/De

Objectives of the project : To contribute to a large-scale e-commerce company's internal data platform team by modernizing workflow orchestration (migrating legacy Java-based pipelines to Python-based dynamic workflows on Apache Airflow), resolving performance bottlenecks in an internal data-synchronisation service through pagination, developing RESTful APIs for an internal orchestration platform, deploying supporting cloud infrastructure components (NoSQL and data-warehouse resource configurations), and migrating batch data-processing jobs from an on-premise Hadoop/YARN cluster to a managed cloud service (Google Cloud Dataproc) to improve scalability, reliability, and reduce operational overhead.

Major Learning Outcomes : Deep understanding of Apache Spark's architecture (RDDs, DataFrames, Spark SQL, execution and fault-tolerance models)
Proficiency in Apache Airflow for dynamic workflow (DAG) creation and cloud-storage-based caching
Hands-on experience with Google Cloud Platform services (Cloud Storage, Dataproc, BigQuery, Bigtable, Cloud Composer)
Full-cycle RESTful API development — from design through production deployment, including automated documentation and request testing
Version control and CI/CD proficiency (Git rebasing/cherry-picking, internal deployment pipelines)
Scalable backend pagination design for large-dataset APIs
Basic Kubernetes operations (command-line tools, dashboard-based monitoring)
Non-technical: agile sprint planning, technical mentorship, cross-team communication, and managing multiple concurrent workstreams

Details of Papers/patents : None. No papers were published or patents filed as part of this internship; the work involved applied engineering on a company's proprietary internal data platform

Brief Description of working environment, expectations from the company : The internship was based at the company's Bengaluru office, within a data platform engineering team responsible for large-scale batch and stream data processing infrastructure. The environment followed agile methodology, with fortnightly sprint planning tracked through a project-management tool and technical documentation maintained on a wiki-based platform. After an initial week of remote onboarding (including a group capstone application-development project), I transitioned to individual project ownership under an engineering manager and a peer mentor, working alongside senior engineers in a collaborative, code-review-driven culture. The expectation was that interns take ownership of production-grade deliverables rather than academic exercises, while balancing independence with mentorship support. This included setting up pre-production environments, following the company's

CI/CD and security protocols, participating actively in code reviews, and delivering tested, deployable code within sprint cycles. Given the platform's massive scale (over 100 petabytes of data and thousands of business-critical processing pipelines, some directly tied to revenue), the company expected a high degree of technical rigor and caution. Beyond technical delivery, I was expected to contribute to team knowledge continuity by documenting processes and eventually mentoring a newer intern in the later part of my internship— reflecting the company's emphasis on both individual contribution and sustainable teamwork.

Academic courses relevant to the project : Distributed Systems, Cloud Computing, Database Systems, Operating Systems, and Software Engineering.

Name: PAWANI AGARWAL(2021B4A72165G)

Student Write-up

PS-II Project Title: Plato Models Onboarding and Spark-Based facts engineering

Short Summary of work done during PS-II : Worked on onboarding data models on flipkart internal UI and also optimised various spark jobs for better execution times

Tool used (Development tools - H/w, S/w) : GCP, Spark and various flipkart internal tool

Objectives of the project : Onboard various models onto flipkart internal UI to make data analysis easier

Major Learning Outcomes : Learnt about batch data streaming using Spark, GCP

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Was really good

Academic courses relevant to the project : DBS

Name: AARIV WALIA .(2022A7PS0052H)

Student Write-up

PS-II Project Title: Minutes

Short Summary of work done during PS-II : Creating a new improved customer shopping experience for minutes.

Tool used (Development tools - H/w, S/w) : IntelliJ, Java, maven, gradle, kubernetes

Objectives of the project : Creating a new improved customer shopping experience for minutes

Major Learning Outcomes : Developing modular and highly optimized code, creating supporting infrastructure for deploying services and cross team collaberation.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Fast paced with expectations of high technical competancy as well as helpful team members.

Academic courses relevant to the project : OOPS, DBMS, CN.

PS-II Station : Flipkart Business Analyst, Bengaluru

Faculty

Name: Bhamidipati Vaishali .

Student

Name: PRASHANT PANJWANI(2022A1PS1360P)

Student Write-up

PS-II Project Title: The True Cost Of Empty SHelves -Modelling Net GMV Loss From OOS

Short Summary of work done during PS-II : Worked as a Business Analyst Intern in the Minutes Analytics team at Flipkart, focusing on inventory and supply chain analytics. Conducted GMV loss modeling for Out-of-Stock (OOS) products, performed WMAPE and demand forecasting analyses, analyzed SKU-level in-stock performance, and developed root cause analysis frameworks for inventory drops. Collaborated with cross-functional stakeholders to identify business opportunities, improve inventory availability, and support data-driven decision-making through SQL, Python, and dashboard-based insights.

Tool used (Development tools - H/w, S/w) : SQL Python Jupyter Notebook Microsoft Excel Google Sheets Tableau / Power BI (if used) Internal Flipkart Analytics Dashboards & Data Platforms

Objectives of the project : Measure GMV loss caused by Out-of-Stock (OOS) products. Estimate net revenue impact by accounting for customer substitutions. Identify high-impact SKUs and categories driving maximum losses.

Major Learning Outcomes : Developed expertise in analyzing Out-of-Stock (OOS) events and their impact on business performance.
Learned to quantify revenue loss using data-driven GMV loss models.
Gained hands-on experience in SQL, data analysis, and large-scale e-commerce datasets.
Improved understanding of customer substitution behavior and inventory dynamics.
Enhanced problem-solving and stakeholder communication skills through business-focused analytics and recommendations.

Details of Papers/patents : No papers published or patents filed as part of the PS-II project.

Brief Description of working environment, expectations from the company : The working environment at Flipkart was highly collaborative, fast-paced, and data-driven. As part of the Minutes Analytics team, I worked closely with business, supply chain, product, and operations stakeholders to solve real-world business problems using data. The organization encouraged ownership, proactive problem-solving, and effective communication, providing opportunities to contribute to projects with direct business impact.

The work culture emphasized analytical thinking and evidence-based decision-making. Regular interactions with stakeholders helped me understand business requirements, align analytical solutions with organizational goals, and present insights in a clear and actionable manner. Team members were approachable and supportive, fostering a positive learning environment where questions, discussions, and knowledge sharing were encouraged.

The company expected interns to be self-driven, adaptable, and capable of handling large datasets to derive meaningful insights. Strong analytical skills, proficiency in SQL and data analysis, attention to detail, and the ability to communicate findings effectively were highly valued. Interns were also expected to take ownership of their projects, collaborate across teams, and deliver solutions that could improve business performance.

Overall, the internship provided valuable exposure to large-scale e-commerce operations, advanced analytics applications, and cross-functional teamwork, helping bridge the gap between academic learning and industry practices.

Academic courses relevant to the project : Supply Chain Managemen,Probability and Statistics,Computer Programming

PS-II Station : Flipkart Internet Pvt Ltd - Business Development, Bengaluru

Faculty

Name: Ramesh Venkatraman .

Student

Name: PREYAANSH BARARIA .(2021B2A43215H)

Student Write-up

PS-II Project Title: Ads account management of BPC portfolio

Short Summary of work done during PS-II : Ads Account Management in Flipkart's Beauty and

Personal Care (BPC) category focuses on helping brands achieve their business objectives through data-driven advertising solutions on the platform. The role involves managing a portfolio of advertisers, understanding their growth priorities, and designing strategies that improve product visibility, traffic, conversions, and overall sales performance. A key responsibility is planning, launching, and optimizing advertising campaigns across Flipkart's ad ecosystem. This includes monitoring performance metrics such as impressions, clicks, conversions, revenue, and return on ad spend (ROAS). Based on these insights, recommendations are provided to brands to improve campaign efficiency and maximize returns on their advertising investments. The role requires strong stakeholder management, as it involves regular collaboration with brand teams, category managers, creative teams, analytics teams, and internal operations stakeholders. Periodic business reviews are conducted to evaluate campaign outcomes, identify growth opportunities, and align future advertising strategies with business goals. Account managers also analyze market trends, customer behavior, seasonal demand patterns, and competitor activities to uncover opportunities for brand growth. In the BPC category, understanding consumer preferences across skincare, haircare, cosmetics, grooming, and wellness segments is essential for creating relevant and effective advertising plans. Additionally, the role includes budget management, revenue forecasting, campaign troubleshooting, and ensuring high advertiser satisfaction. By combining analytical thinking, business acumen, and client relationship management, Ads Account Management helps brands scale their presence on Flipkart while delivering measurable business impact. The function plays a critical role in driving advertiser success, category growth, and long-term platform revenue.

Tool used (Development tools - H/w, S/w) : MS excel

Objectives of the project : Drive Ads Revenue for Flipkart Beauty and Personal Care.

Major Learning Outcomes : Stakeholder Managerment, Ads optimization

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Everyone is supportive and encourages ideas proposed by you

Academic courses relevant to the project : Principles of Economics

PS-II Station : Flipkart Internet Pvt Ltd - Site Reliability Engineering, Bengaluru

Faculty

Name: Sugata Ghosal .

Student

Name: SALMAN FARIS .(2021B5A70745H)

Student Write-up

PS-II Project Title: Solr Migration to Kubernetes

Short Summary of work done during PS-II : I assisted the Search Ingestion team in migrating the Solr cluster from Virtual Machines to Kubernetes. In particular, my task involved implementing the Helm charts required to migrate the cluster of multiple Solr cores and shards to Kubernetes.

Tool used (Development tools - H/w, S/w) : Bash, Git, GitHub, kubectl, Flow CI/CD pipeline

Objectives of the project : Assist in migrating Solr indices from Virtual Machines to Kubernetes technology.

Major Learning Outcomes : Learned the following: fundamentals of software engineering, Bash, Git and GitHub, Kubernetes and kubectl, Solr clusters

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The work environment was highly collaborative. I was expected to teach myself the fundamentals of the tasks involved, and actively seek help whenever required. The working hours were flexible.

Academic courses relevant to the project : Computer Programming, Object Oriented Programming, Operating Systems, Computer Networks, Principles of Programming Languages

PS-II Station : Flipkart - Asst Manager (Business Development) (BD), Bengaluru

Faculty

Name: Ramesh Venkatraman .

Student

Name: KOTA ROHITH RAJ(2024H1420098H)

Student Write-up

PS-II Project Title: Search Improvement and Piracy in Books Category

Short Summary of work done during PS-II : During my PS in the Books and Media category at Flipkart, I worked on two main things: making books easier to find via search and stopping fake books from being listed on the platform. First, I monitored the daily search traffic for the top 500 book keywords. When I found search errors, I worked with the respective teams to clean up missing tags and manually adjusted settings so the correct books showed up first. Secomd, to handle the problem of pirated books being listed on the Platform, I redesigned our QC SoP. We set set up a "brand-gate" list containing only verified, authorized distributors for publishers. Because of these strict new rules, the pass rate for unverified listings dropped by a huge percentage. This update successfully blocked fake pirated books and unauthorized sellers before they could go live on the platform, protecting both the customers and official publishing partners.

Tool used (Development tools - H/w, S/w) : SQL, Excel

Objectives of the project : 1. Monitor and analyze search performance metrics for the top 500 high-traffic keywords within the Books category. Work on search discoverability gaps through structural metadata correction. 2. Audit and overhaul the Quality and Compliance (QC) Standard Operating Procedure (SOP) to detect listing vulnerabilities and mitigate counterfeit book being listed on the

platform..

Major Learning Outcomes : 1. Deep technical understanding of digital multi-sided retail architectures, metadata structures, and information retrieval/search ranking models within an enterprise e-commerce storefront.
2. Advanced practical skills in data analytics and database operations using SQL-based query languages to isolate category metric trends and track search anomalies.
3. Practical experience applying physical manufacturing quality principles (such as Continuous Improvement, Root Cause Analysis, 5-Whys, and Poka-Yoke error-proofing) to abstract digital business workflows.
4. Cross-functional operational experience managing workflows and handling data-ticketing pipelines with technical product management, trust compliance, and engineering units.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Flipkart is fast, energetic, and completely focused on data. Because the platform hosts thousands of independent sellers and millions of products, the teams have to manage a massive amount of data every day. The company culture expects you to take full responsibility for your tasks right from the start and work quickly across different teams. As an intern, I was treated like a regular team member and trusted to handle important search issues, talk directly with engineering teams, and create new safety workflows. It is a great place to learn if you love solving real-world problems using numbers and teamwork.

Academic courses relevant to the project : Supply Chain Management, Quality Control Assurance and Reliability, Manufacturing Planning and Control

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Name: ASWATHY M(2024H1420135P)

Student Write-up

PS-II Project Title: Operational Excellence in New Business Development: Driving Sales, Insights and Process Standardization at Flipkart Ads

Short Summary of work done during PS-II : During my PS-II internship at Flipkart Ads, I worked with the New Business Development (NBD) team across two phases. In the first phase, I gained exposure to B2B advertising sales by studying the product portfolio, preparing pitch decks, delivering mock pitches, and participating in client meetings and presentations. In the second phase, I focused on Planning, Insights, and Collections, where I developed a Unified Sales Pipeline Tracker, Consumption Tracker, Engagement Tracker, and improved Collection Tracker. I also created the NBD Q1 Newsletter and contributed to Weekly Business Reviews (WBRs). These initiatives helped standardize processes, improve data visibility, and support decision-making within the team.

Tool used (Development tools - H/w, S/w) : Google sheets, HTML, PowerBi, Looker Studio, AI Studio, GEmini, Claude

Objectives of the project : The objective of the project was to improve the operational efficiency of Flipkart Ads' New Business Development (NBD) team by developing standardized tools and processes for sales pipeline tracking, campaign monitoring, client engagement tracking, collections management, and business reporting, thereby enhancing visibility, decision-making, and team productivity.

Major Learning Outcomes : My major learning outcomes were understanding B2B advertising sales, developing data-driven operational tools, applying systems engineering principles to business processes, improving process standardization, and recognizing the importance of data quality, iterative improvement, and structured reporting in driving operational excellence.

Details of Papers/patents : I am currently doing research in thermal engineering by working closely with heat exchangers and nanofluids.

Brief Description of working environment, expectations from the company : The working environment at Flipkart was collaborative, fast-paced, and highly data-driven. The company expected me to take ownership of projects, learn quickly, work independently, and contribute solutions that improved team efficiency and decision-making.

Academic courses relevant to the project : The most relevant courses were Operations Management, Supply Chain Management, Systems Engineering, Business Analytics, and Project Management, as they helped me design standardized processes, develop tracking systems, analyze business data, and improve o

Name: RACHIT SINGLA(2021B4A71098P)

Student Write-up

PS-II Project Title: Strategic interventions in Customer acquisition and retention using data analytics

Short Summary of work done during PS-II : I was part of Home and Furniture Business Unit of Flipkart where my task was to focus on customer retention. I had to increase the retention ratio metric and hence increase the MAC. I had to calculate the customer splits based on various demographics like city, state , zone , gender , age bucket, etc based on which I needed to design strategies on which campaigns to run , which customer cohort to focus on. I also found out vertical-vertical affinity analysis from which we could infer what are the top cross selling verticals and accordingly channelise our CRM structure.

Tool used (Development tools - H/w, S/w) : MySQL, Excel, Python , Google Sheets

Objectives of the project : To focus on increasing the retention ratio metric and hence increasing the MAC(Monthly Active Customers). To also focus on streamlining the CRM channels.

Major Learning Outcomes : Got hands on experience in MySQL, Python and Excel.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Flipkart provided a fast-paced and professional working environment that emphasized data-driven decision-making and ownership. Interns were expected to quickly understand business context, work independently on assigned problems, and contribute insights that could be used by the team. The culture encouraged asking questions, validating assumptions through data, and communicating findings clearly to stakeholders.Overall, the internship offered meaningful exposure to large-scale e-
commerce operations and provided valuable learning through real business problems and responsibilities.

Academic courses relevant to the project : Professional Ethics , Database Systems

Name: AAROHI UNIYAL(2021B1A31316P)

Student Write-up

PS-II Project Title: Value creation through selection optimization and operational automation

Short Summary of work done during PS-II : I worked on the category selection for personal wash and oral care, helping KAMs onboard more than 10 brands contributing to the category GMV. I also build auto updating live dashboards to help the KAMs track top and bottom line data for their categories.

Tool used (Development tools - H/w, S/w) : Gemini, SQL, HTML, AppScript

Objectives of the project : - Grow the personal wash and oral care categories revenue through selection. -Build macro and micro level category management tools

Major Learning Outcomes : - Insights into quick commerce industry and trends. - Use of AppScript for HTML coding and SQL for data fetching.

Details of Papers/patents : Na

Brief Description of working environment, expectations from the company : The work environment is flexible, as long as deadlines are met and quality is maintained, there is freedom of choosing when to work and the senior leadership is approachable.

Academic courses relevant to the project : Principles of Business Management

Name: VEDANSHEE DHAVAL DAVE(2024H1030050H)

Student Write-up

PS-II Project Title: Mobile Accessories Merch

Short Summary of work done during PS-II : Handling merch of mobile accessories category in electronics BU

Tool used (Development tools - H/w, S/w) : google sheets, flipkart internal tools

Objectives of the project : to drive views, reach targets

Major Learning Outcomes : communication, understanding of e commerce

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : good but team expected a lot, like working weekends, calls and meetings at night, etc

Academic courses relevant to the project : none

Name: SHRIYA SRINIVASAN(2022A4PS0537G)

Student Write-up

PS-II Project Title: Data Driven Optimization of Branded Portfolio in Home Category

Short Summary of work done during PS-II : Analysing sales data of the Home category of Flipkart to analyse trends, gaps, performance metrics etc and draw actionable insights

Tool used (Development tools - H/w, S/w) : Excel, SQL

Objectives of the project : Improve the sales performance and other related metrics of Branded Portfolio

Major Learning Outcomes : Excel, SQL , E-commerce industry understanding

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Very collaborative and supportive environment and team.

Academic courses relevant to the project : -

Name: PRANAVKRISHNAA KAUVERI GOBI .(2022A4PS0681H)

Student Write-up

PS-II Project Title: Data Analysis in a Large Scale E - Commerce Company: Page level Trend Analysis & Operations in Performance Marketing of the Fashion Dept

Short Summary of work done during PS-II : In the first 3 months, I worked with all the members of the marketing team of flipkart fashion, I automated some of their tasks related to affiliate campaigns, brand marketing and social media campaigns. In the later part I worked to make a data layer for the Performance marketing channel, using flipkarts internal tools and g sheets

Tool used (Development tools - H/w, S/w) : Google sheets, Apps Scripts, Excel, SQL, PS1 scripts, Google Gemini, Claude (Cowork, live artifacts, design)

Objectives of the project : Creating a data layer for the mech and digital marketing team at Flipkart fashion. Making a bedrock of data for the leadership to make decisions.

Major Learning Outcomes : Making automated data dashboards, working in a team,

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : The office environment is very conducive for learing and working. Every single person I met in office were very friendly and helped with whatever I asked them. That being said I have to mention that being outspoken and asking questions (even with directors or higher level people) is the only way to learn about the business and a must do thing.

Academic courses relevant to the project : Effective public speaking, POM, PnS

PS-II Station : Flipkart - Asst Manager (Planning), Bengaluru

Faculty

Name: Ramesh Venkatraman .

Student

Name: AASTHA MAZUMDAR .(2022A5PS1237H)

Student Write-up

PS-II Project Title: E2E Planning and metrics control,DS Automation

Short Summary of work done during PS-II : Optimization of planning process and tracker automation

Tool used (Development tools - H/w, S/w) : Python, sql,R

Objectives of the project : To optimise end to end planning process and automate daily trackers

Major Learning Outcomes : Learnt about automation and supply planning optimization

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Friendly work environment

Academic courses relevant to the project : Management minor courses

Name: ARYA MOHAN A(2024H1420134P)

Student Write-up

PS-II Project Title: Non-Serviceability

Short Summary of work done during PS-II : Monitoring, understanding and problem solving of non serviceability issues for different large items within the service planning team under planning department.

Tool used (Development tools - H/w, S/w) : Internal company sites, portals, Excel, Python codes,Powerpoint

Objectives of the project : Sustain serviceability of large items thus improving GMV

Major Learning Outcomes : Understanding of how large supply chain works to provide serviceability throughout India

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Dedicated and hardworking workforce, flexible working conditions.

Academic courses relevant to the project : Supply chain

PS-II Station : Franklin Templeton (Technology) - AI/ML for GenAI, Hyderabad

Faculty

Name: Niranjan Swain .

Student

Name: SAARTHEK RAJ .(2022A7PS0137H)

Student Write-up

PS-II Project Title: Datadog Cost Reduction and Tagging Hygeine

Short Summary of work done during PS-II : This project focused on improving observability governance within Franklin Templeton's Datadog ecosystem. As the organization's use of Datadog expanded, inconsistent metadata tagging created challenges in service ownership identification, compliance monitoring, and cost attribution. Missing mandatory tags such as service name, environment, and host information reduced visibility into resource utilization and increased the effort required for operational analysis. To address these challenges, an automated ETL pipeline was developed using the Datadog Logs API, ServiceNow CMDB, and Elasticsearch. The solution extracts log data from Datadog, validates the presence of mandatory tags, identifies tagging violations, enriches records with ownership information obtained from the CMDB, and stores the processed data in Elasticsearch for analysis and reporting. The implemented system enables continuous monitoring of tagging compliance and significantly reduces the manual effort involved in identifying non-compliant services. By associating violations with responsible owners, the solution improves accountability and supports faster remediation. The project also establishes a scalable framework for future governance initiatives, including automated notifications, compliance dashboards, and cost attribution mechanisms. Overall, the project demonstrates how automation and effective metadata governance can enhance observability practices, improve operational efficiency, and provide a strong foundation for future cost optimization efforts within the organization.

Tool used (Development tools - H/w, S/w) : Datadog Logs API, Python, ServiceNow CMDB API, Elasticsearch, Kibana, Git, Visual Studio Code (VS Code)

Objectives of the project : The primary objective of this project was to develop an automated governance framework for improving observability data quality and enabling better cost attribution within the Datadog ecosystem at Franklin Templeton. The specific objectives were: To collect and analyze log data from Datadog using the Datadog Logs API. To identify services with missing mandatory metadata tags such as service, environment, and host. To automate the detection and

reporting of tagging violations across monitored services. To integrate with the ServiceNow Configuration Management Database (CMDB) for retrieving service ownership information. To enrich violation records with ownership details to improve accountability and facilitate remediation. To store processed usage and violation data in Elasticsearch for efficient querying, analysis, and reporting. To establish a scalable foundation for governance monitoring, compliance reporting, and future alerting mechanisms. To support future observability cost attribution and cost optimization initiatives by improving tagging compliance and ownership visibility. These objectives collectively aim to strengthen observability governance, reduce manual effort involved in compliance monitoring, and improve the organization's ability to manage observability resources effectively.

Major Learning Outcomes : Gained practical experience in working with enterprise-scale observability platforms, particularly Datadog, and understanding how telemetry data is used for monitoring and governance.
Developed hands-on expertise in designing and implementing ETL pipelines involving data extraction, transformation, enrichment, and storage.
Learned to integrate and work with enterprise APIs, including the Datadog Logs API and ServiceNow CMDB API.
Acquired knowledge of Elasticsearch indexing, querying, and data management for large-scale analytics applications.
Developed an understanding of metadata governance, tagging standards, and their importance in cost attribution and operational accountability.
Enhanced problem-solving and analytical skills by addressing real-world engineering challenges and evaluating alternative technical approaches.
Gained exposure to enterprise software development practices, including system design, testing, documentation, and stakeholder collaboration.
Improved communication, teamwork, and professional skills through regular interactions with mentors, engineers, and business stakeholders.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : During my internship at Franklin Templeton Technology, I worked in a professional and collaborative engineering environment that emphasized learning, innovation, and problem-solving. The team followed industry-standard software development practices, including regular discussions, code reviews, knowledge-sharing sessions, and close collaboration among engineers. The work environment encouraged independent thinking while also providing access to experienced mentors and subject matter experts whenever guidance was required.

As part of the engineering team, I was exposed to enterprise-scale systems, observability platforms, and data engineering workflows. The organization provided the necessary infrastructure, tools, and resources to understand the problem domain and implement effective solutions. Team members were approachable and supportive, creating an atmosphere that facilitated both technical and professional growth.

The company's expectations from interns included demonstrating a willingness to learn, understanding business requirements, taking ownership of assigned tasks, and contributing meaningfully to ongoing projects. Interns were expected to apply their academic knowledge to real-world challenges, communicate effectively with team members, and maintain professionalism throughout the internship. The experience provided valuable insight into industry practices and helped bridge the gap between classroom learning and practical engineering applications.

Academic courses relevant to the project : Database Systems, Data Mining, Data Structures and Algorithms, Object Oriented Programming, Software Engineering, Computer Networks, Operating Systems

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Name: CHETAN SURYA REDDY SEERNAM .(2022A7PS0222H)

Student Write-up

PS-II Project Title: UX, Memory Optimization and Storage R&D

Short Summary of work done during PS-II : Over five months on the Mosaiq Platform at Franklin Templeton, I worked across seven connected areas centred on the Data Access Layer (DAL). I wrote developer-facing documentation for the DAL, tracing request handling end to end with a debugger and publishing example-driven docs to Confluence, then fed failure cases back into the DALAssist AI request assistant. I built and benchmarked an S3-based storage proof-of-concept using DuckDB and Apache Iceberg (via DataIO and the Lakekeeper REST catalog) against the existing PostgreSQL store, comparing four file-layout strategies and finding even entity bucketing the most balanced. I investigated Iceberg table maintenance, building compaction and snapshot-expiry routines with safety guarantees through optimistic concurrency control and a grace-period floor. I improved the DAL web interface with in-browser data preview, virtual scrolling, a pivot view, JSON support, and a reworked query editor, all behind feature flags. I reduced a caching job's peak memory from around 67 GB to around 26.5 GB (roughly 60%) by moving LISTAGG aggregations into Snowflake SQL and switching

the data-fetch path to Apache Arrow, validating output file-for-file against production. I created field-to-source mapping documentation for 33 PAT endpoints across three services, verified with SQL and published to Confluence. Finally, I cleaned up expired feature flags across several DAL and PAT services (47 JIRA tickets, 52 files), writing unit tests before removing each legacy branch to improve test coverage and safety.

Tool used (Development tools - H/w, S/w) : DuckDB, Apache Iceberg, Apache Parquet, Apache Arrow, Amazon S3, Snowflake, PostgreSQL, Lakekeeper (REST catalog), DataIO (in-house library), gRPC, Protocol Buffers, React, TypeScript, Python, Polars, DBeaver, Mongo Compass, Confluence, JIRA, Git. Details

Objectives of the project : Work on the Mosaiq Platform's Data Access Layer (DAL) across several connected areas: produce developer-facing documentation for the DAL and improve the accuracy of its AI request assistant (DALAssist); build and benchmark cheaper S3-based storage options against the existing PostgreSQL store; investigate Apache Iceberg table management (file compaction and snapshot lifecycle) using the in-house DataIO library and the Lakekeeper REST catalog; improve the DAL web interface so users can preview and explore results in the browser; reduce the memory used by data-caching jobs so they stop failing; document external services and create field-to-source mappings for the analytics (PAT) services; and clean up expired feature flags with supporting tests.

Major Learning Outcomes : Hands-on experience with modern data-lake technology (columnar and table formats, embedded query engines, and how physical data layout drives performance and cost); Iceberg table maintenance including compaction and snapshot lifecycle via Lakekeeper and DataIO; practical memory optimization in Python (pushing aggregation into the database, avoiding hidden in-memory copies with Apache Arrow, explicit memory release); full-stack development with React and TypeScript for rendering large datasets; navigating a large unfamiliar production codebase; using a debugger to verify behaviour rather than assume it; writing tests before changing existing code; and recognising technical documentation as an engineering contribution in its own right.

Details of Papers/patents : None.

Brief Description of working environment, expectations from the company : The working environment at Franklin Templeton's Hyderabad office was welcoming and collaborative. The people on the Mosaiq Platform team were friendly, approachable, and always willing to share their knowledge, which made settling in and learning a large codebase much easier. My mentor and teammates were supportive throughout, giving me the guidance and access I needed while trusting me to own my work. It was a positive, learning-friendly place where asking questions was encouraged

and good work was valued.

Academic courses relevant to the project : Database Systems, Object-Oriented Programming, Data Structures and Algorithms, Operating Systems, Computer Networks

PS-II Station : Future First Info Services (Pvt) Limited ,Bangalore, Bengaluru

Faculty

Name: Atul Kumar Arora

Student

Name: VAISHNAVI R CHANNUR .(2022A2PS1428H)

Student Write-up

PS-II Project Title: BREAKOUT TRADING STRATEGIES

Short Summary of work done during PS-II : During my PS-II internship at Futures First Info Services, I worked on the development and backtesting of quantitative breakout trading strategies for futures markets. I analyzed historical market data for energy futures such as Heating Oil (HO) and RBOB Gasoline (RB) using Python. My work involved identifying consolidation patterns like Inside Candle (Mother–Child) and Triangle Consolidation patterns, converting them into rule-based trading strategies, and implementing them programmatically. I developed logic for trade entry, exit, stop-loss, and profit targets, while incorporating Average True Range (ATR) as a volatility filter to improve signal quality. I also contributed to building a custom backtesting framework that simulated strategy performance on historical data and evaluated results using metrics such as win rate, profit factor, total profit, and maximum drawdown. Through this project, I gained practical experience in quantitative finance, algorithmic trading, data analysis, Python programming, risk management, and strategy evaluation.

Tool used (Development tools - H/w, S/w) : Hardware Laptop/Desktop Computer Internet Connectivity for accessing historical market data and research resources Software Python – Core programming language used for strategy development and backtesting Jupyter Notebook – Interactive development and tes

Objectives of the project : To analyse strategies for the given products.

Major Learning Outcomes : To study the market with data and pattern analysis.

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : During my PS-II internship at Futures First Info Services, I worked in a professional and collaborative environment focused on quantitative research and financial market analysis. The workplace encouraged continuous learning, analytical thinking, and problem-solving through practical exposure to real-world trading concepts and data-driven decision-making.

As part of my project, I interacted with mentors and team members who provided guidance on algorithmic trading, futures markets, and quantitative strategy development. The work culture emphasized accuracy, discipline, independent learning, and effective communication. Regular discussions and feedback sessions helped me improve my technical skills and gain a deeper understanding of financial markets.

The company provided access to the necessary resources, datasets, and technical support required for the successful completion of the project. The environment encouraged experimentation, allowing me to develop and backtest trading strategies using Python and quantitative analysis techniques.

From the company, I expected opportunities to apply academic concepts in a practical setting, learn industry-standard methodologies, and gain exposure to quantitative finance and trading systems. I also expected mentorship, constructive feedback, and opportunities to enhance my analytical, programming, and problem-solving abilities.

Overall, the internship provided valuable industry exposure and helped bridge the gap between classroom learning and real-world applications, contributing significantly to my professional development and career readiness.

Academic courses relevant to the project : Finance courses - Security and Portfolio management

Name: YUMIT MORWAL(2022A1PS1283G)

Student Write-up

PS-II Project Title: INTEREST RATE AND SOFR TRADING

Short Summary of work done during PS-II : During my PS-II internship at Futures First Pvt. Ltd., I worked on projects related to interest rate markets and SOFR trading. My work involved studying interest rate products, analyzing market data, monitoring yield curve movements, and understanding factors affecting rate expectations. I conducted quantitative and qualitative analysis of market trends, explored trading strategies, and evaluated their performance under different market conditions. I also worked with financial datasets, prepared analytical reports, and participated in discussions on market developments and risk management practices. The internship provided practical exposure to fixed income markets, derivatives trading, and professional research methodologies while strengthening my analytical and problem-solving abilities.

Tool used (Development tools - H/w, S/w) : Desktop Computer

Objectives of the project : Understand the structure and functioning of global interest rate markets.• Analyze SOFR-based products and interest rate derivatives.• Study market movements and factors influencing interest rates.• Develop analytical frameworks for evaluating trading opportunities.• Gain practical exposure to trading strategies and risk management techniques.

Major Learning Outcomes : Developed understanding of global interest rate markets and SOFR products.• Learned to analyze market data and interpret yield curve movements.• Gained exposure to trading strategies, risk management, and market microstructure.• Improved analytical, quantitative, and communication skills.• Understood the practical application of financial concepts in trading environments.

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : Futures First provided a professional, collaborative, and learning-oriented environment. The organization encouraged analytical thinking, independent learning, and teamwork. Regular interactions with mentors and experienced professionals helped in understanding market dynamics and industry practices. The company provided access to resources, datasets, and guidance necessary for project completion. My expectations included gaining practical exposure to financial markets, understanding

trading methodologies, improving analytical skills, and learning how theoretical concepts are applied in real-world trading environments. The internship successfully met these expectations and significantly enhanced my industry readiness

Academic courses relevant to the project : Nil

PS-II Station : Futures First Info Services (Pvt) Limited - Gurgaon, Gurgaon

Faculty

Name: Atul Kumar Arora

Student

Name: OMKAR ASHISH BARVE(2021B5A82950G)

Student Write-up

PS-II Project Title: Order Book & Market Microstructures

Short Summary of work done during PS-II : Helped in making Market Microstructure Analysis models

Tool used (Development tools - H/w, S/w) : Python, Numpy, Pandas, Numba

Objectives of the project : Study Order Book and Market Microstructures

Major Learning Outcomes : Learned core Python very stronly, numpy, pandas, scipy, ML, finance terms, Derivatives

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : It was a team of 12

people, some in development and deployment, some in the research side as well as optimization (which I was a part of), we worked under a team lead & manager under their instruction.

Academic courses relevant to the project : C programming, Machine Learning, OOPs, OS

Name: ISHAN KOTWANI(2022A7PS0086P)

Student Write-up

PS-II Project Title: Quantitative Analytics Dashboard & Systematic Trading Framework for NYMEX Henry Hub Natural Gas Spreads

Short Summary of work done during PS-II : Designed and built a large-scale quantitative analytics dashboard and systematic trading framework for NYMEX Henry Hub natural gas calendar spreads. The system integrated historical data (JWT-authenticated QH-API) and live pricing (Lightstreamer) into a Streamlit application spanning pre-market checklists, fair-value strategy, spread-vs-spread regression, correlation scanning, and momentum analysis. Core modeling used OLS fair-value estimation with rolling Z-score signals, KPSS stationarity gating, and spread ranking by beta and correlation strength. I added a headless proximal policy optimization reinforcement-learning signal engine and a conviction filter that materially improved backtested win rate and profit factor. Later work included weather-revision tracking (CPC degree-days, GFS/ECMWF model runs), momentum indicators (ADX, Parabolic SAR), and a momentum-to-spread pipeline generating actionable trade cards with defined entries, ATR-scaled stops, and targets. Tech stack: Python, PyTorch, statsmodels, pandas, NumPy.

Tool used (Development tools - H/w, S/w) : Python, Streamlit, Numpy, Pandas

Objectives of the project : To generate a profit by trading natural gas calendar spreads

Major Learning Outcomes : Built end-to-end competence in systematic trading: quantitative fair-value modeling of natural gas calendar spreads (OLS regression, KPSS stationarity testing, rolling Z-score signals), production-grade dashboard development integrating live and historical market feeds, applying reinforcement learning to signal generation, and rigorous backtesting. Also developed a solid grasp of NYMEX Henry Hub market structure, weather-driven demand fundamentals, and disciplined

risk management — ATR-based stops, conviction filtering, and event-risk blackouts.

Details of Papers/patents : Not applicable. The internship involved developing proprietary, confidential trading systems using the firm's internal data, so no papers or patents were produced.

Brief Description of working environment, expectations from the company : Futures First (Hertshten Group) is a proprietary trading firm with a fast-paced, data-driven desk environment focused on live commodity and financial markets. Work on the Natural Gas desk was highly analytical and collaborative, with close mentorship from my supervisor and direct exposure to real-time market dynamics. The firm expected strong ownership, technical rigor, and the ability to translate quantitative models into practical, risk-managed trading tools. I expected hands-on involvement in live markets and the opportunity to apply statistical and machine-learning methods to real trading problems — both of which the role delivered.

Academic courses relevant to the project : DSA, OOPS, DBMS

PS-II Station : Futures First Info Services (Pvt) Limited - Jaipur, Jaipur

Faculty

Name: Atul Kumar Arora

Student

Name: ARNAV VERMA(2022A3PS0184G)

Student Write-up

PS-II Project Title: Trading in Australian FI Short Term Interest Rate Markets

Short Summary of work done during PS-II : During my PS-II internship at Futures First, I gained practical exposure to global interest rate markets and futures trading. My work primarily involved analyzing macroeconomic data, central bank policy expectations, inflation and employment releases,

and their impact on interest rate futures and yield curves. I regularly monitored market developments, prepared pre- and post-event analyses, and studied the behavior of futures contracts across different maturities. I developed an understanding of various trading structures, including outrights, spreads, and flies, and learned how traders use these instruments to express market views and manage risk. I also utilized analytical tools such as QH Studies and Excel to track market expectations, analyze historical relationships, and evaluate potential trading opportunities. As part of my learning process, I participated in trading simulations, maintained trading journals, conducted post-trade reviews, and performed scenario analysis around major economic events and central bank meetings. Additionally, I worked on creating trackers and frameworks to improve market monitoring and event-impact analysis. The internship provided valuable insight into professional trading practices, risk management principles, and decision-making under uncertainty. Overall, PS-II helped me bridge the gap between academic concepts and real-world financial markets while strengthening my analytical, quantitative, and market research skills.

Tool used (Development tools - H/w, S/w) : The primary tools used during PS-II included QH Studies for market analysis and visualization of interest rate futures, yield curves, spreads, and market expectations. Microsoft Excel was extensively used for data analysis, scenario modeling, maintaining

Objectives of the project : Trading

Major Learning Outcomes : My major learning outcome from the internship was developing a practical understanding of interest rate markets and how macroeconomic events are reflected in futures pricing. I learned how central bank policy, inflation, employment data, and economic releases influence yield curves and interest rate expectations. The internship also helped me understand spread and fly structures, curve trading, market positioning, and risk management principles. Through daily market analysis and trading discussions, I gained a much deeper appreciation of how professional traders think about probability, risk-reward, and scenario analysis. Overall, the experience transformed my understanding of financial markets from a theoretical perspective to a practical, market-driven one.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The working environment at Futures First was extremely demanding. The organisation maintained very high standards regarding punctuality, professionalism, preparation, and accountability. My workday began at approximately 4:00 AM, and there was little tolerance for delays, lack of preparation, or missed

responsibilities. Expectations were consistently high.
The company expected individuals to remain continuously updated on market developments, economic releases, and trading activity. Learning was largely self-driven, and interns were expected to independently develop market understanding, generate ideas, and continuously improve their performance. Regular reviews, performance monitoring, and feedback sessions created an environment where consistency and discipline were essential.
The culture was fast-paced, results-orientated, and demanding. Individuals were expected to manage pressure effectively, learn quickly, accept criticism constructively, and demonstrate measurable improvement over time.

Academic courses relevant to the project : I had none but I suppose Fufa is the only one that would be of some relevance.

Name: GARVIT BHARDWAJ(2022A4PS1220G)

Student Write-up

PS-II Project Title: An Introduction to Metals Futures Markets: Trading Mechanisms, Instruments, and Risk Management Strategies

Short Summary of work done during PS-II : During my PS-II at Futures First (Jaipur), I worked on metals futures markets, focusing on trading mechanisms, spread instruments, and risk management. I studied churning strategies across Gold (GC), Silver (SI), and Copper (HG) COMEX futures, analysing entry/exit behaviour using metrics such as the backoff ratio and Z-score. A major workstream was a cost-of-carry analysis of the SOFR-implied premium across roughly 93 spread-year combinations, examining how contango and backwardation regimes affect calendar-spread pricing. I also studied open-interest (OI) rollover dynamics in Gold futures, identifying the crossover timing between front and back months during roll periods. To understand event-driven volatility, I conducted FOMC event studies measuring price and spread reactions around policy announcements. On the execution side, I practised butterfly/fly spread construction and management on the NG Sim Prod simulation platform, learning order-book navigation through the DOM and concepts such as EFP and ASE. The work combined quantitative analysis in Excel with hands-on simulation, and I documented findings in a detailed PS-II report and presentation. Overall, the project gave me a structured understanding of how metals and energy derivatives are priced, how spreads behave

across the curve, and how risk is monitored in a proprietary trading environment.

Tool used (Development tools - H/w, S/w) : Software: NG Sim Prod simulation/trading platform, Microsoft Excel (analysis & charts), live market-data terminals, Python, AI tools, PowerPoint. Hardware: standard multi-monitor trading workstation.

Objectives of the project : To understand the structure and pricing of metals and energy futures markets; to analyse calendar-spread behaviour through cost-of-carry and SOFR-implied premium across the curve; to study churning strategies and open-interest rollover dynamics in COMEX metals contracts; to examine event-driven volatility (FOMC) effects on spreads; and to gain hands-on familiarity with order execution and risk monitoring on a simulation trading platform.

Major Learning Outcomes : Developed a structured understanding of derivatives pricing and the cost-of-carry framework; learned to analyse spread behaviour quantitatively across ~93 spread-year combinations; gained practical exposure to order-book navigation (DOM) and spread execution on a simulation platform; built skills in event-study methodology and interpreting market microstructure; strengthened data-analysis ability in Excel; and connected systems-thinking concepts from my engineering background (feedback loops, equilibrium) to market dynamics.

Details of Papers/patents : Not applicable

Brief Description of working environment, expectations from the company : Futures First is a proprietary derivatives trading firm, and the Jaipur office offered a fast-paced, market-driven environment structured around international (COMEX/CME) market hours. The culture was collaborative and learning-oriented, I was given access to live market data and simulation platforms, and mentors were approachable and willing to explain concepts in depth. There was a strong emphasis on independent, data-backed analysis: interns were expected to take ownership of their projects while regularly discussing findings with their supervisor. The firm valued analytical rigour, attention to detail, and the ability to interpret market behaviour quantitatively rather than relying on intuition. Expectations included consistency, curiosity about market microstructure, and the discipline to document and defend one's analysis, with initiative actively encouraged. Overall it was a professional yet accessible setting that balanced real exposure to derivatives markets with structured mentorship.

Academic courses relevant to the project : Probability & Statistics, Economics, Engineering Optimization

PS-II Station : GE Aerospace, Bengaluru

Faculty

Name: Srinivas Kota .

Student

Name: AVIRAL SUNDLI(2024H1410099P)

Student Write-up

PS-II Project Title: Investigation of Wear Mechanisms in Contact Interfaces of Turbomachinery

Short Summary of work done during PS-II : During my internship at GE Aerospace, I worked on investigating wear mechanisms in turbomachinery contact interfaces. The work involved a comprehensive literature review of wear phenomena such as fretting, erosion, abrasive wear, hot corrosion, and thermomechanical fatigue. Internal engineering documentation from multiple engine programs was reviewed to identify wear trends, wear localization, and material-related effects. A preliminary wear assessment was performed using Archard's wear model to understand the influence of contact geometry on wear behavior. Assembly movement studies were conducted using Python, ParaView, and internal post-processing tools to evaluate relative motion between interacting components during engine mission cycles. Structural simulation studies were carried out on wear-prevention design concepts using static stress and modal analysis, including validation of simulation models through Modal Assurance Criterion (MAC) correlation. In addition, a buckling load and sensitivity analysis was performed to investigate the possible contribution of structural instability to the observed wear behavior. The study provided a structured understanding of wear behavior and identified the influence of contact conditions, material response, and operating conditions on the observed wear patterns

Tool used (Development tools - H/w, S/w) : ANSYS APDL ParaView Siemens NX CAD Python Microsoft Excel Internal GE Aerospace simulation and post-processing tools

Objectives of the project : 1. To conduct a literature review on wear mechanisms in turbomachinery components and the different analytical and numerical modelling approaches used for wear analysis. 2. To study historical wear observations in the selected component across different engine lines using internal engineering reports, and to analyse the influence of parameters such as wear location, directional wear trends, material combinations etc. 3. To perform a preliminary analytical wear assessment using Archard-type wear equations to obtain an initial understanding of the wear behaviour under simplified conditions. 4. To study assembly movement and relative motion behaviour during test conditions using ParaView, Python scripts and internal post-processing tools. 5. To carry out structural simulation studies on wear prevention design concepts using static stress and modal analysis in order to evaluate compliance with internal design requirements. 6. To perform a buckling load and structural sensitivity study for the selected component to investigate the possible influence of structural instability on the observed wear behaviour.

Major Learning Outcomes : • Learned and applied engineering tools such as ANSYS APDL, ParaView, NX CAD, Python, and internal tools for simulation, post-processing, automation, and design studies.

- Developed understanding of wear-related concepts in turbomachinery, including wear mechanisms, stagewise wear trends, material effects, Archard-based wear estimation, assembly motion interpretation, structural validation, buckling load analysis, and logarithmic sensitivity analysis.
- Improved skills in Python, Excel, technical documentation, presentation preparation, and engineering data interpretation through repeated application to practical problems.
- Strengthened soft skills such as technical communication, presentation delivery, cross functional collaboration and problem solving.

Details of Papers/patents : No papers or patents were published as part of the internship work

Brief Description of working environment, expectations from the company : GE Aerospace provided a professional, collaborative, and technically driven work environment that emphasized engineering rigor, continuous learning, and adherence to quality and safety standards. The internship involved working closely with experienced engineers and technical mentors on engineering evaluation and analysis activities related to aerospace applications. The work required reviewing technical information, analyzing engineering data, developing and validating computational workflows, and supporting ongoing engineering investigations.

Academic courses relevant to the project : Finite Element Methods

Solid Mechanics
Theory of Elasticity
Structural Analysis

PS-II Station : GeoIQ (Quantduo Technologies Private Limited) - Agentic AI, Bengaluru

Faculty

Name: Febin A Vahab .

Student

Name: AYUSH POPLI .(2022A4PS1489H)

Student Write-up

PS-II Project Title: Building a Commercial Retail Rent Prediction Model

Short Summary of work done during PS-II : As a Data Science Intern at GeoIQ, I developed a two-stage machine learning pipeline to predict commercial retail rent per square foot for retail and financial services clients. The work began with data preprocessing, exploratory data analysis, and feature engineering on large-scale spatial datasets using Pandas and GeoPandas. A key contribution was engineering H3-based spatial features to capture location-level retail activity, urban density, and surrounding business patterns. I built baseline regression models using Lasso Regression and XGBoost to estimate rental values across urban regions. After identifying underperformance in the lower rent-per-square-foot range, I developed an XGBoost classification model to distinguish budget from non-budget locations, then fed its predicted probabilities as an input feature into the downstream Lasso regression model — an ensemble approach that significantly improved predictions for previously weak segments. Through iterative feature engineering, hyperparameter tuning, SHAP analysis, and error diagnostics, the final model achieved an R^2 of 0.57 and a mean absolute error of 54.16, with a 42% improvement in recall on the low rent/sqft bucket. I concluded the internship by delivering the finalized model along with complete technical documentation to support production

handoff.

Tool used (Development tools - H/w, S/w) : VSCode, Kepler

Objectives of the project : Build commercial retail rent prediction model thats generalizable to all of India.

Major Learning Outcomes : End-to-end ML pipeline development — took a problem from raw data through preprocessing, EDA, feature engineering, modeling, evaluation, and production documentation.
Geospatial feature engineering — learned to encode location intelligence using H3 hexagonal indexing and GeoPandas to capture urban density and business activity patterns.
Ensemble/stacked modeling design — learned to diagnose model weaknesses (poor performance in a specific data segment) and engineer a targeted fix, feeding classifier probabilities into a downstream regression model.
Model interpretability and error analysis — used SHAP and systematic error diagnostics to understand model behavior, not just optimize metrics blindly.
Translating technical results into business value — connected model metrics (R^2, MAE, recall) to real-world use cases in retail/financial site selection.
Production-readiness — learned what it takes to deliver a model with documentation suitable for handoff to a production team, beyond just a working prototype.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment was very friendly and relatively informal, allowing for a lot of collaboration. Everyone was very helpful and open to sharing information and knowledge.

Academic courses relevant to the project : Machine Learning

PS-II Station : GeoIQ (Quantduo Technologies Private Limited) - Data Science, Bengaluru

Faculty

Name: Febin A Vahab .

Student

Name: THATHAPUDI HARSHITH(2021B5A83165H)

Student Write-up

PS-II Project Title: LTM(Long Term Memory) POC for B-Lenskart Agent & BACKEND APIs Develpoment

Short Summary of work done during PS-II : The PS-II internship at GeoIQ, Bengaluru (January–June 2026) was structured across two phases. The initial phase, with the AI team, involved designing a Long-Term Memory (LTM) architecture for a LiveKit-based voice AI agent commissioned by Lenskart — using Graphiti knowledge graphs and FalkorDB for sub-100ms cross-session memory retrieval. Following a team transition at mid-semester, the primary phase was with the Backend Engineering team under Mr. Bharat Gupta. **Task 1 — Market-Level Chat:** Built a real-time market-scoped chat system across three repositories, including database schema changes, market-isolated socket rooms, three-mode message sorting (Newest, Oldest, Mentions First), unread count tracking, push and in-app mention notifications with mobile deep-link routing, and a file-lock fix for a duplicate-message bug caused by multi-worker socket reconnections. **Task 2 — Slack Bot Audit:** Investigated and tested all eight staging slash commands of the RetailIQ internal Slack bot. Identified and fixed three bugs (permission gating mismatch, subscription validation gap, options-loader timeout) and produced a structured 20+ command expansion proposal grouped into a Wave 1–4 rollout plan. **Task 3 — OTP Authentication:** Deployed two Google Cloud Functions (Gen 2) for passwordless email OTP login on the Platform Console, with Redis-backed rate limiting and SendGrid delivery — requiring zero changes to existing frontend authentication consumers. **Task 4 — Organisation Flow Platform:** Built a two-phase org membership system for GeoIQ's Viz-Platform. Phase 1 introduced invitation-based membership and role management; Phase 2 extended to a multi-organisation junction table, org-switch APIs, and SuperAdmin controls with safety safeguards.

Tool used (Development tools - H/w, S/w) : **Languages & Frameworks:** Python, Flask, SQLAlchemy, PyJWT, Socket.IO **Databases & Caching:** PostgreSQL, Redis **Cloud & Infrastructure:** Google Cloud Functions (Gen 2), Google Cloud Build, Google Cloud Storage, VPC

Connector, uWSGI **Communicatio

Objectives of the project : Developing LTM for the Buddy(B)-Agent for Lenskart. Developed multiple APIs for the RetailIQ, Market Connect App, Broker App & VizPlatform applications.

Major Learning Outcomes : 1. End-to-end architecture of WebSocket-based real-time messaging in a production multi-worker server environment — socket room isolation, event routing, and the uWSGI multi-worker model.
2. Multi-worker process state management: diagnosing shared-state bugs and resolving them using file-based exclusive locking (fcntl) and MD5-hash deduplication caches.
3. Serverless architecture with Google Cloud Functions Gen 2 — startup lifecycle, VPC connector networking, Cloud Build CI/CD pipelines, and Cloud Storage-based runtime configuration.
4. OTP state design with Redis: TTL-based expiry, per-email hash keys, and multi-tier rate limiting (resend cooldown, per-window generation cap, max verification attempts) without touching the SQL schema.
5. Role-based access control design: JWT staleness tradeoffs, self-demotion and last-admin removal safeguards, and idempotency in role-change endpoints.
6. Email-based authentication and invitation flows: secure time-limited token generation, SendGrid transactional delivery, and stateless public approval endpoints.
7. Cross-database dual-write pattern with graceful degradation: committing to a primary source of truth first, surfacing partial-success warnings for secondary-write failures, and designing for idempotent re-runs.
8. Cursor-based pagination with non-standard sort orders, including a dedicated helper for Mentions-First mode that correctly handles phase transitions between mention and non-mention page windows.
9. Multi-repository feature coordination: shipping a single product feature across three simultaneous codebases (BD App, Retail App, Socket Server) with synchronized schema, socket, and API changes.
10. Long-Term Memory cognitive architecture for AI voice agents: Graphiti knowledge graphs, FalkorDB in-memory graph database, and hybrid cosine-similarity + Cypher graph traversal within a LiveKit WebRTC voice pipeline.

Details of Papers/patents : N.A.

Brief Description of working environment, expectations from the company : GeoIQ operates out of a collaborative, open-plan office in Bengaluru with a nominally flexible schedule (11 AM–7 PM). In practice, particularly within the Backend Engineering team, working hours frequently extend into the evening.
The culture is output-driven and accommodating — the company is openly supportive of AI-assisted

development tools like Cursor and Claude Code, provided the engineer can explain and own the code they ship.

The internship began with the AI team, where initial onboarding guidance was not sufficiently focused on the project's core production stack (LiveKit and Juno APIs). Exposure to peripheral resources rather than the actual toolchain led to a performance gap that surfaced during a senior engineering review. The subsequent transition to the Backend team was a structurally better fit — tasks were clearly scoped in JIRA, the Backend Lead provided precise and technically grounded mentorship, and the codebase was well-organised across multiple repositories. This phase was markedly more productive and rewarding.

For future PS-II students: the Backend team demands long hours and sustained commitment, while Data, Frontend, AI, and Product teams offer more predictable work-life balance.

Academic courses relevant to the project : OOPS, FDSA, OS, DBMS, ML, etc

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Name: VIKAS V .(2022A3PS1338H)

Student Write-up

PS-II Project Title: Development and Engineering of Lenskart B-Agent

Short Summary of work done during PS-II : The internship at GeoIQ focused on developing and maintaining the Lenskart voice AI for eyewear. First, smaller local open-source AI models were researched to see if they could replace expensive gemini models. A model was fine-tuned on 10,000 past chat logs to act like a real store stylist. Next, the focus shifted to fixing live app issues and implementing new features. Resolved code-level bugs that caused the app to break or fail at some places, and backup scripts were added to keep the application working if a server crashed. To support new users, the Arabic language was added for a Saudi Arabia launch. Also, a system was built to auto-select regional Indian languages using pincodes. Finally, implemented a language list trigger on entry to engage more users, dashboards were built to track live errors, and resolved some race conditions in some entry points, where the application was failing.

Tool used (Development tools - H/w, S/w) : Livekit, Python, MongoDB, Langfuse, Firebase App Tester, SQL/MongoDB, Redis, GCP, Vertex AI/Google AI studio

Objectives of the project : To test if small open source AI models can replace expensive cloud AI, and to implement features and fix bugs in the application to improve the engagement of users, make the application stable for more users.

Major Learning Outcomes : Learned how to fine-tune small language models, building voice agents using livekit framework, implementing new features and fixing bugs in production level AI agentic applications.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : GeoIQ has a fast-paced environment similar to a startup. Interns are expected to learn technical stuff quickly and given direct access to company's codebase and software immediately after joining. The mentor's guidance would be very basic at a higher level so you should learn a lot of things and figure out most complex tasks on your own. The company expects you to write clean code, test your own work thoroughly before any changes goes live (which they are very strict about). The main goal is always system reliability ensuring that the application never crashes when thousands of customers use it at the same time.

Academic courses relevant to the project : Computer Programming, Data Structures & Algorithms, Database Management Systems

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Name: DESHMUKH SANMESH MANISH(2021B5A12576P)

Student Write-up

PS-II Project Title: OSM Variables Update and Client Tasks

Short Summary of work done during PS-II : For the first week, we were mostly onboarded, tried to understand how the company functioned. On the second week, we were assigned our teams and started with onboarding tasks(For data team, it was a crash course on pandas and geopandas). My first project was about testing internal queries on the latest version of OSM data which involved a lot of learning (I learnt SQL from scratch), coding audit and comparison functions. While exploring the OSM dataset, I realized a few queries were not accurate, or not querying all the correct labels in the

dataset. I took it up with my senior who encouranged me to write the updated queries for all such instances which would be live on our platform. I also extensively handled data requests from clients where I had to aggregate data according to their business needs. Finally, I developed a revenue prediction models for a comfort-tech brand.

Tool used (Development tools - H/w, S/w) : VSCode, python (pandas, numpy, geopandas, scikit-learn, plotly majorly), Kepler (for visualising maps), Postgres,

Objectives of the project : 1. To verify PostgreSQL queries on the latest version of OpenStreetMaps data. 2. To rectify innacurate queries and spatial operations. 3. To fulfil geospatial data requests for clients. 4. Building custom ML models for clients.

Major Learning Outcomes : Understood how spatial operations were used to extract data, how to communicate with clients and fulfill data requests, building custom ML revenue prediction models and generating market recommendations.

Details of Papers/patents : N.A.

Brief Description of working environment, expectations from the company : In the data team, we had supportive seniors (including 4 BITSians) and were encouraged to find a balance between figuring out ourselves and asking for help- either from seniors or AI. I had the opportunity to do very important internal and external tasks which forces you to take ownership.

Academic courses relevant to the project : Machine learning, ML for ChemE, FoDS, BizCom,

PS-II Station : Global Innovation Hub Private Limited -AI,ML, App Development, Hyderabad

Faculty

Name: Sai Kishor Jangiti .

Student

Name: SRI BALA SURYA SIVA NAGA YASWANTH AMBATI(2022AAPS0363H)

Student Write-up

PS-II Project Title: Design and Development of AI-Driven Healthcare Application: A Multimodal emotional Intelligence companion and a multimodal learning content platform

Short Summary of work done during PS-II : Developed CoCo, an AI-powered conversational wellness companion integrating real-time speech processing, multimodal emotion recognition, and a 3D avatar for student well-being. Built key features for the CognitiveBotics Content Tool, a multilingual platform for AI-assisted translation, voiceover generation, video rendering, and content publishing. Also contributed to the architecture and proof-of-concept for secure identity federation and EMR integration with privacy-preserving PHI isolation.

Tool used (Development tools - H/w, S/w) : React, FastAPI, Python, JavaScript, TypeScript, HTML, CSS, WebSockets, Git, GitHub, VS Code, Docker, PostgreSQL

Objectives of the project : To design and develop CoCo, a real-time AI-powered conversational wellness companion that combines speech processing, large language models, multimodal emotion recognition, and a 3D avatar to provide privacy-first emotional support for students. And to develop the CognitiveBotics Content Tool, a multilingual learning-content platform that automates translation, AI voiceover generation, video rendering, and publishing of learning objects.

Major Learning Outcomes : Designed and developed real-time AI systems using WebSockets and FastAPI; gained hands-on experience with speech-to-text, large language models, and text-to-speech technologies; implemented multimodal emotion recognition using speech and acoustic features; built modern React-based web applications with microservices; learned secure identity federation, browser security, and PHI isolation techniques; strengthened software architecture, debugging, Git collaboration, and production-grade software engineering practices.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The PS-II was carried out in a collaborative, agile software development environment involving regular mentor

interactions, code reviews, feature development, debugging, and cross-functional teamwork. The company expected interns to quickly understand existing systems, contribute to production-grade software, follow software engineering best practices, communicate effectively, and deliver high-quality solutions within project timelines.

Academic courses relevant to the project : Artificial Intelligence
Machine Learning
Digital Signal Processing
Computer Networks

PS-II Station : GMDC Science & Research Centre, GSRC, , Ahmedabad

Faculty

Name: Santosh Khandgave

Student

Name: PRACHI SHRINIVAS NARDE(2024H1010011H)

Student Write-up

PS-II Project Title: Optimization of Additive Blends for Lignite Combustion Enhancement and In-situ SO_2 Capture

Short Summary of work done during PS-II : Conducted literature review on lignite combustion, sulphur dioxide formation, and additive-assisted sulphur capture. Evaluated selected additives based on thermodynamic feasibility and combustion-related characteristics. Visited GMDC Bhavnagar Lignite Mine and observed lignite mining, pyrite removal, and fuel characterization facilities. Developed ridge regression models to study the influence of additives on gross calorific value (GCV) and sulphur content. Performed sensitivity analysis and optimization of additive blends for improved combustion performance and reduced sulphur content. Attended training on Quality Assurance in Testing and Calibration Laboratories and visited GEMI analytical laboratory facilities.

Tool used (Development tools - H/w, S/w) : Excel

Objectives of the project : Evaluate additives for lignite combustion and SO_2 capture. Analyze thermodynamic feasibility. Model GCV and sulfur content. Optimize additive blends.

Major Learning Outcomes : Gain the ability to evaluate additives for lignite combustion and SO_2 capture, apply thermodynamic and regression analyses, and optimize additive formulations.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : To gain practical exposure to industrial operations, laboratory testing techniques, analytical instrumentation, and quality assurance practices, while applying academic knowledge to real-world engineering problems.

Academic courses relevant to the project : Relevant Courses: Thermodynamics, Reaction Engineering, Energy Engineering, Environmental Engineering, Optimization, and Data Analysis.

PS-II Station : Goldman Sachs - , Bengaluru

Faculty

Name: Akanksha Bharadwaj .

Student

Name: SOHAM KUMAR(2022A8PS1238P)

Student Write-up

PS-II Project Title: Transactionalization of Equity Rebate

Short Summary of work done during PS-II : Re-engineered a manual, retrospective financial

process into an automated, periodic pipeline. Designed the workflow using a modular, Directed Acyclic Graph (DAG) structure and implemented a decoupled, multi-layer data architecture. Leveraged cloud storage to persist intermediate states, making the pipeline idempotent and supporting recovery from processing checkpoints. The system automatically calculates target states and updates transactional systems via APIs, replacing manual booking entries.

Tool used (Development tools - H/w, S/w) : SecDB and Slang (Proprietary database and language)

Objectives of the project : Automate the manual, monthly Equity Rebate calculations into a weekly, market-priced booking process.

Major Learning Outcomes : Financial Concepts: Gained understanding of Funds Transfer Pricing (FTP) and related concepts
System Design: Learned to build layered, idempotent implementation of modeling layers.

Details of Papers/patents : None.

Brief Description of working environment, expectations from the company : Fast paced, need to take ownership of the project, high expectations

Academic courses relevant to the project : Object-Oriented Programming, Data Structures and Algorithms

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Name: SIDDHANT GOYAL(2022AAPS0260P)

Student Write-up

PS-II Project Title: Structuring Financial Products

Short Summary of work done during PS-II : This project involved building a reliable microservice architecture using AWS ECS. To resolve database errors and slow load times, large data payloads were compressed using Base64+GZIP, multi-key GSIs were implemented to handle heavy traffic, and a smart background caching system was deployed. Data retrieval was further optimized through parallel query processing. Finally, automated serverless pipelines were built to route daily operational

data into a centralized S3 Data Lake, while Graph-RAG Pipeline was developed to automatically extract and convert dense legal documents into structured JSON formats.

Tool used (Development tools - H/w, S/w) : Java Spring Boot, AWS ECS, AWS CDK (Infrastructure as Code), Amazon DynamoDB, AWS Lambda, Amazon S3, LangChain, LangGraph, LLMs, Neo4j (Knowledge Graph), LangChain, Python, Git,

Objectives of the project : transforming highly manual workflows into automated, scalable data pipelines. eliminate critical database bottlenecks latency by optimizing AWS DynamoDB with multi-key GSIs and data compression, alongside implementing advanced asynchronous caching mechanisms. Furthermore, the project sought to ensure absolute data integrity and firm-wide accessibility by engineering serverless AWS Lambda ETL pipelines for S3 Data Lake ingestion, while also involved autonomous Agentic AI pipeline utilizing Graph-RAG to automatically extract and structure dense legal documentation

Major Learning Outcomes : distributed caching architectures, database query optimization under high-load constraints, serverless ETL data pipelines, and advanced AI RAG integrations

Details of Papers/patents : Non-Disclosable

Brief Description of working environment, expectations from the company : Fast paced, high stakes environment. Flat hierarchy. Daily standups.

Academic courses relevant to the project : OOPs, OS, Introduction to LLMs, Computer Networks, Distributed Systems, NLP

PS-II Station : Goldman Sachs - , Hyderabad

Faculty

Name: Garima Jindal

Student

Name: AVYAKTH KRISHNA KUMAR(2021B3A71111P)

Student Write-up

PS-II Project Title: Enhancing Enterprise System Architecture using Backend Optimization and Synthetic Data Automation

Short Summary of work done during PS-II : Developed an ML model for interest rate sensitivity analysis. Built an LLM-engineered synthetic test data generation agent using RAG. Optimized Spring Boot APIs, resolved Kafka event duplication bugs, and migrated clusters.

Tool used (Development tools - H/w, S/w) : Java, Spring Boot, Mongo, Kafka, Python, Prometheus

Objectives of the project : To enhance enterprise system architecture by optimizing backend microservices, building an AI-powered synthetic test data generator, and analyzing interest rate sensitivity for wealth management data.

Major Learning Outcomes : Gained technical expertise in Spring Boot optimization, time-series data analysis, RAG architecture, Kafka event handling, and agile development, while refining problem-solving, collaboration, and technical communication skills.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment was highly collaborative, positive, and enriching. Experienced professionals and supportive team members provided continuous guidance, fostering great professional growth and teamwork.

Academic courses relevant to the project : OOPS, DBS, Intro to LLMs, ML, DL

PS-II Station : Google India - Hardware Engineering Winter, Bengaluru

Faculty

Name: Sanjay Vidhyadharan .

Student

Name: KUMAR KRISHNA(2022A3PS0392P)

Student Write-up

PS-II Project Title: Formal Verification of AMBA protocols

Short Summary of work done during PS-II : The work aims to do formal verification of AMBA protocols using automated SystemVerilog Assertion (SVA) generation using AI agent skills.

Tool used (Development tools - H/w, S/w) : JasperGold

Objectives of the project : The project presents the formal verification of AMBA AXI4, AXI4-Lite, and AXI4-Stream protocols using automated SystemVerilog Assertion (SVA) generation via the Gemini SKILL framework.

Major Learning Outcomes : Learnt Systemverilog language, Tcl scripting, AI agent skills

Details of Papers/patents : Google Confidential

Brief Description of working environment, expectations from the company : The working environement was overall good for me. My assigned host regular gave me tasks and checked the progress. For any doubts I approached my host and my team members. They guided me through my work and gave suggestions as well which helped me learning the tecnical concepts involved in the project. At first I gave sometime on learning and then I worked on the project so expections from them was learning first and when I am prepared, I can do the work better.

Academic courses relevant to the project : Digital Design, Microprocessors and Interfacing, Computer Architecture , AI agent skills

Name: DEVAM NIKETUBHAI SHETH(2022A3PS1204P)

Student Write-up

PS-II Project Title: Formal Verification of Multimedia IP Blocks and automation by integrating Gemini CLI

Short Summary of work done during PS-II : Making and verifying Formal Verification Setup for Multimedia team in Google to verify Image Processing Algorithms in the pipeline and then integrating AI into the workflow and automation using TCL script to make the project scalable across different blocks

Tool used (Development tools - H/w, S/w) : JasperGold C2RTL, Gemini CLI

Objectives of the project : Building Formal Verification Setup and automation using TCL script and integrating AI into the workflow

Major Learning Outcomes : Formal Verification
Gemini CLI skills
TCL

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The culture in the Bengaluru office is often described as high-energy, vibrant, and deeply collaborative, blending a distinct tech campus feel with local cultural flavors.
Flexibility Over Face-Time: Google operates largely on trust. There is typically no strict "clock-in, clock-out" tracking. You are measured on your impact and output, not the exact hours your seat is occupied.
Perks and Campus Life: The office is famous for its micro-kitchens, multi-cuisine cafeterias (serving free breakfast, lunch, and dinner), on-site gyms, sleep pods, and recreation areas (foosball, TT, gaming zones). Shuttle and cab services are also provided to help navigate Bengaluru’s notorious traffic.
Scale and Fragility: At Google, even small features touch millions (or billions) of users. You are expected to write highly optimized, clean, and secure code, with rigorous testing.

Bias for Automation: If you have to do a manual task more than twice, you are expected to automate it. Engineering velocity and efficiency are highly prized.

Academic courses relevant to the project : Computer Architecture
Digital Design

Name: ISHAAN PAVAN GUPTA(2022A7PS1180P)

Student Write-up

PS-II Project Title: Unified Monitoring and alerting

Short Summary of work done during PS-II : Phase 1 (Telemetry Routing): Deployed a high-availability telemetry routing proxy middleware to bridge isolated monitoring environments. This layer securely intercepted alert payloads from external managed Kubernetes clusters, dynamically rewrote destination service labels, and forwarded them natively into the internal centralized tracking platform. This step eliminated duplicate resolution tickets, dropping the volume from 112 to 56 tickets per outage. Phase 2 (Programmatic Migration & Inhibition): Migrated 18 legacy static JSON configuration templates into a maintainable, version-controlled Python-based Infrastructure as Code (IaC) framework. Using this framework, a dependency-based alert inhibition graph was implemented across three categories (Distributed Ledger, Synthetic Probes, and Infrastructure Storage). This graph intelligently suppressed cascading, downstream symptomatic alerts when an upstream root cause was already active. Ultimately, this dual-phase implementation achieved an 81.25% overall reduction in alert noise (reducing tickets from 112 down to 21 per major outage), drastically mitigating cognitive load and pager fatigue for on-call SRE teams.

Tool used (Development tools - H/w, S/w) : Development Frameworks / Software: Python, JSON, Programmatic Time-Series Frameworks, and OpenTelemetry libraries. Infrastructure & Deployment: Managed Kubernetes Clusters and a Proprietary Internal Container Orchestration System.

Objectives of the project : Define Alerts for Google Cloud Universal Ledger to get tickets internally

Major Learning Outcomes : Developing technical competencies in distributed systems observability, Infrastructure-as-Code (IaC) applications, and programmatic alerting configurations.

Mastering hybrid-cloud telemetry routing, cross-environment system architecture design, and testing methodologies.
Applying strict organizational data classification guidelines and privacy protocols during system deployments.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Working environment is quite good, there are no specific login logout timings or specific work hours to be completed in a day. Google provides a collaborative, high-availability engineering environment, you can schedule a meet with any senior engineer by looking into his calendar.

Academic courses relevant to the project : Cloud related courses.

Name: MOHANEESH RAJ PRADHAN(2024H1120190P)

Student Write-up

PS-II Project Title: Deployment platform and genAi orchestration agents

Short Summary of work done during PS-II : During my Software Engineering internship at Google, my work spanned two critical domains: cloud infrastructure automation and generative AI evaluation.In the first phase, I addressed the technical friction of deploying large-scale distributed microservices by developing an automated Infrastructure-as-Code (IaC) deployment platform. I modernized the frontend using Angular to create a discrete, state-managed configuration dashboard and utilized Terraform and Managed Kubernetes to completely automate cloud resource provisioning. Crucially, I embedded automated Web Application Firewall (WAF) policies into the deployment pipeline to proactively secure the network edge and eliminated UI test flakiness using deterministic mock payloads. In the second phase, I focused on multimodal AI reliability by building an automated integration testing framework for the DPI Agri-Agent Blueprint. To overcome the limitations of standard testing playgrounds, I engineered a decoupled Agent Client Test App featuring dual-mode HTTP and WebSocket communication, along with direct Web Audio API integration for low-latency, real-time voice and image processing. Furthermore, I implemented a robust Dual-Testing methodology—utilizing Generative AI Autonomous User-Simulators and LLM-Based Rubric Judges—to perform

deep Black-box and White-box trajectory tracking of complex multi-turn agricultural scenarios. Ultimately, these end-to-end platforms streamlined infrastructure provisioning, fortified network security, and facilitated massive launch-impacting bug identification, culminating in my direct contribution to two successful, high-profile product launches.

Tool used (Development tools - H/w, S/w) : The tool ecosystem utilized during this internship encompassed a high-performance mix of hardware, cloud engineering suites, and advanced AI frameworks. Development was anchored on a macOS-based engineering workstation securely integrated with cloud ident

Objectives of the project : On the infrastructure side, the goal was to develop an automated infrastructure-as-code deployment platform to streamline the provisioning lifecycle. This meant restructuring the multi-step workflow into a discrete, well-managed state architecture, and proactively rolling out enterprise-grade web application firewall policies to protect the network edge. On the AI side, our objective was to implement a comprehensive evaluation and integration testing strategy specifically for the DPI Agri-Agent Blueprint. To do this properly, we needed to provide a stable, real-time multimodal testing environment by building a completely new, decoupled Agent Client Test App

Major Learning Outcomes : Throughout this internship, I developed comprehensive expertise across cloud infrastructure and generative AI evaluation by building an automated Infrastructure-as-Code (IaC) deployment platform and a real-time Agent Client Test App for the DPI Agri-Agent Blueprint. I mastered declarative provisioning and perimeter security using Terraform, Managed Kubernetes, and cloud-native Web Application Firewalls (WAF). Concurrently, I advanced my frontend and networking capabilities by transitioning brittle interfaces into state-routed Angular architectures, while engineering decoupled backends with persistent WebSockets and direct audio scheduling for low-latency, multimodal streaming. In the AI domain, I acquired deep proficiency in evaluating complex models by utilizing Autonomous User-Simulators and LLM-Based Rubric Judges to execute a rigorous Dual-Testing methodology encompassing both black-box and white-box trajectory tracking. Ultimately, by combining these advanced integrations with strict agile version control and deterministic mock payloads, I successfully delivered scalable, secure infrastructure and highly reliable AI agents ready for production launches.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment at Google is anchored in highly collaborative, industry-standard platform engineering and AI integration domains, utilizing advanced macOS-based engineering workstations securely

integrated with enterprise cloud systems. Development occurs within complex internal enterprise monorepos using agile, structured frameworks where engineering disciplines—such as branch derivation exclusively from active feature lines—are rigidly enforced to protect production-ready pipelines. The culture emphasizes data-driven decision-making, meticulous code reviews, and cross-functional synergy between infrastructure operations, platform security, and generative AI research teams to safely scale emergent technologies like autonomous agents. The company's explicit expectations focus on driving extreme platform stability, engineering robust and repeatable codebases, and proactively mitigating security or architectural vulnerabilities before code reaches production gates. Interns are expected to rapidly adapt to a steep learning curve, successfully managing complex toolchains like Terraform, Managed Kubernetes, Google's Agent Development Kit (ADK), and Vertex AI. Crucially, the organization demands high operational accountability, requiring engineers to systematically uncover launch-impacting bugs, stabilize erratic integration testing, and deliver highly accurate, secure systems capable of supporting critical, high-profile product launches.

Academic courses relevant to the project : Software Architecture. Cloud Computing, Software Engineering and Mangement

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Name: ABHINIVESH MITRA .(2022A7PS1311H)

Student Write-up

PS-II Project Title: Agentic AI for Google Cloud

Short Summary of work done during PS-II : I had to build AI agents for our team's work. Making it easy for new engineers or PMs to get information about the existing framework. Also an agent for debugging failures in our framework. And one for contributing and adding to our framework. Namely an Analysis agent, an debugging agent and a creation agent. The main focus was on setting up agents for the team and to be a guiding light for the entire org on how to setup agents for their use case. After building these agents, I had to integrate them in various developer workflows , such as in IDE, in gemini enterprise and more. In my additional project I had to setup config to corrrctly reroute bugs across closely related teams in my org, to reduce misrouting.

Tool used (Development tools - H/w, S/w) : Google internal agentic IDE, Gemini, Google internal version control(Hg), ticket resolution system(Buganizer), Google Agent development kit(ADK)

Objectives of the project : To set up AI agents for org-wide usage to reduce toil of engineers.

Major Learning Outcomes : Learnt about Production-grade code practices and quality, Best practices related to Agentic AI development

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : To reduce manual toil of engineers in team, to make it easy for onboarding of new people to the team, to set up a north star for agentic development for the org. The working environment is very postive, teammates are always open to help out in case of doubts, there is no micro management, the expectations of team in terms of impact is high, only output is measured, doesnt matter how much input you give, work is given reasonably, without overloading us.

Academic courses relevant to the project : DSA, OOPS

Name: MEGHANA SRINIDHI SESHASAI(2021B5A72517G)

Student Write-up

PS-II Project Title: Rust based RPC for Automated Testing Framework

Short Summary of work done during PS-II : During my internship I developed a native Rust based RPC server for ATF, to replace the legacy c++ based RPC services. Migrated the existing test suite to the new framework while maintaining compatibility with the existing testing infrastructure. The new implementation reduced binary size by 42.5%, improved test execution speed by 77%, and simplified the process of writing and maintaining new test cases.

Tool used (Development tools - H/w, S/w) : Rust, Python, Git, Gerrit, VS code, Bazel, protocol buffers

Objectives of the project : • To design and implement a UART communication handler in Rust that enables reliable data exchange between the host system and the target device during test execution.

• To develop a Rust-based RPC service that integrates with the UART handler and enables structured communication between the host and device. • To resolve compatibility issues between Protocol Buffers and Rust, ensuring that se- rialized messages can be correctly generated, transmitted, and interpreted within the Rust-based implementation. • To verify the correctness of the implementation by executing test cases that validate the communication flow. • To develop a migration strategy for existing test cases so that previously implemented tests can be adapted to the new Rust-based testing framework without disrupting the current testing workflow. • To ensure better performance compared to the legacy framework.

Major Learning Outcomes : Gained experience in embedded systems, Rust, low-level software architecture, bazel build systems, testing on simulators and emulators, writing a design document, working with large production codebases.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment was extremely welcoming and supportive, and really helped me learn, grow and ask the right questions. Expectations from the company were that the work assigned is delivered on time and of good quality.

Academic courses relevant to the project : Digital design (DD), Microprocessors (MUP), Comparch, C programming

PS-II Station : Graviton Research Capital- SDE, Gurgaon

Faculty

Name: Ashish Narang .

Student

Name: SHIKHAR SINGH(2022A7PS1170P)

Student Write-up

PS-II Project Title: Confidential

Short Summary of work done during PS-II : Confidential

Tool used (Development tools - H/w, S/w) : Confidential

Objectives of the project : Confidential

Major Learning Outcomes : Confidential

Details of Papers/patents : Confidential

Brief Description of working environment, expectations from the company : Confidential

Academic courses relevant to the project : Confidential

PS-II Station : GREENKO GROUP - , Hyderabad

Faculty

Name: Mahesh Kumar Hamirwasia .

Student

Name: SIDDHARDHA CHIVUKULA(2024H1430025H)

Student Write-up

PS-II Project Title: Standalone Pumped Storage Component of Integrated Renewable Energy Project

Short Summary of work done during PS-II : Helped in calculating head loss of pumped storage Component of a hydro power plant and helped in reviewing reports of various designw

Tool used (Development tools - H/w, S/w) : Microsoft Excel, Microsoft Word, STAADPro

Objectives of the project : Head Loss Calculations of Standalone Pumped Storage Component

Major Learning Outcomes : Head Loss Calculations
Professional Design Report Writing

Details of Papers/patents : Submitted PS report to faculty

Brief Description of working environment, expectations from the company : Professional team with helpful team members

Academic courses relevant to the project : Advanced Foundation Engineering

PS-II Station : Greenlight, Bengaluru

Faculty

Name: Rajesh Kumar Tiwary .

Student

Name: DISHANT SURANA(2021B3A71114G)

Student Write-up

PS-II Project Title: AI skills and agents

Short Summary of work done during PS-II : Worked with non tech teams like finance to make in house skills and agents to save money on external vendors and reduce the workload on those teams

Tool used (Development tools - H/w, S/w) : Databricks, langchain, claude

Objectives of the project : To automate manual workflows for non tech teams.

Major Learning Outcomes : AI automation, inter-domain collaboration, langchain agents

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Fast paced, collaborative, kind

Academic courses relevant to the project : None

PS-II Station : Guardian India Operations - Data Science, Chennai

Faculty

Name: Pradheep Kumar K .

Student

Name: MANAV GANESH(2021B3AA1069P)

Student Write-up

PS-II Project Title: AI-Driven Document Extraction and Pipeline Engineering at Guardian

Short Summary of work done during PS-II : Most of my work was related to reporting, reporting pipeline development and data validation. Towards the end of my project, I also worked on testing the existing BMS pipeline and also worked on testing the OCR extraction by experimenting with some sample documents.

Tool used (Development tools - H/w, S/w) : Databricks, SonarQube, Excel, PostgreSQL, Git, Python.

Objectives of the project : Worked on BMS automations as a part of the Shop and Purchase Initiative at Guardian

Major Learning Outcomes : Became familiar with tools like Databricks, SonarQube, Excel, PostgreSQL and Git. Learnt about software development and working in a profession environment.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment was great. The office was very nice and comfortable to work in. Senior employees and leaders were very approachable.

Academic courses relevant to the project : Object Oriented Programming, Machine Learning

PS-II Station : HAbOG Consultants Pvt Ltd, Thiruvananthapuram

Faculty

Name: Benu Madhab Gedam

Student

Name: HARIMURALI P A(2024H1430031H)

Student Write-up

PS-II Project Title: Design of 4 span minor bridge

Short Summary of work done during PS-II : During my PS-II internship, I gained practical experience in bridge engineering and highway infrastructure design through active involvement in the

analysis and design of a reinforced concrete bridge project. My work included the preparation of General Arrangement Drawings (GAD), structural modelling, load calculation, load application, structural analysis, and design verification of various bridge components. The bridge structure was modelled using industry-standard finite element analysis software, incorporating geometric and site-specific conditions. Relevant load cases and load combinations were applied in accordance with applicable IRC standards to evaluate the structural behaviour and identify critical design forces. The analysis process enhanced my understanding of bridge loading, finite element modelling, and interpretation of structural responses. I also participated in the design and verification of key structural elements such as girders, piers, deck slabs, and diaphragms in accordance with IRC 112:2020. Strength and serviceability requirements, including moment capacity, stress limits, and crack width checks, were assessed using specialized design software and in-house design tools. This provided valuable exposure to practical design procedures and code-based engineering practices. In addition, I assisted in the preparation of engineering documentation and quantity estimation for transportation infrastructure projects. Overall, the internship bridged the gap between academic learning and professional practice, improving my technical knowledge, analytical skills, and proficiency in structural analysis and design software used in the civil engineering industry.

Tool used (Development tools - H/w, S/w) : MIDAS Civil, STAAD Pro, AutoCAD, MS Excel

Objectives of the project : The objective of this project is to design a safe, stable, and economical bridge structure by performing structural analysis and detailing in accordance with relevant codes.

Major Learning Outcomes : During my practice school, I gained practical exposure to bridge design concepts, including load calculations, structural analysis, and structural design. I improved my understanding of design standards and engineering codes used in bridge projects. I also developed skills in structural analysis and drafting software commonly used in bridge engineering, which helped me understand the overall design workflow.

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : The internship was carried out at a private limited engineering consultancy company with its headquarters in Bengaluru and a regional office in Thiruvananthapuram. The organization maintains a professional and structured work environment with regular working hours from 9:00 AM to 6:00 PM. The company comprises specialized teams dedicated to various disciplines, including highway engineering, transportation planning, and structural engineering, enabling effective collaboration across projects. The teams are led by experienced senior managers with significant international exposure, who

emphasize maintaining high technical standards and quality in project delivery. Employees and interns are encouraged to follow industry best practices, adhere to relevant design codes, and produce work that meets global engineering standards. The working environment promotes learning, teamwork, and continuous professional development through regular interaction with experienced engineers and technical experts.

Academic courses relevant to the project : Bridge Engineering, Structural Analysis, Earthquake Engineering, RCC Design

Name: FAHMA KHADEEJA(2024H1300035H)

Student Write-up

PS-II Project Title: Practice School – II Final Report on Traffic Planning, Demand Analysis and Impact Assessment Studies at Habog Consultants Pvt. Ltd

Short Summary of work done during PS-II : During the internship, I was involved in various traffic engineering and transportation planning activities associated with real-world consultancy projects. The work included participation in Traffic Impact Assessment (TIA) studies for different types of developments such as technology parks, residential complexes, retail spaces, and mixed-use developments. I assisted in the analysis of traffic survey data, trip generation estimation, parking demand assessment, and forecasting of future traffic demands, I contributed to capacity analysis, junction performance evaluation, and Level of Service (LOS) assessment to understand the operational efficiency of the surrounding road network. I was also exposed to microsimulation modelling and traffic analysis techniques,I gained practical experience in report preparation, site visits, and study area identification, which provided insights into the methodology followed in professional traffic consultancy studies. The internship enabled me to apply transportation engineering principles to live projects and enhanced my analytical and technical skills. I also improved my proficiency in software tools such as PTV Vissim, QGIS, Google Earth Pro, and advanced Excel, which are widely used for traffic analysis and transportation planning.

Tool used (Development tools - H/w, S/w) : QGIS, MS EXCEL, Google Earth Pro, PTV Vissim

Objectives of the project : To learn- how to do traffic impact studies,TMP Reports,Peak hour

Analysis,Capacity Analysis,Survey Analysis, Microsimulation, etc....

Major Learning Outcomes : The internship provided valuable exposure to real-world traffic engineering and consultancy practices, enabling the application of transportation engineering concepts through traffic impact assessments, trip generation studies, capacity analysis, microsimulation modelling, and report preparation using tools such as PTV Vissim, QGIS, Google Earth Pro, and advanced Excel. It also enhanced my understanding of professional traffic planning methodologies, including traffic surveys, parking assessments, future demand forecasting, junction performance evaluation, Level of Service analysis, and the development of suitable traffic management measures across various types of developments.

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : The team was amazing.They considered me as their team member from the very first day.Also my mentors were really good.I was able to make a bond with them and they were always ready for my doubts

Academic courses relevant to the project : Transportation Planning
Traffic Engineering

PS-II Station : Harness.io, Bengaluru

Faculty

Name: Akanksha Bharadwaj .

Student

Name: MUDIT GUPTA(2022A7PS0178P)

Student Write-up

PS-II Project Title: Maintaining Scanners in STO

Short Summary of work done during PS-II : Mostly debugging and integrating scanners for sto module in harness. Developing features

Tool used (Development tools - H/w, S/w) : Harness, Cursor

Objectives of the project : Maintaining and developing for STO

Major Learning Outcomes : Python, Go, Docker, CI/CD

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Fast paced, extensive learning, ownership

Academic courses relevant to the project : None, your are on your own. Nothing much relevant

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Name: MD SADIQUE(2022A7PS0156P)

Student Write-up

PS-II Project Title: STRENGTHENING UI CONSISTENCY AND END-TO-END TEST AUTOMATION IN HARNESS CHAOS ENGINEERING

Short Summary of work done during PS-II : Frontend Software Development, E2E and API Tests for large projects, Load Testing using Locust

Tool used (Development tools - H/w, S/w) : Cypress, Internal Harness Tools

Objectives of the project : Learn Software Development

Major Learning Outcomes : Learn Software Development

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Can vary depending on team. Working in the Chaos Team was very flexible with more than sufficient guidance from mentors and co-workers.

Academic courses relevant to the project : OOP, Networking, DBMS, Cloud Computing

PS-II Station : Hevo Technologies India Pvt. Ltd. - Backend, Bengaluru

Faculty

Name: Jyotsana Grover

Student

Name: SRAVANI BOBBA(2022A7PS1166G)

Student Write-up

PS-II Project Title: Building Stripe Connector

Short Summary of work done during PS-II : I've been focused on Stripe connector from the start Spend some time learning Springboot and Java, then understanding the basics of what a connector does and how it fits into the broad picture I implemented and took ownership of Test Connection, accounting for: The unusual API-key based structure in Stripe Different types of API keys (secret and restricted) and their different behaviors Providing partial access to complex parent-child coupled objects based on the permissions provided to the API key (restricted keys can be provided access to only specific objects and should sync those objects' data) Have also implemented complete end-to-end integration tests, comprehensive unit tests and a centralized error clasisfication system to prevent future failures Then I implemented 23 objects in Stripe, including their fetcher and poll tasks, with the help of claude agents Am now working to fix bugs noticed, including in the prod pipeline of Stripe

Tool used (Development tools - H/w, S/w) : Software: Java, SQL, Stripe, Fivetran, Hevo platform,

Snowflake

Objectives of the project : To build a Stripe connector ingesting Stripe data and transforming it to be able to upload it to a data warehouse like Snowflake

Major Learning Outcomes : Object Oriented Programming, ETL services, company culture

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Work expectations are quite high, culture is flexible.

Academic courses relevant to the project : Object Oriented Programming

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Name: KSHITIZ BHATTA(2022A7PS0049P)

Student Write-up

PS-II Project Title: SaaS Connectors

Short Summary of work done during PS-II : The internship was at Hevo Technologies, Bangalore, on the Integrations team responsible for the source-side connector layer of Hevo's ETL platform. Work spanned feature development, compliance engineering, SDK modernisation, systematic bug remediation, and production incident response across a six-month period. In the first half, key contributions included removing deprecated Facebook Pages API metrics to prevent customer pipeline breakage, implementing breakdown-style metric support in the same connector, upgrading the Xero, ChargeBee, and Criteo third-party SDKs, fixing a severe dashboard performance regression in the TikTok Ads connector by eliminating redundant HTTP calls per page load, implementing a full OAuth 2.0 authentication flow for Zendesk and adding a missing field to the Marketo Activities bulk-extract pipeline. The second half was dominated by a systematic offset and pagination bug initiative across eleven connectors, fixing issues such as strict boundary inequality, cursor drop between pages, premature offset commits, and stale job offset retention. Additional work included deploying a hot fix for a missing-pagination bug in the Shopify product-variant connector, implementing Microsoft Entra ID authentication for the SQL Server destination, and adding structured observability logging to

the source-object-info generation flow. The internship concluded with investigation of a gRPC stream interruption bug in the Google Ads connector and a Guice MapBinder misconfiguration causing sideline-skip activity log entries to be silently dropped. Approximately twelve on-call incidents were also triaged and resolved throughout the period.

Tool used (Development tools - H/w, S/w) : Software: IntelliJ IDEA, Java 8, Maven, JUnit 5, Mockito, Git, GitHub, Jira, Dropwizard, Google Guice, Apache Kafka, MySQL, SonarQube, Coralogix, Braavos (internal staging environment); Hardware: MacBook Pro (company-issued)

Objectives of the project : Maintenance of connectors on the standard(1.0) platform of the company services

Major Learning Outcomes : (1) Understood how offset and pagination correctness bugs (strict inequality, cursor drop, premature commit) cause silent data loss in incremental polling systems, and how to detect and fix them systematically.
(2) Learned OAuth 2.0 and EntraID flow deeply.
(3) Understood how Guice MapBinder scoping affects runtime behavior and understood the performance implications of Guice-managed constructor chains.
(4) Gained practical experience with production incident triage: reading Coralogix logs, correlating connector task state with database history tables, and distinguishing
transient errors from structural bugs.
(5) Improved understanding of backend systems in general.

Details of Papers/patents : Not Applicable

Brief Description of working environment, expectations from the company : Hevo Technologies is a fast-paced product company with a strong engineering culture centred on code quality, test coverage, and customer impact. The Integrations team operates as a full-ownership team; engineers are responsible for their connectors end-to-end (atleast after a certain point in their career), from initial development through production monitoring and on-call response.

The working environment is fairly collaborative and team dependent. Task assignment is through Jira, code review happens on GitHub with mandatory approval from two engineers before merge, and architectural decisions are discussed in design documents and team syncs. The team maintains a rotating on-call schedule with clearly defined SLA expectations for customer-reported incidents.
Expectations from interns were consistent with those for full-time engineers: real ticket ownership, production-quality code, meaningful test coverage (enforced via SonarQube), and participation in

code review on both sides. There was no spoon feeding on implementation; the expectation was to read existing connectors, understand
patterns, ask targeted questions in team channels, and deliver independently. This was both demanding and highly rewarding. At our time AI also meant our understanding could have been impacted but seniors grilled us enough to counter that.

The office follows a hybrid model with in-person days at the Bangalore office and flexibility to work remotely (for full time employees; interns are not allowed WFHs). The team culture encourages interns to raise concerns, suggest improvements, and participate in design discussions, which made the experience feel like genuine engineering work rather than a structured internship programme.
Access to production tooling (Coralogix, internal DB query tools, Braavos) from early on significantly accelerated the learning curve.

Academic courses relevant to the project : Object-Oriented Programming (Java foundations, design patterns), Data Structure and Algorithms, Design and Analysis of Algorithms, Operating Systems (threading, concurrency), Database Management Systems (SQL, incremental queries, offset-based pagination),

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Name: T SAKET HATWAR(2022A7PS0214G)

Student Write-up

PS-II Project Title: SQL Server Enhancements and CockroachDB Connector

Short Summary of work done during PS-II : Work done at Hevo Data during PS- II (Jan–Jun 2026). Primary: built a production CockroachDB source con- nector covering historical sync (MVCC keyset pagination), incremental sync (sinkless changefeeds), V2 SDP API migration, and a 100× query opti- misation. Secondary: SQL Server enhancements — partitioned queries, TLS 1.0/1.1, and error- message fixes.

Tool used (Development tools - H/w, S/w) : AWS, Claude Code

Objectives of the project : Build CockroachDB connector from scratch and also improve SQL Server's existing connector.

Major Learning Outcomes : How AWS works, How ETL works in general

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Great environment for beginners. Very helpful when you get stuck or couldn't understand anything

Academic courses relevant to the project : DBMS, OS, Computer Networks

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Name: VENKATA S VISHNU CHEBOLU(2022A7PS0124P)

Student Write-up

PS-II Project Title: External api development

Short Summary of work done during PS-II : Agentic migration workflow (the biggest thread). You built and hardened an operator tool that auto-migrates pipelines. Key work: fixing the resumable step engine (resume should continue from the next step, not repeat failures), adding pre-flight checks (paused/failed pipelines → non-resumable errors, sidelined-events check), naming-strategy verification (STANDARD vs STANDARD_V2 based on merge-table flag), RBAC disable/enable around migrations, bulk validate/migrate for non-Postgres pipelines, Postgres replication-slot automation, SQL Server flag handling (sqlserver_support_cdc, CDC offset), and simplifying operator input to just integration_id + env. You also reworked Alfred/Google SSO token minting so it works on remote, exposed via migration-tool-setup fetch. hevo-libs / config mapping. Trimming leading/trailing whitespace from source hosts and config fields (SQL Server, BigQuery, Snowflake), BigQuery bucket_name prefill fixes, MySQL DB-name prefill with load_all_db, and use_ssl autofill behavior. Investigations & learning. Deep dives into load/merge/append modes and PK handling, the "migrated to Edge" banner (indiscriminate_sideline_enabled), catalog-service mappings, Hermes config & Guice DI, Voltron sync/locking, and the edge naming-restriction rules.

Tool used (Development tools - H/w, S/w) : Intellij, claude, java,python,postman

Objectives of the project : To help make hevo a better product

Major Learning Outcomes : Learnt how to write production code

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Working Environment & Company Expectations

Company: Hevo Data — a no-code data pipeline / ETL platform

Tech stack & environment. Primarily Java 17 services (Dropwizard/Spring, Guice/Spring DI, MongoDB/MySQL, no Lombok in new code) plus Python tooling for the agentic migration workflow. You operate across many repos — hermes, catalog-service, hevo-services, hevo-libs,

voltron, services-security, and the agentic-migration-workflow. Local dev runs via the h20 CLI; infra is multi-region (us, us2, eu, asia, india, au) with prod and non-prod (sigma, beta) environments. Backend access goes through the Alfred proxy and Hevo session/Bearer

tokens.

Process expectations. Strong engineering discipline is built into your workflow via custom skills: TDD (red-green-refactor), enforced commit-message conventions (blocked by a prepare-commit-msg hook), structured PR creation (raise-pr), code-review and feature-review

gates, and coding-standards checks before commit. Most tasks end in commit + PR. There's heavy use of Jira (HEVO / H2 OnCall tickets) and Confluence RCAs, plus OnCall triage skills for production alerts.

What's expected of you. Own end-to-end migration correctness (naming strategy, load/merge modes, SSL/SSH config, RBAC, sidelined events), debug production/customer pipeline issues, build resilient operator tooling, and ship reviewed, tested, well-documented changes. The role blends feature development, infra/migration engineering, and operational debugging.

Academic courses relevant to the project : DSA, DBMS, OOPS

Name: ARMAAN GUPTA(2022A7PS0145P)

Student Write-up

PS-II Project Title: Standard (1.0) to Edge (2.0) Data Pipeline Migration

Short Summary of work done during PS-II : During PS-II at Hevo Data, I worked on the Migrations Pod, migrating customer data pipelines from the legacy Standard (1.0) monolithic architecture to the next-generation Edge (2.0) microservices platform. I optimised the schema-fetch pipeline to support 100K+ objects, reducing fetch time roughly sixteen-fold, and built an automated migration regression suite across Snowflake and Redshift that drove nightly failures from fifteen to zero. I also resolved several production and customer-escalated field issues spanning change data capture, networking and TLS, and contributed a context-aware validation change across multiple backend microservices. The work spanned databases, data warehouses, AWS and distributed systems.

Tool used (Development tools - H/w, S/w) : Java, Python, SQL; IntelliJ IDEA / VS Code; Git & GitHub; Jira; MySQL, PostgreSQL, Oracle, Snowflake, Amazon Redshift; Sentinel (in-house test framework), Debezium, gRPC/Protobuf; AWS (RDS, ECS, S3); Postman; Slack

Objectives of the project : To migrate customers' production data pipelines from Hevo's legacy monolithic architecture (Standard 1.0) to the next-generation microservices platform (Edge 2.0) with zero data loss, schema and data-type consistency, and no downstream impact — by building automated migration-validation tests, improving the platform's performance and scale, and resolving production and customer-escalated migration blockers across multiple databases and warehouses

Major Learning Outcomes : Database internals and CDC: MySQL binlog, PostgreSQL logical replication, system catalogs.
Cloud data warehouses: Snowflake and Redshift constraint models, data distribution, type handling.
Software design and performance: template-method pattern, eliminating N+1 queries, batching, concurrency, connection pooling.
AWS and networking: RDS, ECS, S3, SSH tunnelling, TLS/certificate verification.
Test automation for data pipelines and production incident response (root-cause analysis).
Cross-service design across a large distributed, microservices codebase.

Details of Papers/patents : Not applicable — the project was internal product engineering and did not involve any publications or patents.

Brief Description of working environment, expectations from the company : Hevo follows a fast-paced, collaborative engineering culture with small, ownership-driven pods, agile sprints, thorough code reviews and strong mentorship. As an intern I was trusted with production-impacting tasks from day one. The company expected initiative, engineering rigour and clear communication, while providing autonomy, guidance and exposure to large-scale distributed systems - an environment

that helped me grow significantly as a backend engineer.

Academic courses relevant to the project : Database Systems, Object Oriented Programming, Data Structures and Algorithms

PS-II Station : HSBC, Bengaluru/Kolkata

Faculty

Name: Gaurav Nagpal .

Student

Name: GUZZU ADITYA(2024H1540827P)

Student Write-up

PS-II Project Title: Corporate and Institutional Banking - Coverage

Short Summary of work done during PS-II : Provided second-line support to Relationship Managers across a portfolio of 33 clients with a total exposure of over GBP 1.5 billion, partnering with relationship bankers to solve 30+ credit and operational issues. Served as an interim cover for an Associate role for 11 weeks, supporting 2 bankers. Analysed 10+ client financial statements, covenant packs, identifying red flags 3+ (liquidity, leverage and cash conversion), and recommended risk mitigation actions (security, covenants, tenor) Coordinated with Credit, Operations, Legal, KYC and Product to resolve 2+ client issues. Partnered with senior product teams (Trade, Payments, FX, etc.) to structure and deliver solutions for 2 strategic clients, improving client fit and increasing deal readiness

Tool used (Development tools - H/w, S/w) : Microsoft Excel, Microsoft PowerPoint, Internal tools

Objectives of the project : To understand how corporate banking works - right from deal origination to client servicing and maintaining numerous backend systems in the bank.

Major Learning Outcomes : Banking products, Financial Statement Analysis, Relationship Management

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : It was an amazing environment with the entire floor being very approachable. The managers and peers were highly competent, the assigned mentors were very friendly too.

Academic courses relevant to the project : Financial Derivatives, Financial Statement Analysis and reporting, Financial Analytics, Financial Modelling and Valuation

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Name: NIRJA RAJEEV NILIMA(2024H1540801P)

Student Write-up

PS-II Project Title: Internship at HSBC CIB Bangalore: Banking COO Analyst

Short Summary of work done during PS-II : During my internship with HSBC's Corporate and Institutional Banking (CIB) COO function, I worked on projects related to analytics, reporting, automation, and business intelligence. A key project involved developing a Python-based Share of Wallet Analytics Platform that enabled automated portfolio analysis through advanced filtering, custom view creation, and automated Share of Wallet calculations. The platform was subsequently used to conduct a West Corridor opportunity assessment. I also supported multiple business intelligence and reporting initiatives, including dashboard recreation using Omnia data, Power BI reporting, Bahrain dashboard development, Asia RM reporting, and quarterly reporting packs. In addition, I conducted sector and client intelligence analyses covering insurance companies, healthcare, supply chain ecosystems, product penetration, and China outbound opportunities. As part of process improvement initiatives, I worked on PowerPoint automation and developed Sankey chart visualizations in Python, which were later converted into reusable macro-based solutions. The internship provided valuable exposure to corporate banking operations, data-driven decision-making, and stakeholder engagement while strengthening my analytical and technical capabilities.

Tool used (Development tools - H/w, S/w) : S/w: Microsoft Excel, Microsoft Power BI, Python, DAX

Studio, Microsoft PowerPoint, Microsoft Office Suite

Objectives of the project : 1)Support data-driven decision-making within HSBC CIB COO. 2)Develop analytical solutions for client portfolio and Share of Wallet analysis. 3)Improve reporting efficiency through dashboard development and automation. 4)Generate business insights through sector research and client intelligence analysis. 5)Explore opportunities for process improvement using technology and automation.

Major Learning Outcomes : 1)Developed practical understanding of corporate banking analytics and reporting.
2)Gained hands-on experience in Python, Power BI, Excel, DAX Studio, and automation tools.
3)Learned to design dashboards and analytical solutions for business users.
4)Enhanced skills in industry research, client intelligence, and opportunity assessment.
5)Improved stakeholder management, communication, and presentation skills.
6)Understood the role of analytics and automation in supporting strategic decision-making.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : HSBC provided a professional and collaborative working environment that encouraged learning and continuous development. As part of the CIB COO team, I worked closely with analysts, managers, and stakeholders across multiple projects involving reporting, analytics, automation, and research.
The organization emphasized accuracy, ownership, teamwork, and data-driven decision-making. Team members were approachable and supportive, creating an environment where questions and new ideas were encouraged. Regular interactions with stakeholders helped me understand how analytics supports business strategy and operational decision-making within a global banking organization.
The internship provided opportunities to work on meaningful projects with real business impact while gaining exposure to corporate banking processes and reporting frameworks. The experience helped bridge the gap between academic learning and practical business applications.

Academic courses relevant to the project : Advanced Excel, Corporate Finance, Accounting, Data Modelling, Power BI

Name: SATHEESH M K(2024H1540810P)

Student Write-up

PS-II Project Title: HSBC CIB Internship

Short Summary of work done during PS-II : During Practice School-II at HSBC, I worked within the HSBC Infrastructure Finance (HIF) COO team under Corporate & Institutional Banking. My internship focused on workforce analytics, process automation, KPI reporting, and business planning support. I developed workforce analytics dashboards using Power BI by integrating HR datasets with team mapping structures, enabling leadership to monitor key workforce metrics such as headcount, joiners, leavers, and regional trends. I also contributed to streamlining monthly KPI reporting by developing an Excel-based framework that automated year-to-date calculations, year-on-year comparisons, target tracking, trend analysis, and leadership reporting. In addition, I designed an automated workforce allocation tracking solution using Excel VBA and Power Automate. The solution streamlined data collection, validation, and consolidation into a centralized tracker, significantly reducing manual effort and improving data quality. I also supported business planning activities by conducting external market research and building a structured framework to identify and evaluate potential financing opportunities, contributing to deal pipeline development and revenue forecasting discussions. Overall, the internship provided hands-on exposure to analytics-driven decision support, process improvement, and business operations within a global banking environment, while delivering measurable improvements in reporting efficiency, operational visibility, and strategic planning.

Tool used (Development tools - H/w, S/w) : Microsoft 365, Power BI, Internal AI tools

Objectives of the project : Improve workforce visibility through analytics dashboards and KPI reporting frameworks. Streamline reporting and workforce allocation processes through automation. Support business planning and decision-making through market research and deal pipeline analysis. Enhance data accuracy, reporting efficiency, and operational transparency within the HIF COO function.

Major Learning Outcomes : Developed practical expertise in Power BI, Excel VBA, Power Automate, and advanced Excel for business analytics applications.
Learned how COO functions support governance, workforce planning, reporting, and strategic decision-making in a global banking environment.
Gained exposure to Infrastructure Finance and Export Finance business operations.
Improved skills in dashboard development, KPI management, data modeling, and process

automation.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : HSBC provided a professional, collaborative, and highly structured working environment that emphasized accountability, data accuracy, and continuous improvement. As part of the HSBC Infrastructure Finance COO team, I worked closely with stakeholders. Team members were approachable and supportive, providing regular guidance, feedback, and opportunities to participate in meaningful business initiatives. Exposure to real-world reporting, automation, and business planning activities helped bridge the gap between academic concepts and practical implementation.

Academic courses relevant to the project : Advanced Excel, Data Visualization, Corporate Finance

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Name: SAMEER KANTH(2024H1540835P)

Student Write-up

PS-II Project Title: Corporate and Instituitional Banking

Short Summary of work done during PS-II : During my PS-II internship as an Analyst Intern at HSBC's Global Insurance Centre of Excellence, I worked within the Business Development - Coverage team, specifically focusing on the Institutional Clients Group (ICG). My core mandate involved the comprehensive analysis of a large-scale global pipeline deal dataset containing over 19,000 rows. I processed this data to conduct deep sector analysis, identifying key trends and coverage opportunities. By analyzing this pipeline data, I supported the team's strategic vision and helped optimize global business development efforts for the ICG sector. The role required synthesizing complex data into actionable insights to directly support management's coverage strategies and project mandates.

Tool used (Development tools - H/w, S/w) : Python, Excel, Power BI, Factset, Pitchbook,

Objectives of the project : Exposure to Investment and Corporate Banking

Major Learning Outcomes : Reporting, Research, Financial Statement Analysis, Automation, Strategy

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at HSBC's RMZ Ecospace office is a fast-paced, highly professional corporate setting. Situated within the Global Insurance Centre of Excellence, the culture is deeply analytical, collaborative, and globally minded. The environment encourages ownership and strategic thinking, requiring active engagement with complex financial data and cross-functional teamwork within the Business Development - Coverage team.
The company holds high expectations for analytical rigor and accuracy. As an Analyst Intern, the core expectation is to handle large-scale, complex datasets independently and translate them into actionable business intelligence.

Academic courses relevant to the project : Advanced Excel, Financial Accounting

PS-II Station : HSBC-Analyst Intern, Bengaluru/Kolkata

Faculty

Name: Uma Nagarajan .

Student

Name: ROHIT KUMAR(2024H1540833P)

Student Write-up

PS-II Project Title: Workforce Transformation and AI-Driven Capability Building in Insurance

Short Summary of work done during PS-II : During my PS-II at HSBC Hyderabad, I worked as an Analyst Intern in the Insurance Transformation team. My work focused on workforce transformation

and AI-driven capability building initiatives. I supported career pathway development by reviewing job structures, identifying future-ready roles, and mapping skill requirements across multiple business functions. I contributed to capability framework development, learning and development tracking, and workforce readiness initiatives. I coordinated with stakeholders across Operations, Product, Customer, Distribution, and Transformation teams for training nominations, governance reporting, and project updates. I tracked technical training completion, prepared learning dashboards, and monitored workforce capability enhancement programs. Additionally, I conducted research on AI-driven workforce transformation, emerging job roles, and future skill requirements using market intelligence platforms

Tool used (Development tools - H/w, S/w) : Microsoft Excel Microsoft PowerPoint Microsoft Teams Microsoft Outlook Confluence

Objectives of the project : Understand workforce transformation strategies in the insurance industry. Analyze the impact of AI and automation on workforce capabilities. Support career pathway development and job architecture initiatives. Assist in capability building and learning development programs. Participate in upskilling and cross-skilling initiatives. Gain exposure to strategic workforce planning and organizational transformation. Improve analytical, reporting, and stakeholder management skills.

Major Learning Outcomes : Understanding workforce transformation and AI-driven organizational change.
Exposure to capability framework development and career pathway mapping.
Experience in governance reporting and stakeholder management.
Knowledge of workforce planning and learning analytics.
Improved communication, coordination, and project management skills.
Understanding of upskilling and cross-skilling programs

Details of Papers/patents : No papers or patents were published as part of the PS-II project.

Brief Description of working environment, expectations from the company : HSBC provided a highly professional, collaborative, and learning-oriented work environment. The organization encouraged continuous learning, innovation, and cross-functional collaboration. Team members were supportive and provided regular guidance through meetings, feedback sessions, and knowledge-sharing discussions.

Academic courses relevant to the project : Organizational Behavior

PS-II Station : IBM - Hardware, Bengaluru/Hyderabad

Faculty

Name: Sanjay Vidhyadharan .

Student

Name: ANWESHA CHHOTRAY(2024H1240186H)

Student Write-up

PS-II Project Title: Read Path Unit Verification

Short Summary of work done during PS-II : Summary of PS-II Work: Verifying the Nexus Flash Controller Read Unit During my 6 months internship at IBM, I worked on verifying a part of the flash controller that reads data from memory. The goal was to find problems and make sure the system works correctly. Analyzing Warning Messages: The testing tool generates warning messages when it finds potential issues. I organized these warnings to remove duplicates and identify which ones matter. I reduced over 44,000 warnings down to 37,000 unique ones. I found that most warnings came from vendor software, but about 800 were real problems in our code. The main issues were signals that weren't properly set up, which I documented for the team to fix. Verifying Read Operations: I created tests to check if the system handles errors correctly when reading data. I tested different error scenarios like wrong memory addresses and incorrect data positions. I watched the test results to confirm the system responded the right way to each error. Formal Verification: I ran a formal verification process that checks 216,000 different conditions in the design. This is like an automated proof that the design works correctly. I had to fix some technical issues with the verification tool when it ran out of memory, then successfully completed the verification steps. Coverage Results: My tests achieved about 90% coverage, meaning they exercised most of the code. I also wrote tools to track specific design behaviors that matter for correctness. Final Work: I prepared for a conference and prepared weekly progress reports and presentations.

Tool used (Development tools - H/w, S/w) : Cadence

Objectives of the project : RPU testbench development, XPROP warning deduplication, UNR formal verification workflow

Major Learning Outcomes : SystemVerilog assertions (SVA), coverage-driven verification, formal property verification,UVM

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Team Structure: I worked under the guidance of my manager, Sriram K.S., and my technical mentor, Prathap Shanbhag . The team includes other verification engineers and designers working on different parts of the flash controller system. Regular meetings and code reviews are part of the work culture.
Company Expectations:
Technical Ownership: Interns are expected to take ownership of assigned verification tasks and drive them to completion with minimal supervision.
Problem-Solving: When issues arise (tool failures, simulation crashes), interns are expected to investigate and find solutions rather than wait for help.
Documentation: Clear documentation of work, findings, and results is required for knowledge sharing and future reference.
Communication: Regular updates to managers and mentors about progress, blockers, and achievements.
Quality: All code and test cases must meet industry standards for hardware verification.
Learning: The company encourages interns to learn new tools, methodologies, and industry practices during the internship.
Resources Provided: IBM provides all necessary software tools, computing resources, and technical documentation. Mentors are available for guidance on technical challenges and career development.

Academic courses relevant to the project : VLSI DESIGN

PS-II Station : IBM - Software, Bengaluru / Hyderabad

Faculty

Name: Reddy Rani Vangimalla .

Student

Name: ARNAV DHAM(2022A7PS1182P)

Student Write-up

PS-II Project Title: Hyperlink Protocol Bringup using DMA Engines

Short Summary of work done during PS-II : This project focuses on the bring-up of the zHyperlink prototype using DMA Engines. The objective of the project is to perform a Machine Bring Up (BUP) to validate the feasibility of the Hyperlink prototype that utilizes DMA Engines on the Z side of HyperLink for transferring data from the Z server to IBM Storage endpoints. The work involved understanding the implementation changes required to initialize the DMA Engine on the client side, along with necessary protocol modifications to enable DMA-based data transfer. These changes aim to improve the single link throughput of zHyperLink by transitioning from the existing push-pull communication model to a push-push model while operating within the boundaries of the existing HyperLink protocol and PCIe infrastructure.

Tool used (Development tools - H/w, S/w) : Chiplink,IBM internal softwares,Git,Github,VScode

Objectives of the project : IML,Reads work,Sense Works,Writes work

Major Learning Outcomes : C,C++,IBM Architecture, PCIe,Chiplink,etc

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Great working environment

Academic courses relevant to the project : CP, DSA, OS, CN

PS-II Station : ICT- Intercontinental Consultants & Technocrats Private Limited, New Delhi

Faculty

Name: Manoj Kumar .

Student

Name: DUSHANT DEWANAND RAMTEKE(2024H1300048P)

Student Write-up

PS-II Project Title: Preparation and Review of Detailed Project Reports (DPR) and Highway Infrastructure Consultancy Services.

Short Summary of work done during PS-II : During my PS-II internship, I received comprehensive exposure to various divisions involved in the preparation of Detailed Project Reports (DPRs) for highway infrastructure projects. Highway Design: Learned the complete DPR preparation process, stages of project development, report submissions, and relevant IRC guidelines. Assisted in reviewing topographical survey data, creating surfaces in Civil 3D, identifying and marking structures such as bridges and flyovers, measuring cross-road widths, and preparing longitudinal and cross-sections of rivers. Survey: Gained understanding of field survey methodologies, data collection procedures, and the role of surveys in highway project planning and design. Traffic: Studied traffic data collection and analysis techniques, including Automatic Traffic Count and Classification (ATCC) surveys. Received exposure to transportation planning and simulation software such as VISSIM, VISUM, and QGIS. Pavement: Learned pavement design concepts and relevant IRC codes, including IRC:37 for Flexible Pavement Design and IRC:58 for Rigid Pavement Design. Hydrology: Acquired knowledge of highway drainage design and hydrological studies with reference to IRC SP:42-2014 and IRC SP:50-2013 guidelines. QSC (Quantity Survey & Costing): Understood quantity estimation, BOQ preparation, cost analysis, and budgeting procedures for highway projects. Railway: Learned the fundamentals of railway geometric design, rail types, common defects, and railway yard layouts. Geotech: Studied geotechnical aspects of infrastructure projects, including slope stability analysis and stability assessment of high embankments. Overall, the internship provided practical insight into multidisciplinary aspects of transportation engineering, enhancing both my technical knowledge and

professional skills in infrastructure consultancy projects.

Tool used (Development tools - H/w, S/w) : Software: AutoCAD, Civil 3D, Google Earth Pro, QGIS, VISSIM, VISUM, IITPAVE MS Excel, MS Word, MS PowerPoint.

Objectives of the project : • To understand the process of DPR preparation for highway projects. • To assist in alignment studies, traffic analysis, and engineering design. • To gain exposure to highway supervision and project monitoring activities. • To develop practical knowledge of NHAI standards, IRC guidelines, and project execution procedures.

Major Learning Outcomes : • Understanding of DPR preparation methodology for highway projects.

- Practical exposure to highway geometric design and alignment development.
- Knowledge of NHAI, IRC, and MoRTH standards.
- Enhanced skills in engineering software and technical reporting.

Details of Papers/patents : No papers or patents were published during the internship period.

Brief Description of working environment, expectations from the company : The organization provides consultancy services in the field of transportation and infrastructure development, serving both domestic and international clients. The working environment was professional, collaborative, and learning-oriented, allowing interns to interact with experienced engineers and project managers. The company emphasized technical accuracy, adherence to standards, timely project delivery, and effective communication among team members. Exposure to live projects helped me understand industry practices, client requirements, and project management procedures. The organization encouraged continuous learning, teamwork, and professional development while maintaining high-quality engineering standards.

Academic courses relevant to the project : • Highway Design

- Pavement Courses
- Traffic course

PS-II Station : IFB Industries - Goa, Panaji

Faculty

Name: Pavan Kumar Potdar .

Student

Name: RUDRAKSH ALIAS BHAGWANT MUKUND SURYARAO SARDESAI(2024H1410050G)

Student Write-up

PS-II Project Title: A Method of Improving hygiene in Laundry equipments

Short Summary of work done during PS-II : During my PS-II internship, I gained practical exposure to washing machine design, testing, and user-centric product development processes. I disassembled washing machines to understand the functioning and integration of various components and observed testing machines and laboratory setups used for product validation. I learned about concepts such as Sinner's Circle, stain test strips for fabric evaluation, orbital shower systems, and washer diagnostic modes. I also visited different testing laboratories and studied procedures used for unbalance testing in washing machines. As part of the project work, I applied design thinking methodologies to identify and address customer pain points. This involved conducting user interviews through phone calls and site visits, analysing customer interviews using empathy cards and concept cards, and exploring potential product improvements. I also participated in patent discussions and reviewed existing patents to understand innovation strategies and technical solutions in the appliance industry. Additionally, I used various testing tools during experimentation and worked on developing solution concepts for identified issues. I created CAD models of proposed ideas using Creo and developed prototype models to evaluate design feasibility. I also gained hands-on experience with 3D printing, including the use of slicing software and fabrication of prototype parts. These activities provided valuable insights into the product development cycle, from customer research and concept generation to prototyping, testing, and validation. Overall, the internship enhanced my understanding of product testing, design methodologies, rapid prototyping, and engineering problem-solving in the appliance domain.

Tool used (Development tools - H/w, S/w) : Software used : 3d printing software, MS Word, MS

Excel, MS Powerpoint, Solidworks, PTC Creo, Fusion 360, patent websites(Google Patents, WIPO). Hardware used: PH meter, Turbidity meter, Spectrometer, CMM, TDS meter,Thermo scientific Orion Star A215,Dif

Objectives of the project : To develop an innovative washing machine design solution that improves hygiene conditions, enhances user convenience, ensures ease of use, and incorporates an attractive and aesthetically pleasing design.

Major Learning Outcomes : Technical Learnings:
Understanding of washing machine systems, modes, and hygiene challenges
Knowledge of washer testing and validation processes
CAD modeling, design iteration, and prototyping
Exposure to 3D printing and product development workflows
Application of design thinking framework and empathy mapping
Understanding of innovation processes and patent filing procedures
Professional Learnings:
Team formation, collaboration, and coordination
Problem identification and structured thinking
Presentation and communication skills
Iterative design and decision-making approach
Working effectively in a professional product development environment

Details of Papers/patents : Prepared Invention Disclosure Forms (IDFs) for patent filing in future.

Brief Description of working environment, expectations from the company : The working environment during my PS-II internship (January to June) was within an R&D department focused on innovation and product development. The workplace followed a formal and structured work culture, where learning was largely self-driven and centered around understanding real user problems before developing solutions. The overall process was methodical, as innovation required detailed analysis of customer needs and iterative thinking.

I was given the responsibility to form and manage my own team, which helped strengthen my coordination, communication, and leadership skills. Manager was available for guidance and support, while employees were highly approachable, cooperative, and willing to share their knowledge. This created a positive learning environment that encouraged both independent learning and collaboration. The internship provided strong technical exposure through hands-on activities such as disassembling washing machines, using various software tools, creating prototypes, participating in patent discussions, and visiting biology and testing laboratories. Interactions with customers provided

valuable insights into real-world usage issues and offered a deeper understanding of the user-centric innovation process. The environment also provided opportunities to apply product design concepts to practical engineering problems.

The co-location of R&D and manufacturing facilities, along with benchmarking visits, further enhanced my understanding of industrial workflows and product development cycles. The workplace also offered free tea and coffee, while snacks and refreshments were available on a paid basis, contributing to a comfortable yet professional work environment.

Overall, the experience helped me develop technical knowledge, teamwork, communication skills, leadership abilities, and a deeper understanding of user-driven innovation in an industrial setting.

Academic courses relevant to the project : Strength of Materials, Computer Aided Designing, Product Design, Machine Design, some parts of microbiology, Fluid mechanics(optional)

Name: MEENU S TITTO(2024H1060077G)

Student Write-up

PS-II Project Title: PCM Integration in IDU and ODU of Residential Split AC

Short Summary of work done during PS-II : During my PS-II at IFB Industries, Goa, I worked on multiple R&D and innovation-oriented activities in the air-conditioning domain. A major part of my work was the PCM-integrated AC indoor unit project, where I studied the feasibility of integrating a phase change material at the warm-air inlet frame of a residential split AC indoor unit to enable inlet air pre-cooling, reduce evaporator load, lower compressor cycling, and improve thermal buffering. The project involved problem mapping, PCM material screening, workflow-based material selection, and development of a proposed inlet-frame redesign concept using a CA-PA-SA/EG composite PCM. In addition, I contributed to the innovation project, which included opportunity identification under the “Humanizing Air” framework and presentation of multiple customer-centric AC concepts such as fresh air integration, harsh draft reduction, and microzone management. I also carried out teardown-based benchmarking activities to understand existing products and design approaches. Further, I prepared presentations and reports related to air purifier research, indoor air quality, and air purifier market analysis. I also studied the air cooler market, learned concepts related to design of experiments, and submitted reports based on those studies. Another important part of my internship was the ideation and presentation of 12 project ideas relevant to AC innovation and future product opportunities.

Overall, PS-II gave me hands-on exposure to industrial R&D, technical analysis, product benchmarking, market research, concept generation, and engineering documentation.

Tool used (Development tools - H/w, S/w) : Ansys, Solidworks.

Objectives of the project : To enhance the thermal performance of residential split air conditioning systems by integrating Phase Change Material (PCM), enabling passive pre-cooling of return air and reduction of compressor cycling frequency without any modification to the existing refrigerant circuit.

Major Learning Outcomes : Learned how PCM can be integrated into an AC indoor unit as a thermal buffering element rather than as a separate bulky subsystem. Gained experience in PCM material selection using chemistry, compatibility, and containment criteria. Understood the relation between inlet air pre-cooling, reduced compressor demand, and cycling reduction. Improved skills in product-oriented concept development, feasibility analysis, and technical presentation.

Details of Papers/patents : IDF - 5260IN206. Performance enhancement of Air Conditioning Systems by integrating PCM into the warm air inlet frame of the AC indoor unit.

Brief Description of working environment, expectations from the company : -

Academic courses relevant to the project : Refrigeration and air conditioning.

Name: BANDI AJAY GOUD(2024H1410054G)

Student Write-up

PS-II Project Title: Reuse water in washer

Short Summary of work done during PS-II : It was great got to learn a lot while interacting with IFB employees

Tool used (Development tools - H/w, S/w) : Matlab, creo

Objectives of the project : Increase efficiency of washer

Major Learning Outcomes : corporate interactions and mechanical concepts

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Good

Academic courses relevant to the project : Fem cad

Name: SUMIT SAKHARAM GHODKE(2024H1410048G)

Student Write-up

PS-II Project Title: Mitigating Insoluble Detergent Residues on Dark Fabrics Through Advanced Wash Delivery Architecture

Short Summary of work done during PS-II : The project focused on the design, optimization, and testing of modular system frameworks to enhance the efficiency and reliability of next-generation product architectures. The primary objective was to analyze the existing workflow or codebase, identify latency bottlenecks or operational constraints, and implement scalable solutions. The process was executed in three distinct phases: comprehensive requirement analysis, simulation/prototype development, and integration testing. By collaborating with cross-functional engineering teams, a robust control or processing framework was successfully deployed.

Tool used (Development tools - H/w, S/w) : Creo, Matlab, spectrophotometer, SEM-EDX

Objectives of the project : Avoid White streaks and stains on dark garments

Major Learning Outcomes : Gained a deep understanding of modular architecture of washers, algorithms, testing standards and system integration within consumer appliances.
Learned to design, test, and validate features following strict industry compliance, version control, and rigorous quality benchmarks. Acquired hands-on experience on creating POCs and SOPs for the tests and analyzing test data related to textile, wash quality and hard water chemistry.

Details of Papers/patents : 3 IDFs Filed

Brief Description of working environment, expectations from the company : Highly collaborative, tech-driven, and fast-paced. The R&D and innovation divisions emphasize open communication across hardware, software, and product management teams. IFB expects high accountability, an autonomous approach to problem-solving, rapid adaptability to their internal standard operating procedures (SOPs), and the ability to translate theoretical knowledge into reliable, production-ready solutions.

Academic courses relevant to the project : Product Design, CAD, Material Testing

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Name: SHIVACHANDRA KACHARLA(2024H1410051G)

Student Write-up

PS-II Project Title: Design and Development of a Rinse Water Recovery and Reuse System in Washers

Short Summary of work done during PS-II : During my internship at IFB , I worked in the R&D Innovation Cell on a sustainability-focused project aimed at reducing water consumption in washing machines. The project involved studying existing water reuse technologies, understanding customer needs through user research, and identifying opportunities to recycle rinse water within the washing process. Based on the insights gathered, different concepts for water reuse were generated and evaluated. The work included studying water quality parameters, investigating filtration and coagulation techniques for treating rinse water, and assessing their suitability for household laundry applications. Laboratory experiments were conducted to evaluate treatment performance, and the findings were used to refine the proposed solution. A prototype was then designed and developed to demonstrate the feasibility of the water reuse concept. The prototype was validated through wash performance and water reuse experiments to assess its effectiveness in reducing fresh water consumption. Throughout the internship, I gained practical experience in product development, experimentation, concept validation, and engineering problem-solving within an industrial R&D environment.

Tool used (Development tools - H/w, S/w) : TDS Meter Turbidity Meter pH Meter Conductivity Meter;

Solidworks, MS Excel, MS Powerpoint

Objectives of the project : To develop a sustainable water reuse solution for washing machines by exploring methods to recycle rinse water, evaluating suitable treatment techniques, and developing a prototype that reduces fresh water consumption while maintaining washing performance.

Major Learning Outcomes : Applied design thinking methodology to solve a real-world engineering problem.
Understood washing machine architecture, wash cycles, and water management systems.
Conducted customer research and converted user insights into engineering requirements.
Studied water quality parameters such as TDS, turbidity, pH, conductivity, and hardness.
Evaluated filtration and coagulation techniques for laundry water treatment.
Developed and tested a prototype for intelligent water reuse.
Learned cross-functional collaboration in an industrial R&D environment.

Details of Papers/patents : Prepared and filed an Invention Disclosure Form (IDF) for a novel washing machine water reuse concept submitted for internal patent evaluation at IFB.

Brief Description of working environment, expectations from the company : The internship was carried out in the Innovation Cell of the R&D department at IFB R&D. The work environment was collaborative, research-oriented, and encouraged independent thinking. Team members were supportive and provided regular technical guidance while allowing interns to explore innovative solutions. Weekly discussions and review meetings helped in evaluating progress and refining ideas based on technical feasibility.

Academic courses relevant to the project : Product Design, CAAD

PS-II Station : Impactsure Technologies Private Limited - Business Analyst, Mumbai

Faculty

Name: Niranjan Swain .

Student

Name: SWASTHEKA SUBRAMANIYAN(2022A5PS1460P)

Student Write-up

PS-II Project Title: Business Analysis for Trade Finance Operations: Digitisation of Export, Import and Compliance Workflows on a Fintech Platform

Short Summary of work done during PS-II : The internship was undertaken at Impactsure Technologies, a fintech company building a Trade Finance and Compliance Platform for the largest private sector bank in India. As a Business Analyst Intern, the primary responsibility was to bridge domain knowledge and product development — understanding complex trade finance processes and translating them into structured BRDs and workflow specifications for the development team. The internship progressed through four phases: Understand (studying trade finance operations and analysing the Corporate Bank PoC), Translate (mapping business processes into BRDs and workflow specs), Validate (end-to-end functional and workflow testing, preparing structured UAT test cases in Excel), and Integrate (cross-module work across Imports, ORM, LCs, and BGs). Modules worked upon include Exports (Goods, Services, and Software) with sub-workflows covering bill lodgement, EDF generation, and IRM mapping; Imports covering advance payments, direct payments, and Bill of Entry ORM mapping; Letters of Credit and Bank Guarantees covering types, lifecycles, and platform application flows. Work was carried out in an Agile framework with active participation in sprint planning, stakeholder discussions, and UAT sign-off cycles.

Tool used (Development tools - H/w, S/w) : Microsoft Excel (test case management and data repositories), Microsoft Word (BRD documentation), Impactsure Trade Platform (functional and workflow testing), Python and Java (observational exposure through training sessions and developer discussions)

Objectives of the project : To analyse, document, and translate complex trade finance processes into structured Business Requirement Documents (BRDs) and workflow specifications for the development team building a Trade Finance and Compliance Platform. Modules covered include Exports (Goods, Services, Software), Imports, Inward Remittances (IRM), Outward Remittances (ORM), Letters of Credit (LCs), and Bank Guarantees (BGs), along with participation in Agile sprint cycles and User Acceptance Testing (UAT).

Major Learning Outcomes : Gained comprehensive domain knowledge in trade finance operations including export and import workflows, remittances, LCs, BGs, and the regulatory ecosystem governed by RBI, DGFT, and FEMA. Developed practical business analysis skills including requirement elicitation, BRD writing, and workflow specification. Understood Agile product development processes through active sprint participation. Acquired experience in functional, workflow, and UAT-based testing. Developed people management and cross-functional communication skills by working closely with developers, domain experts, and stakeholders across a fast-paced fintech environment.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Impactsure Technologies operates as a fast-paced, collaborative fintech startup environment headquartered in Mumbai. The team is relatively lean, with close interaction across business, product, and technical functions. The working culture is highly dynamic — requirements evolve frequently based on client feedback and stakeholder reviews, and team members are expected to adapt quickly to changing priorities.

As a Business Analyst Intern, the expectation was to independently understand trade finance domain processes with minimal hand-holding, produce clear and structured documentation that developers could directly act upon, and actively participate in testing and review cycles. The company expected strong communication skills, the ability to ask the right questions of domain experts and developers alike, and a proactive attitude toward problem identification and resolution.

The environment offered significant real-world exposure — the platform being built is for one of India's largest private sector banks, which meant the stakes and quality bar were high. Interns were treated as contributing team members rather than observers, with responsibilities that directly impacted the product's development. Collaboration with cross-functional teams including developers, domain experts, and product leads was a daily expectation, making stakeholder management and clear communication critical skills throughout the internship.

Academic courses relevant to the project : Derivatives of Risk management , Fundamentals of Finance and accounting, Technical Report Writing

PS-II Station : INDUS INTERNATIONAL FZC, UAE-Sharjah

Faculty

Name: Raghuraman S .

Student

Name: YUVRAJ SINGH(2021B1A42937G)

Student Write-up

PS-II Project Title: Fire detection using live camera feed

Short Summary of work done during PS-II : This project developed a real-time fire detection system using a YOLOv8n model integrated with a live CP Plus CCTV camera (via screen capture, since no RTSP stream was available). Trained on 1,355 curated images across four classes (fire, smoke, light, no-fire) using transfer learning, the model achieved 95.1% mAP@50 and 97.6% fire precision-recall. A 0.35 confidence threshold plus a 3-frame confirmation rule minimized false alarms. On detection, the system sends email and SMS alerts and logs events to CSV. Live testing in May–June 2026 confirmed reliable performance. Limitations include weak small-flame detection and screen-capture dependency; future work includes RTSP access, Raspberry Pi deployment, and multi-camera support.

Tool used (Development tools - H/w, S/w) : Python 3.12.10 YOLOv8 (Ultralytics) OpenCV NumPy MSS smtplib Twilio CSV Roboflow Universe imagehash CP Plus CP-E28Q camera

Objectives of the project : Fire prevention and alert

Major Learning Outcomes : Executing end to end and delployment

Details of Papers/patents : Redmon, J., Divvala, S., Girshick, R., Farhadi, A. — You Only Look Once: Unified, Real-Time Object Detection
Muhammad, K., Ahmad, J., Mehmood, I., Rho, S., Baik, S. W. — Convolutional Neural Networks Based Fire Detection in Surveillance Videos

Brief Description of working environment, expectations from the company : It was remote,

Academic courses relevant to the project : Machine Learning
Deep Learning / Neural Networks
Computer Vision / Digital Image Processing
Data Structures and Algorithms
Python Programming / Object-Oriented Programming

PS-II Station : Inferigence Quotient Pvt Ltd, Bengaluru

Faculty

Name: Shwetha Vittal

Student

Name: APOORV VUPPULURY .(2022AAPS0504H)

Student Write-up

PS-II Project Title: Artificial Intelligence - Based Avionics

Short Summary of work done during PS-II : During my Practice School-II at Inferigence Quotient Pvt. Ltd., I worked on the design, analysis, and development of an indigenous UAV gimbal stabilization system for avionics applications. The project involved studying and implementing multi-axis gimbal architectures, integrating sensors such as magnetic encoders and IMUs, and developing embedded control systems for precise camera stabilization. I worked on both brushed DC and BLDC motor control architectures, including PID-based position control and Field-Oriented Control (FOC) for high-precision actuation. The work included hardware architecture design, sensor integration, control algorithm development, vibration analysis using PX4 flight logs, and MATLAB/Simulink-based modelling of the complete control system. Detailed simulations were carried out to validate cascaded position, velocity, and current control loops for BLDC motors. Spectral analysis techniques such as PSD and STFT were used to evaluate vibration characteristics affecting gimbal performance. The project contributed towards developing a cost-effective and scalable indigenous stabilization platform suitable for UAV payload stabilization, surveillance systems, and precision imaging applications.

Tool used (Development tools - H/w, S/w) : Microcontroller Development Boards UAV Flight Controller, Sensors (HW)

Objectives of the project : Gimbal Controller Algorithm and Mechanical System

Major Learning Outcomes : Made a complete custom controller algorithm for a functional military grade gimbal.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working environment is very straightforward and helpful, but you can't be laidback, you should be eager, alert, and most importantly, you need to be a fast learner.

Academic courses relevant to the project : Embedded Systems Design, Control Systems, Programming in C++

PS-II Station : Infineon - Electronics, Bengaluru

Faculty

Name: Pawan Sharma .

Student

Name: YOGYA CHAWLA(2020HS231776H)

Student Write-up

PS-II Project Title: Silicon Characterization

Short Summary of work done during PS-II : Silicon Characterization Intern Bangalore, Karnataka

• Characterized an ES-100, Buck Converter IC till ATE-Char Correlation from -45°C to 150°C. • Programmed automation scripts for 81 parameters using NIMAX and PyVISA to streamline the testing process. • Parameters: Startup, DEM and FCCM current, Pull-Up/Down resistance, rise/fall time, and Gate Propagation delay of Power MOSFET.

Tool used (Development tools - H/w, S/w) : PyViSA, Teledyne Lecroy Oscilloscope

Objectives of the project : To Characterize (checking the electrical limits of an IC) of a buck converter IC

Major Learning Outcomes : Python Automation, Buck converter, SMU, PCB, Oscilloscope

Details of Papers/patents : Buck converter IC to be used in automotive PMIC

Brief Description of working environment, expectations from the company : Great work life balance, in my team there is a lot of work so I was involved in a project from March itself and from March to May, I have been involved in the testing part of ASIC design flow

Academic courses relevant to the project : Analog Electronics, Power Electronics, Python automation

PS-II Station : Infineon- Supply Chain, Bengaluru

Faculty

Name: Pawan Sharma .

Student

Name: SHOBHIT JHA .(2022A8PS1805H)

Student Write-up

PS-II Project Title: Routing Accelerator configuration tool (RACT)

Short Summary of work done during PS-II : Configure ethernet driver, ethernet switch and can moudules together using a single tool

Tool used (Development tools - H/w, S/w) : Python, nodejs, tresos, embeded C

Objectives of the project : Configure ethernet driver, ethernet switch and can moudules together using a single tool

Major Learning Outcomes : Pyhton, Webdevelopment, embedded C

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Good, wfh available

Academic courses relevant to the project : NA

Name: PRANJAL BHARDWAJ .(2022A3PS1858H)

Student Write-up

PS-II Project Title: Rtl design for subsystem

Short Summary of work done during PS-II : Run subsystem levels checks for RTL, specifically lint, CDC and RDC checks. Design and code small reusable usecase specific IPs. Synthesis of IPs. Work with interface of AMBA protocols.

Tool used (Development tools - H/w, S/w) : Synopsis VC spyglass, cadence CLP, cadence genus, UNIX

Objectives of the project : Run subsystem level checks(Lint, CDC and RDC). Design and code small IPs.

Major Learning Outcomes : Industry standard tools used in front end, RTL to GDS flow, design structures commonly used and good verilog coding practices.

Details of Papers/patents : Na

Brief Description of working environment, expectations from the company : Good working environment. Mentors and managers were helpful and took time to explain the requirements, expectations and give constructive feedback. Interns are mostly expected to work on small IPs which are generally standard and reusable. Some about scripting knowledge for workflow related task is also expected.

Academic courses relevant to the project : Digital design, ADVD, CP

Name: SOUMYADEEP BHUNIA(2024H1240042H)

Student Write-up

PS-II Project Title: Integration of Universal Debug Engine into an Automated Embedded Test Platform using ROBOT Framework

Short Summary of work done during PS-II : The automation framework worked upon was Python -based and most of the work was on Python. Developed drivers for an internal tool to communicate with, flash, read/write and run programs on an Infineon AURIX board. Learned about the tool by finding out the program flow through debugging. Communicated with the tool users (MCAL development and validation) to gather feedback and gain an understanding of what is required of the tool, and added UI options accordingly. Additionally, learned about Virtual prototypes of microcontroller cores and how to use Synopsys Virtualizer to run validation workflows. Was also tasked with exploration of automating the VP workflow and

Tool used (Development tools - H/w, S/w) : Python, UDE, Synopsys Virtualizer

Objectives of the project : To automate a tool using its exposed APIs and integrate into the organisation's testing framework so that the existing instructions can be used to run the new tool. Provides an alternative and a tool that supports all kinds of microcontrollers while the presently-used

tool only supports one family (AURIX).

Major Learning Outcomes : Primarily learnt about development and validation workflow on Infineon microcontrollers.
Strengthened object-oriented programming concepts.
Learned about MCAL code and how a program gets compiled, loaded onto the MCU and how it translates to what we see as a user.
Additionally learned about LLMs, agents and MCPs and how they're used to accelerate development workflows.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : One mentor assigned who guides the ramp up process and in the internship project. The internship projects are mostly R&D and exploratory topics and the task is to develop a proof-of-concept for some new methodology. Working environment is relatively relaxed, with 60/40 WFO/WFH ratio and 9-6 working hours.

Academic courses relevant to the project : ML for Electronics Engineers, Hardware-Software Co-Design

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Name: CHOTHANI LALITA BIPINCHANDRA(2024H1230089G)

Student Write-up

PS-II Project Title: DC DC Buck Converter Power Stage

Short Summary of work done during PS-II : Worked on verification of a DC-DC synchronous buck converter power stage through circuit-level, AMS, SOA, aging, and extracted simulations. Studied reliability and protection mechanisms including OCP, NegOCP, BTI, and HCI.

Tool used (Development tools - H/w, S/w) : Cadence Virtuoso, Spectre, AMS Simulator, Verilog-A, Linux.

Objectives of the project : To understand the architecture and operation of a DC - DC synchronous buck converter power stage and perform its verification using cadence tools. To study AMS, SOA, aging, extracted simulations and reliability verification methodologies used in PMIC development.

Major Learning Outcomes : Gained practical experience in analog and mixed-signal verification of a DC-DC buck converter power stage. Learned AMS, SOA, aging, and extracted simulation methodologies using Cadence tools.

Details of Papers/patents : No papers or patents were published during the internship.

Brief Description of working environment, expectations from the company : Worked in a collaborative semiconductor design environment with regular technical discussions and design reviews. Used industry-standard EDA tools for simulation and verification activities.

Academic courses relevant to the project : Analog IC Design, Mixed-Signal IC Design, VLSI Design, CMOS Analog Circuit Design, Data Converters, Semiconductor Device Modeling.

Name: MEKALA PATRICK MANOHAR(2024H1400081H)

Student Write-up

PS-II Project Title: Verification and Enhancement of mcal modules on Infineon Aurix

Short Summary of work done during PS-II : AUTOSAR knowledge, verification process and also enhancement through newer implementations in existing implementation

Tool used (Development tools - H/w, S/w) : H/w, S/w

Objectives of the project : Verification and Enhancement of mcal modules on Infineon Aurix

Major Learning Outcomes : AUTOSAR

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Good working environment. Flexible - hybrid work, nice team bonding.

Academic courses relevant to the project : Embedded System Design, Real Time Systems

PS-II Station : InMobi Technologies Pvt Ltd - Business/ Product Analytics, Bengaluru

Faculty

Name: Smitha Sarma Ranganathan

Student

Name: JANAKIRAM BOLLAPRAGADA .(2021B5A42366H)

Student Write-up

PS-II Project Title: Business Analytics and AdTech Data Intelligence

Short Summary of work done during PS-II : The first half was foundation-building: onboarding, an AdTech and technical curriculum (SQL via pgAdmin, PySpark on Databricks, Excel, EDA), and four projects — Creatives Performance Analysis, RILL tool enablement, a Marketing Operations attribution investigation, and an initial Glance buyer intelligence study. The second half went deeper and broader. I expanded the Magnite buyer intelligence work, where I uncovered an attribution gap ("Buyer 0") and built a DSP backfill methodology, then turned it into an auction-package go-to-market narrative for Glance. I ran a PubMatic buyer-pathway analysis and an Amazon monetization study that separated scale from yield using a correctly grained true-eCPM framework. I formalised correct definitions for CTR, VCR, and eCPM. The largest engineering effort was a two-month Databricks pipeline reconciling request-side (UMP) and delivery-side (CAS) data into a unified Web & CTV reporting layer, followed by a cross-platform Audience Intelligence table unifying IX, Beeswax, and iDSP. I also built a Celtra creative-intelligence onboarding framework, a Facebook creative and landing-page intelligence pipeline (including political-signal detection), URL/attribution mechanics work, a Salesforce-based

Global Ads Pipeline dashboard, a dashboard email-automation system, and an adomain canonicalization workflow — all underpinned by a running discipline of Excel/SQL validation. The unifying takeaway was a data-product mindset: define the question, get the grain right, validate the source, resolve identities, compute metrics correctly, and translate results for stakeholders.

Tool used (Development tools - H/w, S/w) : Software: SQL (via pgAdmin / PostgreSQL), PySpark and Databricks (Delta tables, Spark configuration and performance tuning), Microsoft Excel (pivots, formula-driven analysis), RILL for dashboarding and visualization, Salesforce (opportunity/pipeline data)

Objectives of the project : The core objective was to turn fragmented operational data from across InMobi's advertising ecosystem into trustworthy, reusable business intelligence. In practice this meant three things: developing hands-on proficiency in the team's toolset (SQL, PySpark on Databricks, Excel, RILL); delivering analytical outputs that internal stakeholders could actually make decisions on; and learning to navigate the ambiguous, messy data problems that are normal in a fast-moving AdTech environment. Over the six months this shifted from one-off descriptive analysis toward building proper data pipelines, dashboards, and reusable data products — buyer intelligence studies, a Web & CTV reconciliation pipeline, a cross-platform audience table, creative-intelligence onboarding, and a Salesforce-based sales pipeline dashboard.

Major Learning Outcomes : The biggest thing I took away is that a report is only as good as the identity-resolution layer underneath it — most of the high-value work was actually fixing how entities (buyers, DSPs, creatives, segments, advertisers, countries) map across systems. I also learned to always ask what a single row actually represents before trusting a number, because a lot of mistakes come from mixing grains (like averaging row-level eCPM instead of recomputing from summed numerators and denominators). Beyond the technical side, I learned to build things as systems rather than as charts — defining sources, fields, refresh logic, and validation — and to translate technical findings into language that stakeholders in Sales, RevOps, Trading, and Product could act on. And a recurring lesson from the very first project onward: often the most useful analytical contribution isn't the number itself but correctly diagnosing why the expected number is missing.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : I was embedded in the Business Analytics and Insights team within the Central Operations division. The environment was fast-paced and collaborative — the team sits at the intersection of a lot of business units (Sales, Marketing Ops, Creatives, Programmatic Partnerships, RevOps, Trading, Product, Global Exchange

Operations), so most projects came from real requests by real stakeholders rather than being academic exercises. That meant a lot of cross-functional interaction: getting business context from one team, validating outputs with another, and getting data access from a third.
The expectation was that I'd get up to speed on the toolset quickly and then own problems end-to-end, not just run queries handed to me. Over time the bar shifted from "can you pull this number?" to "can you build something reusable and defensible that the business can rely on?" There was a strong emphasis on correctness and validation — surprising results were treated as hypotheses to check, not findings to report. Ambiguity was normal and expected; a big part of the job was making reasonable, clearly-flagged judgement calls when data was incomplete. Onboarding was thorough (People and Culture handled the organizational side, and there was a structured technical/domain curriculum), and my manager was very accessible for day-to-day problem-solving, which made the steep learning curve manageable.

Academic courses relevant to the project : Not specific courses, but the general analytical and problem-structuring habits from the Physics and Mechanical Engineering programs — breaking a messy problem down, checking assumptions, and validating results — carried over more than any single subject.

Name: AYUSH SRIVASTAVA(2021B3A72462G)

Student Write-up

PS-II Project Title: Business Analytics: Proactive Monitoring and Revenue Optimization for Web and CTV

Short Summary of work done during PS-II : Over a 5 month PS-II at InMobi, I worked as a Business Analyst in the Web and CTV team, monitoring the programmatic ad ecosystem, identifying performance anomalies, performing root cause analysis, and building proactive monitoring systems. The work spanned three workstreams. The first was building monitoring infrastructure. When I joined, the team had no automated daily reporting and relied on manual Excel dashboards. I developed and deployed six automated mailers as scheduled Databricks jobs: covering addressability, marketplace health, web/CTV alerts, in-house SDK adoption, seller-tagging discrepancies, and ad render rates. Each built with PySpark, HTML/CSS templates, and SMTP delivery. I also owned the funnel sheets used by ~50 stakeholders and established a template health verification process. The second was

identifying revenue-impacting issues. Across findings, roughly $19K+ in combined DAILY run rate was flagged, recovered, or escalated, plus publisher-bidder trading gaps and template-related fixes. The third was analytical deep dives: a 60-day bidder revenue decline investigation, a CTV deal-scaling analysis (35 deals identified), end-to-end onboarding analysis for new publishers, a supply-chain compliance audit, and a full web revenue decline RCA. Over the period, combined web and CTV daily run rate moved from ~$188K to a ~$138K April trough and recovered to ~$194K by mid-June and peaked at around ~$248K by the end, with the monitoring systems supporting the recovery.

Tool used (Development tools - H/w, S/w) : Tools: Databricks, PySpark, Rill, Jira, Confluence, SendGrid.

Objectives of the project : To monitor the programmatic ad ecosystem across Web and Connected TV channels; build a proactive automated monitoring infrastructure to surface performance anomalies before they escalate; identify, quantify, and escalate revenue-impacting issues through structured root cause analysis; and conduct end-to-end analytical investigations to support revenue optimization for the Web and CTV team.

Major Learning Outcomes : 1. End-to-end understanding of the programmatic ad-tech ecosystem.
2. The layered L0–L1–L2 root cause analysis methodology: narrowing a broad metric anomaly across dimensions until the root cause surfaces
3. Building production-grade automated data systems: PySpark pipelines, scheduled Databricks jobs, alert-threshold design, and cross-client HTML email rendering.
4. Communicating insights to senior stakeholders in a way that drives action, including contributing to executive presentations
5. The conceptual shift from reactive analysis to proactive monitoring, which majorly included building systems that surface questions before anyone asks.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at InMobi was excellent and highly collaborative. People across the team were approachable and helpful; you could reach out to anyone at any time, regardless of seniority, and get the support you needed. The team culture was positive and genuinely growth-oriented.
The pace was fast, and the first 2 quarters in particular were hectic and high-pressure, since that period is commercially critical for the business. Keeping up with that pace was demanding, but it was also where most of the learning happened, since the intensity pushed you to ramp up quickly and take real ownership.

In terms of expectations, the company expected analysts to work independently, monitor the ad ecosystem proactively, investigate anomalies end to end, and communicate findings clearly to the relevant stakeholders. Overall it was a challenging but rewarding environment that accelerated both analytical and professional growth.

Academic courses relevant to the project : DSA, OS

PS-II Station : Intuit India Product Development Center, Bengaluru

Faculty

Name: Sangeetha Viswanathan .

Student

Name: CHINMAY RAMDAS RAO(2022A7PS0106G)

Student Write-up

PS-II Project Title: Taxonomy Reconciliation Automation and Content Version Deletion

Short Summary of work done during PS-II : During my backend engineering internship, I successfully delivered two high-impact technical projects while navigating a fast-paced corporate environment. Utilizing Java Spring Boot and AWS, I first engineered a database retention solution that automatically purges deprecated data according to strict versioning policies, significantly optimizing storage. Second, I modernized the Taxonomy Service by replacing a manual reconciliation process with an automated, scalable producer-consumer architecture, drastically improving data consistency and processing efficiency. Beyond coding, this experience provided a comprehensive understanding of the end-to-end product lifecycle. Collaborating with cross-functional stakeholders—including product managers and QA teams—sharpened my professional communication and aligned my technical tasks with broader business goals. Finally, immersed in an agile workflow, I cultivated strong problem-solving habits and mastered the art of proactively troubleshooting and getting myself unblocked to ensure seamless project momentum.

Tool used (Development tools - H/w, S/w) : IntelliJ, Cursor, Claude Code, Github, Splunk, Jenkins, Jira

Objectives of the project : Database Lifecycle Optimization: Engineered and implemented a automated database retention mechanism to systematically purge deprecated content versions in compliance with data versioning policies, significantly reducing storage overhead. Process Automation & Architecture Redesign: Successfully automated a manual reconciliation workflow within the Taxonomy Service by architecting a scalable, high-throughput producer-consumer model, drastically reducing processing time and ensuring data consistency.

Major Learning Outcomes : 1. Technical Frameworks & Cloud Infrastructure

Acquired deep technical proficiency in backend engineering by utilizing the Java Spring Boot framework to develop robust, scalable, and efficient application logic.

Complementing this backend development, gained extensive practical experience with AWS cloud infrastructure, learning how to securely deploy, monitor, and manage services in a modern production environment.

2. Corporate Navigation & Professional Etiquette

Developed a firsthand understanding of the corporate ecosystem by successfully adapting to professional workflows, organizational structures, and workplace culture.

Beyond the code, gained valuable exposure to the non-technical dimensions of business operations, including navigating corporate communication channels and aligning daily tasks with broader company goals.

3. Product Lifecycle & Stakeholder Management

Gained a comprehensive overview of the end-to-end product development lifecycle, tracking how a software feature evolves from initial requirements and sprint planning to final deployment.

Learned how to effectively collaborate with diverse stakeholders—including product managers, QA engineers, and UX designers—ensuring that the technical implementation perfectly met cross-functional business expectations.

4. Cross-Functional Collaboration & Teamwork

Recognized the critical importance of collaborative teamwork, understanding that high-quality software is the product of collective synergy rather than isolated effort.

Actively participated in agile ceremonies and peer code reviews, which enhanced communication transparency, fostered shared code ownership, and ensured smooth integration across the codebase.

5. Proactive Problem-Solving & Self-Unblocking

Cultivated strong professional independence by learning to troubleshoot complex technical bugs and research documentation before escalating issues.

Mastered the essential skill of getting unblocked by knowing exactly when and how to articulate technical hurdles clearly to senior engineers, maximizing team efficiency and minimizing project downtime.

Details of Papers/patents : N.A.

Brief Description of working environment, expectations from the company : Operating within a structured **9:00 AM to 4:00 PM hybrid model**, the work environment seamlessly balanced independent development with high-impact teamwork by requiring **three days of in-office collaboration** per week. The physical workplace featured a vibrant, **open-office layout** that prioritized **offline, face-to-face meetings** and spontaneous engineering synergy. This collaborative atmosphere was further anchored by a dedicated mentorship structure, where each intern was paired with a **senior engineer**. These mentors fostered strong professional autonomy by avoiding micro-management or hand-holding, instead empowering interns to solve problems independently while remaining readily accessible to offer strategic guidance and technical support when needed.

Academic courses relevant to the project : Data Structures and Algorithms, Operating Systems, Object Oriented Programming, Database Management System

PS-II Station : ITCONS E-SOLUTIONS LTD, Noida

Faculty

Name: Sidharth Mishra .

Student

Name: ADIT MITTAL(2022A3PS0484P)

Student Write-up

PS-II Project Title: AI Integrations and Workflow Automations

Short Summary of work done during PS-II : 1. Automate bulk payroll formatting and integrate real-time bank account verification to prevent misdirected salary credits. 2. Automate the verification, highlighting, and project-wise segregation of PF and ESIC compliance challans against HR master records. 3. Build a recruitment performance tracking system that unifies desk and field recruiter data into a single, conflict-safe source of truth. 4. Build an enterprise recruitment dashboard with role-based access for leadership, vertical managers, HR, and Finance, surfacing financial, workforce, and risk metrics in real time.

Tool used (Development tools - H/w, S/w) : Antigravity, Apps Script, VS Code etc.

Objectives of the project : The 2 main objectives of the project were: 1. create and implement systematic time saving and cost effective solutions using AI tools like antigravity. 2. Cross functional team management and coordination. 3. Stakeholder Management and productivity analysis

Major Learning Outcomes : Learnt how to create and implement systematic time saving and cost effective solutions for an expanding company along with stakeholder management.

Details of Papers/patents : --

Brief Description of working environment, expectations from the company : The company's working environment is pretty good. The mentors, along with the managers, are very helpful, supportive, and always open to doubts. The expectations of the company from me were to help provide value in terms of streamlining and fastracking operations. The company promoted me to take reasonable time in understanding the structure and bottlenecks, ensuring I don't feel overburdened at any point.

Academic courses relevant to the project : Introduction to Large Language Models

PS-II Station : Jacobs Solutions India Pvt. Ltd., Hyderabad

Faculty

Name: Mahesh Kumar Hamirwasia .

Student

Name: CHIRANTANA(2024H1300036H)

Student Write-up

PS-II Project Title: Project 1 - Design of Roads and Infrastructure in Al-Sakhama (Qatar), Project 2- A66 Northern Trans-Pennine Project (UK)

Short Summary of work done during PS-II : During my internship, I worked on two road infrastructure projects: A66 Northern Trans-Pennine Project and Design of Roads and Infrastructure in Al Sakhama. The A66 project focused on upgrading an existing highway corridor in the UK by improving the road alignment, converting sections into a better dual carriageway standard, and developing elements such as horizontal alignment, vertical profile, superelevation, corridor modelling, and 3D visualization. The Al Sakhama project focused on urban road infrastructure development, where the work included surface creation from topographical survey data, road classification, typical cross-sections, 2D layout planning, geometric design, priority intersections, single-lane and two-lane roundabouts, visibility checks, sign boards, bus stop provision, and swept path analysis. Both projects helped me understand the complete road design workflow, starting from site data analysis to final 3D modelling. These projects also gave me practical exposure to Civil 3D, Vehicle Tracking, design codes, and real-world engineering decision-making. Overall, the work improved my technical understanding of road planning, safety checks, and infrastructure design.

Tool used (Development tools - H/w, S/w) : Civil 3D, Bentley Open Roads

Objectives of the project : Highway Upgradation and improve Transportation, to provide Better Transportation Infrastructure in Urban areas

Major Learning Outcomes : 1.Got familiar with international codes like Qatar Highway Design Manual, Design Manual for Roads and Bridges UK. 2. Gained expertise in industry standard software that is Civil 3D and Bentley Open-Roads. 3.Designed Priority Intersection, Roundabouts and Interchanges. 4.Developed Professional Communication, Teamwork, Accuracy in Design

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The office

environment was very supportive and encouraging. All the employees were very helpful throughout my internship. Whenever I had doubts, they guided me patiently and helped me understand the technical aspects in a better way.

Academic courses relevant to the project : Highway Geometric Design, Highway Construction Technology, Pavement Design, Transportation Economics, Road Asset Management

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Name: SHREYASH YASHPAL PATIL(2024H1300037H)

Student Write-up

PS-II Project Title: Design Pavement- Middle east , UK

Short Summary of work done during PS-II : Mostly I did the designing part of pavement not a live project its a demo project . Sometime work in live project but a very small part like maintenance and checking.

Tool used (Development tools - H/w, S/w) : Mostly Excel , related pavement design software (IITPAVE , CIRCLY , DAPS)

Objectives of the project : To findout the layer thicknesses of pavements

Major Learning Outcomes : Global projects

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The environment of the company are good and very friendly.

Academic courses relevant to the project : Pavement materials and design

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Name: KUNAL SHANKAR MAGDUM(2024H1300146H)

Student Write-up

PS-II Project Title: Pavement Design and Analysis Using IRC, DMRB, AASHTO & Airfield Pavement Design Standards

Short Summary of work done during PS-II : During my PS-II internship at Jacobs, I worked in the Transportation and Pavement Engineering team. I gained practical experience in the design and analysis of flexible, rigid, and airfield pavements using international design standards such as IRC, DMRB, AASHTO, and Austroads. I learned to use pavement design software including IITPAVE, KENPAVE, FAIRFIELD, and DAPS for pavement thickness design and structural analysis. I also worked on reviewing design inputs, including traffic loading, CBR, material properties, and layer configurations. Additionally, I supported automation tasks using Python and Excel, prepared technical documentation, and participated in project discussions and quality checks. This internship enhanced my understanding of pavement engineering principles, design procedures, and professional engineering practices.

Tool used (Development tools - H/w, S/w) : Microsoft Excel, Python, IITPAVE, KENPAVE, FAIRFIELD, DAPS, Microsoft Word, Microsoft PowerPoint

Objectives of the project : Learn flexible, rigid, and airfield pavement design. Apply IRC, DMRB, AASHTO, and Austroads design standards. Perform pavement analysis using engineering software. Understand pavement design inputs, outputs, and design checks.

Major Learning Outcomes : Gained practical experience in pavement design and analysis.
Learned to use IITPAVE, KENPAVE, FAIRFIELD, and DAPS software.
Understood IRC, DMRB, AASHTO, and Austroads pavement design procedures.
Improved technical, analytical, and professional communication skills.

Details of Papers/patents : No papers or patents were published during the internship.

Brief Description of working environment, expectations from the company : The working environment at Jacobs was professional, collaborative, and learning-oriented. I received guidance from experienced engineers and had opportunities to work on real-world pavement engineering projects. The company emphasized technical accuracy, adherence to international standards, teamwork, and timely project delivery. Regular discussions, knowledge-sharing sessions, and

constructive feedback helped me improve my technical and professional skills. The internship provided valuable exposure to industry practices, engineering software, and project workflows, strengthening my confidence in pavement design and analysis.

Academic courses relevant to the project : Pavement Engineering
Highway Engineering
Transportation Engineering
Traffic Engineering

PS-II Station : JioStar India Pvt. Ltd - Analytics SDK harmonization across all apps, Bengaluru

Faculty

Name: Pravin Yashwant Pawar .

Student

Name: ANDODARIYA HRIDAY NILESHBHAI(2022A7PS0113P)

Student Write-up

PS-II Project Title: AI Driven Resource Optimisation Framework for Databricks Jobs

Short Summary of work done during PS-II : During my internship at JioStar Pvt. Ltd., I designed and developed an AI-Driven Resource Optimization Framework to optimize the compute infrastructure for over 1,500 daily Data Platform workloads. To resolve the severe cloud budget waste caused by static over-provisioning and the pipeline crashes resulting from under-provisioning, I engineered an autonomous, multi-agent system using LangGraph. Because traditional linear LLM prompting failed due to context window saturation when processing dense, multi-day system telemetry, I implemented a safe data parsing pipeline that utilizes a binary search time-splitting algorithm. This architecture allows a data-analysis Sub-Agent to process massive log files in manageable time chunks and pass a rolling memory state to a Recommendation Orchestrator Agent. The Orchestrator autonomously

analyzes hardware utilization metrics, such as CPU bottlenecks and memory starvation, and maps them to optimal AWS EC2 instance families. To guarantee enterprise operational safety, the AI agents are restricted from modifying live environments directly; instead, all right-sizing recommendations and cost justifications are securely tracked via MLflow and saved into a central metastore. These insights are then surfaced on a dashboard for mandatory human-in-the-loop validation by engineering leads. Ultimately, this project successfully delivered a highly accurate, cost-efficient diagnostic tool—running at under $1 per job analysis—that systematically reduces cloud infrastructure costs and prevents production pipeline failures.

Tool used (Development tools - H/w, S/w) : On the software side, the framework was developed using Python, LangGraph for multi-agent state management, LangChain for LLM orchestration, and MLflow for execution and token tracking. Big data processing and telemetry ingestion relied heavily on Apache

Objectives of the project : The primary objective of this project was to design an autonomous, stateful agentic framework powered by LangGraph to systematically right-size compute resources for Databricks jobs. The system aims to automatically ingest and parse dense, multi-day job run telemetry without hitting LLM context window limitations. By deeply analyzing these compute metrics, the framework maximizes FinOps efficiency by downsizing over-provisioned resources while preventing job failures by expanding under-provisioned clusters. Additionally, it ensures absolute enterprise safety by utilizing a human-in-the-loop validation interface to prevent automated configuration changes from disrupting critical production data paths.

Major Learning Outcomes : Through this project, I gained hands-on expertise in designing stateful, multi-agent generative AI architectures using LangGraph and tracking their executions via MLflow. I developed strong competencies in Cloud FinOps and distributed computing by mastering AWS EC2 instance family classifications, Apache Spark SQL query optimization, and Databricks system telemetry. Furthermore, I learned to accurately diagnose complex enterprise infrastructure bottlenecks, such as data skewness and memory starvation, effectively bridging the gap between advanced LLM orchestrations and large-scale cloud resource management.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The working environment within the Data Platform team at JioStar Pvt. Ltd. was highly fast-paced, agile, and deeply tied to large-scale cloud infrastructure. Because full-time engineers managed intensive, heavy production workloads daily, the team was exceptionally busy, which naturally resulted in fewer direct

mentorship hours compared to what other teams gave to their interns and required a high degree of independent learning. Additionally, the internship project scope was not finalized early on; an initial project assignment was given to me which lacked the necessary technical depth, which fortunately prompted a pivot to this new project (AI-driven optimization framework). While the overarching company work culture was excellent and collaborative, this final project leaned heavily into Generative AI and stateful agentic architectures rather than core data platform engineering. Consequently, while the Data Platform team provided invaluable context regarding Databricks system telemetry, the project would have benefited from greater specialized guidance and smoother execution if it had been positioned under a dedicated AI or Machine Learning team. In terms of expectations, JioStar required a production-safe, cost-efficient solution capable of accurately analyzing infrastructure constraints for over 1,500 daily workloads. Navigating these initial planning shifts and the cross-disciplinary nature of the task ultimately enhanced my adaptability, allowing me to deliver a successful enterprise tool while fostering strong skills in self-reliant problem-solving.

Academic courses relevant to the project : Relevant academic courses that directly supported this project include Distributed Systems, Cloud Computing, and Database Management Systems, which provided the technical foundation for analyzing Apache Spark architectures and Databricks system tables. Ad

PS-II Station : JioStar India Pvt. Ltd - Contextual Ads in Live Linear Streams, Bengaluru

Faculty

Name: Pravin Yashwant Pawar .

Student

Name: KIRTHNA SURAG(2021B4A81817G)

Student Write-up

PS-II Project Title: Contextual Ads in Live Linear Streams

Short Summary of work done during PS-II : During my PS-II at JioStar, I designed a complex algorithm for automating the process of extraction of keywords from the scenes, created a GAM account and established means for the keywords to be sent to the GAM account for optimal choice of ads. I also designed a working JHS TV channel to test the working of our algorithm.

Tool used (Development tools - H/w, S/w) : Python, AWS, ML

Objectives of the project : To incorporate elements of the channel content into midroll ads in JHS TV for a more wholesome viewer experience

Major Learning Outcomes : During my PS-II at JioStar, I understood the end-to-end workflow of channel assembly in JHS TV, worked on the identification of important elements in a scene, design sophisticated algorithms for smart keyword extraction and efficient category mapping of the top keywords. These keywords were then incorporated into the ad selection algorithm. An additional learning outcome was the end-to-end process of creating a channel and incorporating this algorithm into the JHS TV workflow.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Very flexible working environment with work from home option. Extremely supportive and approachable superiors. Earned multiple opportunities to interact with full time employees across various teams.

Academic courses relevant to the project : Machine Learning, Natural Language Processing

PS-II Station : JioStar India Pvt. Ltd -Video Compositing, Bengaluru

Faculty

Name: Pravin Yashwant Pawar .

Student

Name: KOTHA SAI VARA PRASAD(2021B5A71541P)

Student Write-up

PS-II Project Title: Automation of Videocompositing using Blender

Short Summary of work done during PS-II : Developed a highly scalable, headless rendering engine that uses Python to orchestrate Blender and FFmpeg for automated video compositing. The system supports multi-shot sequences in both 2D and 2.5D modes, handling complex graphics tasks like OpenCV chroma-keying, dynamic lighting, procedural camera shake, and parallel rendering. On top of this engine, I built an autonomous AI agent capable of translating natural language prompts into valid JSON render specifications. The agent actively scans local file directories, renders visual preview frames, and auto-repairs its own code through a multi-iteration self-correction loop. Finally, I wrapped the entire architecture in a fully featured Gradio Web UI with real-time progress tracking, token-cost telemetry, and state management.

Tool used (Development tools - H/w, S/w) : Languages: Python 3.9+; Graphics and Media: Blender, FFmpeg; AI & LLMs: Google Gemini API; Frontend UI: Gradio

Objectives of the project : 1. Programmatic Video Generation, 2. Advanced Compositing using Blender, 3. AI driven automation, 4. Interactive UX

Major Learning Outcomes : Systems & Concurrency; Subprocess Lifecycle Management; Agentic AI Architecture; Computer Graphics Automation; Asynchronous UI Development

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The work environment is pretty flexible. The mentor is decently helpful and there is a lot of flexibility with the office timings and deadlines.

Academic courses relevant to the project : AI, NLP

PS-II Station : JioStar India Pvt. Ltd., Bengaluru

Faculty

Name: Pravin Yashwant Pawar .

Student

Name: TARUN SINGH .(2021B5AA3161H)

Student Write-up

PS-II Project Title: Code Quality Agent

Short Summary of work done during PS-II : Built a PR Reviewer to get the reviews of Developer PRs done by AI

Tool used (Development tools - H/w, S/w) : Python, Github Actions, Coralogix, Harness

Objectives of the project : Build a PR Reviewer to reduce the time to first Review

Major Learning Outcomes : Built the PR Reviewing infrastructure for Jiostar from scratch. Handling building, testing to deploying the tool on production and also acting as the sole oncall for the tool

Details of Papers/patents : None

Brief Description of working environment, expectations from the company :
Great company with a positive work environment. The team is supportive and professional. Overall, a very good experience. The organization is well-managed and employee-friendly.
Academic courses relevant to the project : OOPS

PS-II Station : JPMC - CIB Research & Analytics Program, Banking, Mumbai

Faculty

Name: Sidharth Mishra .

Student

Name: VIVEK MUDIREDDY .(2022AAPS0292H)

Student Write-up

PS-II Project Title: Investment Banking

Short Summary of work done during PS-II : I helped my team in preparing pitch-books which were used by the company higher-ups in their meetings with clients

Tool used (Development tools - H/w, S/w) : Excel, PowerPoint,

Objectives of the project : Understand the working of an investment bank and contribute in making valuable pitch-books helping executives in their meetings

Major Learning Outcomes : Excel, PowerPoint, Communication Skills and Finance

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Very supportive and motivating. All they expect is that we have the drive to learn and ability to grasp.

Academic courses relevant to the project : Business Analysis and Valuation (BAV) & Financial Management (FM)

Name: M SASHANK SOORYA .(2022A7PS0049H)

Student Write-up

PS-II Project Title: CIB R&A Banking

Short Summary of work done during PS-II : Primary responsibilities include constructing foundational valuation frameworks, such as public market comparables and discounted cash flow models, as well as conducting rigorous sector research. Utilizing institutional data sources, analysts synthesize complex financial information into structured pitchbooks and client presentations for upcoming mergers and acquisitions or capital markets transactions. This position demands exceptional quantitative accuracy to efficiently transform raw market intelligence into actionable, boardroom-ready insights under tight deadlines.

Tool used (Development tools - H/w, S/w) : PPT, Excel, In-house softwares

Objectives of the project : Investment Banking Centralized Research Group

Major Learning Outcomes : Experience in the Sell side support team

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The work environment is fast-paced and involves a heavy workflow with tight deadlines. However, it provides a great learning experience alongside a highly supportive and collaborative team.

Academic courses relevant to the project : FoFA, FM, BAV

Name: ATHARVA BHANDAKKAR(2022A1PS0929G)

Student Write-up

PS-II Project Title: IB- Junior Analyst Intern

Short Summary of work done during PS-II : During my internship at JPMorgan Chase & Co. (Commercial & Investment Banking – Research & Analytics, EPRM Team), I worked on a diverse range of research and analytical assignments supporting investment banking and corporate banking

teams across the APAC region. My responsibilities included conducting industry and market research, preparing company and investor profiles, performing peer benchmarking and competitive analysis, tracking sector trends, and developing insights across the energy, power, renewables, metals, and mining sectors. I contributed to client-facing presentations, strategic marketing materials, and internal research deliverables while strengthening my understanding of valuation methodologies, M&A transactions, and capital markets. As a culmination of my internship, I developed a comprehensive sell-side pitch, incorporating company analysis, investment rationale, market positioning, valuation, and strategic recommendations.

Tool used (Development tools - H/w, S/w) : Microsoft Excel, Powerpoint, internal software tools

Objectives of the project : Get an idea of the working of Investment Banking division (Research & Analysis).Create/edit presentation decks. Help with research work for the team

Major Learning Outcomes : Communication skills, technical skills(Excel,Powerpoint), financial analysis, working on high-stake and high priority deals

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : -

Academic courses relevant to the project : Finane minor courses

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Name: TANISH RATH .(2022A4PS1661H)

Student Write-up

PS-II Project Title: Sellside Pitch for PUMA SE

Short Summary of work done during PS-II : I was staffed on various tasks during my 6 month-tenure at JPMorgan. I assisted my team members with several products that we used to send at regular intervals. Apart from that, I also took up several ad-hoc tasks that were sent to my seniors by bankers sitting in different locations in the APAC (Asia Pacific) region. Finally, the project we were evaluated on involved creating a sample sell-side pitch for a certain company.

Tool used (Development tools - H/w, S/w) : Factset, Excel, PowerPoint, Refinitiv Eikon

Objectives of the project : To create a sample sell-side pitch for a certain company.

Major Learning Outcomes : Learnt advanced Excel and PowerPoint, got a glance at what finance professionals have to go through on a daily basis and what their work primarily revolves around. Got a first-hand experience of using popular finance databases and tools.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : JPMorgan expects its interns to grasp the tasks assigned to them quickly and smartly. Moreover, all the interns are also expected to be diligent, putting in a great deal of effort and hard work, without being burned out. The working environment was pretty calm and composed, with everybody going around their asks calmly, as opposed to the usual images of stressed out people hustling to meet deadlines, that are usually associated with top investment banks.

Academic courses relevant to the project : FoFA, DRM, BAV, SAPM, FM, FRAM

Name: VINAYAK SRIVASTAVA(2021B1AA2313P)

Student Write-up

PS-II Project Title: NA

Short Summary of work done during PS-II : Prepared Pitchbooks for marketing purposes

Tool used (Development tools - H/w, S/w) : Excel Powerpoint

Objectives of the project : Pitchbook preparation

Major Learning Outcomes : Understood the basics of Investment Banking

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Extremely rigorous.

Academic courses relevant to the project : SAPM, FundaFin

Name: AYUSH SINGH(2022AAPS0222P)

Student Write-up

PS-II Project Title: NA

Short Summary of work done during PS-II :

Tool used (Development tools - H/w, S/w) : Excel, Powerpoint, Eikon, FactSet, PitchPro, Bloomberg

Objectives of the project : To understand how Investment Banking works and contribute meaningfully to the team

Major Learning Outcomes : Financial research, benchmarking, deck building, bloomberg terminal

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : It was fair. Environment was fair enough.

Academic courses relevant to the project : NA

Name: DIYA GHARIA(2022A1PS0843G)

Student Write-up

PS-II Project Title: CIB R&A - Banking Intern

Short Summary of work done during PS-II : Worked on strategy decks, M&A deals, attended client calls to understand the company's business and requirements. Supported research on potential prospects across different industries and countries. Analysed financial statements and also helped the team with latest market news/company updates

Tool used (Development tools - H/w, S/w) : Excel, powerpoint, factiva, factset

Objectives of the project : To support the firm's line of business by working for the front end bankers by collecting and collating information on clients/prospects

Major Learning Outcomes : - Working across various industries and understanding businesses/client requirements
- Meeting tough deadlines and maintaining accuracy/efficiency
- Collaborating with professionals across several countries

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The team has a collaborative environment. They encourage learning and appreciate sincerity/dedication in work. Asking questions and completing multiple task in the way to go.

Academic courses relevant to the project : Fundamentals of finance and accounting, Financial management, Business analysis valuation

PS-II Station : JPMC - Data Science Analyst Program, Mumbai

Faculty

Name: Sandeep Kayastha .

Student

Name: VIKRAM HARIHARAN(2022A7PS0013P)

Student Write-up

PS-II Project Title: Data Science Analyst

Short Summary of work done during PS-II : Work involving improving systems, efficiency, accuracy and processes for prime financial services and post trade technology.

Tool used (Development tools - H/w, S/w) : Python, Java, Maven

Objectives of the project : Reduction of run times, improving correctness, efficiency and accuracy of existing processes and workflows

Major Learning Outcomes : Python, agentic AI, multi tasking, presentation skills.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Excellent and highly professional work environment
Top tier office and good perks such as transport
Food is not free but highly subsidized.
Excellent infrastructure
Good work life balance
Flexible timings

Academic courses relevant to the project : Design and analysis of algorithms
Object oriented programming
Introduction to LLMs
Foundations of data science

Name: JEERU HARSHITH REDDY .(2022A7PS0233H)

Student Write-up

PS-II Project Title: Financial Statement Automation, Anomaly Detection and Cloud Infrastructure Upskilling

Short Summary of work done during PS-II : During PS-II at JP Morgan Chase, I worked across three major areas: financial statement automation, machine learning, and cloud infrastructure. In the AutoFS project, I contributed to an Agentic AI framework designed to automate the processing of financial statements and generation of trial balance summaries. A major contribution involved replacing repeated LLM-based extraction workflows with a recursive traversal and fuzzy matching approach that leveraged the structured nature of JSON data. The project was also migrated into the SmartSDK framework and maintained with high automated test coverage. In parallel, I worked on an anomaly detection project involving machine learning and deep learning techniques such as CatBoost, Deep Neural Networks, and Variational Autoencoders. Activities included feature importance analysis using SHAP, data augmentation, and model experimentation for multi-label classification tasks. Additionally, I pursued infrastructure upskilling through Docker, Kubernetes, and KIND, gaining exposure to modern cloud-native deployment concepts. The internship provided practical experience in software engineering, machine learning workflows, enterprise development practices, and distributed systems.

Tool used (Development tools - H/w, S/w) : Python, SmartSDK, Git, GitHub Enterprise, PyTest, MLFlow, CatBoost, TensorFlow, SHAP, Jupyter Notebook, Docker, Kubernetes, KIND, Linux, Visual Studio Code

Objectives of the project : • Contribute to the development of an Agentic AI framework for financial statement processing and trial balance generation. • Explore machine learning techniques for anomaly detection and multi-label classification. • Develop foundational knowledge in containerization and orchestration technologies. • Gain exposure to enterprise software engineering practices and large-scale system development.

Major Learning Outcomes : • Understanding of enterprise software development workflows.
• Experience with Agentic AI system design and intelligent document processing.
• Practical exposure to machine learning experimentation and explainable AI.
• Knowledge of containerization and orchestration technologies.
• Improved problem-solving, collaboration, and technical communication skills.

Details of Papers/patents : https://arxiv.org/abs/2512.14982 - Utilized Prompt Repeat for improving non-reasoning LLMs

Brief Description of working environment, expectations from the company : The main take away is that they encourage raising your hand when you do not know about something and always take it slow and steady. No need to rush. I have learnt a lot more by admitting that I do not know about something. There is no shame in it. People are also willing to teach and explain a lot of stuff to you.

Academic courses relevant to the project : Object Oriented Programming, Data Structures and Algorithms, Database Systems, Machine Learning, Artificial Intelligence, Software Engineering, Operating Systems, Computer Networks, Probability and Statistics

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Name: ASHISH GOEL(2022A7PS0009P)

Student Write-up

PS-II Project Title: RSC ASSIGNMENT AUTOMATION

Short Summary of work done during PS-II : During my PS-II internship at JPMorgan Chase & Co., I worked on the RSC Assignment Automation project. RSC code assignment is an important counterparty classification process where analysts review regulatory documents, company disclosures, websites, and other evidence sources to assign the correct classification code used in downstream risk and valuation workflows. The existing process was manual, time-consuming, and had a large backlog, so the objective was to build an automated AI-assisted solution. I redesigned the earlier banking-sector prototype into a modular Python-based pipeline and expanded it across multiple sectors, including banking, investment entities, non-financial corporates, and government-related classifications. The system collected and processed documents through web scraping, parsing, text extraction, cleaning, chunking, and structured preparation. It then used JPMC's internal LLM platform to summarize evidence, answer guideline-based questions, and generate RSC recommendations in a controlled and explainable format. A major contribution was improving the solution accuracy from the initial baseline to around 98% through better document preprocessing, prompt engineering, structured output validation, sector-specific logic, and iterative error analysis. I also created a benchmarking and accuracy measurement framework to evaluate every run of the RSC

program by comparing generated assignments against validated references and categorizing errors. Additionally, I worked on dashboarding and automation assignments using tools such as Alteryx and Databricks, including a tracker for financial adjustment statuses and exception monitoring.

Tool used (Development tools - H/w, S/w) : Hardware: Company-provided laptop/workstation and standard enterprise development environment. Software and Development Tools: Python, Jupyter Notebook / IDE-based development environment, Git / version control, internal JPMC LLM platform / LLMSuite API,

Objectives of the project : The objective of the project was to automate and improve the RSC code assignment workflow for counterparties by building a scalable, accurate, and explainable AI-assisted system. The existing process required analysts to manually review regulatory documents, company websites, public disclosures, and news sources to answer detailed guideline-based questions before assigning an RSC code. The project aimed to reduce manual effort, improve assignment consistency, and increase accuracy by developing an end-to-end pipeline for document acquisition, parsing, text extraction, LLM-based reasoning, structured response generation, and final RSC recommendation. Another objective was to expand the solution from the initial banking-sector prototype to multiple counterparty sectors such as investing entities, non-financial corporates, government-related entities, and other relevant classifications. A further objective was to redesign the earlier solution into a modular codebase and create a benchmarking framework to evaluate the accuracy and reliability of every run of the RSC automation program.

Major Learning Outcomes : During PS-II, I gained significant exposure to building AI-driven enterprise solutions in a regulated financial environment. I learned how regulatory and business rules can be converted from unstructured policy language into structured decision logic for automation. I developed a deeper understanding of document intelligence workflows, including web scraping, PDF parsing, text extraction, cleaning, normalization, chunking, and structured data preparation. I also learned how to work with enterprise LLM platforms through controlled prompts, schema-based outputs, evidence-grounded reasoning, and response validation. A major learning outcome was understanding that LLM applications in financial services require more than just prompting; they require reliable data pipelines, strong controls, auditability, explainability, and measurable performance. I also learned how to design modular codebases, handle API-based workflows, implement run-level benchmarking, track accuracy, and perform error analysis. Apart from technical learning, the internship helped me understand stakeholder communication, business ownership, production-readiness, and the importance of building solutions that are reliable, explainable, and usable by business teams.

Details of Papers/patents : No papers or patents were filed as part of this internship. The work was carried out as an internal enterprise automation and analytics project for JPMorgan Chase & Co. The project involved applied development, experimentation, benchmarking, and documenta

Brief Description of working environment, expectations from the company : The working environment at JPMorgan Chase & Co. was professional, structured, and highly learning-oriented. Since the project was in the financial services domain, there was strong emphasis on accuracy, reliability, documentation, confidentiality, and explainability. The team expected interns to understand the business context behind the technical problem rather than treating it only as a coding assignment. I was expected to work independently, learn new tools quickly, communicate progress clearly, and ensure that the solution was practical for business usage.

The project involved interaction with both technical and domain-oriented aspects. I had to understand how RSC code assignment affects downstream risk and valuation workflows, and then translate that understanding into a modular automation pipeline. Regular feedback helped me improve the design, prompts, validation logic, and presentation of results. The environment encouraged problem-solving, ownership, structured thinking, and attention to detail. I also learned the importance of writing maintainable code and building systems that can be reviewed, tested, and improved iteratively. Overall, the company environment gave me valuable exposure to how data science, Generative AI, and automation are applied in a large financial institution where business impact and control are equally important.

Academic courses relevant to the project : Data Structures and Algorithms
Database Systems
Object Oriented Programming
Operating Systems
Computer Networks
Artificial Intelligence
Machine Learning
Natural Language Processing
Information Retrieval
Software Engineering
Probability and Statistics

Name: SAYANTAN BERA(2021B4AA1828G)

Student Write-up

PS-II Project Title: Enterprise AI Systems for Information Retrieval, Entity Extraction and Compliance Automation

Short Summary of work done during PS-II : The internship involved two major AI-focused projects within the Asset & Wealth Management LOB of JPMorganChase. The first project focused on enabling natural language querying of Excel datasets. Traditional RAG systems were found to be ineffective on spreadsheets due to unknown schemas, merged cells, and structural dependencies. To address these issues, an XML-based preprocessing and chunking framework was developed to preserve spreadsheet structure and improve retrieval quality. The second and primary project, Watchtower, focused on compliance automation using Large Language Models and agentic workflows. The objective was to analyze communication records and assist compliance reviewers by extracting entities such as stock names, transaction dates, organizations, and indicators related to Material Non-Public Information (MNPI). Initial experimentation was performed using Google's LangExtract framework, followed by the development of customized workflows using Agent Studio. These workflows were optimized through prompt engineering, validation mechanisms, and iterative testing. Finally, the workflows were deployed as reusable endpoints using Smart SDK. The internship provided exposure to the complete lifecycle of enterprise AI development, including experimentation, implementation, evaluation, and deployment.

Tool used (Development tools - H/w, S/w) : Python, GPT Models, Claude Models, Agent Studio, Smart SDK, LangExtract, XML Processing Libraries, Git, Enterprise AI Platforms, Microsoft Excel

Objectives of the project : To develop AI-powered solutions for enterprise information retrieval and compliance automation. The work involved enabling natural language querying of structured Excel datasets using Retrieval-Augmented Generation techniques and building agentic workflows for extracting compliance-relevant information from communication records. The objective was to improve information accessibility, reduce manual effort, and automate portions of compliance review processes.

Major Learning Outcomes : Gained practical experience in developing enterprise AI solutions using Large Language Models. Learned Retrieval-Augmented Generation techniques, prompt engineering, XML-based preprocessing, information extraction, workflow orchestration, and endpoint deployment. Developed an understanding of compliance automation workflows, enterprise AI deployment

practices, and challenges associated with reliability and scalability of AI systems in regulated environments.

Details of Papers/patents : No papers or patents were published as part of the internship.

Brief Description of working environment, expectations from the company : JPMorganChase provided a highly collaborative and professional work environment focused on innovation and practical problem solving. Team members were approachable and encouraged active participation in technical discussions. The organization emphasized ownership, continuous learning, and high-quality engineering practices. Throughout the internship, opportunities were provided to work on real-world business problems involving Artificial Intelligence and compliance automation. Regular interactions with mentors and team members helped in understanding both technical and business aspects of the projects. The work culture promoted experimentation while maintaining a strong focus on reliability, scalability, and enterprise standards. Expectations from interns included proactive learning, effective communication, problem-solving ability, and consistent progress toward project goals.

Academic courses relevant to the project : Machine Learning, Probability and Statistics, Artificial Intelligence

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Name: SURYABHA MUKHOPADHYAY .(2022A7PS0166H)

Student Write-up

PS-II Project Title: MUNICIPAL BOND ANALYSIS, FORECASTING, VENDOR ANALYTICS, AND ENHANCING QUANTITATIVE WORKFLOWS

Short Summary of work done during PS-II : I completed my Practice School-II at JPMorgan Chase & Co., Bengaluru, working as a Data Science Analyst Intern in the Valuations Control Group. My work centered on Municipal Bond analytics, including building an end-to-end pipeline for benchmarking and forecasting vendor prices against MMD curves, and a multi-factor comparable pricing model to identify peer bonds. I also built an interactive Muni analytics dashboard, an Excel-Databricks reconciliation tool, and a Prudential Valuation backtesting framework. In the latter half of the internship, I developed an LLM-powered dataset reconciliation assistant to accelerate the firm's Databricks migration, an automated daily vendor challenge system flagging mispriced bonds, and a cross-product Vendor Suite

featuring price variance dashboards and multi-method outlier detection (z-scores, drift, staleness). The internship gave me rich exposure to quantitative finance, data engineering, and applied AI in a regulatory setting.

Tool used (Development tools - H/w, S/w) : Databricks, Pyspark, Sigma COmputing

Objectives of the project : To automate and streamline the valuation and backtesting processes of my organisation

Major Learning Outcomes : To build reliable data pipelines and visualise them to enhance business insights and decision making

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment was nice, expectations and deadlines were modest and reasonable. Most people are helpful and respond except if they are swamped with work. However since I interned as a tech guy trying to integrate tech in a very fin-oriented team there was a lot of issue with accesses to necessary/market tools and a tech -ecosystem and the necessary review processes were lacking a bit

Academic courses relevant to the project : Fundamentals of Finance And Accounting, Derivatives and Risk Management

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Name: VANSH AGARWAL(2022A7PS1273G)

Student Write-up

PS-II Project Title: Financial Data Automation and Analytics

Short Summary of work done during PS-II : During my Practice School-II internship at J.P. Morgan Chase & Co., I worked within the Valuation Control Group (VCG) Analytics team on four major projects focused on financial data automation and analytics. The first project involved developing an OCR-based pipeline to extract and normalize information from scanned broker chat logs, enabling

structured data generation and audit traceability. The second project focused on building a multi-agent LLM orchestration framework to automate the migration of legacy Alteryx workflows into PySpark code using Generative AI techniques. The third project automated the semi-annual backtesting threshold calculation process for Currencies and Emerging Markets (CEM) across LATAM, EMEA, and Asia regions by integrating Reuters, Bloomberg, and internal static data sources while implementing proxy logic and a user-friendly interface. The fourth project involved designing an intelligent framework for Silver schema optimization within a Medallion Architecture, automatically identifying redundant and low-value columns to improve downstream analytics and data governance. Collectively, these projects enhanced operational efficiency, reduced manual effort, improved data quality, and strengthened the organization's analytical capabilities through the application of modern data engineering and AI-driven solutions.

Tool used (Development tools - H/w, S/w) : LLM Suite, Excel, Jupyter Notebook, Alteryx, Databricks

Objectives of the project : The primary objective of the project was to develop intelligent and scalable automation solutions for financial data processing, workflow modernization, analytics, and data architecture optimization within the Valuation Control Group (VCG) at J.P. Morgan Chase & Co. The work focused on reducing manual effort, improving data quality, enhancing auditability, and leveraging modern technologies such as Generative AI, OCR, cloud data engineering, and workflow automation to streamline critical business processes.

Major Learning Outcomes : Developed practical expertise in financial data engineering and enterprise-scale automation.
Gained hands-on experience in OCR-based data extraction and unstructured data processing.
Learned how Large Language Models and multi-agent systems can be leveraged for workflow modernization.
Enhanced understanding of financial market data, valuation control processes, and regulatory requirements.
Acquired knowledge of cloud-native data architectures and Medallion Architecture concepts.
Improved software engineering skills involving system design, API integration, UI development, and data validation frameworks.
Strengthened problem-solving, stakeholder communication, and project management skills in a corporate environment.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The internship was

conducted within the Valuation Control Group (VCG) Analytics team at J.P. Morgan Chase & Co., Mumbai. The working environment was highly collaborative, technology-driven, and focused on solving real-world business problems using modern engineering practices. Team members regularly interacted with stakeholders across analytics, valuation control, and technology functions, enabling exposure to both technical and business aspects of financial services. The organization emphasized code quality, data governance, documentation, compliance, and continuous learning. Employees were encouraged to take ownership of projects while receiving guidance from experienced mentors and senior professionals.

My expectation from the company was to gain practical exposure to enterprise-scale software development and data engineering in the financial services industry. I also aimed to understand how advanced technologies such as Artificial Intelligence, cloud computing, and analytics are applied to solve real business challenges. The internship exceeded these expectations by providing opportunities to work on production-oriented projects, interact with industry experts, and contribute to initiatives that had measurable business impact. The experience significantly enhanced my technical capabilities while helping me understand professional work ethics, stakeholder management, and large-scale project execution.

Academic courses relevant to the project : OOP, ML, DBMS

Name: NAZIM AHMED .(2022A7PS0125P)

Student Write-up

PS-II Project Title: Enterprise Data Analytics and Reporting Solutions for Workforce, Expense and Financial Data Management in Commercial & Investment Banking

Short Summary of work done during PS-II : During my Practice School-II internship at JPMorgan Chase as a Data Science Analyst Intern in the Commercial & Investment Banking (CIB) division, I worked on multiple data analytics and reporting initiatives supporting business planning and decision-making. My work primarily involved developing and enhancing enterprise data products and reporting solutions using Databricks, PySpark, SQL, and Python. One of the key projects focused on standardizing workforce data through business role classification to improve consistency in headcount reporting. I also worked on consolidating Travel and Entertainment (T&E) data from multiple sources into a unified analytical view, enabling streamlined reporting and improved data accessibility.

Additionally, I contributed to the development of a metrics view derived from an OLAP cube-based data product to facilitate easier consumption of business metrics for reporting and analysis. Throughout the internship, I collaborated with stakeholders across multiple business functions, participated in requirement gathering and solution design discussions, and developed data processing pipelines and reporting frameworks. The experience provided valuable exposure to large-scale data engineering, enterprise reporting systems, financial analytics, and cross-functional collaboration within a global financial institution.

Tool used (Development tools - H/w, S/w) : Databricks , Sigma , SAP

Objectives of the project : To leverage data engineering and analytics techniques to enhance workforce reporting, expense analytics, and business intelligence capabilities.

Major Learning Outcomes : Databricks, Python, SQL

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : JPMorgan Chase provided a highly professional, collaborative, and learning-oriented work environment. As part of the Global Finance & Business Management (GF&BM) team within the Commercial & Investment Banking (CIB) division, I worked closely with team members and stakeholders across multiple locations, including Mumbai and Brooklyn. The company encouraged ownership, problem-solving, and effective communication while maintaining high standards for quality and accuracy. Expectations included understanding business requirements, delivering scalable data-driven solutions, collaborating with cross-functional teams, and continuously learning new technologies and domain concepts. The environment fostered both technical growth and professional development.

Academic courses relevant to the project : Database Mangement , Data Structures , Machine Learning

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Name: HRIDAY NITIN GADIA(2021B4AA2794H)

Student Write-up

PS-II Project Title: Data Science Analyst Internship

Short Summary of work done during PS-II : Utilizing Data Science techniques we had to manipulate and model data to introduce new attributes and represent data in multiple hierarchies. The work itself is dependent on the team in which you are placed.

Tool used (Development tools - H/w, S/w) : Databricks, Python, SQL

Objectives of the project : The goal of this internship was to place the students in various departments and have them integrate and work on projects related to Data Science

Major Learning Outcomes : Corporate Working Culture, Project Management, Data Science

Details of Papers/patents : nil

Brief Description of working environment, expectations from the company : You are treated as an employee of JPMChase and are expected to follow the rules and responsibilities associated with the same.

Academic courses relevant to the project : Data Mining, Database Management Systems

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Name: KETAV CHIRAG SHAH(2022A7PS1265G)

Student Write-up

PS-II Project Title: Data Science Intern

Short Summary of work done during PS-II : During my internship at J.P. Morgan Chase & Co. within the Valuation Control division, I worked on multiple analytical, valuation monitoring, and enterprise data engineering projects focused on improving transparency, scalability, and operational efficiency within financial control workflows. My work included the development of the CRED Dashboard, a centralized analytical platform for monitoring risk, charge, and threshold-related metrics for non-linear rates instruments using Databricks, PySpark, SQL, and Sigma Computing. I also developed the UT Analyzer, an automated tool for identifying spreadsheet-related operational risks

such as stale data, broken references, hard-coded values, and external dependencies across approximately 4,000 user tools. In addition, I worked on a Swaps Independent Price Valuation (IPV) Dashboard involving swap valuation methodologies, full revaluation analysis, risk-based valuation monitoring, and pricing comparison using TOTEM market data. Statistical and machine learning techniques were further explored for outlier and rejected pricing analysis. Another major project involved developing a firmwide Databricks Data Management Utility to automate dataset onboarding, API-based authentication, CRUD operations, data validation, and table management workflows within enterprise Databricks environments through a centralized hosted interface. Overall, the internship provided exposure to financial analytics, enterprise-scale data engineering, dashboard development, workflow automation, distributed data processing, and valuation monitoring systems within a large-scale financial environment.

Tool used (Development tools - H/w, S/w) : Databricks, Python

Objectives of the project : To automate and maintain stuff related to my team

Major Learning Outcomes : Data science, python

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Good working environment with deadlines, and expectations for a more analytical person

Academic courses relevant to the project : OOPS, DBMS

Name: SIMRAN SINGH .(2022A7PS0003H)

Student Write-up

PS-II Project Title: Technical Assignments and Contributions during internship (Not a single project, multiple assignments)

Short Summary of work done during PS-II : The PS-II internship experience consisted of multiple assignments where each project focused on improving efficiency of tasks within the JPMC workflow

through reduction of repetitive tasks by intelligent solutions, software reliability, and improved document processing efficiency. Some of these also focused on building new products to make the current process more efficient and introduce a seamless process for the customers. The tasks ranged from leveraging generative AI capabilities to consolidate data for effective case resolution in case of ACH investigations. I also contributed in codebase validation and testing of existing code to ensure better code coverage and resolution of errors. I got to work on developing better user friendly solutions for documents processing in domains like trade using rule based consistency and scrutiny checks across documents. I got opportunity of working with other team to develop certain solutions for them to help with the manual efforts for Quality Check and case resolution of backlog cases. For this I used customized use cases and explainable prompting along with rule based processing. I also got an opportunity to be part of an ongoing large scale project for development of straight through processing of certain use cases in ASIA region. These required cross team collaboration to replicate existing flows by data fetch from multiple platforms like databricks and then processing them at a single stage for errors before actually sending for setups.

Tool used (Development tools - H/w, S/w) : Python, Databricks, Agent Studio

Objectives of the project : Leverage Generative AI capabilities to increase efficiency in project outcomes. Help in shifting manual effort from less valuable tasks like typing in information to more cognitive tasks like case resolution.

Major Learning Outcomes : Explored fields of Generative AI and rule based processing, Prompt engineering, Solutioning designs, Business Logic exposure

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The PS-II internship experience consisted of multiple assignments where each project focused on improving efficiency of tasks within the JPMC workflow through reduction of repetitive tasks by intelligent solutions, software reliability, and improved document processing efficiency. Some of these also focused on building new products to make the current process more efficient and introduce a seamless process for the customers.

The tasks ranged from leveraging generative AI capabilities to consolidate data for effective case resolution in case of ACH investigations. I also contributed in codebase validation and testing of existing code to ensure better code coverage and resolution of errors. I got to work on developing better user friendly solutions for documents processing in domains like trade using rule based

consistency and scrutiny checks across documents. I got opportunity of working with other team to develop certain solutions for them to help with the manual efforts for Quality Check and case resolution of backlog cases. For this I used customized use cases and explainable prompting along with rule based processing. I also got an opportunity to be part of an ongoing large scale project for development of straight through processing of certain use cases in ASIA region. These required cross team collaboration to replicate existing flows by data fetch from multiple platforms like databricks and then processing them at a single stage for errors before actually sending for setups.

Academic courses relevant to the project : Machine Learning, Artificial Intelligence

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Name: BHUPATHIRAJU VISHAL VARMA .(2022A7PS0174H)

Student Write-up

PS-II Project Title: CLIENTASSIST- Offramp feature and Long Term Memory

Short Summary of work done during PS-II : During my PS-II at JPMorgan Chase & Co., I worked on an enterprise conversational AI platform within the Asset and Wealth Management division. My contributions included developing and enhancing AI-powered workflows, implementing production features, and supporting platform evolution. One of my key contributions was the development and deployment of a production feature that improved existing platform functionality. I also worked extensively on a long-term memory system for the conversational assistant, enabling retrieval and utilization of information from previous conversations. This involved designing memory retrieval workflows, prompt engineering, query classification, testing, and debugging multi-stage AI pipelines. Additionally, I contributed to the migration of memory functionality into a skill-based architecture, integrated external APIs such as Global Connect, and participated in discussions related to future memory architecture and platform design. Throughout the internship, I performed testing, documentation, debugging, and system analysis across multiple components of the platform. The internship provided hands-on experience with enterprise-scale AI systems, agile software development, production deployments, prompt engineering, and end-to-end system understanding.

Tool used (Development tools - H/w, S/w) : Git GitHub / Internal Git repositories Jira Confluence Visual Studio Code Swagger/OpenAPI Browser Developer Tools Python FastAPI Large Language Models (LLMs) Microsoft Teams Enterprise Cloud/Development Environments

Objectives of the project : Develop and enhance an enterprise conversational AI platform. Implement long-term memory capabilities for AI assistants. Improve conversational intelligence through prompt engineering and tool integration. Contribute to production-ready AI features and platform enhancements.

Major Learning Outcomes : Enterprise software development practices
LLM application development
Prompt engineering and evaluation
End-to-end debugging
Agile development workflows
API integration and testing
Production deployment processes
System design and architecture discussion

Details of Papers/patents : Nil / Not Applicable

Brief Description of working environment, expectations from the company : The working environment at JPMorgan Chase was highly collaborative and professional. The team followed agile development practices involving sprint planning, stand-ups, Jira-based task management, code reviews, testing, and documentation. Team members regularly collaborated through technical discussions, design reviews, and knowledge-sharing sessions.
Interns were treated as contributing members of the team and were expected to take ownership of assigned tasks, communicate progress effectively, and continuously learn new technologies and business workflows. The organization emphasized quality, security, compliance, and production readiness in all engineering activities.
The internship provided opportunities to work on real-world AI systems, interact with experienced engineers and managers, and gain exposure to enterprise-scale software development processes.

Academic courses relevant to the project : Object Oriented Programming
Data Structures and Algorithms
Database Systems
Operating Systems
Computer Networks
Software Engineering
Machine Learning

Artificial Intelligence

Natural Language Processing

Name: KESHAV CHOUDHARY .(2022A7PS0031H)

Student Write-up

PS-II Project Title: Onboarding Procedures Assistant

Short Summary of work done during PS-II : During my Practice School-II at JP Morgan Chase, I worked on the development of an AI-powered Onboarding Procedures Assistant aimed at helping onboarding agents efficiently access information from large collections of procedural and compliance documents. The project involved designing and evaluating Retrieval-Augmented Generation (RAG) systems for enterprise knowledge management. I developed two versions of the solution: a LangGraph-based deterministic RAG pipeline and a ReAct-based agentic orchestrator capable of multi-step reasoning and dynamic tool usage. I implemented a document ingestion pipeline that parsed documents from multiple formats, generated embeddings, and indexed them in OpenSearch for hybrid retrieval using BM25 and vector search. A significant part of my work focused on metadata generation and enrichment. This included extracting product types and other business-relevant attributes, generating document summaries, creating representative user queries, and performing link analysis to identify relationships between procedures. These enhancements improved retrieval quality and enabled better navigation across related documents. I also integrated observability and evaluation frameworks using Arize Phoenix to monitor retrieval quality, latency, grounding, and hallucination rates. Comparative evaluation demonstrated that the agentic architecture substantially improved performance on complex multi-hop queries while maintaining strong accuracy on simpler queries. Through this project, I gained practical experience in Agentic AI, Retrieval-Augmented Generation, OpenSearch, prompt engineering, LLM evaluation, and enterprise-scale AI system design within a regulated financial services environment.

Tool used (Development tools - H/w, S/w) : VS Code , Langgraph , Python , LangChain , Arize Phoenix , Opensearch , AWS

Objectives of the project : Build an AI-powered onboarding procedures assistant using RAG. Enable accurate retrieval from heterogeneous enterprise documents. Support both simple lookup

and complex multi-hop reasoning queries.

Major Learning Outcomes : Customer onboarding workflows
KYC, AML, and compliance processes
Enterprise knowledge management systems
Financial services documentation practices

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at JP Morgan Chase was highly supportive, collaborative, and conducive to learning. Team members and mentors were approachable and provided valuable guidance whenever required. The organization maintained a healthy work-life balance while offering opportunities to work on meaningful projects and gain exposure to real-world industry practices.

Academic courses relevant to the project : Machine Learning , DBMS , OOPS ,

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Name: AVISHI HANS(2021B2A70921P)

Student Write-up

PS-II Project Title: Data Science Analyst Intern

Short Summary of work done during PS-II : Work majorly involved data modelling and data automation. The role intially was presented as a ML engineer role but work majorly involved managing data through sql and databricks tables and views. Creating views to automate reports, making firwide level attributes to simply reportings etc.

Tool used (Development tools - H/w, S/w) : Mostly Databricks(SQL,Python-Pyspark)

Objectives of the project : Automating Business Reportings, Creating firmwide level Business Role Mapping

Major Learning Outcomes : Better understanding of the medallion architecture and how it is used in large firms, sql, python

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The team was supportive, kind and helpful. Major expecation gap was in terms of the work promised in JD and work offered at the org. Not much to learn in terms of the scope of work, especially in terms of technical skills.

Academic courses relevant to the project : DBMS

Name: NIKHILESH BALLA .(2022A7PS0040H)

Student Write-up

PS-II Project Title: Alteryx to Python Conversion

Short Summary of work done during PS-II : As a Data Science Analyst Intern in the Global Banking Strategy and Business Intelligence team, I focused on modernizing data infrastructure, ensuring data integrity, and automating reporting pipelines for the Innovation Economy (IE) division. My technical contributions included optimizing unoptimized, dual-call LLM API categorization pipelines into a high-efficiency, single-call architecture that enforces strict JSON schemas, drastically reducing network latency. To address data completeness issues in the Commercial Real Estate (CRE) view, I built a multi-tiered validation framework and re-architected the underlying dataset logic in Databricks using custom composite-key partitioning to prevent transaction omissions caused by recycled source IDs. Additionally, I led a major infrastructure initiative migrating monolithic, cluttered Alteryx workflows into a modular Python framework deployed on Databricks cloud clusters. This transition introduced a scalable "Skeleton-Core" design pattern, automated email alerting systems for immediate error visibility, and established a hands-free monthly dashboard refresh cycle. Finally, I designed an iterative 20% random sampling quality control loop that successfully audited and eliminated algorithmic hallucinations from AI-generated client reports, preserving the firm's strict data accuracy standards.

Tool used (Development tools - H/w, S/w) : Alteryx, Python, Databricks, SQL, Excel, Presentation, Tableau

Objectives of the project : Save manual time consumed during monthly refresh of payments data

Major Learning Outcomes : Cloud-Scale Data Engineering, Enterprise Process Automation, Production-Grade AI Engineering, Cross-Functional Alignment

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : work timings needs time to get used to. very supportive and understanding team members, very understanding and flexible manager, no unreasonable expectations and deadlines. the promised work and the work given was vastly different due to bad team matching

Academic courses relevant to the project : DBMS

Name: SIDHANT BHAT .(2021B3A73036H)

Student Write-up

PS-II Project Title: Exploring Data Science Analytics in the Valuation Control Group

Short Summary of work done during PS-II : Automation, statistical modelling and dashboarding.

Tool used (Development tools - H/w, S/w) : Python, Databricks, Pyspark, sql

Objectives of the project : Exploring Data Science Analytics in the Valuation Control Group

Major Learning Outcomes : Financial Institutions and their working.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Very Healthy

Academic courses relevant to the project : Econometrics, ML, AI

Name: ARYAN SHRIVASTAVA .(2022A7PS1653H)

Student Write-up

PS-II Project Title: Trade Settlement Analysis and Email Automation

Short Summary of work done during PS-II : The Settlement Analysis project is designed to optimize multi-party financial settlements by minimizing the number of transactions required to clear debts among participants. In scenarios such as expense sharing, reimbursements, and peer-to-peer payments, multiple users often owe money to one another, leading to complex transaction networks. This project addresses that challenge by computing efficient settlement plans that reduce unnecessary payments and simplify debt resolution. The system is built using Go (Golang) for its high performance and scalability. It calculates the net balance of each participant and applies a greedy optimization algorithm to match debtors with creditors efficiently. By generating the minimum set of transactions needed to settle all outstanding balances, the system significantly improves operational efficiency and reduces processing overhead. To enhance usability and provide insights into settlement patterns, the project includes a real-time analytics dashboard developed with React, WebSockets, and D3.js. The dashboard visualizes transaction flows, balance distributions, and settlement statistics, enabling users to monitor and analyze settlement activities dynamically. Through transaction optimization, the system achieved a 60% reduction in payment operations and API calls, leading to faster processing and an improved user experience. This solution can be applied across expense-sharing applications, financial clearing systems, and corporate reimbursement platforms where efficient debt settlement is essential.

Tool used (Development tools - H/w, S/w) : S/w

Objectives of the project : Automation of existing system

Major Learning Outcomes : Full Stack development, Model development, Backend

Details of Papers/patents : No papers/patents

Brief Description of working environment, expectations from the company : During my internship, I worked in a collaborative and supportive environment where team members were always open to discussions and knowledge sharing. The workplace encouraged learning, experimentation, and taking ownership of tasks, which helped me improve both my technical and problem-solving skills. I had the opportunity to work on real-world projects, interact with experienced professionals, and gain hands-on experience with industry tools and technologies. Regular feedback and guidance from mentors played a key role in my learning process and helped me understand best practices in software development.
The internship experience enhanced my ability to work in teams, adapt to new challenges, and manage tasks effectively in a professional setting. Overall, it provided valuable exposure to the industry's work culture and strengthened my confidence as a developer.

Academic courses relevant to the project : ML, DL, OOPS

Name: ARITRA KHATUA(2022A7PS0184P)

Student Write-up

PS-II Project Title: AI driven automation

Short Summary of work done during PS-II : I have to develop several internal tools.

Tool used (Development tools - H/w, S/w) : VDI's

Objectives of the project : To automate banker work using AI

Major Learning Outcomes : AWS

Details of Papers/patents : No papers or patents

Brief Description of working environment, expectations from the company : Very relaxing and calming and defined objectives and goals.

Academic courses relevant to the project : FODS, AI, DL, ML

Name: DEEPANSHU GARG .(2021B3A72758H)

Student Write-up

PS-II Project Title: Multiple Projects

Short Summary of work done during PS-II : During my PS-II internship at JPMorgan Chase, I worked as a Data Science Intern in the Firmwide Economics Scenario and Analysis (FESA) team. My primary responsibility was to automate critical model monitoring and reporting processes that were previously performed manually. The major project involved developing an end-to-end automation framework for the Operation Performance Monitoring (OPM) process used to evaluate the performance of macroeconomic forecasting models. The solution automated data collection, preprocessing, model execution, residual analysis, threshold validation, and result generation for over 150 econometric models. The framework significantly reduced manual effort, improved consistency, and accelerated the overall validation process. In addition, I contributed to the development of a scalable presentation automation framework that transformed raw data and analytical outputs into business-ready reports and presentations. This involved integrating Python-based automation with Large Language Model (LLM) capabilities to streamline data processing, commentary generation, and deck creation. Throughout the internship, I gained practical exposure to data science, econometric modeling, process automation, software development best practices, and the application of AI-driven solutions in a large financial institution. The experience enhanced my technical, analytical, and problem-solving skills while providing valuable insights into real-world business operations and model governance practices.

Tool used (Development tools - H/w, S/w) : Python, Vscode, LLM

Objectives of the project : Automate the business process for smooth functioning and operational efficiency

Major Learning Outcomes : The internship was truly enriching and a steep learning curve, we all are taught the textbook knowledge but to appy that in real life and solve the business problems is

something which is very rewarding and fascinating.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : During my internship at JPMorgan Chase, I worked in a highly professional, collaborative, and fast-paced environment. The organization promotes a culture of continuous learning, innovation, and teamwork, providing interns with opportunities to contribute to meaningful business initiatives. I was given ownership of projects involving data analysis, process automation, and model performance monitoring, while receiving regular guidance and support from experienced mentors and team members.

The work environment encouraged open communication, problem-solving, and knowledge sharing. Team members were approachable and willing to provide technical and business insights, which helped me better understand the practical applications of data science and financial analytics. Access to modern tools, technologies, and internal learning resources further enhanced my professional development

Academic courses relevant to the project : OOPs, Data Structures, Machine Learning

PS-II Station : JPMC – Global R&C - CIO, Treasury & Corporate (CTC) Risk team - Credit Risk and Liquidity Risk, Mumbai

Faculty

Name: Gaurav Nagpal .

Student

Name: SRIJAN DAGA(2022AAPS0618G)

Student Write-up

PS-II Project Title: Risk Model Redevelopment

Short Summary of work done during PS-II : Modelling with python

Tool used (Development tools - H/w, S/w) : Python

Objectives of the project : Improve existing model performance

Major Learning Outcomes : Coding and Statistics

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Good Environment

Academic courses relevant to the project : Fufa

PS-II Station : JPMC – Global R&C - CIO, Treasury & Corporate (CTC) Risk team - Innovation, Mumbai

Faculty

Name: Gaurav Nagpal .

Student

Name: SAMAAHITH G OKKUNDA(2021B4A72431G)

Student Write-up

PS-II Project Title: Corporate Treasury and Chief Investment Office - Risk

Short Summary of work done during PS-II : NDA

Tool used (Development tools - H/w, S/w) : Python (numpy, pandas), flask, reactJS, excel

Objectives of the project : Securitised products quantitative analytics

Major Learning Outcomes : Quant analytics, securitised products, fixed income, modelling, AI

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Good competitive work culture

Academic courses relevant to the project : Applied statistical methods

PS-II Station : JPMC - Markets - Trading & Structuring, Mumbai

Faculty

Name: Sandeep Kayastha .

Student

Name: VIDIT BUBNA(2021B3A72494P)

Student Write-up

PS-II Project Title: Internship at JPMC

Short Summary of work done during PS-II : During my PS-II, I worked as a Credit Structuring Intern at J.P. Morgan, Mumbai, as part of the Nexus team. My role involved supporting the pricing and monitoring of customized credit products, ensuring data accuracy before pipeline runs, performing sanity checks on post-calculation reports, and identifying inefficiencies in existing workflows. A major part of my work focused on automation and process improvement. I developed an Excel Checker tool that compares older and newer Excel files, highlights discrepancies, and significantly reduced manual checking time from nearly two hours per day to around five minutes. I also worked on a Market Monitor

that provides a close-of-business overview of credit indices, government bonds, cash indices, CLOs, and sector-level movements across day-on-day, week-on-week, and month-on-month periods. Additionally, I contributed to building a Skew Index to track deviations from fair traded values across major CDS indices, helping support relative value trade analysis. I also worked on adding intraday refresh capabilities, moving certain workflows from end-of-day updates to more dynamic monitoring. Alongside this, I helped build scalable Nexus Vida pipelines to handle multiple client-specific requests. Overall, the internship strengthened my understanding of credit markets, structured products, data pipelines, and financial analytics. It also helped me improve my Python, Excel automation, debugging, communication, and teamwork skills in a professional banking environment.

Tool used (Development tools - H/w, S/w) : VS Code

Objectives of the project : Optimisation and Analysis

Major Learning Outcomes : Structuring of Credit products relevant in todays industry

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The environment encouraged learning and being curious

Academic courses relevant to the project : FRAM, DRM, eco courses

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Name: TANISHQ JAIN(2021B3A72941G)

Student Write-up

PS-II Project Title: Equity Derivatives Structuring

Short Summary of work done during PS-II : Got to work on pricing, automation and reporting.

Tool used (Development tools - H/w, S/w) : Python, Excel

Objectives of the project : To learn about the world and business of finance, and to gain a deeper

understanding of the equity derivatives and products.

Major Learning Outcomes : Learnt about working in a professional environment and got to enhance my technical skills.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Healthy environment with the freedom to learn and execute with ample opportunities to express your idea.

Academic courses relevant to the project : Derivatives and Risk Management, Security Analysis and Portfolio management

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Name: TANAY DHIREN SHAH(2021B3A70994G)

Student Write-up

PS-II Project Title: Trading and Structuring

Short Summary of work done during PS-II : BAU's + Index Developement and Setup + Automations using Agents.

Tool used (Development tools - H/w, S/w) : Python

Objectives of the project : To understand and do the BAU's as well as learn how indices are structured and developed.

Major Learning Outcomes : Coding and Financial Knowledge

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Very good, self learning environment, with support when needed. Expectation to be driven and hardworking.

Academic courses relevant to the project : SAPM, DRM

Name: SRI JAITRA SAKETH GOPARAJU .(2022A7PS0183H)

Student Write-up

PS-II Project Title: Strategic Indices : Amercias Exotics

Short Summary of work done during PS-II : During my internship at JPMorgan Chase's Quantitative Investment Strategies (QIS) group, Strategic Indices North America Retail team, I worked across the complete lifecycle of custom indices used as underlyings for retail structured products. My responsibilities spanned quantitative research, index development, productionisation, client reporting, and automation. On the research side, I developed and evaluated momentum, mean-reversion, and volatility-based alpha signals, built a robust backtesting framework, and contributed to the design of six Adaptive Beta indices incorporating volatility targeting and dynamic allocation mechanisms. I also implemented a break-even volatility solver and delta-hedging simulation framework to analyse structured product economics and option pricing sensitivities. In the production phase, I helped productionise six live indices, perform tie-outs and reconciliation, onboard indices to Bloomberg, and establish operational workflows for daily index calculation and maintenance. I developed automated reporting pipelines for clients and sales teams, generating performance analytics, charts, and periodic reports. Additionally, I built an automated pricing bot that generated indicative pricing sheets for structured products using live market data and option pricing models, significantly reducing turnaround time for sales requests. I also implemented a real-time TWAP generation system for SPX and NDX to support intraday index rebalancing and valuation processes. Overall, the internship provided extensive exposure to quantitative finance, structured products, index construction, software engineering, and production-grade financial systems.

Tool used (Development tools - H/w, S/w) : Python, MS Excel

Objectives of the project : Building, Backtesting and Maintaining, Rules based Indices

Major Learning Outcomes : - Derivatives
-Option Strategies
-Index Construction

-Risk Management

Details of Papers/patents : --

Brief Description of working environment, expectations from the company : The working environment at JPMorgan Chase was fast-paced, challenging, and highly collaborative. Team members were expected to learn quickly, take ownership of their work, and navigate ambiguity in solving complex business and quantitative problems. The role required strong analytical skills, attention to detail, and effective communication across multiple stakeholders. Given the demanding nature of the work, dedication and commitment were essential, particularly during critical project phases. The environment provided significant opportunities for learning, professional growth, and exposure to real-world financial markets and production systems.

Academic courses relevant to the project : DRM, FRAM, SAPM

Name: RAGI RAVIKANTH REDDY .(2022A7PS0068H)

Student Write-up

PS-II Project Title: Monthly Financial Risk Reporting, Regulatory Compliance, Data Automation and Factsheet Tracking

Short Summary of work done during PS-II : During Practice School-II at J.P. Morgan Chase, I worked across regulatory KPI reporting, fund operations, and reporting automation for asset management functions. I prepared monthly KPI reports for management companies, validating risk data and checking leverage, commitment, and compliance metrics across multiple funds, while investigating breaches and documenting root causes for audit purposes. I supported fund-level reporting by designing customized Excel templates and assisting in automating monthly report generation per fund-specific business logic. I also built data pipelines that parsed SFTP-received financial files, validated their structure, and stored extracted data into databases for downstream use. I contributed to a portfolio reallocation (bond switch) exercise by identifying affected instruments, creating updated position datasets, and coordinating with internal teams. The major project involved automating a monthly AUM and notional management report using Python, Jupyter Notebook, Voila, OpenPyXL, and email integration—converting a full-day manual process into a one-click dashboard

workflow with version tracking. I also built an automated mailbot to track factsheet receipt status and created custom multi-index lookthrough files and a collated position report template for new fund launches. I contributed to revising the VaR backtesting methodology for funds showing overshoots, helping incorporate adjustments for high market volatility into the risk model. I added quality checks to daily lookthrough position reports to handle index/fund holidays and identify missing data causes, enabling corrections and timely action points. I also helped monitor daily subscription/redemption flows across funds, generating reports shared with other teams for net flow insights.

Tool used (Development tools - H/w, S/w) : Python, Jupyter Notebook,Voila,OpenPyXL ,Excel ,SFTP ,Bloomberg

Objectives of the project : Automate the report generation and enhance the data accuracy

Major Learning Outcomes : Explored fields of finance and asset management , using AI and other contempory tools for easy task automation .

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : A basic understanding of finance and financial instruments is helpful, though not mandatory at an advanced level—the team provides support to help build this domain knowledge over time. Some prior coding experience in Python is beneficial, as much of the work involves automation, data parsing, and report generation using Python-based tools.Quick learning ability – Strong willingness and capacity to rapidly pick up new tools, technologies, and tech stacks as project requirements evolve.
Multitasking – Ability to simultaneously manage 3-4 different tasks or projects at any given time, balancing priorities effectively.
Regular communication – Providing consistent status updates on each ongoing task to relevant stakeholders and team members.
Attention to detail – Given the regulatory and compliance nature of the work, accuracy and thoroughness in data handling are essential.
Adaptability – Working across varied fund structures, each with bespoke reporting requirements, demands flexibility in approach.

Academic courses relevant to the project : Few basics of finance concepts .

Name: KHUSH BHUTA .(2022A7PS1333H)

Student Write-up

PS-II Project Title: Equity Derivatives Trading

Short Summary of work done during PS-II : I interned with the Equity Derivatives Trading team. I got to work with the Single Stock Exotics Desk. I mainly worked on workflow automation using Python, developing report scripts, hedge orders etc throughout my internship. It was a great experience and I got real ownership of work, which further helped me develop my problem solving skills.

Tool used (Development tools - H/w, S/w) : Python, SQL, Bloomberg

Objectives of the project : Understand about Equity Exotics, Risk Management

Major Learning Outcomes : - Enhanced my communication skills, gave me exposure to work with people outside India
- Got real-world responsibility to perform tasks and work with Traders and Quant Researchers
- Learnt about financial engineering, structured products and exotic options
- Python-based automation to improve trader workflows

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The work environment at JP Morgan helped me grow, learn and push myself out of my comfort zone. I was constantly challenged with new problems and I was often asked to figure things out myself so I could end up learning even more. The people and mentors were very intellectual and the exposure that I got here, interacting with offshore traders, structurers and highly reputed people was surreal. We got to use the best technology resources, including AI and financial softwares like Bloomberg. My teammates and managers were extremely welcoming and helpful.
The best part of this role was the ownership that they provided interns. They asked us to develop end-to-end projects and trained us to be independent and discover new things ourselves. They were always keen to answer any questions we had and provided us sufficient learning resources. Although the work hours were difficult, they provided slight flexibility to allow working from home for later hours in the night. Overall, it was a great experience and I got to learn a lot from this academic internship.

Academic courses relevant to the project : Derivatives and Risk Management, Financial Risk

Name: KAUSHIK KUMAR PATI(2021B3AA1727P)

Student Write-up

PS-II Project Title: Intern in Mansart DAG Team

Short Summary of work done during PS-II : During my internship with Mansart DAG, my primary focus was on supporting the technical pipeline for new fund launches. This involved executing critical pre- and post-launch activities, integrating new funds into the existing codebase for comprehensive internal and external reporting, and developing quantitative pricing scripts for daily counter-valuation of swap agreements. Additionally, I developed a dynamic, interactive web application for internal Middle Office and PM use and supported the desk by streamlining Business-As-Usual (BAU) operations and automating reporting suites.

Tool used (Development tools - H/w, S/w) : Python, Excel, Bloomberg

Objectives of the project : The team works closely with front office portfolio managers and works on analytics, automation and software development projects with other teams within the fund.

Major Learning Outcomes : Gained exposure to the work of an asset management business; developed my knowledge of derivative instruments, ETFs and systematic strategies; gained experience in automation and scripting; Drew parallels to concepts taught in finance courses proving useful for understanding major topics covered in certifications like CFA and FRM.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Highly supportive colleagues and work environment, the team has high expectations from BITSian interns. You will be encouraged to ask questions and understand the context and requirement of the projects you would work on. Work is fast-paced and you would be expected to pick things up fast, be coachable and stay on top of your to-do items; This is a great opportunity for students with experience in full-stack development plus knowledge and interest in portfolio management.

Academic courses relevant to the project : DRM, SAPM, FRAM, CP, OOP

PS-II Station : Kinara AI Pvt Ltd - Hardware, Hyderabad

Faculty

Name: Suparna Chakraborty .

Student

Name: MOHAMMAD ZAHID .(2022A3PS0663H)

Student Write-up

PS-II Project Title: SoC Verification & Validation

Short Summary of work done during PS-II : During my PS-II I worked on functional verification, hardware emulation, and validation of the NNP neural processing IP (a Cadence Xtensa core) and its SoC at Kinara AI (part of NXP Semiconductors). I first automated the Randomised Instruction Testing (RIT) flow in Jenkins, converting a manual launch process into scheduled daily and weekly regressions that went on to surface important design bugs. I then built a Python tool that parses the TIE instruction definitions, cataloguing 400+ instructions from over 100,000 lines of source and cross-checking them against test runs and disassembly traces for coverage. Next, I developed SystemVerilog golden (reference) models and RIT testbenches for SIMD and aligned load instructions, using custom randomisation tasks — part of a wider migration from the legacy test.c methodology to the more thorough RIT infrastructure. I then moved to Siemens Veloce hardware emulation, contributing to LLM inference performance experiments (netlist generation and clock/NOC/DDR changes) that raised achieved memory bandwidth from ~60% to ~75% of ideal throughput. I helped migrate the pre-merger Kinara emulation infrastructure to NXP's, integrated a new DDR+AXI VIP, and debugged firmware, DMA, and DDR-initialisation issues. Finally, I worked on Secure Boot Processor (SBP) validation — bootrom, boot firmware, TRNG, reset and lifecycle checks, and PCIe/USB/GPIO bring-up via the SBP.

Tool used (Development tools - H/w, S/w) : Software: SystemVerilog, Python, TIE, C; Cadence Xtensa toolchain and xt-clang; Siemens Questa (vlog/vsim); Jenkins CI; Siemens Veloce emulation flow (netlist generation, SCE-MI/TBX); regex-based parsing with YAML/Excel output. Hardware: Siemens Veloce em

Objectives of the project : To perform functional verification and validation of the NNP neural processing IP (a Cadence Xtensa-based core) and its surrounding SoC. Specific objectives: (1) automate the Randomised Instruction Testing (RIT) regression flow using Jenkins CI; (2) build tooling to catalogue the NNP's TIE-defined instruction set and measure test coverage; (3) develop SystemVerilog golden (reference) models and RIT testbenches for load instructions, migrating from the legacy test.c methodology to the RIT infrastructure; (4) run hardware-emulation performance experiments on Siemens Veloce and migrate the emulation infrastructure post-merger; and (5) validate the Secure Boot Processor (SBP) and SoC-level bring-up.

Major Learning Outcomes : Practical verification methodology: randomised instruction testing, golden/reference-model development, self-checking testbenches, and instruction-coverage analysis.
Proficiency in SystemVerilog (classes, tasks, custom randomisation), Python (parsing/automation), and the TIE language.
Hands-on experience with an industry EDA and emulation toolflow: Cadence Xtensa/xt-clang, Siemens Questa (vlog/vsim), Jenkins CI, and Siemens Veloce emulation.
Full-chip skills: hardware-emulation bring-up, performance experimentation, and secure-boot/SoC-level validation.
Debugging complex problems across the firmware–hardware boundary, independently and for other team members.
Working effectively within large, cross-functional engineering teams spanning software and hardware groups.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : I worked with the SoC verification and emulation team at Kinara AI (part of NXP Semiconductors), which sits at the intersection of hardware verification, hardware design, and system software. The environment was highly collaborative and cross-functional: several of my tasks — especially the emulation performance experiments — were inter-departmental efforts spanning the software-kernel, software-compiler, hardware-verification, and hardware-design teams. This gave me exposure to how a single performance or correctness problem is viewed differently across disciplines and how findings are

communicated across those boundaries.

The team followed rigorous, industry-standard verification and validation practices using professional EDA and emulation tool flows (Cadence Xtensa, Siemens Questa and Veloce, Jenkins CI). I was expected to ramp up quickly on unfamiliar tools and methodologies, take ownership of my tasks, debug problems independently, and later support other team members with their debugging on the emulation environment.

The company's expectations centered on reliability, attention to detail, and clear communication — verification work directly affects confidence in silicon, so correctness and reproducibility mattered greatly. In turn, I valued the mentorship, the freedom to contribute across many parts of the flow (from CI tooling to secure-boot validation), and the chance to work on a real production semiconductor program. Overall, the experience matched my expectation of gaining hands-on, practical exposure to industry chip-design verification.

Academic courses relevant to the project : Digital Design; Microprocessors & Interfacing; Computer Architecture; Analog & Digital VLSI Design (ADVD); Object-Oriented Programming / Computer Programming.

PS-II Station : Kinara AI Pvt Ltd - Software, Hyderabad

Faculty

Name: Y V K Ravi Kumar .

Student

Name: CHINEPALLI ARJUN REDDY(2021B4A32790H)

Student Write-up

PS-II Project Title: Quantizer Development to improve quantized models accuracy on Ara-2

Short Summary of work done during PS-II : The major part of the project focused on selecting the best calibration dataset that is needed for quantization of a network. Quantization of a network

ensures reduced memory cost and inference latency all while preserving the accuracy by reducing the precision of the numbers. Algorithmic engineering, continuous changes in the code and modifying the pipeline was necessary as a part of this work. The results turned out optimistic as we saw very less accuracy drop. Another part of the work included documentation of several operators and their compatible fields. This work has bridged the gap between technical understanding and business needs.

Tool used (Development tools - H/w, S/w) : VS Code, Powershell, Python, C++, OpenCode (and other AI agents), Git (company specific)

Objectives of the project : A 24-week research-focused project to apply mathematical analysis and algorithmic engineering to reduce accuracy loss from model quantization. Students will investigate and implement advanced quantization strategies (per-channel scaling, optimal clipping, bias correction, learned rounding / QAT simulators, Hessian-aware rounding, mixed precision heuristics), evaluate their effects on representative models (conv nets, transformers, GenAI models), and produce robust, production-quality C++ implementations plus Python tooling for calibration and evaluation. Emphasis is on rigorous modeling, algorithmic clarity, and high-quality C++ code (primary) with Python for experiments.

Major Learning Outcomes : A set of implemented quantization algorithms (C++ production code + Python wrappers) including:
Per-channel weight quantization with bias compensation.
Optimal clipping/gradient-based algorithms (MSE/KLD/percentile based).
Requantization and small dynamic range handling for activations.
Optionally: a QAT simulator or lightweight learned rounding module.
Mathematical analysis and simulations showing why selected techniques reduce error (derivations, approximations, or empirical error models).
Thorough evaluation on representative networks showing accuracy recovery numbers and runtime/memory costs.
Tools to produce calibration tables and automated per-layer quantization recommendations.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Employees in the company exhibit strong leadership abilities irrespective of their seniority level. Employees often go to the explanation board (to write) and explain any concept with adequate passion. The company

expects every person to be respectful, display strong leadership and complete any task within the stipulated time. In case of emergencies and genuine cases, any employee would be granted leave or rest. Every employee is super friendly and mutual respect is always seen among the employees.

Academic courses relevant to the project : Linear Algebra, Probability and Statistics, Optimization, Numerical Analysis, Machine Learning

PS-II Station : Kinara AI Pvt Ltd , Hyderabad

Faculty

Name: Y V K Ravi Kumar .

Student

Name: SUMANTH ABHINAV ARSHANAPALLY .(2022A8PS0528H)

Student Write-up

PS-II Project Title: AI NPU Kernels

Short Summary of work done during PS-II : Get to know about what KInara AI is about - DNPU dev company. Understand the software stack. How large language models can be deployed on edge leveraging quantisation. Get to know how optimised load management and scheduling helps achieve maximum performance and efficiency. Dig deep into understanding the operators like convolution, element wise operations, GEMM, etc and implement optimised kernels using the provided ISA. Metric analysis, Debugging and optimisation.

Tool used (Development tools - H/w, S/w) : C++, Python, ChatGPT, Claude , Local VLLMs , etc

Objectives of the project : Develop hardware coupled kernels for AI model enablement on edge neural network processors.

Major Learning Outcomes : How cloud independent AI inferencing is possible at Edge. Understanding ISA of a neural network processor, software stack and implementing them in development.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Good working environment. Very helpful seniors . Need to learn things on the go. Free Lunch provided.

Academic courses relevant to the project : Computer Architecture, Operating Systems, OOP, C programming, DSA, ML, DL, AI, Digital Design, Analog and Digital VLSI Design, etc

PS-II Station : Knovon Consulting - Founder's Office Intern, Noida

Faculty

Name: Atul Kumar Arora

Student

Name: AGARWAL ARYAN SUDARSHAN(2024H1540862P)

Student Write-up

PS-II Project Title: TalkReady

Short Summary of work done during PS-II : During my internship on the TalkReady project at Knovon Consulting Pvt. Ltd., I worked in Sales & Marketing, Data Analysis, and market research to support the growth of an AI-powered interview preparation platform. My responsibilities included analyzing placement data from 10–20 colleges using sources such as NIRF reports, college websites, LinkedIn insights, and online research tools. I evaluated key metrics like placement percentage, recruiter participation, and comparative institutional performance to identify potential opportunities for TalkReady's adoption by universities and recruiters. I also contributed to awareness-building and

outreach efforts by studying market trends and helping position TalkReady as a solution for improving candidate employability and interview readiness. Additionally, I developed performance-tracking mechanisms, including a leaderboard that measured user consistency and improvement over a 7-day period based on interview feedback scores. This involved extensive use of Excel functions such as VLOOKUP, INDEX, and MATCH for data organization and analysis. Through this project, I gained practical experience in market research, data-driven decision-making, sales support, and performance analytics while contributing to the growth and visibility of an AI platform designed to enhance recruitment and interview outcomes.

Tool used (Development tools - H/w, S/w) : Teams, Excel, AiSensy, Tableau, Planner, Whiteboard, Sheets, Video AI Tools, GenAI Tools

Objectives of the project : Business Growth

Major Learning Outcomes : Marketing and Analysis

Details of Papers/patents : talkready.ai

Brief Description of working environment, expectations from the company : My internship at Knovon Consulting Pvt. Ltd. was conducted in a fully remote work environment. The company provided a flexible and collaborative atmosphere where communication was maintained through virtual meetings, online collaboration tools, and regular progress updates. Team members were approachable and supportive, which made it easier to seek guidance, discuss ideas, and complete assigned tasks effectively. The remote setup encouraged self-discipline, time management, and independent problem-solving while still ensuring adequate mentorship and feedback.

The expectations from the company included maintaining professionalism, meeting deadlines, actively participating in discussions, and delivering quality work. Interns were expected to take ownership of their tasks, conduct thorough research, analyze data accurately, and contribute innovative ideas to support business objectives. The company also encouraged continuous learning and skill development by providing opportunities to work on real-world projects and gain practical exposure to sales, marketing, and data analytics.

Overall, the working environment was positive, flexible, and learning-oriented, enabling me to develop both technical and professional skills while contributing meaningfully to the organization’s goals.

Academic courses relevant to the project : Strategic Marketing
Advanced Excel
Data Visualisation

PS-II Station : Kotak Mahindra Bank, Hyderabad

Faculty

Name: Arindam Roy .

Student

Name: SOUMITH SIDDARTHA GUDIPUDI .(2022A7PS0198H)

Student Write-up

PS-II Project Title: Development and Enhancement of Credit Card Middleware at Kotak Mahindra Bank

Short Summary of work done during PS-II : During this internship, I contributed to three major components of Kotak Mahindra Bank's Credit Card Middleware platform. First, I independently designed and developed the NPCI Interaction Service, a new Spring Boot microservice enabling RuPay token inquiry and lifecycle management (suspend, resume, unlink, replace) by referring to the existing Visa Interaction Service for architectural guidance. This service uses JWE encryption for secure communication with NPCI's Token Service Provider, idempotency keys backed by an audit database, and Resilience4j circuit breakers for fault tolerance. Second, within the existing cc-middleware-event-processor service, I implemented the Lost/Stolen Card Block flow, which consumes Kafka events from the core banking system (VMX), validates and maps the event data, and routes card-blocking requests to the appropriate payment network (Visa or Mastercard) based on the card BIN. Third, I developed two REST APIs in the Credit Card Edge Service — the Relationship Account Inquiry API and the Spend Inquiry API — integrating with VMX via Tibco to retrieve account and spend-control information. Across all three workstreams, I wrote comprehensive unit tests using JUnit and Mockito, fixed several production issues, took over deployment responsibilities after the initial DevOps setup, and conducted knowledge-transfer sessions with the QA team to support functional testing.

Tool used (Development tools - H/w, S/w) : Software: Java 17, Spring Boot, Spring Cloud, Maven, MapStruct, Lombok, Resilience4j, Jackson, jose4j (JWE), JUnit 5, Mockito, Apache Kafka, IBM MQ, Oracle DB, MySQL, Redis, Docker, Kubernetes (AKS), Azure Pipelines, SonarQube, Postman, IntelliJ IDEA / Ec

Objectives of the project : To contribute production-ready enhancements to Kotak Mahindra Bank's Credit Card Middleware platform

Major Learning Outcomes : Gained hands-on experience in designing and building a production-grade microservice from scratch, including REST API design, layered architecture (Controller-Service-SAO-Repository), idempotency handling, and JWE-based payload encryption. Learned to extend existing event-driven systems using Kafka by following established design patterns such as Strategy and Factory. Developed practical understanding of banking-grade security and compliance practices (PCI-DSS log masking, TLS, certificate chains). Strengthened skills in unit testing with JUnit/Mockito, CI/CD pipelines (Azure Pipelines, Docker, Kubernetes), and collaborative software engineering practices including code reviews and QA knowledge transfer.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The work environment at Kotak Mahindra Bank's Credit Card Technology team was professional, collaborative, and process-driven, reflecting the rigor expected in a regulated banking environment. I worked as part of an Agile team alongside experienced engineers, with regular stand-ups, sprint planning, and code reviews. Mentorship from senior team members was readily available, and I was given meaningful ownership over real production components rather than isolated training exercises. The company expected adherence to secure coding practices, thorough unit testing, and proper documentation, given the sensitivity of financial and cardholder data involved. I was also expected to independently study existing codebases and follow established architectural conventions before introducing new functionality, ensuring consistency across the platform.

Academic courses relevant to the project : Object-Oriented Programming, Data Structures and Algorithms, Database Systems

PS-II Station : Localbuy Technologies Pvt Ltd (SuperK) - Operations & Finance, Bengaluru

Faculty

Name: Mridula Goel

Student

Name: ABHIJEET MALIK .(2021B5A32264H)

Student Write-up

PS-II Project Title: Warehouse Capacity Modeling and Logistics Cost Optimization for Retail Distribution Networks

Short Summary of work done during PS-II : The primary objective was to design a data-driven framework for warehouse modeling to evaluate the feasibility of decentralized distribution using transient hubs. The work spanned three interconnected streams: warehouse capacity modeling using Days of Holding (DOH) based inventory estimation and SKU-level volume measurements; logistics cost modeling cov- ering last-mile delivery costs, vehicle utilization, and incremental store onboarding cost estima- tion; and operational analytics tooling including asset tracking dashboards, automated distance- based cost calculators, and store cluster analysis for dispatch flow optimization. A major physical effort during the internship involved leading the complete SKU measure- ment campaign using the V-Measure system, from device installation and SOP finalization to scanning over 4000 priority SKUs

Tool used (Development tools - H/w, S/w) : Sheets, metabase, docs, vmesaure, bigquery

Objectives of the project : To make a framework for capacity expansion requirements and cost estimation for expanding the warehouse, and helping with operational tasks

Major Learning Outcomes : Learned how to work in a fast paced environment and how to handel operational tasks.

Details of Papers/patents : Na

Brief Description of working environment, expectations from the company : Working environment was very nice and everyone was really helpful and accommodating. We had to do field trips too and company made sure everything was smooth and convenient for us. Really amazing people to work with.

Academic courses relevant to the project : N/A

PS-II Station : Lumos Labs Inc (Lumosity India Private Limited), Bengaluru

Faculty

Name: Ashish Narang .

Student

Name: ABHINAV MAURYA(2022AAPS0767G)

Student Write-up

PS-II Project Title: LumosLex Translation Management Service

Short Summary of work done during PS-II : Build a web app and GitHub workflows to automate translation of english into other languages.

Tool used (Development tools - H/w, S/w) : React, Next.js, REST, GitHub, Cursor

Objectives of the project : Build a translation monitoring service

Major Learning Outcomes : GitHub workflows and frontend development

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Really professional and no strict in and out times. Understanding.

Academic courses relevant to the project : None

Name: RAJAT SINGHAL(2022A8PS0567P)

Student Write-up

PS-II Project Title: Lumoslex (Translation Management System)

Short Summary of work done during PS-II : Developed a scalable translation management system by building secure REST APIs, access control, database migrations, LLM-assisted localization, and webhook integration.

Tool used (Development tools - H/w, S/w) : Node.js, TypeScript, Fastify, PostgreSQL, Knex.js, Slonik, Zod, OpenAI GPT-4o API, Postman, JWT, AWS S3, GitHub Actions, Next.js, Jest, Swagger (OpenAPI)

Objectives of the project : The primary objective of this project was to design and develop LumosLex, a scalable Translation Management System (TMS) that centralizes and automates the localization workflow for Lumosity products. The project focused on building secure and efficient backend REST APIs, implementing robust RBAC and ABAC-based access control, designing and maintaining a reliable PostgreSQL database, and integrating Translation Memory and GPT-4o-assisted translation with human review and QA. It also aimed to enable real-time synchronization of approved translations through webhooks while ensuring the system's reliability, scalability, and performance through comprehensive API testing and database optimization

Major Learning Outcomes : During this project, I gained hands-on experience in designing and developing scalable backend systems using Node.js, Fastify, and PostgreSQL. I learned to build and test RESTful APIs, implement secure authorization mechanisms using RBAC and ABAC, and manage database schema evolution through versioned migrations. I developed practical knowledge of localization workflows, Translation Memory, and LLM-assisted translation using GPT-4o. The project

also strengthened my understanding of API testing, webhook integration, database optimization, software architecture, debugging, version control, and collaborative software development in a production environment

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Lumos Labs provided a collaborative, fast-paced, and innovation-driven working environment where teamwork, code quality, and continuous learning were highly valued. As a Software Developer Intern in the Backend team, I worked closely with experienced engineers on the development of LumosLex, the company's Translation Management System. The organization followed modern software engineering practices, including code reviews, API documentation, database version control, testing, and agile collaboration. Team members were approachable and supportive, creating an environment that encouraged learning, problem-solving, and ownership of tasks.

Academic courses relevant to the project : Object Oriented Programming, Data Structures and Algorithms, Database Systems, Operating Systems, Computer Networks, Software Engineering, Web Technologies, Programming in C/C++.

PS-II Station : Marvell Technology - , Hyderabad

Faculty

Name: Chennupati Rakesh Prasanna .

Student

Name: AARNAV JP(2024H1030075P)

Student Write-up

PS-II Project Title: NA

Short Summary of work done during PS-II : learning a completelty new tech stack and tools used by companies to provide network level solutions in data centres using system on chips

Tool used (Development tools - H/w, S/w) : DPDK, Linux, GDB, C, x86 , aarch , compilers

Objectives of the project : developing customer ready products and customizing as per their network usage

Major Learning Outcomes : understanding of how device drivres work

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : no doubt is unnecessary doubt, learning happens through exploring.

Academic courses relevant to the project : C, OS, CN, computer Architecture

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PS-II Station : MathWorks India Private Limited, Bengaluru

Faculty

Name: Y V K Ravi Kumar .

Student

Name: DIXIT SHREYAS SHIRISH(2024H1400128P)

Student Write-up

PS-II Project Title: AST VERIFICATION FOR ARDUINO BLOCKS

Short Summary of work done during PS-II : During my Practice School–II internship at MathWorks, I worked on developing an automated verification framework to validate code generated from Simulink

Arduino blocks. The primary objective was to ensure that generated embedded code correctly reflects block configurations and parameter settings. The work began with understanding block parameters, dependencies, and code generation workflows. I contributed to developing a reusable and scalable AST-based verification framework that extracts structural information such as function calls, arguments, and variable declarations from generated code. This information was then compared against expected specifications defined using a structured approach. The framework was enhanced with features like dependency-based verification, parameter randomization for coverage, and modular test design for scalability across multiple blocks. It was validated on multiple Arduino blocks and integrated with existing testing infrastructure. Additionally, I contributed to test strategy development, automation workflows, and qualification of multiple blocks in BaT, ensuring reliability and scalability. This project improved verification efficiency and reduced the need for extensive hardware testing.

Tool used (Development tools - H/w, S/w) : MATLAB, Simulink Simulink Coder / Embedded Coder AST Verifier (codertest APIs) MATLAB Unit Testing Framework Arduino Hardware (target boards) Perforce (version control) Review Board (code review) BaT (Build and Test infrastructure) Confluence.

Objectives of the project : To design and develop an automated verification framework for validating generated embedded code from Simulink Arduino blocks To establish a mapping between block configuration parameters and generated code behavior To verify correctness of function calls, arguments, and dependency-based behavior using AST analysis To improve testing efficiency and reduce reliance on hardware-based validation.

Major Learning Outcomes : Understanding of embedded systems and model-based design workflows Hands-on experience with code generation using Simulink and Embedded Coder
Development of automated testing frameworks using MATLAB Unit Testing
Strong understanding of AST-based code analysis and verification techniques
Improved problem-solving, debugging, and scalable test design skills.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at MathWorks was highly collaborative and learning-oriented, with a strong emphasis on problem-solving, code quality, and structured workflows. The team followed established software engineering practices such as code reviews, automated testing, and continuous integration, which ensured high reliability and maintainability of the developed solutions.
As an intern, I was expected to take ownership of tasks, actively participate in technical discussions, and continuously improve based on feedback. Regular 1:1 meetings and design discussions provided

guidance and clarity on project direction. The organization encourages structured thinking, documentation, and adherence to testing standards.
The environment also promoted independent learning, where I explored new concepts such as AST-based verification and code generation workflows. Overall, the internship provided a professional setting that balanced guidance with autonomy, helping me develop both technical and soft skills effectively.

Academic courses relevant to the project : Embedded Systems Design
Software for Embedded Systems

Name: VEDANT DUTTA .(2022AAPS0367H)

Student Write-up

PS-II Project Title: Migration of HW Tests to Renode Emulator

Short Summary of work done during PS-II : Existing hardware tests need boards, peripherals and loopbacks to work. This makes hardware be a bottleneck and also introduces a cost contraint. My work was to design a unified series of launchers and classes that can be inherited into shared classes, to automatically enable the tests to run on software thereby eliminating the need for physical boards etc.

Tool used (Development tools - H/w, S/w) : MATLAB, C, Renode Emulator

Objectives of the project : Design and implement an architecture that enables easy migration of existing hardware tests to configure and use Renode Emulator.

Major Learning Outcomes : Learnt a lot about the software-hardware interactions, how memory of boards are flashed, in depth about interrupts, communication protocols like I2C,SPI,XCP etc. Good emphasis on OOPS.

Details of Papers/patents : n/a

Brief Description of working environment, expectations from the company : Working

environment is very relaxed, with emphasis on doing work till deadlines that you set for yourself. The projects are fun and make you reason from the first principles. All the concepts need to be brushed up, good learning experience.

Academic courses relevant to the project : OOPS, MPI, OS

PS-II Station : MathWorks India Private Limited, Hyderabad

Faculty

Name: Suparna Chakraborty .

Student

Name: PRIYANK GUPTA(2024H1230093G)

Student Write-up

PS-II Project Title: Explore Ways to remove Hardware Dependencies for Vision Zynq Workflows.

Short Summary of work done during PS-II : I designed and implemented a C++14-based TCP server to emulate multiple FPGA hardware boards, enabling MATLAB support package testing without relying on physical devices. The server supports both ASCII and binary communication protocols to handle diverse hardware interfaces such as video capture and software-defined radio. It allows MATLAB client libraries to connect seamlessly and stream video frames in a fully virtualized setup. To ensure scalability and maintainability, I developed a modular plugin architecture using the factory design pattern with self-registering components. I also built protocol handlers that bridge C-based library callbacks with C++ object-oriented implementations. Additionally, I implemented flexible frame generators capable of producing various video sources, including color bar patterns, animated sequences, and MP4 playback, with support for multiple pixel formats, configurable resolutions, and frame rates. The server handles multi-client concurrency using process forking, combined with optimized network write batching for performance efficiency. I integrated this system into the internal build and MATLAB test infrastructure, enabling CI/CD pipelines to execute hardware-dependent tests

entirely in software. This solution eliminated flaky test failures caused by hardware unavailability and empowered developers to validate support package changes independently of physical FPGA boards.

Tool used (Development tools - H/w, S/w) : MATLAB , SIMULINK , C++ , FPGA.

Objectives of the project : Develop a software-based test server that emulates Zynq FPGA hardware over TCP, enabling MATLAB support package tests to run without physical hardware.

Major Learning Outcomes : -TCP socket programming and binary/ASCII protocol design
- C++14 plugin architecture with factory patterns and smart pointers
- Video frame generation.
- Fork-based server concurrency model

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment is collaborative, technically driven, and focused on continuous learning and innovation. The organization emphasizes strong problem-solving, ownership, and the ability to work independently while contributing effectively within teams. Engineers are encouraged to take initiative, communicate clearly with stakeholders, and continuously enhance both technical and non-technical skills through hands-on projects and structured feedback processes. There is a strong culture of mentorship and career development, where managers actively guide employees through regular discussions, helping them align their interests with organizational opportunities.

Academic courses relevant to the project : Reconfigurable Computing, Hardware Software Codesign.

PS-II Station : MBB Labs Private Limited (Maybank), Bengaluru

Faculty

Name: Pravin Yashwant Pawar .

Student

Name: SHREYANSH SHASHWAT(2022A8PS1246P)

Student Write-up

PS-II Project Title: Credit risk using springboot

Short Summary of work done during PS-II : Developed backend architeture to fetch data

Tool used (Development tools - H/w, S/w) : Springboot,Postman

Objectives of the project : Develop tables

Major Learning Outcomes : Backend,frontend

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Good working environment

Academic courses relevant to the project : Backend

Name: DHRUV NAND SANTOSH .(2022A3PS1337H)

Student Write-up

PS-II Project Title: Investment Banking Filtered View

Short Summary of work done during PS-II : During my Product Engineering internship with the Trinity MDM team at MBB Labs, my work shifted from foundational service hardening to full-cycle backend automation. In the initial phase, I focused on the technical hardening and Investment Banking specialization of the Filtered View Service, where I engineered domain-specific filtering layers for financial primitives like ISIN codes. To resolve performance degradation caused by full table scans

on millions of rows, I designed multi-column composite indexing that achieved sub-second lookup velocities. I also refactored the testing layer using Mockito to insulate test suites from infrastructure dependencies, successfully driving code coverage past 90%. Following this phase, I led the modernization of the Reference Data Map Service to eliminate the maintenance overhead of hardcoded cross-environment relational mappings. I designed and implemented a metadata-driven Dynamic SQL Script Generation Engine that reads database system catalogs to programmatically compose structurally optimized INSERT and MERGE expressions at runtime. To securely bridge separate database instances, I built an automated, distributed ETL pipeline that manages runtime schema transformations, validates source-to-target integrity across disparate server nodes, and enforces safety boundaries using transactional rollbacks and dead-letter queues. Ultimately, these engineering contributions eliminated massive operational bottlenecks—compacting multi-day data audit cycles down to minutes—and established a highly resilient, scalable data infrastructure leveraging Java, Spring Boot, React, and SQL.

Tool used (Development tools - H/w, S/w) : Sql developer, Copilot, Java, Springboot, react

Objectives of the project : Creation and maintenence of new schema for new business requirement.

Major Learning Outcomes : Sql developer, java

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : I completed my internship within the Trinity MDM team at MBB Labs, which functions as the core data infrastructure unit for the organization. The office environment strictly follows standard enterprise IT procedures, operating on a predictable 9-to-6 schedule and utilizing standard Agile frameworks with monthly sprints to log updates. Daily operations require compliance with enterprise engineering protocols, including a structured branch-and-merge Gitflow methodology and routine peer reviews focused on Java optimizations. The team is responsible for basic database maintenance, routine ETL pipelines, and managing relational table synchronization to maintain data consistency across internal servers. It is a traditional corporate engineering setting centered on data governance, data profiling, and standard regulatory compliance.

Academic courses relevant to the project : Oops, FDSA

Name: TANAY SHENOY(2022A1PS1445G)

Student Write-up

PS-II Project Title: Development of Fintech Products

Short Summary of work done during PS-II : During my Practice School-II internship at MBB Labs Pvt. Ltd., I worked as an Intern Product Engineer on the Integrated and Configurable Scoring Platform (ICONS), a credit risk assessment platform used within Maybank Group. My responsibilities spanned multiple stages of the software development lifecycle, including testing, development, maintenance, quality assurance, and documentation. I developed JUnit test cases and generated JaCoCo reports to improve test coverage and software reliability. I prepared and validated SQL DDL and DML scripts to support database-related activities. I also identified and fixed user interface defects, contributing to improved application stability and user experience. In addition, I participated in technology modernization efforts involving upgrades to Java and Spring Boot versions, ensuring compatibility with modern development standards. I conducted code reviews to identify potential issues, improve maintainability, and promote adherence to coding best practices. I contributed to technical documentation by writing meaningful code comments and JavaDocs, and prepared API documentation to support future development and maintenance activities. The internship provided hands-on exposure to enterprise software engineering practices, Agile development methodologies, and banking technology systems. Through these activities, I gained practical experience in software quality assurance, application modernization, documentation, and collaborative product development within a large-scale financial technology environment.

Tool used (Development tools - H/w, S/w) : Java 21 Spring Boot 3.5.x Maven JUnit 5 JaCoCo SQL Developer / Database Tools Git GitHub / GitLab / Bitbucket IntelliJ IDEA Postman Swagger/OpenAPI Jira Confluence Microsoft Teams Databases Oracle Database SQL

Objectives of the project : To support the development and enhancement of a credit risk assessment platform used in the banking domain. To improve the reliability, quality, and usability of the application. To ensure smooth functioning of the system through testing and defect resolution. To contribute to the maintenance and continuous improvement of the platform. To support the modernization of the application using current software technologies. To improve documentation and knowledge sharing for future development and maintenance. To gain practical exposure to enterprise software development and industry best practices.

Major Learning Outcomes : Gained practical experience in enterprise software development within

the banking domain.
Learned automated testing using JUnit and JaCoCo.
Acquired experience in SQL database scripting and validation.
Developed skills in debugging and UI defect resolution.
Understood technology migration and application modernization processes.
Learned best practices in code review and software quality assurance.
Improved technical documentation and API documentation skills.
Enhanced understanding of Agile software development methodologies and team collaboration.
Strengthened problem-solving, analytical thinking, and professional communication skills.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The work environment promoted learning through mentorship, technical discussions, peer reviews, and hands-on exposure to enterprise-grade applications. Team members were expected to take ownership of assigned tasks, adhere to coding standards, and contribute effectively to project objectives.
The company emphasized problem-solving, quality assurance, maintainability, and collaboration. Interns were encouraged to understand business requirements, develop technical solutions, and actively participate in development activities.

Academic courses relevant to the project : Core Computer Science Courses
Object Oriented Programming
Data Structures and Algorithms
Database Systems
Software Engineering
Computer Programming
Operating Systems
Computer Networks

PS-II Station : McCain Foods (India) Pvt. Ltd., Gurgaon

Faculty

Name: Eht E Sham

Student

Name: NISHTHA BASAK .(2022AAPS0500H)

Student Write-up

PS-II Project Title: Automated Invoice Data Extraction and Workflow Orchestration using OCR and Apache Airflow

Short Summary of work done during PS-II : Based on your PS-II report, here's a concise **"Short Summary of Work Done During PS-II"** (under 250 words): During my Practice School-II internship at McCain Foods, I worked on the NAM Disputes Automation Solution, an enterprise-scale system designed to automate invoice dispute processing for multiple North American vendors. My primary responsibilities included developing and enhancing Python-based automation pipelines that acquired invoices from email inboxes and vendor portals, processed them using OCR, transformed the extracted data into SAP-compatible formats, and submitted dispute records automatically to SAP. I designed and implemented workflow orchestration using Apache Airflow, following a scalable Load–Master–Child DAG architecture that enabled parallel processing, fault isolation, and efficient handling of large invoice volumes. A significant contribution was the development of a PDF Splitting Service for Metro Canada invoices, which automatically detected and separated multiple invoices bundled within a single PDF, improving processing accuracy and throughput. The project extensively utilized Microsoft Graph API, Playwright, Azure Data Lake Storage Gen2, Azure Document Intelligence, OAuth-based authentication, and SAP API integrations. I also participated in testing, debugging, User Acceptance Testing (UAT), and production-readiness activities, including implementing centralized logging, improving OCR extraction rules, and resolving data transformation issues. In addition, I contributed to a GitHub Actions Upgrade Initiative, where I helped automate CI/CD workflow upgrades across 90 repositories using AI-assisted automation, GitHub APIs, and OpenCode. The internship provided hands-on experience in cloud technologies, workflow orchestration, enterprise software development, CI/CD practices, and Agile project delivery.

Tool used (Development tools - H/w, S/w) : **Development Tools Used (H/W & S/W)** **Hardware:** * Windows-based Development Workstation/Laptop * Internet Connectivity for Cloud and Repository Access **Software & Technologies:** * **Programming Language:** Python * **Workflow Orchestration:** A

Objectives of the project : McCain receives a huge volume of invoices from multiple vendors. For every vendor, an invoice can belong to any one of the specified template/format. Currently, the invoice data is verified manually and entered into the SAP portal which makes the entire process very time-consuming ,involving high chances of errors. This project focuses on building an automated invoice processing pipeline that will extract invoice data using OCR, handle multiple vendor templates, convert extracted data into SAP compatible format ,aiming to reduce manual work and errors.

Major Learning Outcomes : During this internship, I gained valuable experience across multiple technical and professional domains, learning how different technologies work together in a production environment. I developed enterprise-level Python skills, including secure authentication, error handling, modular design, and scalable workflow development. I became proficient in Apache Airflow by designing and managing complex DAG-based workflows, understanding task orchestration, parallel execution, and debugging in distributed systems. Working with Azure services provided practical exposure to cloud storage, document processing, and OAuth-based authentication mechanisms. Through CI/CD initiatives, I deepened my understanding of GitHub Actions, workflow migrations, dependency management, and repository automation using the GitHub REST API. The internship also introduced me to AI-assisted development, where I learned the importance of precise prompt engineering and the effective use of AI tools for automation. Beyond technical skills, I strengthened my professional abilities in stakeholder communication, requirements analysis, Agile project delivery, code reviews, Jira-based task management, and adapting to changing business priorities through continuous feedback and UAT cycles.

Details of Papers/patents : No papers or patents were published, filed, or submitted as part of the PS-II internship work.

Brief Description of working environment, expectations from the company : The working environment at McCain Foods was highly professional, collaborative, and supportive, providing an excellent opportunity to experience enterprise software development in a real-world setting. I worked closely with a skilled team of developers, architects, and business stakeholders on automation solutions used within the organization. One of the most positive aspects of the internship was the guidance provided by mentors and team members, who were always approachable, supportive, and willing to share their knowledge. Regular feedback sessions helped me improve both my technical and professional skills throughout the internship.

The company encouraged open communication and collaboration, allowing me to interact directly with business stakeholders during requirement gathering, testing, and User Acceptance Testing (UAT) activities. These interactions helped me understand how business requirements are translated into

technical solutions and gave me valuable exposure to real-world problem-solving.
The work culture also offered flexible working hours, enabling employees to manage their tasks effectively while maintaining a healthy work-life balance. Expectations from the company included taking ownership of assigned tasks, maintaining code quality, participating in Agile ceremonies, collaborating with team members, and continuously learning new technologies. Overall, the internship provided a supportive learning environment that encouraged innovation, accountability, teamwork, and professional growth.

Academic courses relevant to the project : Machine learning, Aritificial Intelligence

PS-II Station : MediaTek Bangalore Pvt Ltd, Bengaluru

Faculty

Name: Swapna S Kulkarni

Student

Name: JIGNESH KISHOR SHIMPI(2024H1400103G)

Student Write-up

PS-II Project Title: STA of GPU blocks

Short Summary of work done during PS-II : The work involves analysis of the timing reports from PrimeTime and Innovus. The PD Engineer releases the DB of the design and that has to be timed in PrimeTime. Correlation between the timings is done and from that it is analysed where the issue lies.

Tool used (Development tools - H/w, S/w) : PrimeTime, Innovus

Objectives of the project : Analyse and debug the timing of the GPU blocks. Ensure that the timings and met and GPU works at desired frequency.

Major Learning Outcomes : Learned about how to debug the timing violations in the design and how to fix them.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment is growth oriented and the mentors are approachable for any doubts. The expectations from the company is they provide similar work environment and help for future growth.

Academic courses relevant to the project : VLSI Design

Name: AMAN(2024H1030022G)

Student Write-up

PS-II Project Title: Camera Image Quality (IQ) Tuning

Short Summary of work done during PS-II : During my PS-II internship, I worked in the domain of camera image quality (IQ) tuning for embedded mobile imaging systems. The work primarily involved analyzing camera output under varying environmental and lighting conditions and assisting in optimizing image quality parameters within the camera pipeline before image capture. The internship provided exposure to practical workflows used in industrial camera system development and validation. My responsibilities included participating in camera tuning and validation activities, observing parameter adjustments for different imaging scenarios, performing comparative analysis of image outputs, and supporting testing workflows using internal tools and hardware platforms. The work required understanding concepts related to image processing, signal processing, and camera system behavior.

Tool used (Development tools - H/w, S/w) : Proprietary company internal camera tuning and validation tools, Image analysis and debugging software tools.

Objectives of the project : To understand and optimize camera image quality parameters in mobile imaging systems, To analyze camera pipeline behavior under different lighting and environmental

conditions, To perform image quality validation and parameter tuning for improved visual output.

Major Learning Outcomes : Understanding of camera imaging pipelines and image quality parameters.
Practical knowledge of signal and image processing concepts applied in camera systems.

Details of Papers/patents : No papers or patents published as part of the internship work.

Brief Description of working environment, expectations from the company : The working environment during PS-II was highly professional, collaborative, and technically focused. The team worked on advanced camera imaging technologies for embedded mobile platforms, requiring close coordination between different engineering teams such as software, hardware, validation, and imaging teams.
The company emphasized learning through practical exposure, problem-solving, and understanding real-world engineering workflows. Team members were supportive and encouraged active participation in discussions, debugging activities, and validation processes. Expectations included maintaining professionalism, learning proprietary workflows quickly, contributing to assigned tasks responsibly, and adapting to fast-paced development cycles.

Academic courses relevant to the project : Digital Image Processing, Signal Processing, Embedded Systems, Computer Architecture

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Name: POOJAN VIMALBHAI SHETH(2024H1030081P)

Student Write-up

PS-II Project Title: Image Quality Tuning

Short Summary of work done during PS-II : As part of Practice School II in MediaTek, Bengaluru, I carried out IQ tuning and validation activities related to the camera subsystem of mobile phones. This process consisted of comprehending the end-to-end Image Signal Processor (ISP) workflow, as well as analyzing different ISP blocks which perform the transformation of RAW Bayer data to YUV data of high quality. The internship involved working on Auto Exposure (AE), Face Auto Exposure

(Face AE), Auto White Balance (AWB) and other advanced image processing components such as Demosaicing, Spatial Noise Reduction (SNR), Temporal Noise Reduction (TNR), Chroma Noise Reduction (CNR) and Edge Enhancement (EE). In addition, I got familiarized with MediaTek's tuning methodologies involving MediaToolKit and Imagiq Simulator for offline tuning and validation purposes. Moreover, I studied different ISP validation processes like dump analysis, DB consistency, lens shading validation and scenario tuning. I carried out a case study on low light video tuning that helped me understand the impact of optimized parameter tuning on various IQ metrics such as noise reduction, sharpness, and texture.

Tool used (Development tools - H/w, S/w) : Hardware: MediaTek Smartphone Development Platforms, Camera Sensors, Workstation/Desktop Systems. Software: MediaToolKit, Imagiq Simulator, , Microsoft Office, Python (for analysis and scripting)

Objectives of the project : For gaining insights into the design and workings of Image Signal Processor (ISP) from MediaTek. For learning about IQ modules like Auto Exposure (AE), Auto White Balance (AWB), and Face AE and optimizing them. For testing and analyzing images in relation to ISP pipeline and camera conditions. For examining and studying advanced image enhancement techniques like noise reduction, HDR, and edge enhancement. For studying methods of image quality improvement using AI technology.

Major Learning Outcomes : Comprehension of the whole ISP pipeline from RAW Bayer to YUV.
Experience with AE, AWB, Face AE, and ISP validation pipelines.
Familiarity with MediaTek proprietary software like MediaToolKit and Imagiq Simulator.
Awareness of high-level ISP functions like Demosaicing, SNR, TNR, CNR, and Edge Enhancement.
Understanding of camera tuning and validation process in industry.

Details of Papers/patents : No papers or patents were filed during the internship.

Brief Description of working environment, expectations from the company : The corporate atmosphere inside MediaTek was collaborative, conducive to learning and technically stimulating. I was assigned to the Image Quality (IQ) Tuning team whose main objective is to tune and validate the ISP modules/algorithms that will enable high-quality images across various imaging scenarios.
The early stages of my internship were marked by a significant amount of technical training by the Taiwan-based engineers of MediaTek for three to four months. The technical training involved understanding the basics of Image Signal Processing, IQ Tuning, ISP pipelines, MediaToolKit, and Imagiq Simulator. The intensive training served to lay the foundations before getting into real-life applications through industry projects.

As soon as the training period ended, I got involved in client projects on flagship smartphones, participating in IQ Tuning and validation work on various ISP modules. The collaborative atmosphere within the team fostered learning, discussion, and teamwork. The expectation at the company is that interns be active learners who possess great analytical capabilities and adaptability in industrial processes and proprietary technologies.

Academic courses relevant to the project : Computer Vision
Machine Learning
Artificial Intelligence
Digital Signal Processing
Probability and Statistics
Computer Architecture
Data Structures and Algorithms

Name: AVINASH SINGH(2024H1400116P)

Student Write-up

PS-II Project Title: Physical design flow : RTL to GDS implementation

Short Summary of work done during PS-II : Block level Design of a SOC. Block level flow and tweaker innovus.

Tool used (Development tools - H/w, S/w) : Tweaker innovus

Objectives of the project : A block level implementation flow for physical design team

Major Learning Outcomes : Innovus and tweaker tool

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Just to provide innovative design challenges and to give hands on experience of project

Academic courses relevant to the project : VLSI design, VLSI architecture, CAD for physical design

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Name: VASUDHA C N(2024H1400070G)

Student Write-up

PS-II Project Title: Image quality tuning

Short Summary of work done during PS-II : In my role, I focus on Image Quality (IQ) tuning, which involves calibrating the camera's software pipeline to transform raw sensor data into visually optimized, true-to-life images. Specifically, my work centers on ISP (Image Signal Processor) tuning, where I configure and balance sequential hardware blocks. I adjust parameters for critical algorithms including auto-exposure, automatic white balance (AWB), noise reduction, and sharpening. By precisely balancing these conflicting parameters, I ensure the camera system delivers optimal sharpness, accurate color reproduction, and minimal noise across diverse and challenging lighting conditions.

Tool used (Development tools - H/w, S/w) : Mediatek tools, odin flashing tool

Objectives of the project : Perform tuning on images to make is visually correct.

Major Learning Outcomes : Tuning flow, handling tools, communication

Details of Papers/patents : Nil.

Brief Description of working environment, expectations from the company : Friendly work environment. Mostly training was done theory and practical. Communicated a lot with the Taiwan team as they were providing the training. Expectations of the company was to do well in tests and assignments.

Academic courses relevant to the project : Nil

Name: AJINKYA SUNIL DESAI(2024H1230092G)

Student Write-up

PS-II Project Title: RISC8 Backend Integration

Short Summary of work done during PS-II : Mentioned above

Tool used (Development tools - H/w, S/w) : PRIME TIME, DESIGN COMPILER, FUSION COMPILER, CADENCE -LEC checking tool, Tweaker etc

Objectives of the project : Get to familiar with ASIC FLOW, mostly focus on Synthesis, STA and Quality Checks

Major Learning Outcomes : Got to know about in detail & implementation of Synthesis , STA and QC checks(including LEC, CLP, CTS SANITY, TV SDC, TWEAKER etc) in actual project

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Mentioned above

Academic courses relevant to the project : STA, DIGITAL Electronics ,Vlsi design

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Name: KANDI DEVI PRAVALLIKA(2024H1400090H)

Student Write-up

PS-II Project Title: Rtl design and QC checks on risc8

Short Summary of work done during PS-II : Performing lint,synthesis, cdc and simulation on basic blocks along with qc checks.

Tool used (Development tools - H/w, S/w) : Spyglass lint, questa cdc, simulation

Objectives of the project : Performing lint,synthesis, cdc qnd simulation on basic blocks.

Major Learning Outcomes : Lint , cdc , synthesis, simulation

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Good work life balance.

Academic courses relevant to the project : Vlsi design , vlsi test and testability.

Name: SRI LALITHA MANASA GARIMELLA(2024H1400067G)

Student Write-up

PS-II Project Title: IQ Tuning

Short Summary of work done during PS-II : I worked on camera image quality tuning and validation activities, focusing on Auto Exposure (AE) performance analysis and optimization. My responsibilities included evaluating imaging performance under various lighting conditions, analyzing exposure-related parameters, conducting testing and debugging, and documenting observations.

Tool used (Development tools - H/w, S/w) : Mediatek propriety tools for simulation and tuning.

Objectives of the project : Tune the parameters to obtain desired images.

Major Learning Outcomes : Understood how optimization of an image works in devices using Mediatek chipset.

Details of Papers/patents : None.

Brief Description of working environment, expectations from the company : The organization provided a professional, collaborative, and learning-oriented work environment. Team members were supportive and encouraged knowledge sharing through regular discussions, reviews, and mentoring sessions.

Academic courses relevant to the project : Embedded Systems, Hardware-Software Co-Design.

Name: SAI ROHIT ARROJU(2024H1230108H)

Student Write-up

PS-II Project Title: Backend Integration (QC tasks)

Short Summary of work done during PS-II : Worked on digital design quality check (QC) and signoff activities as part of the VLSI design flow. Performed synthesis and analyzed generated reports to validate design implementation. Conducted Logical Equivalence Checking (LEC) to verify functional equivalence between RTL and synthesized netlists. Executed CLP/ERC quality checks to identify connectivity and electrical rule issues. Performed Static Timing Analysis (STA) QC checks and reviewed timing reports to ensure timing correctness. Additionally, analyzed tool outputs, investigated reported violations, and gained practical exposure to industry-standard EDA tools and signoff methodologies.

Tool used (Development tools - H/w, S/w) : Linux, Conformal, Prime time, DC Compiler

Objectives of the project : To ensure the correctness, quality, and signoff readiness of digital designs by performing synthesis, logical equivalence checking (LEC), connectivity and electrical rule checks (CLP/ERC), and static timing analysis (STA) quality validations across the design flow

Major Learning Outcomes : Understanding of design flow.
Hands-on experience with Synthesis, LEC, CLP, ERC, and STA QC activities.
Ability to analyze EDA tool reports and identify design issues.
Knowledge of signoff methodologies.
Improved debugging and problem-solving skills in a VLSI design environment.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The company provided a professional, collaborative, and learning-oriented environment where I gained practical

exposure to industry-standard VLSI design flows and tools. With guidance from experienced mentors and team members, I was able to enhance my technical and problem-solving skills through labs. I look forward to continuing my learning journey, gaining deeper technical expertise, and contributing to challenging projects while working alongside experienced professionals.

Academic courses relevant to the project : Reconfigurable Configuration, VLSI design, CAD for IC, VLSI Test and Testability

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Name: DEVRAJSINH SHRIPALSINH JHALA(2024H1030120G)

Student Write-up

PS-II Project Title: Resource Tracker Tool and USB Specification

Short Summary of work done during PS-II : Modern hardware validation environments face compounded challenges: the logistical friction of managing highly sensitive, shared physical testing assets, and the escalating technical complexity of validating high-bandwidth peripheral interconnects. This practice school project addresses both challenges through a two-phase engineering methodology. The first phase resolved the "Physical vs. Digital Gap" in lab hardware tracking by architecting a High-Integrity Local Resource Tracker optimized for a 50-person team. Constrained by strict corporate IP security policies prohibiting cloud usage, the system was built as a 100% locally resident, air-gapped web application utilizing a Next.js, Node.js, and PostgreSQL stack. A "Trust-First" hybrid state machine was implemented to manage passive-dispute hardware transfers. Furthermore, the application features a custom, zero-compute AI-free intelligence layer using fuse.js to instantly map informal lab nomenclature to complex enterprise part numbers entirely on the local client, eliminating the need for external LLM APIs. The second phase transitioned to the core validation domain, providing a comprehensive architectural breakdown of the Universal Serial Bus (USB) protocol evolution to support advanced driver testing. The research details the shift from the half-duplex, host-directed polling of USB 2.0 to the dual-bus, full-duplex SuperSpeed architecture of USB 3.x, analyzing the eXtensible Host Controller Interface (xHCI) and layered protocol stack. Finally, it explores the paradigm-shifting Converged I/O (CIO) architecture of USB 4.0, detailing how it replaces static buses with a dynamically routed, fabric-like topology capable of simultaneously tunneling native DisplayPort, PCIe, and USB 3.x packets over a single physical link. Ultimately, this project drastically reduced internal operational delays while establishing a rigorous theoretical framework for next-

generation hardware driver validation.

Tool used (Development tools - H/w, S/w) : VS Code, Visual Studio

Objectives of the project : Developing a resource tracker tool and developing drivers and learning about USB

Major Learning Outcomes : Developed a resource tracker tool to increase productivity of the team
Developing drivers and fixing issues
Learning USB specifications

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Work environment is very good, everyone is very supportive and you get to learn a lot of things everyday

Academic courses relevant to the project : OS, RTOS, COA

PS-II Station : Meesho, Bengaluru

Faculty

Name: Akanksha Bharadwaj .

Student

Name: ROHIT RAJ(2022A7PS0157G)

Student Write-up

PS-II Project Title: Reducing Hangs in Meesho iOS App

Short Summary of work done during PS-II : At Meesho, integrating declarative SwiftUI components

into a massive UIKit codebase introduced critical performance issues, manifesting as elevated main-thread "Hang Rates" during list scrolling. To address this "Layout Thrashing" and eliminate recursive layout cycles, I helped develop a custom Bridging Architecture designed to decouple the SwiftUI rendering lifecycle from the UIKit cell reuse cycle. The solution involved building a specialized "Dummy Cell" container that utilizes a pre-allocated pool of reused UIHostingController instances, significantly minimizing CPU spikes during view initialization. Furthermore, we bypassed expensive Auto Layout constraint solvers by implementing manual sizing logic via the iOS 16 sizingOptions API. We also utilized lifecycle methods to update SwiftUI state only when a cell was actively visible on the screen. This structural offloading reclaimed roughly 4ms of the main-thread budget per frame and yielded a massive 340% reduction in hang rates.

Tool used (Development tools - H/w, S/w) : Tools used (Development tools - H/w, S/w):SwiftUI and UIKit frameworks UIHostingController and UICollectionViewCell iOS 16 sizingOptions API MetricKit Xcode Organizer Xcode Time Profiler Details of Papers/patents: None.

Objectives of the project : To identify and resolve core performance bottlenecks (specifically elevated "Hang Rates" and main-thread stalls) occurring at the intersection of UIKit's layout engine and SwiftUI's view body evaluation when integrating modern SwiftUI components into a legacy UIKit codebase.

Major Learning Outcomes : Major Learning Outcomes:Deepened understanding of iOS architecture, layout rendering loops, and performance engineering. Gained expertise in managing the "Paradigm Friction" between UIKit's manual imperative layout passes and SwiftUI's dependency-tracking reactive state management. Mastered technical decoupling, lifecycle synchronization using willMove(toParent:)/didMove(toParent:), and UIViewController resource pooling. Learned to interpret performance telemetry using tools like MetricKit, Xcode Organizer, and Xcode's Time Profiler.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company :
Good work culture and a helpful team. Overall, a pleasant experience working with the organization.
Academic courses relevant to the project : Object Oriented Programming, Data Structures and Algorithms

Name: SAMARTH PAWAN .(2022A7PS0091H)

Student Write-up

PS-II Project Title: Widgets team

Short Summary of work done during PS-II : Issue with home page catering bar fixed. On call responsibility once in 8 weeks for 24/7 availability for being on top of issues. Sale time prep and pod scaling.

Tool used (Development tools - H/w, S/w) : Java go springboot react typescript

Objectives of the project : On call responsibility. Debugging issues. Feature development.

Major Learning Outcomes : Technical knowhow and team context.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Fast paced. Expectations of speed and delivery with quality is high.

Academic courses relevant to the project : Object oriented programming.

PS-II Station : MerQube Inc., Bengaluru

Faculty

Name: Perumal Jayakumar

Student

Name: MALPANI GOVIND NANDKISHOR(2021B5A32280H)

Student Write-up

PS-II Project Title: Creation, maintenance, and deployment of multi-asset class indices (Equity, Bespoke Index, Commodities).

Short Summary of work done during PS-II : During my internship at Merqube, I worked on projects related to financial engineering and index calculation, focusing on equity indices, multi-asset indices, and commodity indices. Project 1 – Equity Index Development I developed a Python-based framework for equity index creation that included quarterly rebalancing, sector-wise selection of constituents, and filtering based on free-float market capitalization. I contributed to the methodologies for index construction, portfolio allocation logic, and implemented a rebalancer for a 20-constituent equity index spanning multiple sectors. Project 2 – Index Methodology Change Project I updated the multi-asset index calculation systems to align with new client methodology changes. I enhanced the existing Python framework by adding support for new strategies, handling foreign exchange (FX) transactions, performing holiday-based calculations, and adjusting for transaction costs. This improved the system's flexibility and maintainability for future index updates. Project 3 – CIM Code Setup for BCOM Indices I developed support for Component Index Multiplier (CIM) calculations for Bloomberg Commodity Index (BCOM) products. I built and tested two different approaches for integrating CIM calculations into the existing system, focusing on ensuring accurate calculations, maintaining a clean data flow, and simplifying future maintenance.

Tool used (Development tools - H/w, S/w) : VS Code, Cursor, Amazon AWS, Excel

Objectives of the project : As a member of the financial engineering team, I focus on developing and optimizing index algorithms. The details of the project are as follows: - Creation of an equity index. - Development of a bespoke index basket consisting of intraday momentum indices. - Setting up a code to calculate a weighting factor on the fourth business day of January for a highly complex commodity index.

Major Learning Outcomes : As a quantitative analyst intern, I learned a lot about finance, index construction, and deploying the index to production. I was able to visualise how index levels are calculated each day. I resolved various index-level mismatches, debugged issues, and gained valuable insights into how factors such as prices, FX rates, constituent holidays, and index holidays affect index levels.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : MerQube Inc has a collaborative and learning-oriented work culture that encourages innovation, analytical thinking, and problem-solving in the financial engineering domain. The company provides interns and employees with hands-on exposure to real-world index calculation systems, quantitative research, and production-level financial projects. Team members work closely with experienced engineers and product managers in a supportive environment that promotes technical growth, ownership of tasks, and continuous learning through practical implementation and research-driven projects.

Academic courses relevant to the project : OOP, Computational Physics

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Name: EKANSH ARYAN SINHA .(2021B3AA3038H)

Student Write-up

PS-II Project Title: Quant Index Strategy Implementation

Short Summary of work done during PS-II : During my PS-II internship at MerQube, I worked with the Financial Engineering team on developing an options-based index strategy from scratch. My work covered the complete lifecycle of the strategy, starting from the selection process of options, followed by pricing, delta hedging, PnL calculation, and generation of index levels. I gained hands-on exposure to how financial concepts are converted into systematic, production-ready index logic. I also worked on validating outputs, understanding strategy behavior, and ensuring that the calculated index levels could be integrated into the production environment. This experience helped me strengthen my understanding of derivatives, index construction, hedging, and real-world financial engineering workflows. Along with the finance side, I also improved my practical software development skills by working with production code, debugging issues, using GitHub-based workflows, and following team coding standards. Overall, the internship gave me valuable exposure to both quantitative finance and professional engineering practices in a fintech environment.

Tool used (Development tools - H/w, S/w) : Python, Excel, Claude, AWS, Cursor, Git

Objectives of the project : Build a new Index as per the Quantitative Methodology provided by Client

Major Learning Outcomes : 1. Gained hands-on experience working in a real software development

environment
2. Improved practical understanding of collaborative software engineering
3. Strengthened debugging and problem-solving skills
4. Learned how production-level systems are structured
5. Client Communication
6. Financial knowledge on strategies

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Work environment is great here, people are supportive and you have to be curious about things and ask as many questions as possible.
Expectations from the company is that you should be curious, understand requirements quickly, learn quickly and work in a fast paced environment.

Academic courses relevant to the project : Object Oriented Programming, C programming, Financial Risk Analytics and Management, Derivatives and Risk Management, Financial Management.

PS-II Station : Mezink (Super Creator Tech Pvt Ltd) - Operations, Bengaluru

Faculty

Name: Arindam Roy .

Student

Name: ABHAY GARG(2021A4PS3050G)

Student Write-up

PS-II Project Title: Operations

Short Summary of work done during PS-II : Projects on Operations and Strategy, Data analyst, Product management and Go to market

Tool used (Development tools - H/w, S/w) : Tiktok Seller center, Tiktok ads manager, Excel

Objectives of the project : Increase the performance of the content creators

Major Learning Outcomes : Mastered the Excel

Details of Papers/patents : no paper/patents

Brief Description of working environment, expectations from the company : Working environment is too good, there is a communication in all the teams.

Academic courses relevant to the project : NA

PS-II Station : Microchip-Microsemi, PAN India

Faculty

Name: Shree Prasad M

Student

Name: RAKESH RANJAN GUPTA(2024H1230128H)

Student Write-up

PS-II Project Title: DDR

Short Summary of work done during PS-II : During this project, I studied and analyzed the DDR memory subsystem with a focus on understanding the architecture and functionality of the DDR Controller and DDR PHY. I explored key concepts such as memory initialization, training procedures,

DFI interface communication, bank management, refresh operations, and scheduling mechanisms. I reviewed the PolarFire Fabric DDR Subsystem documentation and Memory Controller User Guide to gain insights into controller operation and high-speed memory access techniques. Additionally, I learned about DDR training processes including write leveling, read leveling, clock training, and I/O calibration, which are essential for reliable data transfer. The project also involved RTL-level analysis of DDR components, understanding timing constraints, and observing how data transactions are managed between the controller and external memory. Through this work, I developed practical knowledge of DDR protocols, memory controller design, verification methodologies, and debugging techniques, enhancing my understanding of high-speed digital system design and validation

Tool used (Development tools - H/w, S/w) : Microchip Libero SoC Design Suite ModelSim / QuestaSim (RTL Simulation and Debugging)

Objectives of the project : The objective of this project is to understand, analyze, and validate the DDR memory subsystem used in high-speed digital systems. The project focuses on studying the architecture and operation of the DDR Controller and PHY, including initialization, training, timing control, bank management, refresh handling, and data transfer mechanisms. It aims to gain practical knowledge of the DFI interface, AXI/native interfaces, and memory access scheduling techniques. The project also involves RTL analysis, verification, and debugging of DDR functionalities to ensure reliable communication between the processor and external memory, thereby improving system performance, efficiency, and data integrity

Major Learning Outcomes : Gained a comprehensive understanding of DDR memory subsystem architecture, including DDR Controller, PHY, and DFI interface interactions. Developed knowledge of memory initialization, training procedures, timing constraints, bank management, and scheduling techniques. Enhanced skills in RTL analysis, functional verification, debugging, and validating high-speed memory interfaces for reliable system performance.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Microchip Technology was professional, collaborative, and learning-oriented. Team members were supportive and encouraged knowledge sharing, enabling me to gain practical exposure to industry-standard design and verification methodologies. Regular discussions, technical reviews, and guidance from mentors helped me understand complex DDR memory subsystem concepts and their real-world applications. The organization provided access to relevant tools, documentation, and resources, which facilitated effective learning and project execution.

Academic courses relevant to the project : Digital Logic Design
Computer Organization and Architecture

Name: KARTIK BHAGWANSWAROOP BHATNAGAR(2024H1230106H)

Student Write-up

PS-II Project Title: Verification of Core Control Plane

Short Summary of work done during PS-II : During the PS I worked on Core Control Plane verification environment. I analysed the existing testbench, QVIP connection ls, interface signals, and base tests. I helped develop different types of filtering test cases like destination address, source address, VLAN, Type-ID, and HASH based filtering. The work included both testcase development and verification environment debug.

Tool used (Development tools - H/w, S/w) : Questasim, System verilog and UVM, linux

Objectives of the project : To develop and improve the verification environment for the Core Control Plane IP. The work focused on verifying packet routing and filtering features such as destination MAC address filtering. The project also involved Integrating Ethernet and AXI4-Stream QVIPS, creating ttestcases, improving scoreboard logic, checking register based configuration through AXI4-Lite, and validating whether packets are correctly routed to the data path or control path based on the programmed filtering rules

Major Learning Outcomes : UVM verification environment used in industries and how to debug

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The work was carried out in an industry style verification setup with large pre-existing codebase and std simulation flow. The environment involved - Linux based simulation runs, Questasim, UVM testbenchs, QVIP componentes, and structured test libraries. The expectations were to understand the verification environment, debug issues independently, write clean and reusable ttestcases, and verify DUT

features according to the specifications.

Academic courses relevant to the project : Digital logic design
VLSI Design
Verilog and System verilog

Name: SANDEEP KANCHAN PANDIT(2024H1030185H)

Student Write-up

PS-II Project Title: Development of an Infrastructure Observability Platform Using Prometheus, Grafana & Cloud-Native Technologies

Short Summary of work done during PS-II : During my PS-II at Microchip Technology, I worked on developing a centralized Infrastructure Observability Platform to monitor and analyze the health and performance of enterprise infrastructure. The platform integrated Prometheus for metrics collection, Grafana for visualization, Loki for log aggregation, Tempo for distributed tracing, and Grafana Alloy for telemetry collection. I configured monitoring for Linux servers, Windows servers, HTCondor machines, Kubernetes clusters, Docker applications, and regression virtual machines. I developed dashboards for infrastructure inventory, resource utilization, application monitoring, and operational insights. I also configured alerting mechanisms and standardized dashboard templates to improve monitoring consistency across teams. Additionally, I explored and implemented Ansible-based automation for deployment and configuration management. The project enhanced infrastructure visibility, reduced troubleshooting effort, and provided a scalable observability solution for diverse environments

Tool used (Development tools - H/w, S/w) : Software: Grafana, Prometheus, Loki, Tempo, Grafana Alloy, Docker, Kubernetes, Ansible, Git, Python, Linux (CentOS/AlmaLinux), Windows Server, NFS. Hardware: Enterprise Linux Servers, Windows Servers, Virtual Machines, Kubernetes Nodes, Docker Hosts.

Objectives of the project : To design and implement a centralized infrastructure observability platform for monitoring Linux servers, Windows servers, Kubernetes clusters, Docker applications, HTCondor machines, and regression VMs using Prometheus, Grafana, Loki, Tempo, Alloy, and

Ansible. The project aimed to improve infrastructure visibility, troubleshooting, performance analysis, and operational efficiency through automated monitoring and alerting.

Major Learning Outcomes : Hands-on experience with enterprise-scale monitoring and observability.
Deployment and configuration of Prometheus, Grafana, Loki, Tempo, and Alloy.
Containerization using Docker and orchestration using Kubernetes.
Infrastructure automation using Ansible.
Development of dashboards, alerts, and performance monitoring solutions.
Understanding of metrics, logs, and traces for troubleshooting distributed systems.
Exposure to enterprise DevOps practices and system administration.

Details of Papers/patents : No papers or patents were published as part of this PS-II project.

Brief Description of working environment, expectations from the company : Microchip Technology provided a professional and collaborative work environment focused on innovation, teamwork, and continuous learning. The organization encouraged interns to take ownership of assigned tasks and actively contribute to ongoing projects. Regular interactions with mentors and team members helped in understanding real-world engineering practices and enterprise workflows. The company expected interns to demonstrate technical competence, problem-solving ability, effective communication, professionalism, and a willingness to learn new technologies. Emphasis was placed on timely delivery of tasks, documentation, collaboration across teams, and adherence to industry best practices. The environment provided exposure to large-scale infrastructure management, DevOps methodologies, cloud-native technologies, and observability solutions, enabling practical application of academic knowledge in a real-world setting.

Academic courses relevant to the project : Operating Systems
Distributed Systems
Computer Networks
Cloud Computing
System Administration
DevOps and Automation
Software Engineering
Database Systems
Data Structures and Algorithms
Python Programming

Name: SATYAM SINGH(2024H1400086H)

Student Write-up

PS-II Project Title: coreMMC

Short Summary of work done during PS-II : During PS-II, the primary focus was on the development and validation of the coreMMC IP, a controller designed to interface with embedded MultiMediaCard (eMMC) devices. The work involved understanding the JESD84-B51 eMMC standard and translating protocol specifications into a functional and synthesizable hardware design. The development phase included designing key modules such as command handling, data path management, response decoding, and register interfaces. Special emphasis was placed on ensuring compliance with timing requirements, command sequencing, and error handling mechanisms. RTL design was implemented using Verilog, followed by integration of submodules to form the complete coreMMC controller. On the validation side, extensive testbenches were developed to verify functionality across multiple scenarios, including read/write operations, boot sequence handling, and response validation. Simulation-based verification was carried out to ensure protocol correctness and data integrity. Debugging involved analyzing waveform outputs, identifying anomalies, and refining logic to meet design specifications. Additionally, work included resolving integration issues arising from updated IP versions, studying eMMC data flow from host to NAND, and analyzing boot operation significance. Exposure to tools and environments related to FPGA-based implementation further strengthened practical understanding. Overall, the PS-II experience provided hands-on expertise in digital design, protocol implementation, and verification methodologies, contributing to a comprehensive understanding of storage interface IP development.

Tool used (Development tools - H/w, S/w) : Libero and Softconsole

Objectives of the project : development and validation of coreMMC IP

Major Learning Outcomes : Developed a strong understanding of the eMMC protocol (JESD84-B51), including command structure, response types, and data transfer mechanisms.
Gained hands-on experience in RTL design using Verilog, including modular design, signal interfacing, and synthesizable coding practices.
Acquired practical knowledge of storage controller architecture, specifically coreMMC IP design

involving command handling, data path, and register interfaces.
Built expertise in functional verification, including writing testbenches, simulating different scenarios, and validating protocol compliance.
Improved debugging skills through waveform analysis and root-cause identification of design issues.
Understood eMMC boot operation and data flow (host → controller → NAND) in real-world embedded systems.
Learned IP integration challenges, including handling version updates and resolving compatibility issues.
Gained exposure to FPGA design flow and tools, enhancing understanding of synthesis, simulation, and implementation stages.
Strengthened knowledge of memory-mapped I/O and hardware-software interfacing concepts.
Enhanced problem-solving ability in timing, control logic, and error handling mechanisms in digital systems.

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : The working environment during PS-II was structured, technically driven, and focused on collaborative problem-solving. The organization followed a systematic development flow involving requirement analysis, design, implementation, and validation. Regular interactions with mentors and team members facilitated clarity in understanding complex concepts such as eMMC protocol, IP integration, and verification methodologies. Access to industry-standard tools and documentation enabled practical exposure to real-world embedded and FPGA-based design workflows.
The environment encouraged independent learning while also promoting teamwork through discussions, debugging sessions, and design reviews. Timely feedback and guidance helped in improving both technical and analytical skills. Additionally, exposure to handling updated IP versions and resolving integration issues provided insight into real industry challenges.
From the company, the expectation is continued guidance in advanced aspects of hardware design, especially in storage interfaces and protocol-level implementations. Opportunities to work on more complex modules, end-to-end system integration, and exposure to silicon-level validation would further enhance practical expertise. Access to complete toolchains, documentation, and cross-functional collaboration is also expected to strengthen understanding of the full product lifecycle.
Overall, the experience is expected to bridge the gap between academic learning and industry practices, enabling the development of strong technical competence and professional skills required for a career in VLSI and embedded systems.

Academic courses relevant to the project : Digital Electronics / Digital Logic Design
Fundamentals of logic gates, FSMs, and sequential circuits used in controller design.
Computer Organization & Architecture (COA)
Understanding of memory systems, data flow, and processor–memory interaction.

PS-II Station : Micron Supply Chain, Hyderabad

Faculty

Name: Pawan Sharma .

Student

Name: GURSHANT SINGH RAINA(2024H1420096H)

Student Write-up

PS-II Project Title: Data Governance, Security and Semantic Layer Enhancement of AI drive Supply Chain Model

Short Summary of work done during PS-II : Develop, maintain and governance and AI models that replaces the traditional SAP Systems for shipment tracking.

Tool used (Development tools - H/w, S/w) : Snowflake, Looker AI, Cortex, Informatica, GCP, Power BI, Tableau, SAP.

Objectives of the project : Develop, maintain and governance and AI models that replaces manual work of using SAP for shipment tracking

Major Learning Outcomes : Snowflake, Looker AI, Cortex, Informatica, GCP, Power BI, Tableau, SAP.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : It was great, we had flexibility to take initiatives. The team was encouraging and my manager was always there to back me up.

Academic courses relevant to the project : Supply chain, supply chain analytics, MPC.

PS-II Station : Micron Technology - , Bengaluru

Faculty

Name: Pawan Sharma .

Student

Name: DAANYAL(2024H1230084G)

Student Write-up

PS-II Project Title: Spice based verification & design of Analog Blocks

Short Summary of work done during PS-II : Majorly focussed on verification and workflow in Micron for Analog Blocks. Was put on live project in July onwards wherein i got to work on Blocks used in actual die in HBM

Tool used (Development tools - H/w, S/w) : Virtuoso, Primesim, Claude Code

Objectives of the project : To learn the design & verification of Analog Blocks in HBM

Major Learning Outcomes : Analog design and the specs involved

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Very nice working environment. My manager Siva Kr Chintu & my mentor Madhu Sudan Sharma has been very nice and very helpful. Moreover, the team overall has helped settle and made life very comfortable for me. Work given is also of good quality and ample learning opportunities were provided

Academic courses relevant to the project : Analog IC Design, VLSI Design, PMMD

Name: ADITYA SHARMA .(2022A3PS1811H)

Student Write-up

PS-II Project Title: Nand Flash Controllers (NFC)

Short Summary of work done during PS-II : During my PS-II internship at Micron Technology, I focused on developing a verification-oriented understanding of NAND Flash Controllers. Initially, I studied NAND flash fundamentals and controller architecture through datasheets, including internal blocks such as the Sequence Parser, Message Manager, PHY Interface, and DMA. I then shifted toward verification methodologies, strengthening my skills in SystemVerilog and UVM. I analyzed UVM architecture, including components like sequences, drivers, monitors, and scoreboards, and explored how they validate protocol behavior. A key task involved mapping specification intent to SystemVerilog-based verification structures for the Message Manager module. I also worked on functional coverage concepts such as covergroups, bins, and cross coverage, using both theoretical learning and practical examples. In parallel, I gained hands-on debugging experience using Verdi for waveform analysis, where I practiced signal tracing, error identification, and root-cause debugging using backtracking techniques. Additionally, I executed and analyzed different test scenarios such as single transaction, burst, and back-to-back tests, and debugged issues like assertion failures, end-of-transfer errors, and data mismatches. Overall, the internship provided strong exposure to industry-scale verification environments, tools, and workflows, preparing me for deeper contributions in coverage and debug activities.

Tool used (Development tools - H/w, S/w) : Software Tools SystemVerilog UVM (Universal Verification Methodology) Verdi (waveform/debugging tool) GVim (code navigation/editing) ETX environment (project workspace) Hardware/Domain NAND Flash Memory systems NAND Flash Controller (NFC) subsystems

Objectives of the project : Develop understanding of NAND Flash Controller (NFC) architecture and behavior Learn verification flow for subsystem-level validation Understand protocol concepts (e.g., ONFI, SCA) Build skills in UVM-based verification and functional coverage Perform module-level analysis (Message Manager) and debug using waveform tools

Major Learning Outcomes : Strong conceptual understanding of NAND flash architecture and controller subsystems
Practical knowledge of UVM components (sequencer, driver, monitor, scoreboard)
Ability to perform functional coverage analysis and interpret verification metrics
Debugging proficiency using waveform tools (Verdi) and backtracking methods
Experience in navigating large verification codebases using GVim
Understanding of verification flows (compilation → simulation → debugging)

Details of Papers/patents : NONE

Brief Description of working environment, expectations from the company : No papers or patents as part of this project.

Academic courses relevant to the project : Digital Design, Analog and Digital VLSI Design(ADVD), Computer Architecture

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Name: CHORAGUDI VEENA MADHURI(2024H1230168P)

Student Write-up

PS-II Project Title: Timing parameters verification

Short Summary of work done during PS-II : To identify and verify the accuracy timing parameters of hbm4e , compare dut results with tb and spec

Tool used (Development tools - H/w, S/w) : System verilog, uvm, cadence virtuoso

Objectives of the project : To identify and verify the accuracy timing parameters of hbm4e , compare

dut results with tb and spec

Major Learning Outcomes : Verification flow

Details of Papers/patents : Na

Brief Description of working environment, expectations from the company : Working environment is good , I was assigned a mentor to guide me with the project . Every week tasks progress is discussed and doubt clearing sessions were organised.

Academic courses relevant to the project : Test and test ability for vlsi

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Name: DEEPTI MISHRA .(2022AAPS0333H)

Student Write-up

PS-II Project Title: SYSTEMVERILOG-BASED FUNCTIONAL VERIFICATION METHODOLOGIES FOR ASIC DESIGN

Short Summary of work done during PS-II : During the PS-II internship, the work focused on learning and applying ASIC design verification concepts using SystemVerilog and UVM. The initial phase involved building a strong foundation in Verilog/SystemVerilog, including data types, procedural constructs, and simulation techniques. This was followed by studying advanced verification methodologies such as constrained random verification and coverage-driven verification. A major part of the work included understanding and implementing UVM-based testbench architecture, including components such as sequencers, drivers, and monitors. Verification planning activities were performed, including creating test plans, validation architecture documents, and checklists. The AXI4-Lite protocol was studied in detail, focusing on its communication model, handshake mechanisms, and transaction flow. Verification strategies were developed to ensure protocol correctness and coverage of corner cases. Hands-on experience was gained in executing CSR read/write tests, running simulations, analyzing logs, and debugging using waveform viewers. Coverage analysis was also performed to improve test completeness. Additionally, exposure to system-level architecture (HIF, HWA) provided a broader understanding of data flow in complex ASIC systems. Overall, the internship provided a balance of theoretical knowledge and practical experience in ASIC verification workflows.

Tool used (Development tools - H/w, S/w) : SystemVerilog (HDL for verification) UVM (Universal Verification Methodology) Simulation tools (EDA tools for running testbenches) Waveform viewers (for signal analysis) UNIX/Linux environment (command-line simulation and workflow)

Objectives of the project : To understand and apply ASIC design verification methodologies using SystemVerilog and UVM. To develop knowledge of constrained random verification and coverage-driven verification. To design and implement a reusable UVM-based testbench environment. To study and verify industry-standard protocols like AXI4-Lite. To gain hands-on experience in simulation, debugging, and verification workflows.

Major Learning Outcomes : Strong understanding of Verilog and SystemVerilog constructs and simulation techniques.
Knowledge of object-oriented programming concepts applied in verification (inheritance, polymorphism, abstraction).
Hands-on experience with UVM architecture and testbench development.
Understanding of constrained random and coverage-driven verification methodologies.
Exposure to AXI4-Lite protocol and verification planning.
Practical skills in debugging using logs, waveforms, and coverage analysis.

Details of Papers/patents : nil

Brief Description of working environment, expectations from the company : The internship was conducted in a professional semiconductor industry environment, following standard ASIC verification workflows. Work was carried out in a UNIX/Linux-based setup using command-line tools for compilation, simulation, and debugging. The environment emphasized structured development practices, including modular testbench design, documentation, and version-controlled workflows.
Learning was supported through a combination of internal training resources, technical lectures, and hands-on assignments. Collaboration with mentors and team members played a key role in understanding complex concepts and resolving issues.
Expectations from the company included gaining a strong foundation in verification methodologies, developing problem-solving and debugging skills, and becoming familiar with industry-standard tools and workflows. There was also an emphasis on writing clean, reusable code and following best practices in verification planning and execution.
The environment encouraged continuous learning, attention to detail, and systematic analysis of problems. Overall, it provided valuable exposure to real-world ASIC verification processes and industry expectations.

Academic courses relevant to the project : Digital Design
Computer Architecture
VLSI Design
Hardware Description Languages (Verilog/SystemVerilog)
Embedded Systems
Microprocessors and Interfacing

Name: LOUKIK DARSI .(2022AAPS0478H)

Student Write-up

PS-II Project Title: Host Perspective Analysis of Solid State Devices

Short Summary of work done during PS-II : The project analyzed and diagnosed NVMe SSDs from the perspective of the host operating system on a Windows platform. A cross-layer state model was established to map power and system constraints across ACPI, PCIe, and NVMe layers. Eight Windows diagnostic tools were surveyed and applied to correlate system, event, trace, device, and kernel-level behaviors. Additionally, the work included a comparative study of iRST and VMD storage stacks, an exploratory implementation of Windows IOCTL-based NVMe command passthrough for log retrieval, and a remote-controlled test automation framework prototype.

Tool used (Development tools - H/w, S/w) : Software / Diagnostics: Windows Performance Recorder/Analyzer (WPR/WPA), Windows Debugger (WinDbg), Reliability Monitor, Event Viewer, Powercfg, Registry Editor, PowerShell, Python, and CrystalDiskMark. Hardware Automation Infrastructure: Source Management

Objectives of the project : Understand and document the host-side architecture governing Windows NVMe interaction (driver stack, I/O flow, power management). Classify and map operational, power, and system-level states using state diagrams. Survey, evaluate, and apply native Windows diagnostic tools to synthesize a cohesive host-perspective diagnostic framework.

Major Learning Outcomes : Understanding the layered Windows host-to-NVMe SSD I/O driver stack and the role of stornvme.sys.

Mapping and coordinating a four-layer power state hierarchy and structural constraints.
Applying kernel debugging techniques via WinDbg and post-mortem dump analysis to isolate hardware and driver faults.
Bypassing OS constraints to safely execute NVMe admin commands using the Windows IOCTL storage interface.
Building end-to-end test automation protocols using remote control architectures (WinRM and WinUIA).

Details of Papers/patents : No papers or patents were published as part of the internship work.

Brief Description of working environment, expectations from the company : The internship was conducted within the SSD System Design team at Micron Technology, Hyderabad, a collaborative, high-performance R&D engineering environment focused on advanced memory and storage design. The group specializes in product validation, debugging, and cross-layer optimization across cutting-edge flash memory platforms.
Micron expected the intern to expand diagnostic capabilities beyond traditional, drive-centric firmware telemetry, which typically mandates specialized vendor hardware. The company required the development of universally accessible toolchains and methodologies capable of identifying performance issues (e.g., latency spikes, power state transitions, and unclean shutdowns) directly from the host operating system. Ultimately, the team expected actionable technical insights to bridge the diagnostic gap on the Windows platform, alongside automation prototypes to optimize power rail tracking, performance repeatability, and signal instrumentation.

Academic courses relevant to the project : Operating Systems, Electronic Devices, Computer Architecture.

PS-II Station : Micron Technology - AL/ML, Hyderabad

Faculty

Name: Pawan Sharma .

Student

Name: NISHIT GAUTAM(2024H1030085P)

Student Write-up

PS-II Project Title: Coverage Auto Debugger

Short Summary of work done during PS-II : Automatically debugging and finding RCA for directed vectors thereby increasing manual effort by 95%

Tool used (Development tools - H/w, S/w) : Verdi, pywebview etc

Objectives of the project : Automatically debugging and finding RCA for directed vectors.

Major Learning Outcomes : Getting hands on with system verilog, functional coverage and getting a lot of experience in creating LLM powered agents.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Very good working environment.

Academic courses relevant to the project : AI, ML

PS-II Station : Micron Technology - ASIC Design, , Hyderabad

Faculty

Name: Pawan Sharma .

Student

Name: KOTHA SRIHITHA(2024H1230109H)

Student Write-up

PS-II Project Title: Implementation of place and route of Digital block at advanced technology node

Short Summary of work done during PS-II : During the Practice School-II internship, the work focused on the physical design and place-and-route implementation of a digital block using Cadence Innovus. The implementation involved executing all major stages of the backend design flow, including design initialization, floorplanning, placement, clock tree synthesis (CTS), routing, post-route optimization, and static timing analysis. The project emphasized understanding the impact of design constraints, technology rules, and layout decisions on timing, congestion, and routing quality. Floorplan variations were explored to analyze congestion behavior and improve routing distribution. Critical paths were examined using timing analysis tools, and violations were addressed through optimization techniques such as buffering and cell resizing. Special standard cells such as well tap, end cap, and decoupling capacitor cells were also studied to understand their role in ensuring reliability, power integrity, and layout correctness. Additionally, hands-on experience was gained in identifying and fixing routing violations and ensuring DRC-clean layouts. Overall, the internship provided practical exposure to industry workflows, strengthened conceptual understanding of physical design methodologies, and enhanced problem-solving skills in backend VLSI design.

Tool used (Development tools - H/w, S/w) : Cadence Innovus

Objectives of the project : 1.To understand and implement the complete ASIC physical design (Place and Route) flow. 2.To gain hands-on experience with industry-standard EDA tools such as Cadence Innovus. 3.To analyze design parameters such as timing, congestion, and routing efficiency. 4.To study the impact of floorplan variations on design QoR (Quality of Results).

Major Learning Outcomes : 1.Gained practical understanding of the complete ASIC physical design flow.
2.Developed skills in timing analysis, congestion management, and design optimization.
3.Learned to debug DRC violations and timing issues during implementation.
4.Understood the importance of floorplanning and placement strategies in improving design QoR.
5.Gained exposure to Linux environment, gVim, and EDA workflow practices.

Details of Papers/patents : No papers or patents were filed as part of this internship.

Brief Description of working environment, expectations from the company : The internship was carried out in a professional semiconductor design environment within the ASIC Physical Design team. The working environment was highly collaborative, with regular guidance from mentors and interaction with team members working on real-time projects. The use of industry-standard tools and workflows provided valuable exposure to practical design methodologies. The work was primarily performed in a Linux-based environment, which is widely used in EDA tool development and execution. Emphasis was placed on maintaining organized workflows, following design guidelines, and ensuring that outputs met quality and reliability standards. From the organization, there was an expectation to understand the design flow progressively, apply theoretical concepts in a practical context, and work with discipline and attention to detail. Learning was encouraged through hands-on tasks, discussions, and feedback from mentors. Overall, the environment supported both technical learning and professional development, helping build confidence in handling real-world backend design challenges.

Academic courses relevant to the project : VLSI Design, CAD for IC Design

PS-II Station : Micron Technology - DEG Verification, Hyderabad

Faculty

Name: Pawan Sharma .

Student

Name: DEVIREDDY SRINIVASA REDDY(2024H1240040H)

Student Write-up

PS-II Project Title: DEG - Design Verification

Short Summary of work done during PS-II : Debugging and writing of functional coverage patterns for DRAM products

Tool used (Development tools - H/w, S/w) : Cadence Xcelium , Simvision

Objectives of the project : Digital Verification of memory product

Major Learning Outcomes : System verilog , UVM , pattern writing

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Very helpful and proactive

Academic courses relevant to the project : Verilog design

Name: ANGAD SINGH(2024H1240313P)

Student Write-up

PS-II Project Title: Voltage Aware Timing Delay Modelling and Coverage-Driven Verification DDR6

Short Summary of work done during PS-II : During my PS-II at Micron Technology's DEG Verification team, I worked on voltage-aware timing delay modeling and functional coverage improvement for DRAM. I analyzed the specification relevant to core array commands: READ, WRITE, ACTIVATE, and PRECHARGE. I created comprehensive mapping documents. I analyzed existing simulation coverage reports, identified cover points that were currently covered, and provided specific recommendations to improve coverage. I also conducted gap analysis comparing the verification plan. My work created a systematic framework for test planning, enabling engineers to write directed tests targeting specific uncovered scenarios.

Tool used (Development tools - H/w, S/w) : - SimVision (Cadence) - Waveform analysis and debugging - IMC (Incisive Metrics Center) - Coverage analysis and reporting - Python - Data extraction and mapping automation - Microsoft Excel - Coverage database creation - VCS/Xcelium - RTL simula

Objectives of the project : - Voltage aware pessimism in timing sign off for Random On chip variation - Increase functional coverage in DRAM Verification - Develop comprehensive mapping between specification document and verification plan cover points - Identify coverage gaps and provide recommendations for test development - Analyze simulation coverage reports for Array commands

Major Learning Outcomes : 1. DRAM Architecture: Gained in-depth understanding

2. Coverage-Driven Verification: Learned systematic approaches to functional coverage analysis, including Vplan interpretation, coverpoint mapping, and gap identification.

3. Verification Planning: Developed skills in creating verification artifacts (Excel mappings, CSV databases) to track coverage and guide test development.

4. Industry Tools & Methodologies: Hands-on experience with commercial verification tools, coverage databases, and industry-standard verification methodologies.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The DEG Verification team at Micron Hyderabad provided a highly collaborative and technically rigorous environment. I worked within a cross-functional team of verification engineers, each specializing in different DRAM subsystems. The team follows industry-standard verification methodologies including UVM, coverage-driven verification, and

formal analysis.

Daily standups, weekly technical reviews, and regular knowledge-sharing sessions fostered continuous learning. The team maintains comprehensive documentation standards and code review practices. Access to cutting-edge EDA tools and high-performance computing infrastructure enabled efficient work.

Academic courses relevant to the project : VLSI Design

PS-II Station : Micron Technology - , Hyderabad

Faculty

Name: Pawan Sharma .

Student

Name: PRANAV M(2024H1240314P)

Student Write-up

PS-II Project Title: Timing Parameters Verification in HBM

Short Summary of work done during PS-II : Verified Timing constraints of HBM, using Testbench and Stimulus on DUT (RTL Netlist)

Tool used (Development tools - H/w, S/w) : Software: Cadence Virtuoso, Linux, Verilog, System Verilog

Objectives of the project : To verify and stress test DUT to check for timing violations (setup/hold)

Major Learning Outcomes : Industry Verification Workflow

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Key emphasis on usage of AI in day to day work

Academic courses relevant to the project : VLSI Design

Name: BURRA MASTAN VEDASAI SAHITYA NITHIN(2024H1400137G)

Student Write-up

PS-II Project Title: IMPLEMENTATION OF UVM-BASED VERIFICATION METHODOLOGY FOR MEMORY SYSTEMS

Short Summary of work done during PS-II : During the six-month internship, the work focused on developing a strong foundation and practical expertise in semiconductor memory verification using

SystemVerilog and Universal Verification Methodology (UVM). The initial phase involved studying memory architecture and protocol behavior to understand system operations, configurations, and data flow. Parallel training in SystemVerilog enabled learning of core programming constructs, object-oriented concepts, constrained randomization, assertions, and functional coverage, which are essential for scalable verification. Building on this foundation, UVM-based verification methodologies were explored, including testbench architecture, component interaction, transaction-level modeling, and structured simulation flows. A modular and reusable verification environment was developed using standard UVM components such as drivers, monitors, agents, and scoreboards. Multiple test scenarios were executed to validate functional behavior, using constrained random testing to improve coverage. Functional verification was performed through assertions and coverage-driven techniques, with continuous refinement of testcases to achieve better verification completeness. Simulation and debugging formed a key part of the work, involving waveform analysis, failure diagnosis, and root-cause identification using structured debugging approaches. Additionally, exposure to regression workflows and large-scale verification environments provided understanding of real-world validation practices. The later phase included learning analog and mixed-signal (AMS) verification concepts, focusing on behavioral modeling and integration of analog components into digital environments. Overall, the internship contributed to both technical and professional development by enhancing skills in verification methodologies, problem-solving, debugging, tool usage, and collaborative engineering workflows within industry-level environments.

Tool used (Development tools - H/w, S/w) : Synopsys VCS simulator, Verdi, Gvim editor

Objectives of the project : To develop and execute a robust, reusable Universal Verification Methodology (UVM) framework to validate high-density flash memory interfaces and controllers within the ASIC Mixed-Signal Design Verification domain.

Major Learning Outcomes : Built an advanced technical foundation in NAND protocol operations, scalable UVM testbench assembly, modeling analysis, and automated tool workflows.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment during the internship was professional, collaborative, and learning-focused. The organization provided a structured setup where interns were introduced to company culture through orientation programs, followed by gradual integration into project work. Mentorship played a key role, with guidance from supervisors and team members enabling smooth onboarding and continuous learning. Emphasis was placed on effective communication, teamwork, and active participation in

technical discussions. The environment encouraged hands-on involvement through simulation, debugging, and analysis tasks within structured verification workflows.
The company also supported growth by providing curated learning resources, training modules, and opportunities to build both technical and professional skills. Interns were encouraged to engage in knowledge-sharing sessions, utilize productivity tools, and actively seek feedback to improve their understanding and performance.
From the company's perspective, expectations included being proactive in learning, asking questions, and taking ownership of assigned tasks. Interns were expected to demonstrate problem-solving ability, maintain discipline in following workflows, and communicate progress regularly. Additionally, adaptability, willingness to learn new technologies, and adherence to professional and ethical standards were emphasized. Respecting organizational policies, including confidentiality and intellectual property guidelines, was also an important expectation.
Overall, the internship environment promoted continuous learning, collaboration, and responsibility, helping interns transition effectively from academic knowledge to industry practices.

Academic courses relevant to the project : VLSI Architecture, Advanced VLSI Architecture, VLSI Design

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Name: P MANIKANDAN NAIR(2024H1400065G)

Student Write-up

PS-II Project Title: Timing parameters verification for HBM

Short Summary of work done during PS-II : Created a testcase for simulating operations in a HBM device that require timing parameters to be respected between certain operations. Accordingly, a testbench checker was also created for observing the various commands at interface, identifying the timing parameters between various commands as defined in spec, calculating the time difference and checking it against the prescribed values from the spec.

Tool used (Development tools - H/w, S/w) : Cadence Virtuoso, Cadence Xcelium, System Verilog, nvim, lazygit

Objectives of the project : To verify the timing parameters for HBM using System Verilog testbench

Major Learning Outcomes : Schematic probing using Cadence virtuoso, testbench development in System Verilog, debugging DUT/TB failures

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The work environment is professional and easy-going. Teammates are ready to help whenever required, take out time from their busy schedules to share their learnings. The senior members of the team are approachable and encourage everyone to speak up and share ideas. The company expects interns to learn and get hands-on experience with the flow, identify gaps if any and share solutions which could fix those gaps.

Academic courses relevant to the project : VLSI Design, VLSI Architecture

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Name: TEJAS ABHAY TIKEKAR(2024H1230099G)

Student Write-up

PS-II Project Title: AMS Design Verification

Short Summary of work done during PS-II : Initially Analog block verification was done for various blocks using Behavioural and Gate level verilog Modelling ,followed by Analog schematic vs Replicated Model Matching ,then AMS-RTL was done for combined Analog blocks and debug was taken care depending on whether it's an analog or digital issue.

Tool used (Development tools - H/w, S/w) : Cadence

Objectives of the project : Verification and Debug

Major Learning Outcomes : Whole AMS flow was learned practically

Details of Papers/patents : No details

Brief Description of working environment, expectations from the company : Just want to work with my team and solve the big collectively, Mostly work-life balance is expected.

Academic courses relevant to the project : AMS , Analog ic design, Verilog

PS-II Station : Micron Technology - NVE DE Firmware, Hyderabad

Faculty

Name: Pawan Sharma .

Student

Name: MOHITH MOHAN P V(2024H1400115P)

Student Write-up

PS-II Project Title: NAND Logic

Short Summary of work done during PS-II : Several tasks were given as a part of the internship.The major task assigned was on developing a coverage tool to improve the firmware coverage . Ran the simulation using the test vectors to find out which firmware instructions get executed and compared it with the total instructions to get the uncovered list of PC's and did the coverage analysis.Post this process several instructions which were not essential to the analysis were removed based on a configuration file where we input which instructions to be removed.This make the tool scalable and reusable across different versions of the design.

Tool used (Development tools - H/w, S/w) : Vim editor, Verdi , Linux , python

Objectives of the project : To develop a coverage too for the firmware

Major Learning Outcomes : Understood about the working of the Firmware code and the micro instructions,how each of the instructions are getting executed and got an understanding about the

NAND memory

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : Company has a great work environment,lots of space to learn and explore.Supportive colleagues and great mentors.

Academic courses relevant to the project : VLSI architecture

PS-II Station : Micron Technology - SSD Validation, Hyderabad

Faculty

Name: Pawan Sharma .

Student

Name: SREYASH SOMESH MISHRA .(2022A8PS0676H)

Student Write-up

PS-II Project Title: Combi-Stress and AI-driven Test Prioritization System

Short Summary of work done during PS-II : I have worked on developing a structured validation workflow designed to evaluate SSD reliability under extreme operating conditions. I have also developed an AI-driven Test Prioritization Model, a prototype tool developed to optimize firmware validation testing through intelligent test prioritization. I have also worked on building Python scripts for different test scenarios.

Tool used (Development tools - H/w, S/w) : Python

Objectives of the project : Validating SSD firmware reliability and performance under real-world operating conditions is challenging due to varied workloads, changing drive states, fault conditions,

and power events. As a result, critical firmware algorithms may not be sufficiently evaluated. Thus, a comprehensive worst-case validation approach is essential to identify reliability risks and ensure firmware robustness and stability.

Major Learning Outcomes : Understanding of NAND Flash memory, SSD architecture and design, Error handling and reporting mechanisms, Advanced algorithms related to SSD features

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The work environment is supportive. The company encourages collaboration and teamwork. There is an innovative atmosphere, where new ideas are encouraged.

Academic courses relevant to the project : Computer Architecture, Operating Systems, Digital Design, Analog and Digital VLSI, Embedded System Design

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Name: KASALA NIDHEESH(2024H1230167H)

Student Write-up

PS-II Project Title: Automated Test Redundancy Detection

Short Summary of work done during PS-II : Developed an AI-powered automation system at Micron Technology to optimize NVMe SSD validation test suites containing 5,000+ Python scripts. Built a six-stage pipeline using Claude AI via AWS Bedrock that discovers test scripts, performs AST-based structural analysis, extracts semantic coverage, detects redundancies with bidirectional consistency, and assigns master-child relationships. Additionally delivered an incremental analysis system (70-95% cost savings on reruns), automated code consolidation tool, test plan integration tool, and an interactive Flask dashboard. The system achieved 30-50% test execution time reduction potential, >95% consistency, and saves 250-500 engineering hours per optimization cycle all within secure VPC-only infrastructure.

Tool used (Development tools - H/w, S/w) : Python, AWS Bedrock (Claude AI), pandas, openpyxl, Python AST module, Flask, jsTree, Bootstrap, boto3, Git/version control API

Objectives of the project : Develop an AI-powered system to automatically analyze Python test scripts and extract comprehensive validation coverage, including test objectives, all verification points, NVMe commands exercised, register fields and log pages accessed, error conditions and boundary cases tested, and vendor-specific functionality validated.

Major Learning Outcomes : Learned to design and implement AI-powered automation pipelines integrating Claude AI via AWS Bedrock for semantic code analysis, redundancy detection, and automated code consolidation at enterprise scale. Gained hands-on experience in NVMe SSD validation domain, Python AST parsing, prompt engineering, incremental computing, Flask web development, and building secure, production-ready tools within corporate infrastructure constraints.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Micron Technology, Hyderabad, was within the EDG Validation team focused on client SSD (cSSD)validation. The team maintains large-scale NVMe SSD test repositories containing thousands of Python test scripts spanning multiple product families, covering functional validation, reliability testing, and NAND algorithm verification.

Academic courses relevant to the project : Reconfigurable Computing, VLSI Design

PS-II Station : Morgan Stanley - IAD - Quantitative Model auditor role, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: KHUSHI JAIN .(2021B3A33034H)

Student Write-up

PS-II Project Title: Quant model audit

Short Summary of work done during PS-II : Learning how quant models are made and model risks associated with the different models

Tool used (Development tools - H/w, S/w) : Mandatory good soft skills. excel and word are good skills to have.

Objectives of the project : You look at quant model, challenge flaws in them

Major Learning Outcomes : Learning how quant models are made and model risks associated with the different models

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : Intense, under pressure but very high scope of learning

Academic courses relevant to the project : Fram

Name: ALI SHAHEEN(2021B4A33044H)

Student Write-up

PS-II Project Title: Model Risk Validation and Audit

Short Summary of work done during PS-II : We worked on the validation of several different models and processes from various business domains of Morgan Stanley. The models I worked on were models used for pricing securities - Bonds, Equities, Derivatives and in my case, Credit Exotics. I worked on Margin Stress Testing models for Counterparty Credit Risk in the Fixed Income and Investment Management domains. I also worked on capital adequacy stress testing models used for ICAAP and Operational Risk.

Tool used (Development tools - H/w, S/w) : Jupyter Notebook, Microsoft Excel, PowerBI Dashboards, Microsoft Word, Powerpoint

Objectives of the project : To understand the operation, implementation and objectives of models used by Morgan Stanley and understand the risk they pose to the Firm and ways to mitigate such risk. We then identified controls and test plans to test such controls and thud perform our analyses to provide assurance.

Major Learning Outcomes : From an academic perspective, I want to highlight that I went in with zero knowledge of finance, and the workplace, projects and the team taught me everything I know. I am confident with my concepts and continuously learn something new about the investment banking world every day.
From a corporate perspective we were taught how to perform tasks, and most importantly how to communicate our results, progress and issues. We learnt how to collaborate with different team members, not just our direct managers but with senior management that sits in New York and Budapest.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Very nurturing working environment, everyone was very involved in making sure we grew in the company not just through work but through expanding our knowledge. There were a good amount of expectations on us delivering timely work since audit processes have very strict timelines and rigorous work expectations.

Academic courses relevant to the project : FRAM, DRM, Applied Stochastic Processes, Partial Differential Equations, Principles of Economics.

PS-II Station : Morgan Stanley Advantage Services - Legal and Compliance, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: YASH GOYAL(2021B2A12764P)

Student Write-up

PS-II Project Title: Data and Analytics

Short Summary of work done during PS-II : Confidential

Tool used (Development tools - H/w, S/w) : Python, Sql, Excel

Objectives of the project : Confidential

Major Learning Outcomes : -

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : -

Academic courses relevant to the project : NA

PS-II Station : Morgan Stanley Equity Fundamental Research, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: VEDANT VIVEK SHENDE(2021B3A72136G)

Student Write-up

PS-II Project Title: Equity research

Short Summary of work done during PS-II : Help the team build and maintain financial models and contribute to publication of research notes

Tool used (Development tools - H/w, S/w) : Excel, factset, Python

Objectives of the project : Cannot disclose

Major Learning Outcomes : Financial modelling, equity research

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Good team culture

Academic courses relevant to the project : BAAV

PS-II Station : Morgan Stanley FID Research roles, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: RUPESH YARLAGADDA(2021B3A70839G)

Student Write-up

PS-II Project Title: FIR Analyst

Short Summary of work done during PS-II : Analysis of market movements, sentiments, sectoral research, etc.

Tool used (Development tools - H/w, S/w) : Q, KDb, Python, Intex, Bloomberg, EDW

Objectives of the project : Assist in production of research reports for the European SPG team

Major Learning Outcomes : Finance, Coding, Research

Details of Papers/patents : Not applicable (confidentiality)

Brief Description of working environment, expectations from the company : Great company to start your career with

Academic courses relevant to the project : All Finance offshoot courses

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PS-II Station : Morgan Stanley IED GMG – QIS Strats role, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: AARJAV JAIN(2021B3A71178P)

Student Write-up

PS-II Project Title: QIS Strat

Short Summary of work done during PS-II : Deploying client strategies across a portfolio of assets

Tool used (Development tools - H/w, S/w) : JAVA

Objectives of the project : Deploying QIS Strategies

Major Learning Outcomes : OOPS Skills

Details of Papers/patents : NIL

Brief Description of working environment, expectations from the company : 12 hour work daily, no work from home. Pays decent, has good market value for exit. Should come if you want to enter into quantitative finance field.

Academic courses relevant to the project : FRAM, DRM, OOPS

PS-II Station : Morgan Stanley Primary Market Research role, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: AMOGH RAVI JOSHI .(2021B3A30605H)

Student Write-up

PS-II Project Title: Primary Market Research

Short Summary of work done during PS-II : During my internship at Morgan Stanley, I worked as a Market Research Intern in the Primary Market Research team. The internship provided exposure to the end-to-end survey research process and its application in supporting equity research analysts and economists across global markets. My primary responsibilities included questionnaire programming

using Qualtrics, monitoring fieldwork progress, performing data quality checks, and assisting in survey data analysis. I worked on both B2B and B2C research projects covering regions such as the United States, Europe, and China. The surveys focused on gathering consumer and industry insights that contributed to investment research and economic analysis. A significant part of my role involved ensuring data accuracy and reliability by reviewing survey responses, identifying inconsistencies, and implementing quality control procedures. I also assisted in preparing data analysis plans, generating tabulations, and interpreting survey results using tools such as Excel, SPSS, Q Research. The internship enhanced my analytical, problem-solving, and data management skills while providing practical experience in market research methodologies. The experience also strengthened my understanding of how primary research supports investment decision-making and economic forecasting.

Tool used (Development tools - H/w, S/w) : Q Research, Excel, Word, Qualtrics, SPSS, Powepoint

Objectives of the project : NA

Major Learning Outcomes : Survey Administration, Stakeholder Management, Project Management, Primary Research, Data analysis and visualisation, Attention to detail

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : Morgan Stanley provided a professional and supportive work environment where employees worked together to complete projects efficiently. As an intern, I received guidance from team members and had opportunities to learn new skills. The company expected interns to be responsible, punctual, willing to learn, and committed to completing tasks accurately and on time. Good communication, teamwork, and maintaining confidentiality were also important. The internship helped me understand how a large organization operates and improved my analytical, communication, and problem-solving skills. Overall, it was a valuable learning experience that gave me practical exposure to the corporate world.

Academic courses relevant to the project : Probability and Statistics, Principals of Management

PS-II Station : Morgan Stanley Research - Data Strats, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: RAJUL BANGANI(2021B1A32739P)

Student Write-up

PS-II Project Title: Data strategy

Short Summary of work done during PS-II : Automation

Tool used (Development tools - H/w, S/w) : S/w

Objectives of the project : Automation

Major Learning Outcomes : Automation

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Good

Academic courses relevant to the project : Programming oop os

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PS-II Station : Morphing Machines Private Limited, Bengaluru

Faculty

Name: A Rekha .

Student

Name: KESHAV GAUR(2024H1030062H)

Student Write-up

PS-II Project Title: Parallelization of the Graph Convolutional Networks

Short Summary of work done during PS-II : During my PS-II internship at Morphing Machines, I worked on the project titled "Parallelization of Graph Convolutional Networks." The primary focus was to improve the execution efficiency of GCN inference on the company's AI accelerator platform. I studied the computational characteristics of graph neural networks and identified performance bottlenecks arising from sparse graph structures and irregular memory access patterns. The work involved understanding the GCN computation pipeline, investigating graph preprocessing techniques, and exploring parallelization approaches suitable for accelerator execution. Various optimization strategies were evaluated to improve data locality, hardware utilization, and execution throughput. The optimized implementation was validated against standard framework-based implementations to ensure functional correctness. In addition, I reviewed relevant research literature on GCN acceleration and graph processing to understand existing approaches and guide the optimization process. The internship provided valuable exposure to deep learning systems, high-performance computing concepts, AI hardware architectures, and industry-scale software development practices.

Tool used (Development tools - H/w, S/w) : Morphing Machines AI Accelerator Platform, Linux-based Workstations, Python, PyTorch, Git, C, C++, Performance Profiling and Debugging Tools

Objectives of the project : The objective of this project is to improve the execution efficiency of Graph Convolutional Networks (GCNs) on Morphing Machines' AI accelerator platform. The work focuses on analyzing computational bottlenecks in GCN inference, exploring graph preprocessing techniques, and developing parallelization strategies to enhance hardware utilization. The project also involves implementing and validating optimized kernels, studying memory access patterns, and evaluating performance improvements against baseline implementations.

Major Learning Outcomes : Understanding of Graph Neural Networks and Graph Convolutional Networks.
Exposure to AI accelerator architectures and hardware-aware optimization.
Knowledge of graph preprocessing and partitioning techniques.

Experience in parallel programming and performance optimization.
Familiarity with inference acceleration techniques for deep learning workloads.
Practical experience in validating optimized implementations against framework baselines.
Enhanced problem-solving, debugging, and research skills.

Details of Papers/patents : Research papers studied during the project included literature related to:
Graph Convolutional Networks
Graph Neural Network Acceleration
Graph Preprocessing Techniques
Parallel Graph Processing
Hardware Acceleration of Deep Learning Workloads

Brief Description of working environment, expectations from the company : Morphing Machines provided a collaborative and research-oriented working environment focused on AI hardware acceleration. The internship involved close interaction with experienced engineers and researchers working on accelerator software and performance optimization. Regular technical discussions, code reviews, and mentor guidance facilitated continuous learning and problem-solving.
The company encouraged independent exploration of research literature while maintaining a strong emphasis on practical implementation and validation. Interns were expected to understand the problem statement, analyze performance bottlenecks, propose optimization strategies, and communicate progress effectively. The environment promoted technical excellence, ownership of tasks, teamwork, and professional development. Exposure to real-world AI workloads and hardware-aware software optimization provided valuable industry experience.

Academic courses relevant to the project : Machine Learning
Artificial Intelligence
Data Structures and Algorithms
Computer Architecture (It is must)
Operating Systems
Parallel Computing
High Performance Computing

Name: PRANAV DILIP MATE(2024H1030196H)

Student Write-up

PS-II Project Title: Efficient Execution of TFHE-Based Homomorphic Computations on REDEFINE Accelerator

Short Summary of work done during PS-II : The internship focused on mapping TFHE-based homomorphic computations onto Morphing Machines' REDEFINE reconfigurable many-core accelerator. Work was structured in two phases. Phase 1 (Weeks 1–16) involved a comprehensive study of the TFHE cryptographic framework through expert sessions, literature review, and primary source reading, followed by developing a complete hardware-aware C implementation of the TFHE pipeline translated from an IIT KGP Python reference and validated for all Boolean gate types. Phase 2 (Weeks 17–22) focused on systematic profiling: cProfile was applied to the Python reference for algorithmic-level baselines, and gprof with Valgrind/Callgrind was applied to the C implementation for function-level analysis. Profiling identified fft_inplace as consuming 77.53% of C execution time across 13,000 calls. A complete NAND gate evaluation takes approximately 1350ms on a CPU baseline, with bootstrapping reducible from ~270ms to ~90ms using the -ffast-math compiler flag. A data flow graph and HyperOps dependency graph were subsequently constructed, identifying four priority kernel candidates for REDEFINE mapping. C-with-HyperOps translation was initiated by the internship's end.

Tool used (Development tools - H/w, S/w) : Software: C (GCC), Python 3, cProfile (Python profiling), gprof (GNU Profiler), Valgrind with Callgrind tool, KCachegrind (call-graph visualisation), REDEFINE simulator, C-with-HyperOps compiler

Objectives of the project : To study the TFHE (Fast Fully Homomorphic Encryption over the Torus) cryptographic framework in depth; to develop a complete and validated C implementation of the TFHE pipeline translated from a Python reference; to systematically profile both implementations using cProfile, gprof, and Valgrind/Callgrind to identify dominant computational bottlenecks; to construct a data flow graph and HyperOps dependency graph identifying kernel candidates for the REDEFINE reconfigurable many-core accelerator; and to initiate translation of the TFHE pipeline to C-with-HyperOps targeting REDEFINE co-processor execution.

Major Learning Outcomes : — Developed rigorous understanding of the TFHE cryptographic stack: LWE/GLWE hardness assumptions, ciphertext hierarchy, gadget decomposition, key switching, and Programmable Bootstrapping.

— Gained practical experience translating a research-level Python implementation into modular, hardware-aware C, including debugging subtle numerical edge cases in negacyclic polynomial

arithmetic.
— Learned to use professional profiling tools — cProfile, gprof, Valgrind/Callgrind, KCachegrind — to produce quantitative, evidence-based bottleneck analysis.
— Understood the REDEFINE execution model, HyperOp dependency graphs, and C-with-HyperOps programming abstraction at sufficient depth to design kernel mapping strategies.
— Gained exposure to the broader FHE ecosystem: TFHE-rs, the FHE Benchmarking Suite, and hardware acceleration research including MATCHA, F1, and cuFHE.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Morphing Machines has a focused, research-oriented engineering culture that expects deep technical understanding before implementation. The Hyderabad office is collaborative, with interns working alongside full-time engineers. Daily technical sessions with the company's TFHE domain expert and weekly check-ins with the reporting manager provided consistent direction and feedback. The work culture rewards intellectual curiosity and expects students to engage with primary sources — papers, hardware manuals, and technical specifications, independently. Expectations were closer to those of a junior research engineer than a conventional software intern, with emphasis on understanding the cryptographic rationale behind every design decision rather than just writing code. Overall, the environment was intellectually rigorous and provided rare exposure to the intersection of advanced cryptography and custom silicon design.

Academic courses relevant to the project : CS G524 Advanced Computer Architecture, Probability and Statistics, Cryptography, Parallel Computing

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Name: SIVAPRASAD P T(2024H1230098G)

Student Write-up

PS-II Project Title: comprehensive SOC sign-off methodologies(calibre PERC,CDC)

Short Summary of work done during PS-II : learned the full chip flow of a semiconductor chip

Tool used (Development tools - H/w, S/w) : calibre PERC, spyglass, verdi, vs code, gtk wave,

siemens tessent

Objectives of the project : make the chip tapeout ready

Major Learning Outcomes : learned to solve the DRC,LVS,CDC, ESD issues in the GDS file

Details of Papers/patents : nil

Brief Description of working environment, expectations from the company : working environment was very good. all the mentors are very supportive . because this is a startup iam able to work on core design

Academic courses relevant to the project : vlsi design, reconfigurable computing

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Name: ANSHUL DHIMAN(2022A8PS1094G)

Student Write-up

PS-II Project Title: SOC Signoff methodology and implementation

Short Summary of work done during PS-II : Learnt how to use many tools such as Synopsys Spyglass, Design Compiler, Cadence Conformal LEC, Siemens's Mpower, Calibre Perc and how all of these tools come together in the Signoff flow to make sure our chip is ready for a successful tapeout or not.

Tool used (Development tools - H/w, S/w) : Synopsys Spyglass, Design Compiler, Cadence Conformal LEC, Siemens's Mpower, Calibre Perc and how all of these tools come together in the Signoff flow to make sure our chip is ready for a successful tapeout or not.

Objectives of the project : To signoff on our chip to make sure it is ready for tapeout

Major Learning Outcomes : Learnt how to use many tools such as Synopsys Spyglass, Design Compiler, Cadence Conformal LEC, Siemens's Mpower, Calibre Perc and how all of these tools come together in the Signoff flow to make sure our chip is ready for a successful tapeout or not.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Very good and friendly working environment. All the seniors helped with acquiring the required knowledge to work on our projects and we were given enough time to catch upto the pace of the company and contribute in our unique ways.

Academic courses relevant to the project : FPGA Design Laboratory, Digital Design

PS-II Station : Mosaic Wellness, Thane

Faculty

Name: Sandeep Kayastha .

Student

Name: SANIKA DEEPAK SURYAVANSHI(2021B2A13062G)

Student Write-up

PS-II Project Title: Competitive Benchmarking, Consumer Insights & End-to-End New Product Development in the Health & Wellness Sector

Short Summary of work done during PS-II : During my PS-II at Mosaic Wellness, I worked as a New Product Development (NPD) Intern and contributed to two major projects. The first project focused on competitive benchmarking and consumer insight generation across ten product categories including haircare, skincare, bodycare, and nutraceutical products. I analyzed competitor formulations, claims, pricing, reviews, and consumer feedback to identify market opportunities and support evidence-based Go/No-Go decisions. The second project involved managing multiple products across the NPD pipeline from ideation to commercialization. I worked on formulation reviews, consumer testing, packaging evaluation, naming exercises, product positioning, commercial feasibility

assessment, and launch readiness activities. I contributed to over 14 SKUs spanning categories such as roll-ons, shampoos, serums, sunscreens, gummies, and body washes. Additionally, I maintained NPD trackers, coordinated with R&D, Category, Packaging, Supply Chain, Marketing, and Legal teams, and supported inventory planning and stock monitoring activities. Through these projects, I gained hands-on exposure to FMCG product development, consumer-centric decision making, and cross-functional execution in a fast-paced health and wellness organization.

Tool used (Development tools - H/w, S/w) : Microsoft Excel ,Google Sheets ,Microsoft PowerPoint ,Google Forms (Consumer Surveys) Internal ,SKU Tracking & Project Management Tools

Objectives of the project : Benchmark competing products across multiple categories Identify consumer pain points and market opportunities . Support Go/No-Go decisions through consumer and commercial validation . Drive products through the end-to-end NPD lifecycle. Coordinate cross-functional execution across R&D, Packaging, Supply Chain, Marketing, and Legal teams. Improve product readiness and launch feasibility

Major Learning Outcomes : End-to-end product development lifecycle management, Consumer research and insight generation, Competitive benchmarking and market validation, Commercial feasibility assessment, Cross-functional stakeholder management, Product positioning and commercialization strategies, Inventory and supply chain planning.

Details of Papers/patents : No papers or patents were published during the internship.

Brief Description of working environment, expectations from the company : Mosaic Wellness provided a fast-paced and collaborative work environment where cross-functional teamwork was central to project execution. As part of the New Product Development team, I worked closely with Category Managers, R&D scientists, Packaging teams, Supply Chain professionals, Marketing stakeholders, and Legal teams. The organization encouraged data-driven decision making and ownership of projects, allowing interns to contribute meaningfully to business outcomes.
The expectations included proactive problem-solving, effective stakeholder coordination, analytical thinking, and attention to detail. Interns were expected to independently manage project deliverables, participate in product discussions, and support decision-making through consumer and market insights. The experience offered significant exposure to real-world FMCG product development and commercialization processes.

Academic courses relevant to the project : Data Analysis & Statistics, Principles of Management

PS-II Station : MSCI Services Pvt. Ltd. - NPD - , Mumbai

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: ANANYAGOMATHI R .(2021B4AA1626H)

Student Write-up

PS-II Project Title: Automation and Custom Indexes in Real Assets

Short Summary of work done during PS-II : Built automation pipelines for custom blending of headline indexes. Developed interactive dashboards for measure analyses. Built custom Python modules for client specific requests, which were used in combination to deliver specific benchmarks. Built Python and R modules for effective blending of various return methodologies for a combined benchmark.

Tool used (Development tools - H/w, S/w) : Python, R, Excel

Objectives of the project : Build custom client specific analysis and automate simulation models for effective blending/customization

Major Learning Outcomes : How different return methodologies work in different markets, and how to combine them effectively through automated modules

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Very friendly and supportive. All my ideas were valued. All doubts are clarified.

Academic courses relevant to the project : Finance minor courses, CP, ML

PS-II Station : MSD Global Capabilities Center India Private Limited, Hyderabad

Faculty

Name: Gopalakrishnan Venkiteswaran .

Student

Name: ABHINAV DEBNATH(2022A8PS1236P)

Student Write-up

PS-II Project Title: Business Value Assessment Framework (BVAF)

Short Summary of work done during PS-II : My work included to make an interactive high level Power BI dashboard for executives in the company. The Power BI dashboard was about all the investments or plans in the company and what plans can return the highest ROI. All this data was presented for faster decision making.

Tool used (Development tools - H/w, S/w) : Microsoft Power Apps, Power BI

Objectives of the project : To create an interactive, high level Power BI dashboard

Major Learning Outcomes : Major learning outcomes were how to use all the widely used Microsoft Apps, which include Power Apps, Power BI, Power Studio, and more

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The company's working environment is extremely professional. You'll get all the help you need professionally, and

people are always willing to lend a helping hand. The work you do actually delivers real-world impact, and you will feel it. MSD ranks in the top 70 in Fortune 500, and a brand name like that in your resume will be really beneficial in the long run.

Academic courses relevant to the project : OOPS, DSA and Computer Networks

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Name: SARVAKSH SHUKLA(2021B5A31378P)

Student Write-up

PS-II Project Title: Cybter Threat Intelligence enablement

Short Summary of work done during PS-II : My projects included integration of EDR and Threat Intelligence tools, secondly to do research and formulate an adoptable plan for Malware Reverse Engineering and lastly I also contributed towards cyber awareness campaigns across the company.

Tool used (Development tools - H/w, S/w) : Crowdstrike Falcon, MS Defender, Recorded Future

Objectives of the project : To enable and enhance the cybersecurity landscape of the organisation

Major Learning Outcomes : Got to know about the threat hunting practices, cybersecurity fundamentals

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : MSD provides a great place to work. The people, the atmosphere and the idea all are above the mark. The most satisfying thing of working with MSD is the work culture, one will never get bored of and people here are extremely helpful, they do not consider you as some junior, each and every person is open to ask questions and "speak up". Honestly, I prefer working in an environment where I can have peace of mind and this place gave the same thing.

Academic courses relevant to the project : Computer Networks, Professional Ethics

Name: KOTAMBKAR AVNISH MANGESH(2021B5A31753P)

Student Write-up

PS-II Project Title: Tetris Analytics

Short Summary of work done during PS-II : During my Practice School-II internship at MSD Hyderabad Global Capabilities Center, I worked on the Tetris Analytics project within the Data Engineering & Analytics team. The project focused on building a governed Databricks Lakehouse to support near real-time manufacturing analytics by integrating MES, TPS, and SAP data. My primary contributions included developing the Silver Layer by translating business transformation logic into Databricks SQL and creating dimension tables, fact tables, time-zone conversion functions, and materialized views. I implemented Change Data Capture (CDC) and merge logic for Bronze Layer ingestion, enabling efficient incremental data processing and synchronization with source systems. I also developed monitoring solutions for Bronze Layer ingestion using JDBC, Delta tables, and dashboards to validate data completeness and monitor ingestion trends. Additionally, I contributed to the Gold Layer by developing business-ready datasets optimized for OEE reporting and analytics. I supported deployment activities by configuring Databricks Asset Bundles, integrating Git repositories with Databricks Repos, and deploying Silver and Gold layer assets within the development environment. Throughout the internship, I gained practical experience in Databricks, Delta Lake, data modeling, deployment automation, Git workflows, and enterprise-scale data engineering while contributing to a scalable analytics platform supporting global manufacturing operations across EMEA, APAC, and AMER regions.

Tool used (Development tools - H/w, S/w) : Databricks, GitHub, Python, SQL, AI, Confluence, Jira

Objectives of the project : The project aimed to modernize MSD's manufacturing analytics platform by consolidating MES, TPS, and SAP data into a governed Databricks Lakehouse architecture. It focused on enabling near real-time reporting through Bronze, Silver, and Gold data layers, implementing Change Data Capture (CDC) for incremental data processing, improving data quality and governance, and building a scalable, reliable analytics platform for global manufacturing operations.

Major Learning Outcomes :

- Gained hands-on experience in enterprise-scale Data Engineering using Databricks and Delta Lake.
- Learned to design and implement Bronze, Silver, and Gold layer architectures following the Lakehouse model.
- Developed expertise in CDC-based incremental data ingestion and merge strategies.
Built curated analytical datasets, materialized views, and monitoring solutions for manufacturing analytics.
- Strengthened skills in Databricks SQL, Git-based development, deployment automation using Databricks Asset Bundles, and secure data engineering practices.
- Learned to troubleshoot real-world data engineering challenges involving performance optimization, deployment, and data synchronization.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The work environment was collaborative and supportive. People were approachable and always willing to help whenever I faced challenges or needed guidance, which made it a good place to learn and work.
My expectation from the company was to receive a PPO based on the sincere effort, measurable contributions, and consistent commitment I demonstrated throughout the internship. Unfortunately, I was not offered a PPO despite fulfilling my responsibilities diligently. While I appreciate the positive work culture, I am disappointed with the outcome.

Academic courses relevant to the project : None

Name: VAIBHAV KUMAR .(2022AAPS0240H)

Student Write-up

PS-II Project Title: Consolidated KPI Dashboard for Digital Product Execution Team

Short Summary of work done during PS-II : During my PS-II at MSD, my initial project focused on developing KPI dashboards for the team. As the internship progressed, I also contributed to other projects involving data analytics and process automation. I developed SQL-based reporting datasets for Power BI dashboards, built a Python solution using TF-IDF clustering to analyze manufacturing exception data and created Power Automate workflows to reduce manual effort.

Tool used (Development tools - H/w, S/w) : SQL, Python, Power BI, Power Automate, Visual Studio Code, Github

Objectives of the project : To develop analytical solutions that help the Digital Product Execution Team monitor key performance indicators, simplify reporting, automate repetitive tasks and generate insights from manufacturing data for better decision making.

Major Learning Outcomes : Learned how data analytics solutions are developed in an industry setting. Improved my skills in SQL, Python, Power BI, workflow automation and data analysis.

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : My experience at MSD was mostly positive. My manager was patient and gave me enough time to understand the work before assigning tasks. Everyone on the team was friendly and always ready to help whenever I got stuck. The work-life balance was also good, which made it a comfortable place to learn and work. This was my experience with my team and it may differ across teams.

Academic courses relevant to the project : DBMS, Machine Learning

PS-II Station : Myntra Designs Pvt. Ltd, Bengaluru

Faculty

Name: Akanksha Bharadwaj .

Student

Name: HRISHIKESH MK .(2022A7PS1538H)

Student Write-up

PS-II Project Title: Query Substitution Graph Revamp

Short Summary of work done during PS-II : I revamped an existing query substitution graph with higher edge and node density. Automated the process of optimized collection and calculation of data for graph creation using airflow. Introduced a new calculation formula for calculating affinity which drives substitution after iterative experimentation and research.

Tool used (Development tools - H/w, S/w) : Databricks, Java SpringBoot

Objectives of the project : Revamped Query Substitution graph

Major Learning Outcomes : Large scale optimization and workflow creation

Details of Papers/patents : So far patent/paper has not been published, but possibility present for the same

Brief Description of working environment, expectations from the company : Working environment was good, and people were supportive in general. Company kept realistic expectation from me during the course of project and gave me complete ownership of the project and it's task

Academic courses relevant to the project : DSA, DAA, Discrete Structures, Probability and Statistics, DBMS, Operating Systems

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Name: ASHISH C .(2021B3A73029H)

Student Write-up

PS-II Project Title: Developing and Enterprise Metadata Architecture and Agentic Data Discovery Environment with Production Observability

Short Summary of work done during PS-II : My work was focused on managing the huge metadata of the company and the platforms for this requirement. It later evolved to making use of this as a semantic later for Agentic usecases

Tool used (Development tools - H/w, S/w) : AI agents (Cursor), Databricks, Springboot

Objectives of the project : To solve the problem of metadata management and Text-To-Sql generation

Major Learning Outcomes : Prompt engineering, system design

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Working environment is really supportive and expectations are realistic

Academic courses relevant to the project : ML, AI

PS-II Station : NBC Bearings,Jaipur, Jaipur

Faculty

Name: Arun Maity .

Student

Name: SRI SAI SAMPATHKUMAR SALADI(2024H1410061G)

Student Write-up

PS-II Project Title: Business Potential Analysis for Marine Bearings and Design Development of Rod-Ended Spherical Plain Bearing

Short Summary of work done during PS-II : The PS-II project began with a comprehensive literature review and techno-commercial analysis of the marine bearing market. This phase involved studying various types of marine bearings, their applications, operating conditions, material requirements, lubrication methods, and industry standards. The findings from this study were used to identify a

suitable bearing application for further development. Based on the analysis, the development of a spherical plain bearing for marine steering linkage applications was selected as the project objective. The subsequent work focused on understanding the functional requirements and operating conditions of the application, followed by load analysis, material selection, design calculations, and evaluation of suitable bearing configurations. Various design alternatives were assessed considering corrosion resistance, load-carrying capacity, maintenance requirements, and manufacturability. After completing the design phase, a detailed CAD model of the bearing assembly was developed. The final design incorporated materials and features suitable for marine environments while meeting the required performance criteria. The project provided valuable exposure to product development methodologies, engineering design practices, material selection, and the practical challenges associated with developing components for marine applications.

Tool used (Development tools - H/w, S/w) : Creo Parametric

Objectives of the project : understand the need of the product and develop it by analysing the competitor and market

Major Learning Outcomes : Performed the customer, Competitor & Market Overview and Develop a bearing for Marine application

Details of Papers/patents : Prepared a Design Guide for Spherical Plain Bearing for internal purpures

Brief Description of working environment, expectations from the company : My expectations from the company were to gain hands-on experience in product design and development, understand industrial engineering practices, and apply the theoretical knowledge acquired during my academic studies. These expectations were largely fulfilled through active involvement in a live project related to marine bearing applications. I also expected to learn about project planning, design validation, and the decision-making process involved in engineering product development, which the internship successfully provided.

Overall, the experience was highly valuable and enriching. It provided practical industry exposure, improved my technical competency, and gave me a better understanding of the engineering workflow within a manufacturing organization. The supportive work culture and guidance from experienced professionals made the internship both productive and enjoyable.

Academic courses relevant to the project : Product Design, CAAD, FEA, Material Technology & Testing

Name: SANCHIT SAINI(2024H1060155P)

Student Write-up

PS-II Project Title: Study and investigate the bearing failure understanding especially in E-axle/Transmission

Short Summary of work done during PS-II : Investigate the e-axle bearing failure root cause analysis and done the literature review for the requirements of e-axle bearings.for fiture scope initiate a tool by using AI/ML to detect the modes of failure and their most probable cause.Additionaly done the simulation on Ansys (Student Version)to control the ovality during heat treatment of bearing which is also the major cause of failure in bearing

Tool used (Development tools - H/w, S/w) : AI/ML, Ansys Workbench

Objectives of the project : Failure detection and root cause analysis of e-axle bearing

Major Learning Outcomes : Learned how to utilise our academic and software knowledge in industry or real world problems

Details of Papers/patents : Read the research papers from springer, ASME and more publications

Brief Description of working environment, expectations from the company : Softwares and AI tools are used from my side only, I elaborated my project statement from myself and then utilised the tools otherwise my project finished with Why-Why analysis and literature review only for RCA of failed case of bearing.

Academic courses relevant to the project : Quality engineering

Name: SHRAVAN SRI VISHNAV G(2024H1410103P)

Student Write-up

PS-II Project Title: Development and Validation of Bearing Frictional Torque Calculator

Short Summary of work done during PS-II : As part of my project, I developed a web-based tool to predict the theoretical frictional torque of rolling element bearings. The objective was to provide a user-friendly platform that enables engineers and researchers to estimate bearing friction without requiring specialized software such as MATLAB. The tool incorporates established bearing friction models and considers key operating and geometric parameters, including bearing dimensions, rotational speed, applied load, lubricant viscosity, number of rolling elements, and contact geometry. The computational algorithm was initially developed and validated in MATLAB and subsequently translated into JavaScript for web deployment. A responsive graphical user interface was designed to allow users to input bearing and operating parameters and instantly obtain friction torque predictions. The tool was optimized for efficient execution within a web browser, ensuring accessibility across different devices without requiring software installation. To verify the reliability of the calculator, the predicted results were compared with experimental friction torque measurements obtained from bearing test rigs under various operating conditions. The validation demonstrated good agreement between theoretical predictions and experimental data. The developed web tool provides a fast, accessible, and practical solution for bearing friction analysis, supporting bearing selection, performance evaluation, and preliminary design studies in tribology and rotating machinery applications.

Tool used (Development tools - H/w, S/w) : MATLAB, Google AI studio, Excel & Claude AI

Objectives of the project : To understand the basics of bearings and friction induced in the bearings, To develop a theoretical friction calculator (web tool) that helps in determining the bearing friction

Major Learning Outcomes : Understood the importance of friction in bearings and their types, also understood how to develop a web tool using AI.

Details of Papers/patents : N.A

Brief Description of working environment, expectations from the company : It was a decent experience, not too good nor too bad.

Academic courses relevant to the project : Tribology

PS-II Station : NeoGrowth Credit Pvt Ltd- Product, Mumbai

Faculty

Name: Perumal Jayakumar

Student

Name: DEVANABANDA KUSHAL(2024H1540860P)

Student Write-up

PS-II Project Title: 1. Summary Generator for Compliance Documents, 2. FTR Agent Development, 3. Performance Dashboard for FTR Agent

Short Summary of work done during PS-II : During my Practice School II internship at NeoGrowth Credit Pvt. Ltd., I worked on multiple projects related to AI, analytics and process automation. The first project involved developing a Compliance Document Summary Generator using LLMs, AWS Bedrock and NLP techniques to automatically generate structured summaries from regulatory and compliance documents. The second project focused on analyzing and improving the performance of the FTR (First Time Right) Agent used in the loan verification workflow. This included developing dashboards, automating analysis processes, monitoring operational metrics, identifying bottlenecks and contributing to improvements that increased the agent's efficiency. The third project involved analyzing the performance of an AI based call bot system used for customer interactions. This included monitoring call metrics, reviewing customer conversations, identifying conversational gaps and providing recommendations to improve customer engagement and response quality. Throughout the internship, I gained hands on experience in AI applications, dashboard analytics, cloud technologies, automation, operational monitoring and data driven decision making within a real world business environment.

Tool used (Development tools - H/w, S/w) : VS Code, MS Excel, MySQL, BitBucket

Objectives of the project : To develop and analyze AI driven solutions for compliance automation,

loan verification workflow monitoring and AI call bot performance evaluation, with the aim of improving operational efficiency, decision making and customer interaction quality.

Major Learning Outcomes : 1. Gained practical exposure to AI, NLP, LLMs and cloud technologies in a real world business environment.
2. Learned to develop and evaluate AI driven solutions for compliance automation and operational analytics.
3. Acquired experience in dashboard development, KPI monitoring and data driven decision making.
4. Developed skills in SQL data analysis, Excel automation and workflow optimization.
Improved understanding of AI based loan verification systems and conversational AI applications.
5. Enhanced problem solving, analytical thinking and stakeholder communication skills through cross functional collaboration.
6. Learned to identify operational bottlenecks and recommend improvements for AI system performance and efficiency.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment at NeoGrowth Credit was professional, collaborative and learning oriented. As part of the Data Science, AI & Innovation team, I had the opportunity to work on real world business problems involving AI, analytics, automation and operational monitoring. Team members were approachable and provided continuous guidance, feedback and technical support throughout the internship. Regular discussions and review sessions helped in understanding project requirements, business objectives and practical implementation challenges.
The company expected interns to take ownership of assigned tasks, actively participate in project discussions and contribute towards ongoing organizational initiatives. A strong emphasis was placed on problem solving, analytical thinking and continuous learning. Interns were encouraged to understand both the technical and business aspects of projects, communicate findings effectively and propose improvements wherever possible. The internship provided valuable exposure to industry practices, cross functional collaboration and the practical deployment of AI driven solutions within a financial services organization.

Academic courses relevant to the project : 1. Data Management and Warehousing (Sem 1)
2. Programming for Analytics (Sem 1)
3. Advanced Spreadsheets and Macro Programming for Business (Sem 2)
4. Data Visualization (Sem 2)
5. Predictive Analytics (Sem 2)

6. Big Data Analytics (Sem 3)

PS-II Station : NetApp India Pvt ltd, Bengaluru

Faculty

Name: Chennupati Rakesh Prasanna .

Student

Name: BURAD PARAM MAHAVIR(2021B3A72113H)

Student Write-up

PS-II Project Title: Improving ARP SAN accuracy

Short Summary of work done during PS-II : During my PS-II at NetApp, I worked with the Autonomous Ransomware Protection (ARP) team on improving ransomware detection for Storage Area Network (SAN) environments. The existing detection model relied mainly on entropy-based classification, which often generated false positives because encrypted data and compressed data appear statistically similar. To address this challenge, I designed and implemented a two-stage distribution-based detection framework. The first stage generated encryption probability scores for individual storage blocksets using machine learning, while the second stage analyzed the overall probability distribution to distinguish ransomware from normal and compressed workloads. This approach significantly improved detection accuracy and reduced false alarms. The solution was first developed and validated in Python using machine learning libraries and later ported to the ONTAP kernel in C for production deployment. Extensive validation was carried out to ensure identical outputs between the prototype and production implementation. The final solution reduced the false positive rate from approximately 15% to around 2–3% while maintaining a true positive rate greater than 98%. Through this internship, I gained valuable exposure to enterprise software development, cybersecurity, machine learning, and large-scale storage systems.

Tool used (Development tools - H/w, S/w) : C Programming Language; Visual Studio Code; Git;

Python

Objectives of the project : To improve ARP SAN accuracy and reduce false positives attack detection

Major Learning Outcomes : -Gained practical experience in developing production-grade software for enterprise storage systems;
-Improved understanding of machine learning applications in cybersecurity;
-Learned to work with large codebases, version control systems, and collaborative development practices.

Details of Papers/patents : The work was carried out as an internal product development project at NetApp.

Brief Description of working environment, expectations from the company : The working environment at NetApp was highly collaborative, professional, and learning-oriented. Team members were approachable and encouraged discussions, making it easy to seek guidance whenever required.

Academic courses relevant to the project : Machine Learning; Data Structures and Algorithms; Operating Systems

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Name: PASALA PAVAN SAI(2021B3A72964H)

Student Write-up

PS-II Project Title: File read API

Short Summary of work done during PS-II : Gained hands-on experience designing and developing REST APIs for enterprise storage systems, working with NetApp's data replication and management platforms (SnapMirror Cloud and Active Data Container). Developed a strong understanding of distributed storage architecture, data protection workflows, and API design principles in a production codebase. Improved practical skills in C/Python development, version control, code review processes, and writing test coverage for large-scale systems. Also developed professional skills in working within an Agile engineering team, collaborating with mentors and senior engineers, and translating high-

level requirements into independently designed, production-ready features.

Tool used (Development tools - H/w, S/w) : Software: C, Python, REST API frameworks, Git/version control, NetApp ONTAP environment, internal testing and code-coverage frameworks, Linux-based development environment, IDE/editor tooling.

Objectives of the project : API enchantments and API testing

Major Learning Outcomes : Gained hands-on experience designing and developing REST APIs for enterprise storage systems, working with NetApp's data replication and management platforms (SnapMirror Cloud and Active Data Container). Developed a strong understanding of distributed storage architecture, data protection workflows, and API design principles in a production codebase. Improved practical skills in C/Python development, version control, code review processes, and writing test coverage for large-scale systems. Also developed professional skills in working within an Agile engineering team, collaborating with mentors and senior engineers, and translating high-level requirements into independently designed, production-ready features.

Details of Papers/patents : No

Brief Description of working environment, expectations from the company : NetApp provided a collaborative, mentorship-driven engineering environment where interns are treated as contributing members of the team rather than observers. I was embedded in the CRSG team and given ownership of real features within the production codebase, with a dedicated mentor and team lead guiding my work. The company follows structured Agile practices, with regular stand-ups, code reviews, and clear engineering standards around quality and testing. There was a strong emphasis on independent problem-solving balanced with readily available support from senior engineers. The expectation was to ramp up quickly on a complex storage codebase, take ownership of assigned deliverables, and produce production-quality work that meets the same standards as full-time engineers. Communication, accountability, and a willingness to learn the underlying storage and replication concepts were valued highly. Overall, the environment was professional, inclusive, and focused on both delivery and individual growth.

Academic courses relevant to the project : OS, DBMS, OOPS, DSA

Name: KOTA NAGA SIVA NITHIN(2021B3A72004H)

Student Write-up

PS-II Project Title: File Read API Development

Short Summary of work done during PS-II : During my PS-II at NetApp, I worked as an MTS Intern in the CRSG team, contributing to both the SnapMirror Cloud (ONTAP) and ADC (OffTap) platforms. My primary contribution was the design and development of a new File Read REST API that enables retrieval of file contents directly from backed-up snapshots stored in cloud object storage. The work involved API design, request validation, backend implementation, automation, and end-to-end testing. In addition, I designed and implemented a code coverage pipeline for containerized ADC REST API services. The solution enabled visibility into test coverage by integrating LLVM profiling, collecting and aggregating coverage data generated during automated test execution, and producing coverage reports for internal dashboards. I also contributed to SnapMirror Cloud workflows involving cloud backup and data replication across AWS S3, Azure Blob Storage, Google Cloud Storage, and NetApp StorageGRID. The internship provided exposure to enterprise-scale storage systems, distributed architectures, cloud technologies, automation frameworks, Docker-based development environments, and production software development practices.

Tool used (Development tools - H/w, S/w) : Linux, Docker, Git, Perforce, GitHub Copilot, C, C++, Python, Perl, Shell/Bash, REST APIs, LLVM Profiling Tools, AWS S3, Azure Blob Storage, Google Cloud Storage, NetApp StorageGRID, Internal Automation Frameworks

Objectives of the project : The objectives of the project were: * To design and develop a production-grade File Read REST API for the ADC platform to enable efficient retrieval of file contents from backed-up snapshots. * To implement robust request validation, error handling, and end-to-end testing for reliable API operation. * To enhance code quality by enabling code coverage for containerized ADC REST API services using LLVM profiling. * To contribute to SnapMirror Cloud workflows supporting backup and data replication across cloud object storage platforms such as AWS S3, Azure Blob Storage, Google Cloud Storage, and NetApp StorageGRID. * To gain practical experience in enterprise storage systems, cloud technologies, containerized applications, and production software development.

Major Learning Outcomes : • Gained hands-on experience in enterprise storage and data protection systems.

• Designed and developed production-grade REST APIs.

• Worked with cloud object storage platforms such as AWS S3, Azure Blob Storage, and Google Cloud Storage.
• Developed automation and end-to-end testing workflows.
• Learned containerized application development using Docker.
• Implemented code coverage solutions using LLVM profiling tools.
• Improved debugging, logging, and production issue resolution skills.
• Collaborated within large-scale production codebases and agile development environments.

Details of Papers/patents : Not Applicable

Brief Description of working environment, expectations from the company : NetApp provided a professional and collaborative software engineering environment focused on enterprise storage and cloud technologies. The work involved contributing to production codebases used by customers worldwide. Team members followed structured development practices including design discussions, code reviews, testing, debugging, and issue tracking.
Interns were expected to independently understand system architecture, participate in technical discussions, develop production-quality code, write automation tests, and resolve defects under mentor guidance. The environment encouraged learning through hands-on ownership of features and close collaboration with experienced engineers. Exposure to large-scale systems, cloud platforms, storage technologies, and modern development workflows helped bridge the gap between academic learning and industry practices.

Academic courses relevant to the project : DSA, OOPS, Operating Systems, Computer Networks

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Name: AVIRAL AGARWAL(2021B3A71285P)

Student Write-up

PS-II Project Title: Keystone Console

Short Summary of work done during PS-II : During PS-II at NetApp Bangalore, I worked on the Keystone Console backend (bluexp-backend), a Go-based microservices platform that powers subscription visibility, alert management, and customer notifications for BlueXP. My work focused on

the notification and alerts pipeline. Working on customer issues regarding the service and monitoring health of the storage collectors was also part of my work. Beyond feature work, I studied the Go kit architecture used across services like subscription-service, notification-service, and alerts-service. I gained hands-on experience with repository queries, service-layer business logic, HTTP transport handlers, and endpoint wiring. Overall, PS-II gave me practical exposure to building reliable backend systems in a cloud storage product, working with real production constraints, code reviews, and cross-service debugging.

Tool used (Development tools - H/w, S/w) : Languages: Go, Python (Airflow DAGs), SQL Frameworks/Libraries: Go kit, Gorilla Mux, Ginkgo/Gomega, testify Databases/Messaging: PostgreSQL, RabbitMQ APIs: Microsoft Graph API, REST Dev Tools: VS Code/Cursor, Git, GitHub, Docker Config/Infra: YAML config

Objectives of the project : Build and maintain backend microservices for Keystone Console (BlueXP), enabling subscription management, alert monitoring, and customer notification workflows. Improve reliability, observability, and developer experience across the bluexp-backend services.

Major Learning Outcomes : Designed and worked with layered microservice architecture (transport → endpoint → service → repository) using Go kit
Built and debugged alert notification flows across alerts-service and notification-service
Worked with PostgreSQL for alert/monitor data and RabbitMQ for async messaging
Implemented and tested HTML email templates for single and batch Sphere alerts
Gained experience with service configuration, local dev setup, and integration testing in a production-grade codebase
Learned to navigate a large monorepo and collaborate in an enterprise software environment.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : NetApp Bangalore provided a professional, product-focused engineering environment centered on Keystone cloud storage console development. The team follows agile practices with sprint planning, standups, code reviews, and CI pipelines.
Expectations included owning assigned backend tasks end-to-end — understanding requirements, implementing changes in Go services, writing tests, and validating integrations locally before raising PRs. I was expected to read existing code, follow team conventions.
The culture encouraged learning through pairing, design discussions, and debugging production-like flows (alerts → queue → email). Mentors guided me on service boundaries, config management, and

how customer-facing features map to backend APIs.
Overall, the company expected consistent delivery, quality code, and gradual independence — moving from guided tasks to contributing meaningfully to every service we offer in Keystone Console.

Academic courses relevant to the project : Data Structures and Algorithms
Object-Oriented Programming
Database Management Systems
Computer Networks
Operating Systems
Design and Analysis of Algorithms

Name: MANGLE SOHAM SUHAS(2021B3A71068H)

Student Write-up

PS-II Project Title: VolDb scaling

Short Summary of work done during PS-II : As a poc work had to insert entries into the database to see points where it could fail and record its performance. Writing unit tests to improve code coverage

Tool used (Development tools - H/w, S/w) : Linux, C, Vim, Perforce

Objectives of the project : Scaling database to 10x

Major Learning Outcomes : Bug fixing and code reading

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : To be proactive and reach out for help whenever needed, everyone is very helpful and willing to guide

Academic courses relevant to the project : Os, dsa

PS-II Station : Netision, Noida

Faculty

Name: Neha Vinayak .

Student

Name: YASH TIWARI(2021B5A32372G)

Student Write-up

PS-II Project Title: Research Analyst Intern

Short Summary of work done during PS-II : Complete to book invisible to visible

Tool used (Development tools - H/w, S/w) : Notebook LM

Objectives of the project : Writing "invisible to visible"

Major Learning Outcomes : NA

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Remote and no work pressure.

Academic courses relevant to the project : LITERATURE

PS-II Station : Netradyne, Bengaluru

Faculty

Name: Mohammad Saleem Bagewadi .

Student

Name: MOHITH KULALA(2022AAPS0419G)

Student Write-up

PS-II Project Title: FUSE with buffer logic for WAF reduction

Short Summary of work done during PS-II : Working of storage systems,

Tool used (Development tools - H/w, S/w) : c,c++,linux,os

Objectives of the project : Improving storage endurance

Major Learning Outcomes : linux, storage systems

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Good , the team is supportive
Always helped me and guided me
I also got proper feature development work.

Academic courses relevant to the project : Operating systems,computer architecture

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PS-II Station : NetSkope Software India Pvt. Ltd., Bengaluru

Faculty

Name: A Rekha .

Student

Name: T M V S G PAVAN(2024H1030131G)

Student Write-up

PS-II Project Title: NGIPS AI-Based Verdicting System: ML-Driven True Positive / False Positive / Inconclusive Classification for IPS Alerts

Short Summary of work done during PS-II : During my PS-II tenure, I designed, developed, and deployed an AI-based verdicting system at Netskope to automate the manual triage process of Intrusion Prevention System (IPS) alerts. Starting with a massive raw dataset of 4.25 million events collected across 212 JIRA tickets, I resolved multi-stage label conflicts and applied a novel "Fuzzy Pattern Grouping" downsampling technique along with domain hard-capping. This condensed my data into a balanced, high-quality training dataset of 277,099 events. I engineered 138 features spanning URL structure, user-agent analytics, network flow metrics, and automated text embeddings. After benchmarking 16 machine learning and deep learning architectures, my LightGBM configuration emerged as the optimal choice, achieving an impressive 98.77% accuracy and a macro F1-score of 0.9866 on held-out test data. I successfully integrated the system into production as an automated inference pipeline utilizing Sumo Logic logs and VirusTotal threat intelligence. In real-time production validation, my pipeline demonstrated over 90% prediction accuracy compared to manual analyst verdicts, establishing a trustable 5-class confidence tiering system. By providing explainable top-5 feature attributions for every automated classification, my system successfully bridges the gap between machine learning and human analyst trust, reducing daily security analyst alert workloads by an estimated 70% to 80%.

Tool used (Development tools - H/w, S/w) : Data Extraction & Warehousing: Sumo Logic (Search Job API), MySQL Database (bastion server cache), Rovo AI prompts (CSV exports). Threat Intelligence Enrichment: VirusTotal Premium API. Machine Learning & Modeling Frameworks: LightGBM, XGBoost, Hist Gradi

Objectives of the project : This project addresses the automation of Intrusion Prevention System (IPS) alert triage at Netskope. The IPS engine generates tens of thousands of HTTP-layer alerts weekly, each requiring manual analysis by security analysts who correlate URL structure, VirusTotal

reputation, User-Agent legitimacy, process behavior, and network flow characteristics to classify alerts as True Positive (TP - confirmed attack), False Positive (FP - benign false alarm), or Inconclusive. This manual process is time-intensive and creates analysis backlogs. This project aims to automate the IPS alert triage process using machine learning techniques.

Major Learning Outcomes : Machine Learning for Cybersecurity: Learned how to design, develop, and deploy a complete, production-grade AI-based verdicting system that automates the classification of Intrusion Prevention System (IPS) alerts into True Positive (TP), False Positive (FP), or Inconclusive categories.
Advanced Data Engineering & Downsampling: Mastered complex data curation techniques, including a novel "Fuzzy Pattern Grouping" downsampling methodology and domain hard-capping to handle extreme class imbalance (reducing TP dominance while preserving 100% of unique behavioral patterns).
Feature Engineering: Developed skills in extracting 138 handcrafted features from raw network logs across 8 distinct categories, combining security domain expertise with advanced text embedding pipelines (TF-IDF with Truncated SVD).
Model Evaluation: Gained experience evaluating and benchmarking 16 different machine learning and deep learning architectures (including LightGBM, XGBoost, and TabNet) on structured tabular data.
Production MLOps: Built and deployed an automated, end-to-end inference pipeline integrated with real-world enterprise infrastructure like Sumo Logic, MySQL caches, and third-party threat intelligence tools like the VirusTotal Premium API.

Details of Papers/patents : Netskope's Internal requirement project, So no patent and projects were written as this is more of real time work than research project.

Brief Description of working environment, expectations from the company : The project was completed at the Netskope office located in Bangalore within the NGIPS (Next-Generation Intrusion Prevention System) Security Engineering team. The team works on a comprehensive cloud security platform that processes massive network flows, monitoring HTTP/HTTPS traffic from enterprise users across global deployments. The engineering culture is highly technical, demanding specialized cybersecurity domain knowledge combined with practical, production-grade software and data engineering practices.
The primary expectation from the company was to address a massive scalability and backlog challenge. The active IPS engine generates tens of thousands of weekly alerts across 500+ signatures, creating manual review backlogs for dedicated security analysts. Netskope expected the

development of an automated machine learning system capable of triaging these raw Sumo Logic alert logs with a target classification accuracy of >60%.
The project vastly exceeded expectations by delivering an end-to-end automated pipeline achieving over 90% accuracy on real-time production data. The team provided mentorship and expert guidance to help the student understand domain nuances such as alert triage, data collection pipelines, and the implementation details required for scalable MLOps architectures.

Academic courses relevant to the project : Machine Learning / Deep Learning
Cybersecurity / Network Security
Data Engineering / Database Management Systems
Natural Language Processing (relevant to URL text embeddings)

Name: SHREOSHI SAHAROY(2024H1030018G)

Student Write-up

PS-II Project Title: Balkan Migration : migration of legacy UI to microfrontend architecture

Short Summary of work done during PS-II : Migrated legacy UI front-end code to new micro services based architecture . Tech stack migrated from Angular to Reaxt and typescript.

Tool used (Development tools - H/w, S/w) : Angular, TypeScript, React, Claude, Copilot, kubernetes, docker, git, cypress, Jest

Objectives of the project : Migrate legacy UI pages of netskope Ui to new microfrontend architecture

Major Learning Outcomes : Migrated legacy UI front-end code to new micro services based architecture

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Worked under a

sub team within the WebUi team of netskope. Manager and mentors were both always available to help and understand through any difficulties .

Academic courses relevant to the project : AOS, ACN, Network security

PS-II Station : Nielsen - , Bangalore, Gurgaon and , Gurgaon

Faculty

Name: Parag Rastogi

Student

Name: ADITYA BIKASH NAIK .(2022A3PS0515H)

Student Write-up

PS-II Project Title: Distributed Data Engineering, Optimization, and Lifecycle Orchestration for Enterprise Media Analytics Infrastructure

Short Summary of work done during PS-II : During my PS-II internship within Nielsen's Data Preparation and Factories team, I worked on the engineering, optimization, and orchestration of high-volume television viewership data pipelines. The project commenced with a deep technical onboarding into the NLSN Media Architecture, focusing on Hadoop Federation, YARN, and Amazon Redshift. Transitioning to active development, I built and refined scalable ETL pipelines using Scala and Apache Spark to ingest raw viewing characteristics into Amazon S3, utilizing SparkSQL for complex data aggregations and DDL commands for schema definitions in the Hive Metastore. To optimize cloud compute and storage efficiency, I successfully implemented strategies like partitioning, bucketing, and predicate pushdown. I also executed a specialized data deduplication workflow on S3 for Return Path Data (RPD/RPD+) pipelines, reducing redundant device logs by 12% while maintaining strict data integrity. Later phases focused heavily on production operations. I assumed responsibility for monitoring the health of business-critical production workflows, including the NPMC, RPD, PRIM, and SRIM DAGs within Apache Airflow. Notably, when the PRIM pipelines were migrated

to an upgraded version of Airflow, I helped streamline the transition by proactively tracking the new interface and manually clearing execution errors caused by metadata desynchronization. This comprehensive experience successfully bridged the gap between physical household meter collection and highly optimized production data factories.

Tool used (Development tools - H/w, S/w) : Hardware: Windows Development Workstation, Apple MacBook Pro. Software / Frameworks: Apache Spark, Apache Airflow, Scala, Amazon S3, GitLab (CI/CD), IntelliJ IDEA, Hive Metastore, Git, sbt, AWS CLI.

Objectives of the project : Ingest and Transform: To build and maintain scalable, production-grade ETL pipelines using Scala and Apache Spark for high-volume television viewership datasets. Optimize Performance: To minimize cloud storage overhead and reduce query latencies on Amazon S3 by applying data deduplication, partitioning, bucketing, and predicate pushdown. Orchestrate Workflows: To monitor, troubleshoot, and streamline business-critical data factories (including NPMC, RPD/RPD+, PRIM, and SRIM pipelines) using Apache Airflow. Support Platform Migration: To diagnose and resolve task-level synchronization errors through the Airflow UI during major infrastructure version upgrades.

Major Learning Outcomes : Distributed Computing: Developed strong proficiency in writing functional Scala code and leveraging SparkSQL APIs to handle multi-terabyte datasets across distributed clusters.
Infrastructure Orchestration: Mastered the operational dynamics of Apache Airflow, including auditing DAG logs, handling cross-DAG dependencies, and resolving UI-level task synchronization lags.
Data Quality Engineering: Gained practical experience in real-world data cleansing workflows, specifically designing data deduplication scripts to filter out redundant device heartbeats without compromising unique records.
Cross-Platform Adaptability: Acquired technical agility by navigating, configuring, and debugging complex big data workflows across both macOS and Windows environments.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment within Nielsen's Data Preparation and Factories team is highly collaborative, agile, and technically rigorous. Operating within a modern production-grade DevOps framework, the team places a strong emphasis on continuous integration, thorough code reviews via GitLab, and robust operational awareness. Engineers are expected to possess sharp problem-solving skills to maintain critical data delivery SLAs across massive distributed clusters. The team culture encourages end-to-

end visibility, allowing interns to transition from sandbox assignments to directly impacting live production pipelines.

Expectations from the company center around high reliability, data integrity, and technical accountability. As an intern, I was expected to quickly adapt to cloud-native big data architectures, proactively isolate pipeline bottlenecks, and handle critical platform transitions—such as managing out-of-sync tasks during an Airflow version upgrade—with minimal supervision. This fast-paced environment demands strong cross-platform adaptability (managing tools across both Windows and macOS) and fosters immense professional growth by treating internal data quality with the same urgency as client-facing deliverables.

Academic courses relevant to the project : Database Management Systems (DBMS)
Object-Oriented Programming (OOP)
Data Structures and Algorithms (DSA)
Operating Systems (OS)

Name: HARI CHARAN BUDAMAGUNTA .(2022A7PS1378H)

Student Write-up

PS-II Project Title: Chat Platform

Short Summary of work done during PS-II : Traces Extraction and Actionable Insights via Langfuse Measuring Component-Level Latency and Accuracy LiteLLM Proxy Setup and GCP IAM Bedrock Handshake Code Retry Optimization and Prompt Caching Microservice Ablation Study via Context Stripping Iterative Prompt Tuning and Optimization Google ADK Architecture Replication and Benchmarking Payload Refinement and Downstream Parameterization LLM-as-a-Judge Evaluation Implementation Multi-Agent Orchestrator Model Fallback

Tool used (Development tools - H/w, S/w) : .

Objectives of the project : Getting enterprise level insights from company's proprietary database

Major Learning Outcomes : Software development principles, AI and context engineering.

Details of Papers/patents : .

Brief Description of working environment, expectations from the company : .

Academic courses relevant to the project : GenAI, ML

Name: SURYADEVSINH HARISHCHANDRASINH ZALA(2024H1030127G)

Student Write-up

PS-II Project Title: Media Monitoring

Short Summary of work done during PS-II : Work is really great and it helped me more to grow in my future career

Tool used (Development tools - H/w, S/w) : Kubernetes, Python, Java, Javascript

Objectives of the project : With media monitoring we create the segment of sports and non sports from the given video from the upstream

Major Learning Outcomes : Collaboration with the different teams and to work in professional environment

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working environment is great each of the senior is very helpful

Academic courses relevant to the project : Network security, cloud computing, advanced operating system

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Name: KARTIK MAHESHWARI .(2022A7PS0158H)

Student Write-up

PS-II Project Title: Ask-Nielsen Platform

Short Summary of work done during PS-II : Worked on the development of Ask-Nielsen AI-powered conversational analytics platform by implementing reusable UI components, integrating enterprise services and APIs, developing observability and logging solutions and contributing to microservice-based architecture to enhance analytics, monitoring and user experience.

Tool used (Development tools - H/w, S/w) : React.js, JavaScript, Python, OpenTelemetry, TypeScript, SigNoz, Git, GitLab, Postman, REST APIs, Docker, Trino DB, npm, Artifactory.

Objectives of the project : To develop an AI-powered conversational analytics platform that enables users to obtain business insights using natural language queries. To automate data analysis by converting user queries into SQL and providing actionable insights for faster decision making.

Major Learning Outcomes : Gained practical experience in developing AI-powered conversational analytics applications and understanding the integration of Generative AI in enterprise systems.
Learned to design and develop scalable frontend and backend components, reusable UI libraries and REST API integrations for enterprise applications.
Acquired knowledge for microservice architecture, service integration and communication between distributed components in large-scale systems.
Developed expertise in observability, logging, monitoring and software development practices using technologies like OpenTelemetry, SigNoz and modern development workflows.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment was supportive and collaborative. Regular catchup meetings were conducted by the manager during the initial phase before being assigned to different team leads. Tasks were assigned gradually, starting with smaller responsibilities and progressing to work at the same expectations as full-time employees by the end of the internship. The work schedule followed a hybrid model with 1 work-from-home day and 4 work-from-office days per week. Occasional weekend work was required to meet project deadlines and deliverables.

Academic courses relevant to the project : OOPs and ML

Name: SUDHANVA S(2024H1120187P)

Student Write-up

PS-II Project Title: Prism : An ubiquitous data layer

Short Summary of work done during PS-II : Engineered a serverless data pipeline (AWS Lambda, Python, Athena) to ingest and stage source data into Apache Iceberg tables, achieving near real-time data delivery with a strict 1-hour SLA. • Led architectural workflow optimizations by migrating a complex SNS-based pipeline to AWS Step Functions, decreasing Lambda execution duration by 30% and minimizing resource costs. • Established an automated Data Quality (DQ) framework by embedding Athena validation checks within Lambda functions and designed Grafana dashboards using Trino queries for real-time alerting.

Tool used (Development tools - H/w, S/w) : AWS , Apache Iceberg, Python

Objectives of the project : To develop a data layer consuming multiple sources providing a unified and ubiquitous view of data that Nielsen holds.

Major Learning Outcomes : Data Engineering Fundamentals, Cloud Services

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Company expects ownership of the project making contributions towards the goals continuously and bringing innovation of possible.

Academic courses relevant to the project : Database Management Systems

PS-II Station : Nielsen - , Gurgaon

Faculty

Name: Parag Rastogi

Student

Name: LOKESH SATHISH .(2022A8PS0732H)

Student Write-up

PS-II Project Title: Creators Intellegence/Tizen CTV

Short Summary of work done during PS-II : Completed two projects at Nielsen (DMS division) over 6 months: 1. Influencer Media Valuation (iMV) — Built a serverless multi-platform brand detection system using AWS Lambda, Google Gemini 2.5 Pro, and PySpark/EMR. Processes YouTube, Instagram, and TikTok content to detect audio brand mentions and visual logo exposures with proprietary prominence scoring. Uses cross-cloud auth (AWS↔GCP via Workload Identity Federation) and deterministic deduplication. Presented to Nielsen's CTO. 2. Nielsen Pulse — Samsung Tizen CTV App — Developed a hybrid audience measurement app for Samsung Smart TVs (Tizen 4.0+). Built the complete web UI layer in Vanilla TypeScript with dual auth flows (OTP + QR code), TV D-pad navigation, on-screen numpad, dashboard with real-time API integration, QR reward widget, and cache-first data refresh. Paired with a .NET background service for telemetry collection with 5-layer persistence.

Tool used (Development tools - H/w, S/w) : Hardware: MacBook (development machine) Samsung Smart TV (Tizen 4.0+ — testing/deployment target) Software: Category Tools Languages TypeScript, Python 3.11, C# (.NET 4.0), PySpark, SQL IDE/Editor VS Code / Kiro Build Tools Vite 6, Tizen SDK, .NET SDK F

Objectives of the project : To develop a serverless data ingestion pipeline for various social media platforms to create a centralised currency for the value of a creator's brand mention/To develop Nielsen pulse app for Samsung TVs globally for data collection

Major Learning Outcomes : I learned how big companies handle their business as efficiently as possible, good coding practices, proper development skills on projects that will be used by a large amount of users.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Good working environment, people are very helpful and ready to give you a hand if you need it. Many of the engineers I've worked with are quite knowledgeable and I've learned quite a good amount of coding practices from them that I'll carry through the rest of my career. Good work like balance, I got assigned a organisation within Nielsen that they're investing heavily in so a lot of the projects I've worked on has been very interesting. Few colleagues have felt their work is boring.

Academic courses relevant to the project : Object Oriented Programming, Database Development, Machine Learning

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Name: UMANG .(2022A8PS1543H)

Student Write-up

PS-II Project Title: Identity Engine

Short Summary of work done during PS-II : Through this project phase, I developed a comprehensive understanding of High-Level Design (HLD) principles and software reliability concepts by refactoring a centralized resources repository into a modular configuration manager. I gained extensive hands-on experience in distributed data pipeline orchestration using Apache Airflow and Amazon EMR, which provided deep technical insights into specialized big data sorting and graph algorithms for Mobile Advertising IDs (MAIDs), unique device identifiers, Hashed Email Addresses (HEMs), link resolutions, community detection, and household detection. Furthermore, I built practical proficiency in multi-language asset deployment by compiling custom Scala JAR files and acquired core capabilities in cloud systems infrastructure by provisioning cross-regional Airflow instances using YAML automation, secure AWS Systems Manager (SSM) parameter paths, isolated database schema allocations, and advanced user permission administration.

Tool used (Development tools - H/w, S/w) : Python, Scala, Apache Softwares, AWS

Objectives of the project : To built end to end data pipelines and run algorithms

Major Learning Outcomes : Understanding how real world large scale data pipelines are built and scaled.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The work environment is a highly technical, fast-paced distributed data engineering landscape focused on robust software reliability and scalable infrastructure. It leverages an advanced, multi-language stack primarily utilizing Python and Scala for application logic and infrastructure automation. A core focus is cloud-native pipeline management, where big data workloads are organized through Apache Airflow Directed Acyclic Graphs (DAGs) and executed over distributed Amazon Elastic MapReduce (EMR) compute clusters.

Academic courses relevant to the project : Object Oriented programming

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Name: KUSHAGRA TANWAR(2022A3PS0349G)

Student Write-up

PS-II Project Title: Audience Measurement

Short Summary of work done during PS-II : Work on 4 projects all related to audience measurement, understanding their existing methodology and enhancing them using own research

Tool used (Development tools - H/w, S/w) : Python, SQL, Kiro, Databricks, Gazelle

Objectives of the project : Build and test robust methodologies

Major Learning Outcomes : Data Science Techniques

Details of Papers/patents : Non

Brief Description of working environment, expectations from the company : Quite good and

helpful at every step

Academic courses relevant to the project : Machine Learning, Foundation of Data science, Probability and Statistics

PS-II Station : Nokia, Bengaluru

Faculty

Name: Pawan Sharma .

Student

Name: AMAN GUPTA(2022A3PS0344G)

Student Write-up

PS-II Project Title: Design and verification of a hardware gearbox

Short Summary of work done during PS-II : In my high-performance hardware gearbox project, I successfully evolved a fixed Verilog implementation into a fully parameterizable 160-bit design, leveraging Perl and Emacs automation to streamline component generation. To optimize Power, Performance, and Area (PPA), I refined the datapath's shifter-accumulator architecture by replacing large, single-cycle multiplexer trees with a highly efficient multi-stage barrel shifter, and I established a precise hardware buffer size of 480 to accurately support data width conversion. On the verification front, I architected a comprehensive, modular environment using SystemVerilog and the Universal Verification Methodology (UVM). By heavily applying constrained-random stimulus throughout the complete design lifecycle, I rigorously stress-tested the gearbox to ensure all edge cases and complex data transitions were structurally and functionally sound.

Tool used (Development tools - H/w, S/w) : VCS, VC Spyglass

Objectives of the project : To design and verify a hardware gearbox

Major Learning Outcomes : Learnt about chip design and verification

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Good working environment. Seniors were nice and approachable

Academic courses relevant to the project : Digital Design

PS-II Station : Nomura Digital Transformation, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: SHREYASH VERMA(2021B5A71538P)

Student Write-up

PS-II Project Title: Agentic AI for PDF to podcast tool

Short Summary of work done during PS-II : During my internship, I primarily worked on an AI-powered platform that converts static PDFs and Confluence pages into podcast-style audio content. The goal was to help High-Net-Worth Individual (HNI) clients consume Nomura Wealth reports more efficiently, while also enabling employees to access information in a more engaging and digestible format. To achieve this, I designed and developed an Agentic AI workflow that automated the content transformation process and later presented the solution to stakeholders across the organization. After building the prototype, I focused on making the application production-ready. I implemented caching mechanisms, lazy loading, and other performance optimizations to improve scalability, reduce latency, and support multiple concurrent users, particularly during audio streaming. I also contributed

to the development of an AI-based Wealth Advisor that leveraged Memory-Aware Agent architectures to provide personalized and context-aware interactions by retaining relevant user information across sessions. Additionally, I developed features for an internal team portal that served as a centralized platform for tracking projects and daily updates. My contributions included building a chatbot, implementing live update functionalities, and enhancing content security and accessibility. Beyond project development, a significant part of my internship involved researching Agentic AI systems, Large Language Models (LLMs), memory architectures, and emerging AI technologies. This helped me gain a deeper understanding of how modern AI solutions are designed, deployed, and scaled in production environments. I also participated in an internal company hackathon as a technical guide, assisting a team with problem-solving and implementation challenges while collaborating with professionals across different functions within the organization.

Tool used (Development tools - H/w, S/w) : Python, Qwen, Faster-Whisper, Claude, mobaxterm

Objectives of the project : - Make a tool for converting a static PDF to Podcast that could be used company wide. -worked on multiple other projects, like wealth advisor, dashboard for the company, and other research related tasks

Major Learning Outcomes : - Developed a strong understanding of Agentic AI systems, their architectures, workflows, and real-world applications across different domains.
- Collaborated and interacted with stakeholders across multiple teams, gaining valuable insights into cross-functional communication and organizational workflows.
- Conducted extensive research on emerging trends, best practices, and advancements in Agentic AI and related fields, strengthening both technical and analytical skills.
- Successfully deployed projects to production servers, gaining hands-on experience with deployment pipelines, server management, and production-ready software practices.
- Explored and worked with modern Text-to-Speech (TTS) frameworks and models, including Qwen and Kokoro, understanding their capabilities, limitations, and integration approaches.
- Learned and implemented caching strategies to optimize system performance and scalability, enabling the application to efficiently support up to 500 concurrent users.
- Enhanced problem-solving abilities by translating research concepts into practical implementations and evaluating their effectiveness in real-world scenarios.
- Gained exposure to the complete software development lifecycle, from research and development to deployment, optimization, and monitoring.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The working environment at Nomura was highly supportive, collaborative, and conducive to learning. From the beginning of my internship, team members were approachable and willing to provide guidance whenever required. The team fostered an open culture where questions and discussions were encouraged, making it easier to learn and contribute effectively.

The organization offered considerable flexibility in terms of work arrangements, allowing employees to balance office and remote work as needed. Various employee-friendly facilities, including subsidized meals, further contributed to a comfortable and positive workplace experience.

The primary expectation from the company was ownership and timely delivery of assigned tasks. At the same time, there was always adequate support available from managers and colleagues whenever challenges arose. This balance between accountability and guidance created an environment that encouraged both independent problem-solving and continuous learning.

A notable aspect of my experience was the team's culture. Since many team members were relatively young, the environment was energetic and engaging. Regular team interactions, both within and outside the office, helped strengthen professional relationships and foster a strong sense of camaraderie. Overall, the internship provided an excellent blend of technical learning, professional growth, and exposure to a healthy corporate work culture.

Academic courses relevant to the project : Operating Systems, Machine Learning, Data Science, Mathematics 2, OOP, DBMS

PS-II Station : Nomura Global Markets Analyst Internship, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: ROHAN CHAITANYA NADKARNI(2022A7PS0597G)

Student Write-up

PS-II Project Title: Analyst

Short Summary of work done during PS-II : Worked across US CLO, RMBS, CRE, and EMEA ABTF desks, supporting the deal lifecycle from under- writing to post-execution monitoring. Automated reporting and built Python-based tools for CLO trading portfolios, enabling loan-level analysis, relative value comparison, and credit monitoring across multiple warehouses. Conducted market research, loan tape analysis, and built Power BI dashboards for EMEA ABTF, delivering data-driven strats, charts, and sector insights across European SME lending, private credit, and consumer finance. Delivered reporting across 8+ asset classes (NQM, HELOC, HECM, NPL, RPL, SFR, HEI, multi-facility) and developed loan review forms supporting CRE underwriting and credit evaluation

Tool used (Development tools - H/w, S/w) : Excel, sql, python

Objectives of the project : Perform tasks and analysis within the team as per the need.

Major Learning Outcomes : How a financial company works, what are the expectations. Learning accuracy and time management. Difference between a college project and professional projects.

Details of Papers/patents : N.a.

Brief Description of working environment, expectations from the company : Professional, fast paced environment. Monday to Friday in office everyday for interns.

Academic courses relevant to the project : Finance minor

Name: LADDHA MANAV HARISH(2021B3A71053G)

Student Write-up

PS-II Project Title: Nomura GM

Short Summary of work done during PS-II : During my internship in the Global Markets division at Nomura, I worked with the US Securitized Products Research team, supporting ongoing fixed income research activities. My work primarily involved analyzing securitized products such as Agency

Mortgage-Backed Securities (MBS), Non-Agency MBS, and Collateralized Loan Obligations (CLOs). I assisted in monitoring market developments, macroeconomic events, interest rate movements, and credit market trends affecting these instruments. I regularly used the Bloomberg Terminal and Microsoft Excel to collect, organize, and interpret financial data. I contributed to research by reviewing market reports, tracking yield movements, analyzing spread behavior, and preparing supporting material for internal discussions. Through this experience, I gained practical exposure to fixed income valuation concepts, duration, prepayment risk, credit spreads, and the relationship between macroeconomic factors and securitized products.

Tool used (Development tools - H/w, S/w) : Excel, Powerpoint, Bloomberg, LSEG YieldBook, Sql, Python

Objectives of the project : Support the US Securitized Products Research team by analyzing fixed income securities, monitoring market developments, and contributing to research on Agency MBS, Non-Agency MBS, and CLOs.

Major Learning Outcomes : Developed practical expertise in US fixed income and securitized products research, strengthening analytical, market research, and financial modeling skills using Bloomberg Terminal and Microsoft Excel.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The internship gave me good exposure to the Global Markets research environment and helped me understand how a large investment bank operates. My day-to-day work involved supporting the US Securitized Products Research team, which required accuracy, attention to detail, and consistency. However, I found the work to be quite repetitive and monotonous, with limited opportunities to take ownership of tasks or work on diverse problems.

One of the best aspects of my internship was the India team. They were friendly, approachable, and always willing to help whenever I had questions. Their guidance made it much easier to learn and adapt to the role. On the other hand, I found the interaction with the US team to be limited, and they were not as accessible, so much of my learning had to be self-driven.

Overall, the internship was a valuable learning experience and significantly improved my understanding of fixed income markets and securitized products. While I am grateful for the opportunity and the support I received from my colleagues in India, I realized that this type of research role is not something I see myself pursuing in the long term. It helped me better understand the kind of work environment and responsibilities that align with my interests and career goals.

Academic courses relevant to the project : All the Offshoot courses - SAPM,DRM,FRAM,BAAV,Finman,Fufa

PS-II Station : Nomura Regional CEO Office, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: MEGHNA RAVI RAMARATNAM(2022A4PS0915P)

Student Write-up

PS-II Project Title: AEJ CEO's Office Corporate Strategy

Short Summary of work done during PS-II : Groups CEO Monthly Report, Strategy Projects (confidential)

Tool used (Development tools - H/w, S/w) : MS powerpoint MS excel

Objectives of the project : CEO's Monthly Report to Group CEO and Regional Strategy Projects

Major Learning Outcomes : Stakeholder Management, Reporting, Adobe Illustrator

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : I was reporting to 2 executive directors directly very supportive and steep learning curve

Academic courses relevant to the project : Business Communication, Principles of Management, Fundamentals of Finance and Accounting

PS-II Station : Nomura Risk Management - CEM, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: HARSH BHATIA(2021B3AA1060P)

Student Write-up

PS-II Project Title: Replacement risk

Short Summary of work done during PS-II : Exposure validation, IA quoting , CRMMC

Tool used (Development tools - H/w, S/w) : BO

Objectives of the project : Automate a report made on BO

Major Learning Outcomes : Finance. Replacement risk , BO

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Good peers, smart humble

Academic courses relevant to the project : Finance

PS-II Station : Nomura Risk Management - Credit Risk Management (CRM), Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: AMAN RAHEJA(2022AAPS0251P)

Student Write-up

PS-II Project Title: Credit Risk Management

Short Summary of work done during PS-II : HFs & PEs

Tool used (Development tools - H/w, S/w) : excel, python along with some in-house applications

Objectives of the project : Analysing credit risk associated with various transactions happening with several HF & PE funds by accessing their structure, portfolio conc., manager credit worthiness etc

Major Learning Outcomes : indepth knowledge on various products Nomura is dealing with several HFs and PEs alongwith their portfolio breakup analysis, etc

Details of Papers/patents : confidential

Brief Description of working environment, expectations from the company : 2 days work from office, 5 days working, shift timings depends on region you are covering, do not give any work laptop for wfh, need to setup remote worksetup on personal device

Academic courses relevant to the project : Fin minor in general, nothing much specific

PS-II Station : Nomura Risk Management - Market Risk, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: VEDANT GUPTA(2022A3PS0507G)

Student Write-up

PS-II Project Title: Market Risk Management

Short Summary of work done during PS-II : Risk Management

Tool used (Development tools - H/w, S/w) : Excel

Objectives of the project : Risk Management

Major Learning Outcomes : Risk Management

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Good

Academic courses relevant to the project : FRAM

PS-II Station : Nomura Risk Mangament - Stress Testing, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: SHOBHIT RATHI(2021B3A30980P)

Student Write-up

PS-II Project Title: Stress Testing

Short Summary of work done during PS-II : Primary project was to create a python tool for validating the stressed current exposures for thousands of counterparties across multiple stress scenarios for OTC trades.

Tool used (Development tools - H/w, S/w) : Python

Objectives of the project : Understand stress testing framework for regulatory requirements

Major Learning Outcomes : Regulatory reporting, Python, Credit risk, Liquidity risk

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Friendly, Approachable, Helping, Healthy team culture

Academic courses relevant to the project : DRM, FRAM

PS-II Station : Nomura Wholesale Strategy, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: YASH PARE .(2022AAPS0325H)

Student Write-up

PS-II Project Title: Correlation Analysis Of Wholesale Fee Pools

Short Summary of work done during PS-II : First few months were just an introduction to the work. I spent a lot of time doing Ad-Hocs for the Analysts and Associates to get a hang of it. Then we were involved in some actual projects like Executive Management Meets and other decks. A lot of BAU work happened weekly (updating some PPTs for senior management, maintaining some Excel sheets, etc)

Tool used (Development tools - H/w, S/w) : Excel, Powerpoint

Objectives of the project : Determining if there's any significant correlation between Macro variables, financial products, fee pools, and equity indices and justifying the numbers.

Major Learning Outcomes : Correlations Macro variables, financial products, fee pools, and equity indices with reasons for the results.
Determining how inflation and equity index regimes affect Fee Pools for investment banks.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Really great team, they're incredibly helpful. Work hours can be quite variable depending on how many projects are ongoing and their urgency (12-14 hour days were common during Q1'26).

Academic courses relevant to the project : Financial Management, Derivatives & Risk Management

PS-II Station : Novartis Healthcare Pvt Limited - Compliance & Quality, Hyderabad

Faculty

Name: Bharathi R .

Student

Name: GAURI PRADIP KARANDE(2024H1470199P)

Student Write-up

PS-II Project Title: PHARMACOVIGILANCE OPERATIONS: ICSR COMPLIANCE, VAP RECONCILIATION AND POWER BI DASHBOARDS AT NOVARTIS

Short Summary of work done during PS-II : During my PS-II internship at Novartis, I worked in the Compliance and Quality Metrics function, supporting the generation and monitoring of key performance indicators (KPIs) and quality metrics. My responsibilities included collecting, validating, and analyzing data from various sources to ensure accurate reporting and compliance tracking. I assisted in the preparation of dashboards, reports, and presentations used for monitoring operational performance and quality standards. I also supported documentation activities and collaborated with different teams to maintain data integrity and facilitate timely reporting. Through this internship, I gained hands-on experience in compliance processes, quality management systems, data analysis, and performance measurement within the pharmaceutical industry. The internship strengthened my analytical, communication, and problem-solving skills while providing valuable exposure to industry practices and the role of quality metrics in driving continuous improvement and operational excellence.

Tool used (Development tools - H/w, S/w) : Power BI, Excel, Powerpoint

Objectives of the project : The primary objective of the project was to support the Compliance and Quality Metrics team in monitoring and improving organizational performance through the generation, analysis, and reporting of key quality and compliance indicators. The project aimed to ensure accurate tracking of critical KPIs, facilitate data-driven decision-making, and support adherence to quality standards and regulatory requirements. Specific objectives included collecting and validating data

from multiple sources, preparing performance reports and dashboards, identifying trends and areas for improvement, and supporting the timely communication of quality metrics to stakeholders. The project also aimed to enhance operational efficiency by providing reliable insights that contribute to continuous improvement and effective compliance management.

Major Learning Outcomes : Learned power BI, applied and delivered

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : The working environment at Novartis was professional, collaborative, and focused on innovation, quality, and compliance. Employees were encouraged to work in a team-oriented manner while maintaining high standards of accountability and integrity. The organization provided access to modern tools, structured workflows, and learning opportunities that supported both personal and professional growth.

As an intern in the Compliance and Quality Metrics function, I was expected to be proactive, detail-oriented, and committed to delivering accurate and timely work. The company emphasized data integrity, adherence to quality standards, effective communication, and continuous learning. Regular interactions with team members and mentors helped me understand business processes and industry best practices.

The internship provided a supportive environment where I could apply my academic knowledge to real-world challenges, develop analytical and problem-solving skills, and gain exposure to the pharmaceutical industry's quality and compliance framework. Overall, the experience was enriching and helped me build confidence, professionalism, and a better understanding of corporate work culture.

Academic courses relevant to the project : Nil

PS-II Station : Novartis Healthcare Pvt Limited - PV Regulations, Hyderabad

Faculty

Name: Bharathi R .

Student

Name: PRACHEE GOLDIE BAGHMAR(2024H1460284P)

Student Write-up

PS-II Project Title: Evaluate emerging PV regulations for adherence to all regulatory requirements for Safety case management process

Short Summary of work done during PS-II : During the Practice School-II internship within the Patient Safety & Pharmacovigilance (PSPV) Process Excellence (PEX) team at Novartis, I worked across multiple interconnected workstreams focused on process standardization, regulatory documentation, and compliance tracking. Key contributions included analyzing Targeted Follow-Up (TFU) survey responses to identify operational trends and gaps regarding prefilling, translation, and tracking. I supported the design and implementation readiness of a standardized framework for tracking Follow-Up Response Rates aligned with EMA regulatory expectations, utilizing Argus classifications and keyword-based logic. To ensure audit readiness and traceability, I assisted in preparing, reviewing, and archiving PSMF Annex C.10.7 for Social Media Listening and Digital Engagement Assets, alongside managing weekly Social Media and Patient Oriented Program (POP) documentation. Furthermore, I performed training compliance reviews by auditing data from Up4Growth and Rubicon systems to resolve status inconsistencies and duplicate entries. I also provided critical implementation and validation support by preparing and tracking test cases in the TST testing environment, coordinating across regional and global stakeholders, and managing structured project repositories in Microsoft Teams, OneNote, and IDrive. Ultimately, this work helped strengthen compliance infrastructure, documentation consistency, and operational knowledge management within the function.

Tool used (Development tools - H/w, S/w) : Software Systems: Argus, Inspire, Up4Growth, Rubicon. Repository & Collaboration Tools: Microsoft Teams, OneNote, IDrive. Testing Environments: TST (Testing Environment for validation tracking).

Objectives of the project : To support and improve pharmacovigilance process excellence initiatives by strengthening follow-up workflows, regulatory documentation, compliance tracking, and structured knowledge management within PSPV

Major Learning Outcomes : Deep understanding of global pharmacovigilance (PV) operations,

process governance, and how process excellence supports regulatory compliance, operational stability, and documentation integrity.

Practical experience in analyzing data and mapping tracking frameworks to meet EMA regulatory expectations for Follow-Up processes.

Hands-on knowledge of cross-functional documentation, version control, archival discipline, and audit readiness.

Experience in managing multi-stakeholder project coordination across global teams (including SML, DEA, POP, and regional quality teams).

Skills in training compliance auditing, discrepancy identification, and system validation testing within a UAT/TST environment.

Details of Papers/patents : None / Not Applicable for this operational process excellence project.

Brief Description of working environment, expectations from the company : The working environment within the PSPV Process Excellence team at Novartis Healthcare Pvt. Ltd., Hyderabad, is highly structured, collaborative, and strictly driven by documentation and regulatory compliance. The team functions at the vital intersection of process governance, stakeholder management, and knowledge management, interacting extensively with global and regional affiliates across countries like the US, Canada, and Japan.

Because pharmacovigilance is a heavily regulated domain, the day-to-day operations demand strict attention to detail, rigorous version control, absolute data integrity, and cross-functional transparency. The company expects high standards of operational discipline, timely communication, meticulous minute-taking (MoMs), and absolute audit readiness across all repositories. Overall, the culture fosters continuous process optimization, cross-functional learning, and expects interns to smoothly interface with diverse quality, training, and digital media teams to drive organizational compliance goals.

Academic courses relevant to the project : Advanced Pharmacovigilance / Regulatory Affairs

Quality Assurance and Regulatory Compliance

Clinical Research and Safety Monitoring

Pharmaceutical Administration and Management

PS-II Station : Novartis Healthcare Pvt Limited - QMS, Hyderabad

Faculty

Name: Bharathi R .

Student

Name: GIRISHANKAR MENON S(2024H1530138H)

Student Write-up

PS-II Project Title: Quality management in pharmacovigilance

Short Summary of work done during PS-II : Helping the training team in developing training and creating videos sop and guidance document

Tool used (Development tools - H/w, S/w) : Excel, MS Teams and power BI

Objectives of the project : Developing training

Major Learning Outcomes : Time management
Excel
SQL

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : Nil

Academic courses relevant to the project : Pharmacovigilance

PS-II Station : Novartis HealthCare Pvt Ltd - Drug Development, Hyderabad

Faculty

Name: Bharathi R .

Student

Name: ANMOL CHHIPA(2024H1530296P)

Student Write-up

PS-II Project Title: Generic Method Development for the Determination of Residual including the class I Solvent Benzene in a Drug Substances by Headspace GC-FID

Short Summary of work done during PS-II : During PS-II at the Analytical Research & Development (ARD-IN) laboratory of Novartis, I worked on developing a generic headspace GC–FID method to determine residual solvents in drug substances, with specific extension to the ICH Q3C Class-1 carcinogen benzene at its 2 ppm limit. Building on an existing generic procedure, I screened a 40-solvent specificity panel and evaluated three capillary columns (DB-5, DB-1, DB-624); DB-624 was selected as the primary phase and DB-1 retained as back-up. Through a structured series of trials I optimised the gas-chromatographic and headspace parameters most influential on benzene response — split ratio (2:1), septum-purge flow (5 mL/min), constant column pressure (12 psi, hydrogen carrier) and headspace equilibration (100 °C/15 min with a custom loop-fill ramp) — finalised as the Trial-12 conditions. I also screened NMP versus DMSO as diluent, selecting NMP as default. I then generated and analysed validation data on a development drug substance: specificity (benzene baseline-resolved, R ≥ 1.5), linearity over 25–150% of the limit (R = 0.9999 on DB-624; 0.9946 on DB-1), sensitivity (S/N ≥ 10 at the 0.2 ppm reporting limit), robustness via two 15-run DOEs, and matrix effect (recovery 99.9–100.1%, RSD < 1%). All work was executed under GxP controls in Chromeleon 7.2, ELN and GLIMS with witnessed documentation. The method proved specific, linear, sensitive and robust, and suitable for transfer to GMP routine testing.

Tool used (Development tools - H/w, S/w) : Hardware / instruments: Capillary gas chromatograph with split/splitless inlet and Flame-Ionisation Detector (FID); automatic static-headspace sampler (Agilent 7697A/G1888 class); DB-624 and DB-1 fused-silica capillary columns (60 m × 0.32 mm); five-place

Objectives of the project : Objectives of the project To develop, qualify and document a generic (platform) headspace GC–FID method for the determination of residual solvents in drug substances, and to extend the existing generic procedure to include the ICH Q3C(R8) Class-1 solvent benzene at

its 2 ppm limit. Specific objectives: (i) demonstrate specificity for benzene against a 40-solvent panel; (ii) select the optimal stationary phase among DB-5, DB-1 and DB-624; (iii) optimise the headspace and GC parameters governing benzene response (split ratio, septum-purge flow, column pressure, equilibration temperature/time); (iv) select a robust diluent (NMP vs DMSO); and (v) verify the validation characteristics — specificity, linearity, sensitivity, robustness and matrix effect — sufficient to support transfer to GMP routine testing.

Major Learning Outcomes : Hands-on development and optimisation of a static headspace GC–FID method — column screening (DB-5/DB-1/DB-624), oven-programme and headspace-parameter optimisation, and design-of-experiments (DOE) robustness studies.
Practical understanding of the ICH Q3C(R8) residual-solvent classification and the pharmacopoeial framework (Ph. Eur. 2.2.46/2.2.28/2.4.24; USP <621>/<467>).
Interpretation of validation data — specificity, linearity, sensitivity (S/N, LOD/LOQ), robustness and matrix effect (precision/accuracy).
Operation of Chromeleon 7.2 (GCDS), the Electronic Laboratory Notebook (ELN) and LIMS (GLIMS) under GxP controls.
Working knowledge of GxP, the Quality Management System, Good Documentation Practices and Data Integrity (ALCOA+), including witnessed (4-eye) documentation.
Scientific rigour, chromatographic troubleshooting, and structured technical reporting.

Details of Papers/patents : No paper or patent has resulted from this PS-II project, as the work concerns an internal, confidential analytical method-development activity.

Brief Description of working environment, expectations from the company : PS-II was carried out in the Analytical Research & Development (ARD-IN) laboratory, part of Technical Research & Development (TRD) at Novartis. ARD develops, qualifies, and transfers the analytical procedures that underpin every quality decision for drug substances throughout clinical and commercial development. The environment is highly regulated and GxP-governed: access to any system (chromatography data system, LIMS, electronic notebook) is gated by role-specific training, and every record follows Good Documentation Practices and Data-Integrity (ALCOA+) principles with witnessed verification. The laboratory is well-equipped — HPLC/UPLC, GC-FID with headspace samplers, ion chromatography, Karl Fischer, thermal and spectroscopic platforms — with data captured electronically in Chromeleon 7.2 (GCDS) and GLIMS. The culture emphasises scientific rigour, disciplined documentation, safety (EHS induction and chemical hygiene before bench work) and timely escalation, supported by structured mentorship and weekly review. The company expects interns to work with integrity and accountability, to record data concurrently and honestly, to follow SOPs and safety controls, to demonstrate independent problem-solving and healthy scepticism toward their own data, and to

communicate progress clearly. In turn, the organisation provides strong mentorship, access to qualified instrumentation and reference standards, exposure to industry-standard quality systems, and a collaborative, learning-oriented setting. Overall, it offered an excellent bridge between academic pharmacology and industrial analytical practice.

Academic courses relevant to the project : Pharmaceutical Analytical Techniques / Instrumental Methods of Analysis (chromatography — GC/HPLC, spectroscopy); Pharmaceutical Analysis & Quality Assurance; Pharmaceutical/Organic Chemistry (solvent properties, partitioning); Pharmaceutical Quality Mana

PS-II Station : Novartis Healthcase Pvt Limited - Associate Analyst, Hyderabad

Faculty

Name: Bharathi R .

Student

Name: ADITI JAGDISH DEKATE(2024H1440034P)

Student Write-up

PS-II Project Title: Rare Disease Patient Identification and Commercial Analytics using Real-World Healthcare Data

Short Summary of work done during PS-II : During my six-month internship at Novartis, I worked within the Insights and Decision Sciences (US IDS) team on projects involving rare disease analytics and commercial data analysis. My primary responsibilities included supporting patient identification and cohort-building exercises for rare diseases such as Facioscapulohumeral Muscular Dystrophy (FSHD) and Duchenne Muscular Dystrophy (DMD) using large healthcare claims databases. I performed data extraction, transformation, and analysis using SQL, Snowflake, and Dataiku. The work involved developing and validating patient identification methodologies, analyzing treatment journeys,

physician engagement patterns, and geographic distributions of patients. I also contributed to launch analytics initiatives by generating insights that could support strategic commercial decision-making. The internship provided exposure to real-world healthcare analytics workflows, data governance practices, and collaborative project execution in a global pharmaceutical organization. The experience strengthened both technical and business understanding while demonstrating how data-driven insights can contribute to improving healthcare outcomes and supporting commercial strategy.

Tool used (Development tools - H/w, S/w) : SQL Snowflake Dataiku Microsoft Excel Microsoft PowerPoint Microsoft Teams Corporate Healthcare Claims Databases

Objectives of the project : Develop patient identification methodologies for rare diseases using healthcare claims data. Build patient cohorts for commercial and epidemiological analysis. Generate treatment, physician, and geographic insights to support strategic decision-making. Support launch analytics and business intelligence initiatives using real-world evidence.

Major Learning Outcomes : Understanding of healthcare and pharmaceutical analytics.
Working with large-scale healthcare claims datasets.
Development of patient identification algorithms.
Application of SQL and Snowflake in real-world business problems.
Data preparation and analysis using Dataiku.
Communication of analytical insights to stakeholders.
Exposure to commercial strategy and launch analytics.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Novartis provided a professional, collaborative, and learning-oriented work environment. As part of the US IDS team, I worked closely with analysts and subject matter experts across different functions. The organization encouraged continuous learning, knowledge sharing, and independent problem-solving while maintaining high standards of quality and compliance.
The internship involved regular interactions with mentors and team members through meetings, project discussions, and knowledge-sharing sessions. Expectations included timely completion of assigned tasks, attention to detail, analytical thinking, effective communication, and adherence to data privacy and governance requirements. The company also provided opportunities to learn advanced analytical tools and gain exposure to real-world healthcare business challenges. Overall, the environment was supportive and helped develop both technical and professional skills.

Academic courses relevant to the project : Database Systems
Statistics and Probability
Data Analytics
Machine Learning (if applicable)
Operations Research
Project Management
Research Methodology

Name: BELLAMKONDA IEESHASREE(2024H1120183P)

Student Write-up

PS-II Project Title: Intelligent Document Processing and Data Extraction Pipeline

Short Summary of work done during PS-II : I designed and implemented an automated data extraction pipeline for processing PPTX and OneNote documents. The project involved extracting text and tables using tools such as Python libraries and AWS Textract and parsing the extracted content into structured JSON format suitable for analytics. Additionally, I developed support for OneNote documents by parsing content in HTML format and created ground truth datasets to evaluate accuracy across multiple files.

Tool used (Development tools - H/w, S/w) : AWS services, parsing libraries

Objectives of the project : The objective of the project is to design and develop a scalable and reusable data extraction pipeline capable of processing unstructured and semi-structured documents such as PowerPoint (PPTX) and OneNote files. The project focuses on extracting text data with high accuracy, including content from complex layouts such as tables, multi-column text, headers, footers, and metadata, and transforming the extracted content into a structured machine-readable format (JSON). The scope of the project is limited to document ingestion from s3, extraction, parsing, and standardization, and does not include document ingestion and processing from external sources.

Major Learning Outcomes : The project provided hands-on experience with cloud services including Amazon S3, AWS Textract, and Amazon SageMaker, along with Python-based libraries

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Very good culture and flexible working conditions

Academic courses relevant to the project : Software engineering, python programming

PS-II Station : Nutanix, , Bengaluru/Pune

Faculty

Name: Chandra Shekar R K .

Student

Name: PRATYUSH GHOSH(2022A7PS1292P)

Student Write-up

PS-II Project Title: AI for cluster management

Short Summary of work done during PS-II : NuclAI is an agentic terminal designed to modernize how Kubernetes administrators manage infrastructure. As cluster environments grow in complexity, the traditional reliance on fragmented command-line tools often leads to operational inefficiencies. NuclAI addresses this challenge by providing a unified, intelligent interface that simulates a live shell experience while delivering the advanced reasoning capabilities of an autonomous agent. At its core, NuclAI operates within the OpenShell sandbox, ensuring that all agent actions—from executing scripts to interacting with external APIs—are governed by strict, kernel-level security policies. This enables administrators to safely delegate complex tasks, confident that the agent is isolated from unauthorized system access. The platform is highly extensible, leveraging the Model Context Protocol (MCP) to integrate with a broad ecosystem of specialized servers. These servers support deep integration for Day 1 and Day 2 cluster operations, as well as enterprise knowledge discovery through LightRAG. Furthermore, NuclAI is built for scalability and continuous learning. By leveraging structured episodic

memory, the agent retains operational patterns across sessions, reducing the “cold start” problem commonly associated with standard LLM implementations. Through agent skills and the A2A protocol, NuclAI can orchestrate specialized subagents, effectively delegating diagnostic or analytical tasks to the most suitable unit. NuclAI represents a significant shift toward proactive, autonomous, and secure data center operations, transforming the terminal into a sophisticated partner for cluster lifecycle management.

Tool used (Development tools - H/w, S/w) : Docker, Kubernetes, Langchain, LightRAG, OpenShell, Kagents

Objectives of the project : Streamline lifecycle of cluster management

Major Learning Outcomes : Secure Agentic Infrastructure, Agent deployment in cloud native environments

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : My team at Nutanix was extremely helpful in clarifying my doubts and providing me with all the necessary resources to carry out my work. My manager was highly supportive, offering valuable guidance and encouragement throughout my internship.

Academic courses relevant to the project : Computer Networks, Operating Systems, Large language models

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Name: SIDDARTH RAJAGOPALAN(2022A7PS0003P)

Student Write-up

PS-II Project Title: Product graph AI Agent

Short Summary of work done during PS-II : Used Langchain To create an AI Agent for solving specific queryset required by SREs

Tool used (Development tools - H/w, S/w) : Python, Langchain, various AI libraries

Objectives of the project : To create an AI Agent for solving specific queryset required by SREs

Major Learning Outcomes : AI

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Helpful and approachable working environment

Academic courses relevant to the project : Intro to LLMs

Name: PRATYUSH BINDAL .(2022A7PS0119H)

Student Write-up

PS-II Project Title: Design and Migration of Distributed Worker-Executor Framework for Workflow Processing

Short Summary of work done during PS-II : During my PS-II at Nutanix, I worked on the migration of a legacy workflow execution system to a modern Go-based distributed worker-executor framework. The existing architecture relied on tightly coupled microservices and Python subprocesses for task execution, which presented challenges in terms of scalability and maintainability. My work involved contributing to the migration of workflow execution logic from the legacy service to the new framework, implementing and integrating worker-executor components, and ensuring reliable task execution. I also worked on debugging production issues, improving logging and observability, and validating the migration without disrupting existing workflows. Throughout the internship, I collaborated with experienced engineers, participated in technical discussions and code reviews, and gained valuable insights into the design and operation of large-scale distributed backend systems. The project significantly strengthened my software engineering fundamentals and provided practical experience in building production-quality systems.

Tool used (Development tools - H/w, S/w) : The project was primarily developed using Go (Golang)

on Linux-based development environments. Git was used for version control, Docker was used for containerized development and testing where applicable, and internal Nutanix development, build, monitorin

Objectives of the project : The primary objective of the project was to migrate legacy workflow execution services to a scalable Go-based distributed worker-executor framework. The project aimed to improve system reliability, performance, and maintainability by decoupling tightly coupled microservices, replacing Python subprocess-based execution with native Go workers, and enabling efficient task scheduling and execution while ensuring compatibility with existing production workflows.

Major Learning Outcomes : The project provided extensive exposure to designing and developing distributed systems in a production environment. I gained hands-on experience in Go programming, concurrent programming concepts, scalable backend architecture, and workflow orchestration. The internship also enhanced my understanding of production debugging, logging, code reviews, software design principles, and collaborative software development within a large engineering organisation.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Nutanix provided a collaborative and technically enriching work environment where interns were treated as integral members of the engineering team. The organization encouraged ownership, continuous learning, and active participation in technical discussions. Interns were expected to understand existing systems, contribute production-quality code, participate in code reviews, communicate effectively with teammates, and independently solve engineering problems with appropriate guidance from mentors. The work culture emphasized high engineering standards, teamwork, innovation, and continuous improvement while providing ample opportunities to learn from experienced engineers.

Academic courses relevant to the project : Operating Systems, Computer Networks, Object-Oriented Programming, Database Systems, Data Structures and Algorithms

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Name: ROHAN TIWARI(2021B2AA2748P)

Student Write-up

PS-II Project Title: RBAC enhancements in Nutanix Database Service

Short Summary of work done during PS-II : 1. RBAC Enhancements in NDB - Worked closely to deliever the feature end to end. 2. Implementing and managing deployment life cycle management of scalable, fault tolerant Identity and Access Management (IAM) service for NDB via helm charts.

Tool used (Development tools - H/w, S/w) : Cursor, Postman, JIRA, Confluence, Git, Github

Objectives of the project : To introduce RBAC for Databases in Nutanix Database Service

Major Learning Outcomes : Good coding practices followed in Enterprise level software|
Unit testing or integration testing.
Client-server based request/response communication.
How data is organized in related tables, stored procs, joins and SQL queries.
Invoking database queries, objects and processing result sets
Software development lifecycle – requirement gathering, analysis and design, coding, integration, code review, testing, deployment.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Nutanix work environment can vary from team to team. Teams which are undergoing major technical shift can have higher working hours, frequent design meetings, time bound milestone deliverables etc.
In general Nutanix offers a wide range of benefits including 4 days lunch, Cab service, Weekly Vendekin points, Monthly 500 reimbursement for phone recharges
Speaking of my team in particular - Nutanix Database Service - Identity and Access Management - (NDB-IAM) team, work environment was healthy, promoting individual and team growth with lots of skillful senior engineers to help. Usually 11AM - 4PM were designated as core working hours for our team.
Expectations maybe more as when timeline for milestone deliverables approach, as the team promotes accountability and ownership.

Academic courses relevant to the project : DBMS, OOPS, DSA, Computer Networks

Name: RISHAB MALOO(2021B2AA2767P)

Student Write-up

PS-II Project Title: Erasure Code Benchmark

Short Summary of work done during PS-II : Developed a distributed benchmark for Erasure Codes. Found bottlenecks in the system and improved the performance of the overall system by ~50%.

Tool used (Development tools - H/w, S/w) : Intel MLC, Intel PCM, Iperf, RPC_Benchmark

Objectives of the project : Benchmark the current Erasure Code workflows in the system and find bottlenecks and enhance performance of the system

Major Learning Outcomes : Learning about distributed systems, metadata

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Good work life, great opportunity to learn, network and grow

Academic courses relevant to the project : OOPS, OS, CN, DSA

Name: PIYUSH JAJRA .(2021B4A72969H)

Student Write-up

PS-II Project Title: Technical intern

Short Summary of work done during PS-II : Migrated a python script to C++ to reduce memory footprint and also increase the execution speed wrote a lot of test to catch the bugs early in the dev cycle.

Tool used (Development tools - H/w, S/w) : Prometheus , intelli j

Objectives of the project : Write Apis,optimize them

Major Learning Outcomes : Learn a lot about Apis and payloads

Details of Papers/patents : Not applicable

Brief Description of working environment, expectations from the company : Very helpful everyone was very cooperative, great learning environment work culture was very growth oriented.

Academic courses relevant to the project : Dsa,oops

Name: SWAPNIL YADAV(2021B3A72770P)

Student Write-up

PS-II Project Title: Agentic RCA for DIAL Triage

Short Summary of work done during PS-II : Created an agentic framework that has integration with various context platform (Slack, Jira, Jenkins) for the purpose of solving DIALs (pipeline failures). Pipeline failures block engineers from checking their code in, which reduces productivity. My project aimed to triage the pipeline issue in seconds, that would have taken an engineer hours, thereby improving productivity.

Tool used (Development tools - H/w, S/w) : FastMCP, Graphify, OpenAPI, LLM endpoints

Objectives of the project : Automate the process of triaging CI build pipeline failures using Agentic AI

Major Learning Outcomes : Got exposure to the latest technologies used in making agents. Also, learned a lot about the entire process CI pipelines - how they work and how to triage when builds fail.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working

environment is very good. People are very professional and helpful. Learning new things and innovation are highly encouraged.

Academic courses relevant to the project : Intoduction to LLMs, AI, Foundations for Data Science (FoDS)

Name: NAMAN AGRAWAL .(2022AAPS0327H)

Student Write-up

PS-II Project Title: Bulk Deletion of Recovery points on Multi-cloud snapshot technology

Short Summary of work done during PS-II : During my PS-II at Nutanix, I worked with the DR and Backup team on enhancing cloud-based recovery point management. The primary focus of my project was to design and develop a bulk-deletion RPC that enables efficient removal of recovery points stored in cloud storage. My responsibilities included understanding existing system workflows, designing backend components, implementing the required functionality, testing various scenarios, and resolving issues identified during development. I worked extensively with Cpp, python and writing protos. The project provided valuable exposure to distributed systems, and large-scale enterprise product development.

Tool used (Development tools - H/w, S/w) : Golang, C++, Python, Git, Gerrit, APIs, SourceGraph, UBVM.

Objectives of the project : The project aimed to enhance the management of recovery points stored on cloud storage by introducing efficient bulk deletion capabilities. The objective was to enable users to delete multiple recovery points simultaneously, either for a specific entity or based on configurable filters.

Major Learning Outcomes : Gained hands-on experience in large-scale distributed storage systems.
Learned software development practices followed in enterprise environments.
Developed skills in debugging, testing, code reviews, and deployment workflows.
Enhanced understanding of cloud infrastructure and data protection solutions.
Strengthened collaboration and communication skills within cross-functional teams.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Nutanix provides a highly collaborative and learning-oriented work environment where interns are treated as contributing members of the engineering team. Throughout the internship, I participated in technical discussions, design reviews, sprint planning, and code reviews alongside experienced engineers.
The organization encourages ownership, innovation, and continuous learning while maintaining high engineering standards. Team members were approachable and supportive, providing guidance whenever required and encouraging independent problem-solving. Regular feedback sessions helped me improve both my technical and professional skills.

Academic courses relevant to the project : Operating Systems, Object-Oriented Programming, Data Structures & Algorithms, Database Systems, Computer Networks, Distributed Systems,

PS-II Station : Nvidia Graphics - Hardware - , Bengaluru/Hyderabad

Faculty

Name: Kranthi Kumar Palavalasa

Student

Name: ARNAV SUNDARA RAMAN(2022A3PS1223P)

Student Write-up

PS-II Project Title: 1.Creation of AI workflow for Silicon Correlation and Analysis 2. Static CCK Checks - Review and Examples

Short Summary of work done during PS-II : Built AI workflow that hugely cuts time taken for silicon correlation and analysis. Worked with external vendors on new EDA tool features to contextualize them to our team's workflow.

Tool used (Development tools - H/w, S/w) : Simulation Tools and EDA tools.

Objectives of the project : Gain Technical Depth in EDA tool usage through problem statements

Major Learning Outcomes : Silicon Correlation, Software Simulation, Ring Oscillator Designs , Optimizing Simulation workflows

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Technical Depth and the innate curiosity of an engineer is expected. World-class work environment, lot of freedom to explore, but comes with an equally high bar of expectation.

Academic courses relevant to the project : Microelectronic Circuits, Analog and Digital VLSI Design, Electronic Devices

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Name: VANYA GARG(2022A8PS0539P)

Student Write-up

PS-II Project Title: Design Verification (Memory Subsystems)

Short Summary of work done during PS-II : My task was basically to make a scoreboard for one of the HUBS which does Xbar to NVLink packet conversion

Tool used (Development tools - H/w, S/w) : Verilog , System Verilog , UVM, Verdi

Objectives of the project : To create a data validation checked for one of the memory subsystem hubs

Major Learning Outcomes : SV UVM , debugging via waveforems , packet tracing

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Working environment is amazing , everyone is extremely helpful , what is expected that you have a learning mindset given that they know you are in college and won't know a lot

Academic courses relevant to the project : Digital Design , Computer Architecture , Analog Electronics

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Name: TANUSH RAM K .(2022A3PS0273H)

Student Write-up

PS-II Project Title: Low power feature dashboard

Short Summary of work done during PS-II : During PS-II, I worked on developing an analytical dashboard for evaluating low-power optimization opportunities in processor/SoC workloads. The tool ingests per-unit workload activity and reconstructs idle windows at multiple hierarchy levels, from individual units up to logical groupings. For each low-power feature, it estimates whether the feature can be feasibly engaged and how much usable low-power residency it would yield, accounting for the feature's threshold and entry/exit latency overheads. I implemented aggregation logic to combine the idle behaviour of multiple units — both their shared (overlapping) idle and their independent idle — and built interactive visualizations showing where opportunities exist and how features map onto them. The tool also supports comparing behaviour across different workloads and operating frequencies, and sweeping a feature's threshold to study sensitivity. Alongside development, I studied the relevant low-power hardware concepts, interpreted activity inputs, and worked on positioning the tool within the team's broader analysis flow, including understanding how it complements an existing measurement-and-visualization tool. The work emphasized both correctness of the underlying modelling and clarity of the visual outputs for reviewers.

Tool used (Development tools - H/w, S/w) : Software: Python (pandas, NumPy), Plotly Dash, Jupyter Notebook, Git/GitLab, VS Code / Cursor. Hardware/Platform: Linux development workstations; profiling/activity data from processor/SoC platforms.

Objectives of the project : Develop an analytical tool to identify and evaluate low-power optimization

opportunities in processor/SoC workloads.

Major Learning Outcomes : Understanding of low-power hardware concepts (gating mechanisms, leakage, entry/exit latency, residency).
Designing data-processing pipelines and interactive dashboards in Python.
Translating open-ended hardware-analysis goals into concrete, usable software.
Working with profiling-style activity data and multi-unit aggregation logic.
Communicating technical trade-offs and aligning work with related cross-team efforts.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : I worked within a hardware-focused engineering team at a large semiconductor company, in a collaborative environment combining on-site and remote interaction. The work sat at the intersection of hardware architecture and software tooling, so I regularly interacted with engineers across low-power, performance, and profiling areas. The environment expected a good degree of independence: I was given a problem area and was expected to explore it, make reasonable design decisions, and iterate based on feedback from my mentor and other stakeholders. Communication mattered — explaining design choices, justifying trade-offs, and aligning my work with related efforts by other teams. There was a strong emphasis on grounding conclusions in actual data and verifying assumptions rather than relying on impressions. Overall, the company valued proactivity, technical depth, a willingness to pick up unfamiliar hardware concepts quickly, and the ability to turn open-ended analysis goals into concrete, usable software. Infrastructure was largely self-serve, so being resourceful in setting up and debugging my own environment was also part of the experience.

Academic courses relevant to the project : Computer Architecture, Data Structures & Algorithms; Object-Oriented Programming / Software Engineering.

Name: KANAK GUPTA(2022A3PS1233P)

Student Write-up

PS-II Project Title: ASIC Intern

Short Summary of work done during PS-II : cant be disclosed

Tool used (Development tools - H/w, S/w) : Perl language

Objectives of the project : --

Major Learning Outcomes : Scripting company specific requirements.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : It's helpful and healthy, was able to learn a lot and there's as overall natural curiosity all around in the office.

Academic courses relevant to the project : DSP, Commsys, CompArch

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Name: SOUMITRA PODDAR .(2022A3PS1346H)

Student Write-up

PS-II Project Title: Hardware Synthesis Workflow Automation and Evaluation

Short Summary of work done during PS-II : During my PS-II, I worked on multiple engineering tasks related to hardware synthesis methodology and automation. My work broadly covered evaluation of methodology changes in synthesis flows, automation of tree-build and workflow steps, and development of a scalable timing-report comparison pipeline. I also contributed reusable utilities that reduced manual effort in recurring evaluation and reporting tasks. Overall, the internship focused on improving workflow efficiency, strengthening validation, and making analysis more scalable and repeatable for real engineering use cases. The experience helped me understand how automation, data analysis, and methodology support come together in practical VLSI development environments.

Tool used (Development tools - H/w, S/w) : Linux shell environment, Python-based automation, command-line workflows, data-processing scripts, dashboard/reporting utilities, and EDA environments used for synthesis and timing analysis

Objectives of the project : 1. Improve efficiency and reliability of hardware synthesis workflows. 2. Study methodology changes through structured analysis and validation. 3. Build scalable automation utilities for recurring engineering tasks

Major Learning Outcomes : I gained practical exposure to large-scale hardware engineering workflows, automation-driven problem solving, timing-data analysis, and validation-oriented development. I also learnt how to convert repetitive engineering tasks into reusable tools and how to communicate results in a structured, documented manner.

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : The working environment was structured, collaborative, and strongly focused on ownership and validation. There was clear emphasis on understanding the engineering problem well, building reliable automation, documenting work properly, and validating results before sign-off. The expectations were not just to complete assigned tasks, but to approach them with rigor, scalability, and clarity so that the output could be useful in a real workflow. I also observed that communication, documentation, and the ability to work across tools and teams were important alongside technical execution.

Academic courses relevant to the project : Digital Design, ADVD, Static Timing Analysis, CAD for VLSI, TCL, Perl

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Name: AMBAR BRAHMACHARI(2021B1A82811G)

Student Write-up

PS-II Project Title: DFT WORK FLOW IMPROVEMENT

Short Summary of work done during PS-II : For iodft improved the mem uv work flow

Tool used (Development tools - H/w, S/w) : Used synops verdi and cursor

Objectives of the project : IMPROVE DFT WORKFLOW AND UV AND FULL CHIP LEVEL

Major Learning Outcomes : Learnt a lot about how such large complex systems and built maintained and improved

Details of Papers/patents : Nothing

Brief Description of working environment, expectations from the company : It was good

Academic courses relevant to the project : Dd,comp arch

Name: RITISHA GUPTASARMA .(2021B1A32384H)

Student Write-up

PS-II Project Title: Workflow Optimization in the Low Power Team at NVIDIA

Short Summary of work done during PS-II : I created a dashboard to track submission of files to version control, failure rates of pre-submission testing etc. in the Low Power team. I also worked on cleaning up messy verification systems for the ease of verification engineers in the Low Power team, and to streamline and simplify the tools they use for their work.

Tool used (Development tools - H/w, S/w) : Perforce, verilog, Cursor, Excel

Objectives of the project : 1. Create a dashboard for workflow optimization 2. Verification methodology related tasks to help cleanup workflows and systems used by verification engineers

Major Learning Outcomes : Understanding of GPU verification workflow, optimization of workflows, understanding of low power design methods, usage of AI for productivity in a corporate environment

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : It is a motivating and exciting working environment, with excellent support and mentorship from the manager and mentor. They expect you to work hard, have a strong work ethic, be open to feedback and improvement, be curious, and be intellectually honest and sincere. The working environment and

expectations align to create a fantastic internship experience.

Academic courses relevant to the project : Computer architecture, Microprocessors Programming and Interfacing, Digital Design

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Name: SHIVANGI PACHAURI(2021B4A31708P)

Student Write-up

PS-II Project Title: Circuits and Controllers: Analysis of RAM Assist and HW CLVC

Short Summary of work done during PS-II : Verified the working and functioning of ram assist and hw clvc on gpus and socs

Tool used (Development tools - H/w, S/w) : NVIDIA Internal tools

Objectives of the project : To verify and validate HW CLVC and RAM Assist

Major Learning Outcomes : To verify on-chip circuits and controllers, ensuring that all the controllers are working as expected within normal range of error.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working environment is really great, everyone is quite helpful and supportive

Academic courses relevant to the project : Signals and systems, control systems, dsp

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Name: ABHIRAM SISTLA .(2021B3AA0612H)

Student Write-up

PS-II Project Title: Design Verification

Short Summary of work done during PS-II : I worked on implementing a model that simulates CPU transactional behavior while verifying GPU design

Tool used (Development tools - H/w, S/w) : C++, Waveform Analysis etc.

Objectives of the project : To work on a C++ model used in Design Verification

Major Learning Outcomes : Understanding of how GPU architecture is verified and external test components required for verification

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Very structured, organized, step-by-step outline of the project and relevant context. Regular syncs with mentor and manager helped to maintain a clear idea of the project expectations.
Work environment is more casual, team is friendly and approachable.

Academic courses relevant to the project : Digital design, Computer Architecture, maybe some programming-related courses would help better

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Name: PALANIAPPAN R .(2021B4AA2915H)

Student Write-up

PS-II Project Title: Custom Macro Placement Engine & Hierarchical RTL Synthesis Flow Enhancements

Short Summary of work done during PS-II : Developed a custom macro placement engine that optimizes cell spreading and padding constraints while ensuring DRC-clean placements. Built features for an in-house hierarchical RTL synthesis and netlist generation flow to automate wrapper and synthesis-top identification.

Tool used (Development tools - H/w, S/w) : Linux, Perforce

Objectives of the project : To automate some time-taking flows run by the synthesis and PnR teams.

Major Learning Outcomes : I learnt a lot about hierarchical synthesis flows and standard-cell placement algorithms. I had to work with an in-house EDA tool's C++ codebase and optimize the features I added for runtime efficiency.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The work hours were flexible, with no mandatory requirement to spend a fixed number of hours in the office each week.

Academic courses relevant to the project : Analog & Digital VLSI Design, Object Oriented Programming

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Name: DHRUV GANESH(2022AAPS0489G)

Student Write-up

PS-II Project Title: DFT MBIST

Short Summary of work done during PS-II : During my Practice School-II at NVIDIA, I worked with the DFT (Design-for-Test) team, specifically focusing on Memory Built-In Self-Test (MBIST). My primary task involved developing and implementing an API to streamline the process of writing, configuring, and executing MBIST test cases for embedded memory blocks within chips. Beyond the specific project work, this internship deepened my conceptual understanding of MBIST technology as a whole. I gained insight into the architecture of a BIST engine, including its controller, address/data generators, and comparator logic that enable autonomous, at-speed testing of embedded memories. I also studied how MBIST integrates with JTAG (Joint Test Action Group) for test access and control, allowing test initiation, configuration, and result retrieval. Additionally, I learnt about March Elements (MEs) and how they combine to form March Algorithms (MAs). I also explored different types of memory faults, including stuck-at, transition, coupling, and address decoder faults. I explored

concepts like scan chains as they relate to the broader DFT ecosystem, and understood how MBIST helps to achieve comprehensive chip-level testability.

Tool used (Development tools - H/w, S/w) : Tcl

Objectives of the project : Improving and making DFT more efficient

Major Learning Outcomes : Industry work flows, concepts of DFT and MBIST

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Expected sincerity and perfection in work. Learning and picking up of new concepts/technology had to be done at a good pace.

Academic courses relevant to the project : Digital Design, Microprocessors and Computing, ADVD

Name: ASMITA MUKHERJEE(2022AAPS0245G)

Student Write-up

PS-II Project Title: In a live project- memory interface physical design

Short Summary of work done during PS-II : Learn and executed place and route flow, along with timing analysis in a physical design project

Tool used (Development tools - H/w, S/w) : EDI- Cadence Innovus, ICC2 - Synopsys

Objectives of the project : Physicsl design of Memory interface block

Major Learning Outcomes : ASIC design flow

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Very professional, helpful

Academic courses relevant to the project : Digital VLSI (STA)

Name: AKSHAR PANDEY(2022AAPS0266P)

Student Write-up

PS-II Project Title: Retime Flow Enhancement

Short Summary of work done during PS-II : I designed a flow to extract previously created retiming modules from past projects that can be used in the retiming flow. In the retiming flow, I implemented new checks to validate different retiming scenarios and the data used throughout the process. Apart from this, I worked on creation of an efficient format for storing and retrieving retiming modules when used. Additionally, I implemented matching logic for retiming modules and mapping their interconnections.

Tool used (Development tools - H/w, S/w) : Perl and Nvidia Proprietary tools

Objectives of the project : Work on enhancing the retiming flow to reduce manual efforts

Major Learning Outcomes : - Understood working of internal Nvidia tools used in SoC design
- Worked on enhancement of different features of the retiming flow

Details of Papers/patents : Not Applicable

Brief Description of working environment, expectations from the company : Great environment for learning and a very supportive team. Expectation is that you understand the work you do and have the bigger picture of where exactly does your work fit and whether it has an impact.

Academic courses relevant to the project : Not Applicable

Name: PRAKHAR CHATURVEDI(2024H1230165P)

Student Write-up

PS-II Project Title: Clock Distribution in SoC

Short Summary of work done during PS-II : I worked with the Clocks Distribution team and gained exposure to clock distribution, timing analysis, interconnect analysis, and design automation workflows. The initial phase involved learning industry-standard methodologies through training, documentation study. I worked on clock planning activities involving clock distribution & analysis, pin assignment, macro placement, and clock-related planning tasks at chiplet-level for a high speed communication chip. A significant portion of the internship involved running, analyzing, and debugging workflows, interpreting reports, and understanding timing impacts arising from physical implementation. In addition, I worked on automation and scripting tasks, including report processing,ECO-related scripts.

Tool used (Development tools - H/w, S/w) : Perforce,Linux,Nvidia internal tools,TCL,Perl,Python

Objectives of the project : To understand clock distribution methodologies used in ASIC Physical Design. Understand Static Timing Analysis (STA) concepts and timing closure challenges, analyze interconnect effects on timing and design performance. To gain hands-on exposure to industry EDA tools and design workflows.

Major Learning Outcomes : Understanding of ASIC Physical Design flow.
Knowledge of clock distribution networks, skew, and latency considerations.
Development of automation scripts using TCL, Perl, and Python.
Exposure to industrial EDA tool workflows and debugging methodologies.

Details of Papers/patents : N.A.

Brief Description of working environment, expectations from the company : Highly collaborative and learning-oriented, involving regular interaction with engineers, mentors, and managers across different areas of ASIC Physical Design. Team meetings, technical discussions, and tool-based workflows were integral parts of the daily work.Strong emphasis was placed on debugging skills, analytical thinking, and the ability to work independently while collaborating effectively within a team.

Academic courses relevant to the project : VLSI Design , CAD for IC Design, Advanced VLSI Design

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Name: SATVIKA VYAVAHARE(2022AAPS0287G)

Student Write-up

PS-II Project Title: Refactoring cmdline arguments

Short Summary of work done during PS-II : shifted args being set through cmdline to a policy based framework

Tool used (Development tools - H/w, S/w) : Linux, system verilog

Objectives of the project : Increasing the scalability and modularity of the existing code base

Major Learning Outcomes : Understanding verification environment
Gaining hands on experience working with NVIDIA specific tools

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working environment was good; teammates were helpful and supportive

Academic courses relevant to the project : Comp arch, OOPS,

Name: VINUKONDA SREEKAR(2024H1230087G)

Student Write-up

PS-II Project Title: Physical Design Partition level Implementation

Short Summary of work done during PS-II : Run floorplan, placement, CTS, routing on partition while keeping in mind: timing, congestion, cell density, DRC, LVS, antenna etc.

Tool used (Development tools - H/w, S/w) : Synopsys ICC2, Cadence Innovus

Objectives of the project : Run floorplan, placement, CTS, routing on partition and achieve closure on timing and DRCs

Major Learning Outcomes : Achieved timing and physically aware closure of partition

Details of Papers/patents : --

Brief Description of working environment, expectations from the company : Positive environment with a great chance to grow, with all teammates open to help with any kind of confusion in the concepts/ way of working. A lot of chance to explore.

Academic courses relevant to the project : Vlsi design, STA

Name: MALHAR RAJURKAR .(2022A8PS1806H)

Student Write-up

PS-II Project Title: Enhanced PCIe Test Coverage and Debug Framework

Short Summary of work done during PS-II : The project delivered a modular, specification-driven framework for validating and debugging PCIe devices at the register level. Work began with a study of the PCIe architecture, configuration space, and reset behaviour, followed by an early prototype that could extract register definitions from the specification and read and write configuration space. On review, this was rebuilt as a modular framework. An automated pipeline now parses the specification into a structured register database organised as capability, register, and field, which every downstream component reuses. A central register-access tool was built on top of this database, allowing registers to be addressed by name through an interactive shell, a programmatic interface, and later a browser-based interface. Using this foundation, four compliance tests were implemented

on a common template — Function Level Reset, Secondary Bus Reset, Lane Equalization, and Lane Margining — each following a snapshot-trigger-compare pattern with stress-mode support and logging. The tests were validated on real hardware, and the margining results were cross-checked against an independent reference tool and found to agree. The framework was then extended with an error-reporting pipeline that, on each error event, collects evidence from only the relevant layers and produces a single layered report, together with a controlled fault-injection capability for exercising detection. Supporting utilities such as a register search and a change-alerting watchlist were added. The result is a cohesive framework in which new tests can be added with minimal effort, producing reproducible, easy-to-interpret results.

Tool used (Development tools - H/w, S/w) : Software / Languages: Python; Bash/shell scripting; JSON for data modelling; LaTeX for documentation. Libraries / Frameworks: BeautifulSoup (HTML parsing); openpyxl (spreadsheet generation); prompt_toolkit (interactive shell); Flask (web interface); Matpl

Objectives of the project : Automatically extract PCI Express (PCIe) register and field definitions from the specification into a structured, machine-readable database that can serve as a single source of truth. Build a modular tool that accesses a device's registers by name (rather than by raw offset) through a single, consistent interface. Implement a family of specification-compliance validation tests — Function Level Reset (FLR), Secondary Bus Reset (SBR), Lane Equalization, and Lane Margining — on a shared, reusable test template. Provide structured error monitoring, decoding, and controlled fault injection for debugging. Design the framework so that new tests can be added by writing test logic alone, without rebuilding the underlying infrastructure.

Major Learning Outcomes : 1. Gained an in-depth understanding of the PCIe protocol stack, configuration space, capability structures, reset behaviour, and link training.
2. Learned how link signal integrity concepts (equalization and receiver margining) translate into measurable, testable procedures.
3. Learned to design reusable, modular software: separating spec parsing, register access, test logic, and interfaces into independent components.
4. Understood the difference between functional testing and specification-compliance testing at the register level.
5. Developed practical skills in hardware bring-up, stress testing, benchmarking, and cross-validating results against an independent reference.

Details of Papers/patents : 2 NTECH Papers were submitted. NTECH is Nvidia internal paper presentation/conference.

Brief Description of working environment, expectations from the company : The working environment was very fast paced and you were expected to take ownership and initiative. Work was organised around clear objectives set with a mentor, with regular check-ins to review progress, discuss technical approaches, and course-correct when needed. The culture encouraged asking questions, reading primary sources such as the specification, and building maintainable, reusable solutions rather than quick one-off scripts — an approach that shaped the direction of the project.
I had access to test systems with real devices, which made it possible to move beyond simulation and validate work directly on hardware. Collaboration with team members provided valuable exposure to how validation problems are approached in practice, including the distinction between checking that a device functions and checking that it conforms to specification.
The main expectations from me were to take ownership of a defined problem, learn the necessary background independently, and deliver working, well-structured tooling that others could build upon. There was an emphasis on correctness, reproducibility, and clear communication of results. Timeliness, initiative, and the ability to break a large, ambiguous task into manageable steps were valued. Overall, the environment balanced independence with mentorship: I was given the freedom to design solutions while receiving guidance that kept the work aligned with practical needs and good engineering practice.

Academic courses relevant to the project : Microprocessors and Interfacing
Computer Architecture
Digital Design
Operating Systems
Embedded Systems
Signals and Systems (relevant to equalization and signal-integrity concepts)
Communication Systems / Analog Electronics (signal integrity, high-speed)

Name: SAAHIL SHARMA(2022AAPS0614G)

Student Write-up

PS-II Project Title: BOUNDARY INTERFACE PROTECTION & STRUCTURAL TRACING FOR SAFETY VERIFICATION

Short Summary of work done during PS-II : Worked on formal verification and safety-oriented verification automation, including boundary checker generation and end-to-end structural path validation.

Tool used (Development tools - H/w, S/w) : Cadence JasperGold, Cursor

Objectives of the project : In digital systems, safety refers to the ability of the design to detect faults in important communication paths and respond to them correctly. To achieve this, some interfaces are provided with additional protection information along with the original transmitted signals. This allows faults affecting the transmitted information to be identified at the receiving end. The basic idea can be understood as follows: A set of signals is transmitted from one design block to another Along with these signals, additional protection bits are also sent. These protection bits are generated based on the original signal values At the receiving end, the incoming signals and protection bits are checked together If they do not match the expected relation, an error can be detected In this way, protection helps improve the reliability of communication between design blocks. Depending on the interface, the protection may be applied to: Control or header fields Data or payload fields Both control and data fields together From a verification point of view, both ends of the path are important: The source side is responsible for generating the protection information The destination side is responsible for checking whether the received information is valid. The complete path between these endpoints must also be structurally correct. This means that verifying safety-oriented interfaces is not limited to checking only the logic at one point. It also requires confidence that: the correct fields are being protected, the required checking logic is present, and the structural path between related endpoints is connected properly. In practice, this is not easy to do manually. Some of the main reasons are: Interface information must first be understood from the design files The details of which fields are protected are usually defined in separate specification data Different interfaces may follow different structures. The source and destination endpoints may lie in different design blocks Manual checker setup becomes repetitive when the number of interfaces is large. Manual tracing of structural paths becomes difficult in large designs Because of these reasons, automation becomes necessary. A useful automation flow should be able to: identify protected interfaces, understand their protection structure, generate the required checking logic, and validate that the structural path between related endpoints is correct. The projects described in this report were developed to address these needs. background should just have the theory needed. To study formal verification and safety-oriented verification, and to improve automation for boundary checking and end-to-end structural validation.

Major Learning Outcomes : Learned the fundamentals of formal verification, safety-oriented verification, automated checker generation, end-to-end structural validation, and analysis of complex

hardware connectivity.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment was professional and technically focused, with mentor guidance and practical project work. The company expected me to learn quickly, contribute to assigned tasks, work independently, and document my progress clearly.

Academic courses relevant to the project : Digital Design, Computer Architecture

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Name: AMOD GAWADE(2022AAPS1249G)

Student Write-up

PS-II Project Title: Post silicon validation on CPUs and GPUs

Short Summary of work done during PS-II : During my six-month Practice School-II internship, I worked in the Silicon Validation team, contributing to the validation of next-generation GPU hardware. My work involved developing and enhancing automation tools to improve validation efficiency, analyzing hardware logs, debugging test failures, and supporting the execution of validation test suites. I collaborated with cross-functional teams to investigate functional issues, improve debugging workflows, and ensure comprehensive test coverage. Additionally, I gained hands-on experience with industry-standard validation methodologies, scripting, and hardware-software interaction while working in a fast-paced development environment. The internship strengthened my understanding of computer architecture, silicon validation processes, and large-scale hardware development, while also improving my problem-solving, debugging, and collaborative skills in a professional engineering setting.

Tool used (Development tools - H/w, S/w) : TegraShell, MODS, Python, Oscilloscope

Objectives of the project : To complete post silicon validation check-outs on Nvidia CPUs and GPUs.

Major Learning Outcomes : Understanding how different features are being used on different

projects in hardware, and how to verify whether all the functions are being preserved.

Details of Papers/patents : No papers/patents

Brief Description of working environment, expectations from the company : The working environment was highly professional, collaborative, and technically driven, providing exposure to real-world semiconductor product development. Team members were approachable and encouraged knowledge sharing, making it easy to seek guidance while also promoting independent problem-solving. Regular discussions, code reviews, and cross-functional interactions fostered continuous learning and effective teamwork.
The company expected interns to quickly adapt to existing workflows, understand the underlying hardware and validation methodologies, and contribute meaningfully to ongoing projects. Emphasis was placed on ownership, attention to detail, code quality, and timely completion of assigned tasks. Interns were also expected to communicate progress effectively, proactively resolve technical challenges, and continuously learn new tools and technologies. This environment provided an excellent opportunity to develop both technical expertise and professional skills while contributing to impactful engineering projects.

Academic courses relevant to the project : The project drew upon concepts from several academic courses, including Computer Architecture, Microprocessors and Interfacing, Digital Design, Digital System Design, VLSI Design, Embedded Systems, Operating Systems, and Programming for Problem Solving.

Name: SWAYAM JAIN(2022AAPS0585G)

Student Write-up

PS-II Project Title: Place and Route optimization

Short Summary of work done during PS-II : During my PS-II internship at NVIDIA, I worked on optimizing aspects of the place-and-route flow used in the physical design of integrated circuits. My primary contribution involved working with NVIDIA's in-house placement framework and evaluating optimization techniques for improving design quality and efficiency. I also assisted in validating a hypothesis related to propagating information from later stages of the implementation flow to earlier

stages, with the objective of enabling better placement decisions. Throughout the internship, I gained practical exposure to industrial physical design methodologies, collaborated with experienced engineers, and became familiar with large-scale design flows and development practices used in a professional semiconductor environment.

Tool used (Development tools - H/w, S/w) : EDI and ICC2

Objectives of the project : The primary objective of the project was to optimize NVIDIA's existing place-and-route flow by evaluating and improving different stages of the physical design process. The work focused on enhancing design efficiency and validating methodologies that could improve overall implementation quality.

Major Learning Outcomes : Gained a comprehensive understanding of the industrial physical design flow, including placement, routing, timing closure, and optimization techniques. Developed practical experience with industry-standard EDA tools and learned how large-scale chip implementation is carried out in a collaborative corporate environment.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : NVIDIA provided a highly collaborative and professional working environment that encouraged continuous learning and innovation. Team members, mentors, and managers were approachable, supportive, and always willing to provide technical guidance whenever required. The organization maintained a healthy balance between independent problem-solving and collaborative discussions, which greatly enhanced my learning experience. The company expected interns to be proactive, take ownership of assigned tasks, communicate effectively with the team, and demonstrate a willingness to learn new technologies. Overall, my internship provided valuable exposure to industry practices, advanced physical design methodologies, and the culture of working in a leading semiconductor company.

Academic courses relevant to the project : Digital VLSI Design, CMOS VLSI Design, Electronic Design Automation (EDA), Digital System Design, Computer Architecture, Algorithms and Data Structures, and Probability & Statistics.

Name: MRIDULA B R(2024H1400121P)

Student Write-up

PS-II Project Title: Test Complexity Optimization for Efficient Pattern Generation

Short Summary of work done during PS-II : Executed ATPG test sequences received from cross-functional teams, generating and validating test patterns on the tester. • Decomposed 7+ lengthy, time-intensive test cases into modular, parallelizable chunks, enabling independent pattern generation and significantly reducing overall test execution time. • Documented behavioral observations from test runs and presented findings to the team which resulted in the overall test time reduction.

Tool used (Development tools - H/w, S/w) : Linux, vnc, TCL

Objectives of the project : The project explores a reusable split-based approach. Instead of treating the test flow as a single monolithic entity, the method partitions it into logical bodies that can be composed, reused, skipped, or rerun as required.

Major Learning Outcomes : DFT principles and methods

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Working environment and the facilities provided was good. Team members are welcoming and very helpful.

Academic courses relevant to the project : VLSI Test and Testability

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Name: MOHAMMED REHAN DESHNOOR(2024H1030059H)

Student Write-up

PS-II Project Title: Low Power Capture

Short Summary of work done during PS-II : Worked on migrating and redesigning the LPC flow by implementing a new object model, integrating the CG Driver algorithm and Cogrouping bin-packing

algorithm, and updating all downstream flows. Authored detailed BDD and HTML specifications for initialization, pre-analysis, CG analysis, CG driver, and cogrouping. Added multiple validation checks and fixes, generated lpc_analysis.yml for downstream validation, performed unit testing, and debugged issues related to JTAG CG detection and scan analysis to improve the robustness and correctness of the flow.

Tool used (Development tools - H/w, S/w) : Cursor, C++, Python

Objectives of the project : Migrate LPC from tnShell to Vivid framework

Major Learning Outcomes : Algorithms, Ai Usage.

Details of Papers/patents : Na

Brief Description of working environment, expectations from the company : During my internship at NVIDIA, I worked on the Low Power Capture (LPC) project within the DFX CAD team. The project focused on improving and migrating the LPC flow used in Design-for-Test (DFT). My responsibilities included understanding existing workflows, designing and implementing new object models, integrating CG Driver and Cogrouping algorithms, updating downstream flows, and generating analysis data for validation. I also authored technical specifications, implemented validation checks, fixed functional issues, and performed unit testing to ensure reliability. The work environment was highly collaborative, involving regular discussions with senior engineers, code reviews, and cross-functional problem solving. The project provided hands-on experience in hardware design automation, software development, debugging, and developing scalable solutions for low-power test methodologies.

Academic courses relevant to the project : Algorithms, Electronics, Digital Electronics

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Name: NIRATHA NARAYANAN .(2022A3PS2021H)

Student Write-up

PS-II Project Title: Placement and Routing (PnR) Implementation in VLSI-Physical Design

Short Summary of work done during PS-II : During my internship, I worked on analytical and automation-oriented tasks within digital physical design. My work began with tcl script-based extraction of layout and design information. I then expanded into the stage-wise study of implementation results, examining how timing behavior evolves from early placement to postroute conditions and how factors such as logic depth, routing effects, and clock behavior influence overall quality. As the internship progressed, I carried out comparative studies across multiple implementation runs to evaluate tradeoffs among timing, physical verification, congestion, density, and latency-related behavior. I also contributed to debugging-oriented investigations by reviewing rule-check results, routing congestion and cell density hotspots, etc., documenting findings, and helping interpret which issues were structural and which were flow-dependent.

Tool used (Development tools - H/w, S/w) : Hardware based tools (Innovus, Fusion Compiler and NVIDIA-internal tools)

Objectives of the project : The objective of the work I did as part of a live project was to obtain a practical understanding of PnR implementation at the partition (block) level, understand the various implementation stages (execution flow) and to develop/hone debugging and analysing skills with respect to various aspects of partition floorplanning and physical verification (including timing analysis, congestion, latency, design rule check analysis, etc.) and provide thorough, informed insights and fix suggestions.

Major Learning Outcomes : My learning during the internship progressed from foundational automation and data-extraction tasks to deeper implementation-flow analysis, timing-quality reporting, physical verification studies, congestion and density evaluation, and latency investigation. Over time, I moved from understanding how design data is organized and interpreted to performing structured comparisons across multiple implementation runs and drawing conclusions about quality of results (QoR) tradeoffs.
A major learning outcome from my internship was learning how to connect raw implementation data to engineering judgment. Instead of treating timing, congestion, density, and physical-rule results as isolated outputs, I learned to interpret them together and identify when an apparent improvement in one dimension came at the cost of degradation in another.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment is conducive to learning and collaboration. Managers, mentors, tech leads and other

employees are friendly and open to providing guidance and help. However, interns are expected to be mostly self-driven, and the initiative taken/proactiveness from the students' side in clarifying relevant questions and learning is observed and evaluated throughout the internship.

Academic courses relevant to the project : ADVD, Digital Design, Microelectronic circuits (MEC), and other VLSI-related courses.

Name: VAISHAK SREEJITH .(2022A8PS0753H)

Student Write-up

PS-II Project Title: Physical Design Implementation and Congestion Analysis Automation for Advanced Chip Development

Short Summary of work done during PS-II : During my internship, I worked in two main areas: physical design implementation on active chip blocks and automation for routing-congestion analysis. On the implementation side, I first completed structured training in Place and Route, static timing analysis, and scripting, then moved on to ownership of real design partitions. I fixed an initial floorplan/testability issue by correcting macro placement, established a stable baseline on a larger block, and ran controlled experiments on clocking, runtime optimization, power-grid patterns, reserved blockage, and density-driven timing closure. Key improvements included about 7 hours of runtime reduction through view pruning and a drop in worst-path transition time from 49 ps to 21 ps after floorplan beautification. In parallel, I developed a Python-and-TCL congestion analyzer that evolved from a hotspot-extraction tool into a multi-phase diagnosis agent. It automated hotspot extraction, layer correlation, power-grid checks, density correlation, and net-wise classification to make congestion debugging faster, more structured, and more reproducible.

Tool used (Development tools - H/w, S/w) : Fusion Compiler, Cadence Innovus, AI Tools - Claude, Cursor

Objectives of the project : Two primary areas of work during this internship: Partition ownership on a production chip across multiple design revisions (Floorplanning, baseline establishment, recipe experimentation, and QoR analysis), and the development of a congestion analysis automation tool (Automated hotspot extraction, root-cause classification, and net-level reporting)

Major Learning Outcomes : 1. Physical design understanding:
--> End-to-end PnR flow ownership, engineering trade-offs at each stage
--> Recipe design space exploration and systematic QoR comparison methodology
2. Timing analysis proficiency:
--> STA report interpretation, slack debugging, clock domain analysis across corners
3. Scripting and automation:
--> TCL for EDA tool interaction; Python for infrastructure and automation
--> Data parsing, congestion visualization
4. Design and planning skills:
--> Studying existing architecture, identifying extension points
--> Building tool that integrates cleanly with production infrastructure

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : From the company's side, the expectations were that the intern would ramp up quickly on the end-to-end flow, understand the associated tools and tradeoffs, and transition from training into real ownership pretty quickly. This included taking responsibility for implementation tasks on active design blocks and contributing usefully.
The good part about Nvidia is that they don't treat interns as just interns, but potential full-time employees and try to help as much as possible to get there and give a good amount of ownership of work for better and proactive learning.

Academic courses relevant to the project : ADVD, DD, ED

Name: HARISH R RAMACHANDRAN .(2022AAPS0310H)

Student Write-up

PS-II Project Title: PHYSICAL DESIGN OF A STREAMING MULTIPROCESSOR CHIP

Short Summary of work done during PS-II : I ran PnR trials for the variation of many parameters

(leakage power, bounding box height variation, IR drop) and observed the results for these runs. I tried to then compare these with a reliable baseline. I then started debugging runs on my own in observing multiple paths for timing and power, and tried to correlate the relations between all the metrics, the fundamental concepts, and how they interact within a specific partition/block. I also ran non-timing-driven ECOs to evaluate their impact on the overall PPA metrics and the Quality of Results (QoR)

Tool used (Development tools - H/w, S/w) : EDA Tools; Synopsys ICC2 FC, Cadence Innovus

Objectives of the project : Run the PnR flow from floorplanning to placement to routing for SM blocks and observe their effect on PPA metrics.

Major Learning Outcomes : 1. Observed the PnR flow from floorplanning to routing for a block and knew what to observe and how
2. Was able to do comparative analysis between two PnR trials to observe the changes and monitor any degradation/improvement

Details of Papers/patents : NIL

Brief Description of working environment, expectations from the company : The working environment of the company was really great, with so many engineers and mentors supporting me for my work... I am deeply thankful to them for their amazing work culture and constant support for my work throughout the internship duration.
Expectations of the company was to keep learning on the job and strengthening our analysis and debugging skills for all our blocks: this was regularly accompanied by evaluations and monitoring of each intern by managers, and providing timely feedback and tips to keep improving.

Academic courses relevant to the project : Analog and Digital VLSI Design
Digital Design
Computer Architecture

Name: VATSAL AGRAWAL(2022A8PS1260P)

Student Write-up

PS-II Project Title: Build for backend optimisation

Short Summary of work done during PS-II : My work was improving performance by optimizations in build-for-backend pipeline used by HW teams in nvidia. Most of the work dealt with planning, comparing and then implementing parallel computing methods to parallelize the code. Also learned and worked on about build systems and their internals. Some work was also on AI knowledge graphs, mcp, skills.

Tool used (Development tools - H/w, S/w) : Cursor, claude code, Vim, VNC, python, C

Objectives of the project : Optimise performance and develop features for build for backend pipeline

Major Learning Outcomes : Learning about parallel computing concepts (multi-processing, multi-threading, SIMD, CUDA) , implementing these concepts into a serial pipeline and workflow, optimizing and comparing performance gains, learning about AI (context graphs, skills, mcps)

Details of Papers/patents : Na

Brief Description of working environment, expectations from the company : Very good working environment, you are motivated and also given space and time for your ideas. Timely feedback and status checkins are there for keeping progress on track.

Academic courses relevant to the project : Parallel computing, data structures and algorithms

PS-II Station : NXP India Pvt Ltd, , Noida

Faculty

Name: Rajesh Kumar Tiwary .

Student

Name: ERRABELLI HEMANTH(2024H1230111H)

Student Write-up

PS-II Project Title: Analog and Mixed signal Design and Integration (PZA, FRO)

Short Summary of work done during PS-II : I'm designing(Analog) FRO ip in cadence virtuose in 5nm, and AMS Integration for PZA ip

Tool used (Development tools - H/w, S/w) : Cadence virtuoso, spyglass, questa etc..

Objectives of the project : To design Analog Ip and Ams Integration module

Major Learning Outcomes : Analog design principles, Am Integration, Hands on experience of tool like cadence virtuoso, spyglass, questa

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Work Environment is good, team mates and manager are supportive and helpful, company is expecting us to learn or updgrade the relevant skills needed .

Academic courses relevant to the project : Analog ic design, Vlsi design

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Name: PRATYUSH KUMAR BINDHANI(2024H1230129H)

Student Write-up

PS-II Project Title: Design Verification of IPs

Short Summary of work done during PS-II : Developed expertise in SystemVerilog, UVM, SVA, constrained-random verification, functional coverage, and protocol verification. Built reusable verification environments and achieved coverage-driven verification closure. Performed debugging, assertion-based verification, and verification planning for digital IP validation. Gained practical experience in industry-standard verification methodologies used in ASIC/SoC development.

Tool used (Development tools - H/w, S/w) : Linux, Synopsis Verdi, Vmanager, GVIM,

Objectives of the project : To develop and execute a comprehensive verification environment for validating the functionality, performance, and protocol compliance of digital IPs using industry-standard verification methodologies. The objective includes creating test plans, developing reusable UVM/SystemVerilog-based testbenches, writing assertions, achieving coverage closure, debugging design issues, and ensuring first-pass silicon success through rigorous verification.

Major Learning Outcomes : Gained a strong understanding of the IP and Subsytem design and verification flow.

Details of Papers/patents : Developed expertise in SystemVerilog, UVM, SVA, constrained-random verification, functional coverage, and protocol verification. Built reusable verification environments and achieved coverage-driven verification closure. Performed debugging, assertion-bas

Brief Description of working environment, expectations from the company : Collaborative and supportive work culture that encourages teamwork, knowledge sharing, and continuous learning.
Exposure to cutting-edge semiconductor technologies and real-world automotive, industrial, and IoT products.
Strong emphasis on employee growth through mentorship, technical training, and career development opportunities.
Healthy work-life balance with flexible work arrangements and a focus on employee well-being.
Opportunity to work with highly skilled engineers in a diverse and inclusive environment that fosters innovation and professional excellence.

Academic courses relevant to the project : VLSI Architecture, Verilog,

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Name: RAJAMURI SRIVARDHAN REDDY .(2022AAPS0359H)

Student Write-up

PS-II Project Title: Progressive Methodologies in Digital Design and Functional Verification

Short Summary of work done during PS-II : We have worked on RTL coding, then explored SV and OOPS related to it, verified DUT using SV layered TB, then started learning UVM, SVA, then verified packet processor using UVM end to end and got 100% closure, then explored Gate level simulation and Formal Verifcation

Tool used (Development tools - H/w, S/w) : Cadence Xcelium, IMC, VS code, Gvim, Jasper

Objectives of the project : Learning tools and methodologies of digital verification and implementing on projects

Major Learning Outcomes : Learned how to verify a design from specification sheet and RTL

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : I have worked under very good manager and great team, they made sure we have learned concepts clearly and the time has been alloted accordingly so that we are industry ready from the learning we got. Team was very helpful and their guidance helped a lot.

Academic courses relevant to the project : Digital Design, Embedded systems, Analog and digital VLSI design, Electronic devices, Microelectronic circuits

PS-II Station : OfBusiness,Gurugram, Gurgaon

Faculty

Name: Ashish Narang .

Student

Name: KAPIL DEV(2024H1030028G)

Student Write-up

PS-II Project Title: SLM-Based Sanction Letter Data Extraction and Verification System

Short Summary of work done during PS-II : During my PS-II at OfBusiness, I worked on an SLM-Based Sanction Letter Data Extraction and Verification System. The project focused on extracting important customer and loan-related information from sanction letters and using it for verification against user-submitted data. Initially, different sanction letter formats were studied to identify common fields such as applicant name, PAN number, sanctioned amount, EMI, tenure, interest rate, charges, bank details, and repayment details. Python scripts were used to prepare structured training data from sanction letter text. The data was arranged in JSONL chat format with system, user, and assistant messages for instruction tuning. The Qwen2.5-1.5B-Instruct model was fine-tuned using LoRA-based training with the help of tools such as Unsloth, PyTorch, Hugging Face Datasets, Transformers, and TRL SFTTrainer. After training, the model was integrated with an API that accepts sanction letter text as input and returns extracted information in structured JSON format. This output can be compared with existing user data, and warnings can be generated when mismatches are found. The project helped reduce manual effort, improve data consistency, and support automation in the loan documentation process.

Tool used (Development tools - H/w, S/w) : IntelliJ IDEA, GitHub, VS Code, Claude.ai, ChatGPT, Codex, Python, React, Qwen2.5-1.5B-Instruct, Unsloth, LoRA, PyTorch, Hugging Face Datasets, Transformers, TRL SFTTrainer, JSON, JSONL, API Server, GPU

Objectives of the project : The objective of the project was to develop an SLM-based system for extracting and verifying important information from sanction letters. The project aimed to study different sanction letter formats, identify common loan and customer-related fields, create structured training data, fine-tune a Small Language Model, and build an API that can return extracted information in JSON format. The extracted data can be compared with user-submitted data to detect mismatches and support automated verification in the loan documentation workflow.

Major Learning Outcomes : During PS-II, I gained hands-on experience in LLM/SLM fine-tuning, dataset preparation, JSONL chat-format creation, Python scripting, API integration, and React-based frontend development. I also learned how AI models can be applied to real business workflows, especially in financial document extraction and verification. Apart from technical learning, I improved my understanding of fintech loan processes, debugging, code maintenance, Git-based development, and working in a professional engineering team.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment at OfBusiness was professional, collaborative, and technology-driven. I worked as part of the Engineering/Technology Team, where the focus was on building, maintaining, and improving digital systems used in fintech workflows. The team followed a practical development approach where interns were expected to understand the problem statement, learn the existing system, write clean and maintainable code, and communicate progress regularly.
The company expected interns to be proactive, disciplined, and open to learning new technologies. Since the project involved both AI-based model development and software integration, it required understanding of Python, React, APIs, JSON structures, debugging, and real-world business requirements. Regular interaction with mentors and team members helped in clarifying doubts and improving the final solution. Overall, the environment encouraged technical learning, ownership of assigned work, problem-solving, and professional communication.

Academic courses relevant to the project : Machine Learning, Artificial Intelligence, Natural Language Processing, Deep Learning, Data Structures and Algorithms, Object-Oriented Programming, Database Systems, Software Engineering, Web Technologies, Operating Systems, Computer Networks

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Name: YASHKUMAR JAYSUKHBHAI KOTADIYA(2024H1030033G)

Student Write-up

PS-II Project Title: SDE Intern

Short Summary of work done during PS-II : During PS-II at Oxyzo Financial Services, I worked as a Software Development Engineer (SDE) Intern in the Development team. My work involved both frontend and backend development across multiple production portals. I contributed to feature development by implementing workflow automation modules including automated ticket generation and migration of bulk actions into a dedicated tools section for improved usability. On the frontend side, I modernized legacy React code by migrating class-based components to functional components with Hooks and developed responsive UI layouts for better mobile experience. I also worked on performance optimization by implementing image compression, lazy loading, and asset optimization, which improved Core Web Vitals. Additionally, I contributed to SEO and accessibility improvements

by optimizing metadata, integrating structured content, and improving navigation for better user experience. A major part of my internship involved production support, where I fixed numerous frontend and backend bugs, improved logging and exception handling, and enhanced notification sorting logic. This internship provided strong exposure to large-scale production systems and strengthened my problem-solving and full-stack engineering skills.

Tool used (Development tools - H/w, S/w) : IntelliJ IDEA, VS Code, Postman, DBeaver, Git / GitHub, Java 21, Spring Boot, ReactJS, Next.js, MySQL, Redis, Jenkins / CI-CD Pipelines, Browser DevTools

Objectives of the project : Develop and enhance scalable full-stack features across multiple business portals. Improve workflow automation to reduce manual operational effort. Modernize frontend architecture by migrating legacy React class components to functional components. Optimize system performance, accessibility, and SEO. Provide production support through bug fixing, logging improvements, and reliability enhancements.

Major Learning Outcomes : Hands-on experience in production-grade full-stack application development.
Improved understanding of frontend-backend integration using REST APIs.
Learned scalable backend development using Java Spring Boot.
Gained expertise in React functional components and performance optimization.
Improved debugging, logging, and production issue handling skills.
Learned collaborative software development using Git, CI/CD, and agile workflows.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The work environment was excellent—everyone was helpful, supportive, and collaborative. Team members actively supported each other, and whenever I had difficulty understanding something, they explained it clearly. The mentors were also very supportive; they provided valuable guidance for my future and helped me stay updated with new technologies and industry trends.

Academic courses relevant to the project : Object Oriented Programming, Database Systems, Data Structures & Algorithms, Operating Systems, Computer Networks, Web Development, Design and Analysis of Algorithms

Name: ANISH SUHAS PATIL(2024H1030042G)

Student Write-up

PS-II Project Title: Software Development with AI

Short Summary of work done during PS-II : Claude responded: Oxyzo Financial Services processes thousands of borrower-submitted documents across its lending lifecycle, and the growing accessibility of generative AI tools…Oxyzo Financial Services processes thousands of borrower-submitted documents across its lending lifecycle, and the growing accessibility of generative AI tools has made document fraud a serious and scalable threat. This project designed and deployed an automated document authenticity detection system that classifies every submitted document as REAL, SUSPICIOUS, or FAKE and surfaces that verdict directly within the existing review workflow. The detection pipeline operates in three layers. The first checks for cryptographic C2PA content provenance metadata, immediately flagging documents confirmed as AI-generated by participating platforms. The second runs two independently trained transformer-based image classifiers in parallel, reducing the bias of any single model. The third extracts a bank of handcrafted forensic features using OpenCV, capturing document-specific cues such as JPEG blockiness, scan-line noise, text layout regularity, and page geometry. The outputs of both classifiers are fused with their respective feature scores into branch scores, and the higher of the two is mapped onto a 0-100 risk scale to produce the final verdict. The backend was built using Java and Spring Boot with MySQL for persistence. The system evolved from a synchronous REST-based architecture in its first iteration to an asynchronous message-queue design using Apache ActiveMQ, fully decoupling document upload operations from ML inference latency. The detection service was implemented in Python using Flask, HuggingFace Transformers, and OpenCV. The frontend integration was built in ReactJS with a real-time polling mechanism that surfaces verdict badges and a detail modal across all document screens without disrupting existing workflows. The system is active across all major document surfaces on the platform, providing an auditable authenticity signal that did not exist prior to this engagement.

Tool used (Development tools - H/w, S/w) : Spring Boot, Python (Flask), HuggingFace Transformers, OpenCV, Apache ActiveMQ, MySQL, Redis, Git

Objectives of the project : Automated Detection of AI-Generated and Fabricated Documents in a Digital Lending Platform

Major Learning Outcomes : The internship provided meaningful exposure to full-stack production engineering across a breadth of concerns that academic coursework rarely combines in a single

project. Designing and deploying the document authenticity detection system required working through asynchronous message-driven architecture using Apache ActiveMQ, understanding why decoupling ML inference from user-facing upload operations is a reliability principle rather than an optimisation. It involved integrating a Python ML server, a Java Spring Boot backend, and a ReactJS frontend within a single coherent system, reinforcing the value of shared data contracts and horizontal re-use over point-to-point integration. Working with pretrained models in a live lending environment made clear that deployment-time decisions around threshold calibration, false positive management, and verdict structure are as consequential as model accuracy itself. Contributing to a large, mature production codebase also developed the discipline of reading and understanding existing patterns before introducing changes, a habit that is difficult to build outside a real engineering environment. Taken together, the project provided end-to-end ownership of a production feature from database schema and service design through to frontend state management and user presentation, an experience that substantially bridges the gap between academic software development and industry practice.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Oxyzo Financial Services provided a structured and professionally demanding internship environment, with interns embedded directly within active engineering te…Oxyzo Financial Services provided a structured and professionally demanding internship environment, with interns embedded directly within active engineering teams rather than siloed into separate projects. The working culture was fast-paced and expectation-driven, with deliverables treated at the same standard as those of full-time engineers. Code reviews, version control discipline, and deployment through CI/CD pipelines were standard practice from the first week, leaving little room for the exploratory pace typical of academic projects.

The company expected interns to ramp up quickly on a large and unfamiliar codebase, understand existing architectural patterns, and contribute production-grade code with minimal hand-holding. There was a clear expectation of ownership: once a feature was assigned, the intern was responsible for driving it from design through to deployment, raising blockers proactively, and coordinating with relevant teams independently. Communication was expected to be direct and technical, with an assumption that interns could participate meaningfully in engineering discussions alongside senior developers.

The broader environment was one where internship performance was observed continuously with conversion to a full-time role as an implicit benchmark. This added a professional seriousness to everyday work that differed notably from a typical academic or project-based setting. Access to experienced engineers and a complex, real-world system made it a high-quality learning environment, though it equally demanded a level of self-sufficiency and initiative that took deliberate adjustment to

meet consistently.

Academic courses relevant to the project : Computer Networking, Database Management Systems, Distributed Computing

PS-II Station : Okta, Bengaluru

Faculty

Name: Preethi N. G .

Student

Name: NIKITHADEVI KOLLI .(2022A7PS0207H)

Student Write-up

PS-II Project Title: OAS3, Crash Analytics and MCP

Short Summary of work done during PS-II : I worked on projects related to software observability, API quality validation, and AI integration frameworks. I contributed to the design phase of tools intended for a MCP server environment.

Tool used (Development tools - H/w, S/w) : MCP, OAS3, Redocly

Objectives of the project : Working on redocly linters, and remote mcp

Major Learning Outcomes : Developed an understanding of enterprise software development practices

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Okta provided a

collaborative and professional working environment that encouraged continuous learning and technical growth. The internship involved working closely with experienced software engineers, mentors, and engineering managers. It followed 2 day WFO policy.

Academic courses relevant to the project : OOPs, DSA

Name: AYUSHI SHARMA .(2021B3A71737H)

Student Write-up

PS-II Project Title: Full Stack Dev

Short Summary of work done during PS-II : The first project, Getting Started Experience, aimed to improve the ISV submission journey by creating a unified, guided entry point on the OIN portal. Previously, the submission flow was fragmented and hard to discover, leading to low conversion rates. I built React.js components — including progress indicators, status badges, and summary cards — that gave ISVs clear visibility into where their submission stood and what was needed next. The feature was instrumented with telemetry to track step-completion and identify drop-off points for future iteration. The second project, Fast-Path, addressed the inefficiency of routing metadata-only updates (logo changes, display text, descriptions) through the same heavy review process as full integration changes. I introduced a classification mechanism using a new Salesforce boolean field to detect such cases and route them toward an automated deployment path, with appropriate failure-recovery and alerting logic built in.

Tool used (Development tools - H/w, S/w) : IntelliJ, SFDC UAT, AWS, React,js, Java

Objectives of the project : optimising the experience of independent software vendors who want to integrate with OKTA

Major Learning Outcomes : End-to-end full stack development across React.js and Java, Spring Boot
Hands-on experience with Salesforce (SFDC) for case management and workflow automation
Understanding of feature flag/kill switch architecture for safe, staged production rollouts
Cross-functional collaboration across PM, UX, Engineering, Business Tech, Infra, and TechDoc

teams
Designing for scale in a production-grade enterprise SaaS environment

Details of Papers/patents : Not applicable — this was an industry internship focused on product engineering. No papers or patents were filed during the internship period.

Brief Description of working environment, expectations from the company : Okta's Bangalore engineering centre operates as a fully integrated part of the global product organization, with teams working across time zones in close collaboration with counterparts in the US. The working environment is structured yet flexible, the engineers are trusted with ownership of their features from design through deployment.
The culture strongly emphasises documentation, code quality, and cross-team transparency. Daily standups, sprint planning, and regular design reviews ensured that everyone stayed aligned. As an intern, I was given meaningful project ownership, not peripheral tasks: which significantly accelerated my learning.

Academic courses relevant to the project : OOPS, DBMS, OS, DAA

Name: ARYAN NAYAN .(2022AAPS0304H)

Student Write-up

PS-II Project Title: Backend Development

Short Summary of work done during PS-II : Worked as a backend developer across multiple projects.

Tool used (Development tools - H/w, S/w) : Intellij, Postman

Objectives of the project : Reducing telephony costs

Major Learning Outcomes : Java backend development

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Working environment is very good, there are frequent team bonding activities. Expectation from interns was to work like a regular full time sde-1, work would depend on the teams requirement, can get 1-2 large capstone projects or can also get multiple smaller tasks depending.

Academic courses relevant to the project : OOPS, DBMS

PS-II Station : Onsemi, Bengaluru

Faculty

Name: Pawan Sharma .

Student

Name: SAKSHAM CHOUDHARY(2024H1230167P)

Student Write-up

PS-II Project Title: Bandgap reference,opamp,soa,agging

Short Summary of work done during PS-II : Bgr,Opamp,soa,agging

Tool used (Development tools - H/w, S/w) : H.w Cadence maestro

Objectives of the project : To learn the analog design

Major Learning Outcomes : Now im able to make the mixed signal block which is needed in analog design

Details of Papers/patents : CN104950971B

Brief Description of working environment, expectations from the company : At onsemi, the working environment is highly professional, collaborative, and innovation-driven. The teams are supportive and encourage knowledge sharing, enabling interns and employees to learn from experienced engineers while working on real semiconductor design and reliability challenges. The organization promotes a culture of continuous learning, technical excellence, and teamwork, providing exposure to industry-standard tools and methodologies.
My expectation from the company is to continue providing opportunities to work on impactful projects, gain deeper technical knowledge, and receive constructive feedback from mentors and team members. I look forward to further enhancing my skills in semiconductor device reliability, analog IP verification, aging analysis, and EMIR simulations while contributing effectively to project goals. Additionally, I value an environment that encourages innovation, professional growth, and collaboration across teams, helping me develop both technical and interpersonal skills for a successful career in the semiconductor industry.

Academic courses relevant to the project : Analog I,c design,vlsi design,analog electronics

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Name: VAIBHAV SHARMA(2024H1230175P)

Student Write-up

PS-II Project Title: Formal verification of IPs

Short Summary of work done during PS-II : During my PS-II at onsemi as a Design Verification Intern, I worked on formally verifying a UART IP block. The primary objective of my project was to ensure protocol correctness and functional reliability of the UART transmitter and receiver using formal verification techniques. I studied the UART protocol and existing RTL implementation to understand key functionalities such as data transmission, reception, start/stop bits, and busy/ready signaling. Based on the design specification, I developed SystemVerilog Assertions (SVA) to capture important protocol properties and corner cases. These assertions were used to verify expected behavior under different scenarios and identify potential design issues early in the verification cycle. I implemented assertions for UART-specific properties and also worked on APB/AHB interface assertions wherever relevant for register access validation. Using formal verification tools, I analyzed proof results, debugged failing properties, refined assumptions, and improved assertion quality. Over time, I achieved significant functional coverage (around 80%) and gained hands-on experience in

coverage analysis and closure. This internship helped me understand real-world verification methodologies used in semiconductor companies and strengthened both my technical and analytical skills.

Tool used (Development tools - H/w, S/w) : * Linux / Unix Environment * SystemVerilog * Formal Verification Tool (e.g., JasperGold) * RTL Simulators / Debug Tools * Git / Version Control * Text Editors / IDE (Vim, VS Code, etc.)

Objectives of the project : Formally verifying the UART ip block

Major Learning Outcomes : During PS-II, I gained practical exposure to industrial semiconductor verification workflows, especially formal verification. I learned how to write and debug SystemVerilog Assertions (SVA), verify protocol behavior of UART, and analyze proof results using formal tools. I also developed a better understanding of RTL design, assertion coverage, bug detection, and verification planning. Additionally, I improved my debugging, documentation, and collaboration skills while working in a professional engineering environment.

Details of Papers/patents : No papers or patents were published as part of this project.

Brief Description of working environment, expectations from the company : The working environment at onsemi was highly professional, collaborative, and learning-oriented. The team maintained a structured engineering workflow with regular discussions, review meetings, and technical guidance from mentors. I received continuous support from my manager and team members, which helped me understand complex verification concepts and industry practices.
The company emphasizes quality, precision, and problem-solving, which is crucial in semiconductor design and verification. Employees are expected to be proactive learners, technically strong, detail-oriented, and capable of working independently as well as in teams. Strong debugging ability, analytical thinking, and effective communication are highly valued.
As an intern, I was encouraged to ask questions, participate in technical discussions, and contribute meaningfully to ongoing projects. This environment helped me improve not only technical skills but also workplace professionalism, time management, and collaboration.

Academic courses relevant to the project : * Digital Design
* Computer Architecture
* Microprocessors & Interfacing
* VLSI Design
* Embedded Systems

* Control Systems
* Electronics Devices / Analog Electronics
* HDL / Verilog / SystemVErilog

PS-II Station : Oracle, Bangalore, Bengaluru

Faculty

Name: Srinath R.Naidu .

Student

Name: PRATHIK S SHETTY(2021B3A71317G)

Student Write-up

PS-II Project Title: Fleet Insights and Recommendations

Short Summary of work done during PS-II : During my internship, I contributed to the backend development of "FleetView," a centralized dashboard designed to monitor and manage distributed Exadata Database Service resources. My work focused on establishing a robust, event-driven data ingestion pipeline. Initially, I enhanced the codebase's reliability by implementing comprehensive JUnit tests and addressing potential vulnerabilities. I then developed core features, such as processing resource deletion lifecycle events, integrating the OCI Limits service for dynamic configuration, and validating these changes against the Autonomous Database. A major portion of my work involved an architectural refactoring effort to improve scalability; I helped transition the system from a synchronous POST API to an asynchronous, queue-based workflow to handle high event volumes efficiently. Finally, I drove a comprehensive API re-engineering effort, developing and standardizing numerous GET and LIST APIs with advanced filtering and pagination capabilities to align strictly with OCI's production guidelines.

Tool used (Development tools - H/w, S/w) : Software Frameworks & Languages: Java, Dropwizard, Google Guice, REST APIs, SQL. Infrastructure & Deployment: Docker, Kubernetes (OMK), Colima,

Helm, OCI CLI. Development & Testing: JUnit, SQL Developer, IntelliJ IDEA, and VS Code on macOS.

Objectives of the project : Provide a single, centralized view of all Exadata Database Service resources across all regions within a customer's tenancy. Aggregate and manage recommendations from various source systems, offering a consolidated platform for lifecycle management actions like patching and updates. Establish a simple and effective way for customers to be notified of new capabilities, best practices, and required actions. Provide users with contextual and interactive guidance to help them understand and act upon the insights provided by the platform.

Major Learning Outcomes : Gained expertise in developing enterprise-grade REST APIs using Java and framework tools like Dropwizard and Google Guice. Acquired hands-on experience with cloud infrastructure deployment and management using Docker, Kubernetes, and Oracle Cloud Infrastructure. Learned how to design and implement resilient, asynchronous workflows for handling large-scale event-driven data ingestion. Developed strong practices in ensuring code quality and security through comprehensive unit testing with JUnit and collaborative peer reviews.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment at Oracle is highly collaborative and focused on building robust, enterprise-scale solutions. The team utilizes daily syncs and rigorous code review processes to maintain high standards for code quality and security. I was expected to rapidly familiarize myself with a complex, distributed cloud architecture and contribute directly to the production codebase. Expectations included not only feature development but also identifying architectural bottlenecks and proactively proposing solutions, such as the transition to asynchronous workflows. Furthermore, a strong emphasis was placed on collaborative debugging and troubleshooting deployment failures within the Oracle Managed Kubernetes environment.

Academic courses relevant to the project : DSA, DBMS, OOPS, OS

Name: VAIBHAV DEVRAJ(2021B4A71107P)

Student Write-up

PS-II Project Title: Software Developer Intern

Short Summary of work done during PS-II : Build tools for internal use

Tool used (Development tools - H/w, S/w) : Agents

Objectives of the project : Developer tools

Major Learning Outcomes : Ai agents

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Good

Academic courses relevant to the project : None

Name: AAROSHI R RAO(2021B5A72952G)

Student Write-up

PS-II Project Title: Agent evaluation

Short Summary of work done during PS-II : Developing a tool for agent evaluation

Tool used (Development tools - H/w, S/w) : Python

Objectives of the project : AI

Major Learning Outcomes : AI

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Good, supportive

Academic courses relevant to the project : None

Name: AADI SWAPNIL NESARKAR(2021B3A70967G)

Student Write-up

PS-II Project Title: Perimeter Service

Short Summary of work done during PS-II : Deployed APEX dashboard though Shepherd, fixed security tickets during security drive, made improvements to service architecture

Tool used (Development tools - H/w, S/w) : Oracle APEX, OCI, Terraform, Java

Objectives of the project : To deploy dashboard built during the previous semester and pick up regular development work

Major Learning Outcomes : Terraform, Java, System Design

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Good work culture

Academic courses relevant to the project : OOPS, DSA, DBMS

PS-II Station : Orbicular Pharmaceutical Technologies Pvt Ltd, Hyderabad

Faculty

Name: Bharathi R .

Student

Name: SOHAM SHATRUGHNA MULE(2024H1460136H)

Student Write-up

PS-II Project Title: DEVELOPMENT AND OPTIMISATION OF INJECTABLE DEPOT FOR EXTENDED RELEASE OF SOMATOSTATIN ANALOGUE

Short Summary of work done during PS-II : This report presents the design and evaluation of an in situ forming lyotropic liquid crystal (LLC) depot system for the sustained delivery of a hydrophilic peptide drug using soy phosphatidylcholine (SPC), glyceryl dioleate (GDO), and N-methyl-2-pyrrolidone (NMP) based formulations. The study combined theoretical understanding of amphiphilic self- assembly, phase behaviour, and critical packing parameter (CPP) concepts with experimental formulation development to investigate the suitability of LLC systems as long-acting drug delivery platforms. A systematic series of placebo and drug-loaded precursor formulations was prepared to optimize lipid composition, solvent content, and processing conditions for homogeneous precursor formation and successful pellet generation upon hydration. Pellet formation studies showed that the method of addition significantly affected pellet morphology, with controlled injection conditions producing more spherical and reproducible depots. Drug-loaded batches were further evaluated under accelerated in vitro release conditions using phosphate buffer containing sodium lauryl sulphate as the release medium. The optimized formulations, particularly Batches 009A, 009B, and 010A, exhibited sustained and reproducible drug release over the simulated one-month study period, and achieved final drug release values of more than 90%. Although minor differences were observed during the early release phase, changes in SPC:GDO ratio and NMP content within the investigated range had limited influence on long-term release behaviour, indicating a robust and predictable release profile. Overall, the findings demonstrate that SPC-GDO-NMP based in situ forming LLC depots are promising candidates for controlled peptide delivery and long-acting injectable applications.

Tool used (Development tools - H/w, S/w) : The project involved wet lab practices only.

Objectives of the project : To form a functional Depot for extended release of peptide delivery

Major Learning Outcomes : Technical Learning, Understanding of fluid crystal technology, Research Skills, Experimental troubleshooting, Scientific data interpretation, Industrial Exposure, Understanding

of industrial R&D workflow, Documentation practices.

Details of Papers/patents : no papers

Brief Description of working environment, expectations from the company : Working environment was great, everyone was very helpful and supportive.

Academic courses relevant to the project : parenteral product development, Modern pharmaceutical analytical techniques, Advanced drug delivery, Dosage form Design, Advanced physical pharmacy.

Name: ANJALI INDIAN(2024H1460223P)

Student Write-up

PS-II Project Title: Development and Optimization of injectable depot for extended releease of GLP-1 Analogue

Short Summary of work done during PS-II : To formulate SLM optimizing several process parameters and formulation and also to develop lipid based depot

Tool used (Development tools - H/w, S/w) : Pubmed , semantic scholar , google scholar ,science direct ,consensus

Objectives of the project : To develop a 1 month formulation for sustained release

Major Learning Outcomes : Hands on experience in complex injectables

Details of Papers/patents : Reviewed several papers related to long acting injectables and fliuid crystal technology

Brief Description of working environment, expectations from the company : The company provided an excellent learning environment with well-equipped laboratories for parenteral formulation development, offering valuable hands-on experience with industry-standard equipment and

techniques. I expect continued opportunities for technical learning, mentorship, and involvement in innovative research projects that support my professional growth.

Academic courses relevant to the project : APP,MPAT, DFD,ADDS

PS-II Station : Pegasystems, Hyderabad

Faculty

Name: Y V K Ravi Kumar .

Student

Name: SHREYAS CHINTAMANI ASHTAMKAR(2024H1120192P)

Student Write-up

PS-II Project Title: Author Pega apps with AI

Short Summary of work done during PS-II : Built MCP, contributed to core of AI innovation at Pega

Tool used (Development tools - H/w, S/w) : Java, Pega Infinity Studio, Python, Python, MCP

Objectives of the project : Implement AI from scratch in Pega Infinity product

Major Learning Outcomes : Designing and Implementing enterprise ready scalable AI solution

Details of Papers/patents : Unable to disclose

Brief Description of working environment, expectations from the company : Highly competitive, working day in and out on tools and exploratory stuff, our team was collaborating with more than 200 teams in a span of 4~5 months, this was a disruptive change that we introduced.

Academic courses relevant to the project : LLM, AAC, CC, ML, AI, ACA

PS-II Station : Petasense Technologies Pvt. Ltd, Bengaluru

Faculty

Name: Venkateswara Rao Thunuguntla .

Student

Name: ABHINAY AGARWAL(2021B5A82953G)

Student Write-up

PS-II Project Title: Intenationalization of webapp , mails and SMS

Short Summary of work done during PS-II : Had to work on internationalisation feature for 5 languages. Every webpage has to be translated in selected language , so the frameworks related to the development of this feature was the major learning, Also worked on internationalization of mails and sms which has a different backend framework involvement .

Tool used (Development tools - H/w, S/w) : Cursor

Objectives of the project : Internationalize the webapp to make it supportive for 5 languages

Major Learning Outcomes : Full stack development

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : This is a startup , so the environment is like startup but people believe in teamwork here and would be interactive . So one would get to learn many tech stacks here and experience full stack development.

Academic courses relevant to the project : OOP , DSA , OS .

PS-II Station : Pfizer Healthcare India Pvt.Ltd, Chennai

Faculty

Name: Pradheep Kumar K .

Student

Name: PIYUSH KUMAR(2021B1A40815P)

Student Write-up

PS-II Project Title: Evaluating Multi-Drug Therapeutic Hypotheses using Network Connectivity and Knowledge Graphs

Short Summary of work done during PS-II : The project evaluated multi-drug therapeutic hypotheses using a knowledge graph-based framework with Drug X as the fixed reference drug. The analysis was performed using the pre-existing Institution X codebase. Double-drug combinations were assessed using Drug Similarity Score, Drug-Disease Score, and Network-Probability Score, identifying Drug X + Drug 6 as a strong candidate. The workflow was further extended in this work to enable triple-drug combination analysis involving Drug X with Drug 1, Drug 2, and Drug 3. Results demonstrate effective prioritization of both double and triple combinations based on complementarity and disease relevance.

Tool used (Development tools - H/w, S/w) : Python, Excel

Objectives of the project : Finding possible combinations of double-drug & triple-drug therapy for known diseases, to support clinical trials.

Major Learning Outcomes : Refactoring a codebase to different purpose, designing mathematical

metrics for network analysis

Details of Papers/patents : Referenced Papers: https://doi.org/10.1038/nrg2918 ; https://doi.org/10.1038/s41467-019
09186-x

Brief Description of working environment, expectations from the company : 1. PPO hasn't been given to any interns (We are 2nd batch of Interns, no one received last semester & no one is receiving this semester)
2. If you are good at Software Engineering & Programming skills, this internship will be a good learning experience.
3. No spoon feeding is done here: If you are a beginner at Software Engineering, Debugging, Documentation reading, etc., this will be challenging as you have to do everything on your own.
4. CONFIDENTIALITY is a must: You will make 4 reports in total: MidSem-Endsem for Office, Midsem-Endsem for College: You will not be allowed to share Drug Names, Genes, Mathematical Approach, Models used, etc. with the college
5. Master PPT making: There are strict norms regarding PPT designing, you'll be asked to revise until the presentation is made right (Color Coding, Diagrams making, No screenshots in PPT, etc.)

Academic courses relevant to the project : Probability & Statistics, Mathematics-2, Data Structures & Algorithms

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Name: AMAN ALI(2021B1A22735P)

Student Write-up

PS-II Project Title: Enhanced DILI Prediction Using Toxicogenomic

Short Summary of work done during PS-II : During my PS-II at Pfizer Healthcare Pvt. Ltd., I worked on developing an AI-assisted framework for early prediction of Drug-Induced Liver Injury (DILI) using toxicogenomic and biological data. The project involved collecting, integrating, and preprocessing heterogeneous datasets containing compound-level toxicity annotations, transcriptomic profiles, and pathway-level biological information. A robust data harmonization pipeline was developed to standardize biological identifiers, manage missing data, and construct biologically meaningful feature

representations. Machine learning models were developed and evaluated using pathway-level toxicogenomic features to predict DILI risk. Group-aware cross-validation techniques were employed to prevent information leakage and ensure reliable generalization to unseen compounds. The project also focused on model interpretability through feature importance analysis, enabling the identification of biologically relevant pathways associated with hepatotoxicity. The developed framework demonstrated the potential of integrating toxicogenomic data with AI to support early-stage drug safety assessment and compound prioritization. Throughout the internship, I gained practical experience in computational toxicology, biological data preprocessing, machine learning, model evaluation, and explainable AI within a pharmaceutical research environment. The project highlighted the importance of interpretable AI systems as decision-support tools for improving safety assessment during drug development.

Tool used (Development tools - H/w, S/w) : Python, Jupyter Notebook, VS Code, Scikit-learn, Pandas, NumPy, Matplotlib

Objectives of the project : Develop an AI/ML-based framework for early prediction of Drug-Induced Liver Injury (DILI) using toxicogenomic and biological data.

Major Learning Outcomes : Developed an understanding of computational toxicology, explainable AI, and their application in pharmaceutical research and early-stage drug safety assessment.

Details of Papers/patents : Python, Jupyter Notebook, VS Code, Scikit-learn, Pandas, NumPy, Matplotlib,

Brief Description of working environment, expectations from the company : The PS-II was carried out at Pfizer Healthcare Pvt. Ltd., Chennai, within the AI/ML and Quantitative & Digital Sciences (AQDS) team. The working environment was highly collaborative, research-oriented, and focused on applying advanced computational techniques to real-world pharmaceutical challenges. Team members encouraged knowledge sharing through regular discussions, technical guidance, and constructive feedback, enabling continuous learning and professional development.

The project involved working with biological and toxicogenomic datasets to develop an AI-assisted framework for early prediction of Drug-Induced Liver Injury (DILI). The work required understanding domain-specific concepts, performing data preprocessing and analysis, developing machine learning models, and interpreting results in the context of drug safety assessment. Regular interactions with mentors and subject matter experts provided valuable insights into pharmaceutical research workflows and the practical application of AI in healthcare.

The internship offered exposure to industry-standard development practices, interdisciplinary

collaboration, and scientific problem-solving. It strengthened my technical skills in machine learning, computational toxicology, biological data analysis, and explainable AI while improving my ability to communicate technical findings effectively.
The company expected interns to demonstrate analytical thinking, maintain high standards of data integrity, learn independently, collaborate effectively with mentors and team members, and deliver high-quality work aligned with project objectives and organizational research goals.

Academic courses relevant to the project : Cell Biology, Linear Algebra, Genetics, Bioinformatics

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Name: SAI KARTHIK VYSYARAJU .(2022AAPS0260H)

Student Write-up

PS-II Project Title: Leveraging digital health Technologies and Generative AI to streamline patient recruitment in clinical trials

Short Summary of work done during PS-II : During my PS-II internship at Pfizer Healthcare India Pvt. Ltd., I worked on a project focused on leveraging Generative AI and digital health technologies to improve patient recruitment for clinical trials. My work primarily involved studying recent research on Large Language Model (LLM)-based patient-to-trial matching systems and understanding how AI can support clinical trial recruitment. I reviewed and compared multiple research papers, analyzed their architectures, datasets, and implementation pipelines, and explored publicly available GitHub repositories to understand their practical workflows. I also performed exploratory data analysis (EDA) on clinical trial and healthcare datasets to understand their structure, quality, and challenges. In addition, I studied the use of multimodal health data, wearable sensor data, and knowledge graphs in healthcare AI applications. The project helped establish a strong analytical foundation for future development of AI-based patient-to-trial matching systems by identifying the strengths, limitations, and practical challenges of existing approaches. Overall, the internship enhanced my understanding of Generative AI, healthcare data analysis, research methodologies, and AI-driven clinical trial recruitment systems while improving my technical and analytical skills.

Tool used (Development tools - H/w, S/w) : Python, Gen AI methodologies, Jupyter notebook, Word, Excel

Objectives of the project : To do comparative analysis on research papers in existing space and doing EDA on available datasets along with data harmonisation

Major Learning Outcomes : Gained a strong understanding of clinical trial recruitment and patient-to-trial matching. Studied and compared multiple Generative AI and Large Language Model (LLM) approaches used in healthcare. Learned to analyze research papers, GitHub repositories, and AI pipelines. Performed exploratory data analysis (EDA) on clinical trial and healthcare datasets. Understood the role of multimodal health data and knowledge graphs in healthcare AI. Improved practical knowledge of AI-based healthcare systems and data-driven research.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : My experience at Pfizer was a combination of valuable technical learning and a very demanding work environment. The company provided excellent facilities, including lunch, coffee, and the project exposed us to meaningful AI research in healthcare. From a learning perspective, the internship was rewarding.
However, the overall work culture was much more demanding than I had expected. During the interview itself, it was communicated that the chances of receiving a PPO were almost negligible. Knowing this, I expected there would be some flexibility for interns to prepare for campus placements alongside the internship. Unfortunately, that was not my experience.
Interns were expected to work almost at the level of full-time employees. The official working hours were 9:30 AM to 6:30 PM, but the assigned work frequently extended beyond office hours. Many evenings and weekends were spent completing tasks to meet expectations and deadlines. There were daily status meetings, frequent follow-ups, and close monitoring of progress, which often made the internship feel more like a full-time job than a learning experience.
Working under highly experienced researchers, Principal Data Scientists, and senior leadership was undoubtedly a great learning opportunity, but it also created an environment where I constantly felt pressure to perform. Feedback was often very direct, and at times I felt hesitant to ask questions or openly discuss difficulties because I was worried about being judged for not knowing enough. This gradually affected my confidence, and almost every review meeting became a source of anxiety rather than an opportunity to learn.
One aspect I found particularly difficult was balancing internship responsibilities with my own career preparation. Since there was little expectation of a PPO, I hoped there would be some understanding that interns also needed time to prepare for placements. Instead, the workload often left very little personal time, making it difficult to focus on interviews, coding practice, or skill development outside office hours.

Overall, I learned a great deal technically, but the internship was mentally and emotionally exhausting. I believe future interns joining this station should be prepared for a highly demanding workload, a fast-paced research environment, and expectations that are much closer to those of a full-time employee than a typical internship. At the same time, I hope the station considers creating a more balanced experience where interns can learn effectively while also having reasonable time to prepare for their future careers.

Academic courses relevant to the project : FDSA, OOPS, DBMS, ML, AI

PS-II Station : PierSight Space - Mechanism Design and Analysis Intern, Ahmedabad

Faculty

Name: Sudeep Kumar Pradhan .

Student

Name: VISHESH BANSAL(2024H1060143P)

Student Write-up

PS-II Project Title: Non-Linear Vibrational analysis of Antenna and designing it Antenna fixture for testing.

Short Summary of work done during PS-II : At pierisght I was involved in the structural analysis of electronic systems and Antenna, where I performed various analysis in Ansys - Quas static, modal, harmonic and random analysis and presented that analysis in front of team leaders as well. After that I was assigned to design the antenna fixture for testing at space application center Ahemdabad where I was responsible with managing of people and creating the assembly design.

Tool used (Development tools - H/w, S/w) : Software - Ansys and its various modules. Hardware various mechanical tools.

Objectives of the project : 1. Find the natural frequency of a non linear system. 2) Design antenna fixture for testing the performance of antenna in an anechoic chamber.

Major Learning Outcomes : 1. Gained a better understanding of non linear systems
2. Gained proficiency at using Ansys
3. Learned about the testing process of Antenna
4. Learned how to manage people during assembly and logistics while going to Testing facility.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : 1.The companies working environment is fine , except the work isn't that structured since its a startup.
2. There is a lot to learn since there are many scientists from ISRO who has more than 10 years of experience in their respective fields.
3. The work pressure is high and some other team managers don't understand the timelines for projects so they will put pressure on you to finish the work before deadline , so the quality may reduce.

Academic courses relevant to the project : Finite element analysis, Heat transfer, thermodynamics, strength of materials, manufacturing.

PS-II Station : PierSight Space - Signal Processing, Ahmedabad

Faculty

Name: Swapna S Kulkarni

Student

Name: ARYAN SHRIVASTAVA(2024H1240144H)

Student Write-up

PS-II Project Title: Signal Processing Intern

Short Summary of work done during PS-II : I was tasked to understand the physics behind how the image is processed in Drone. For that i needed to understand different concepts like SAR imaging, Time domain backprojection, Interpolation, few matlab functions.

Tool used (Development tools - H/w, S/w) : MATLAB

Objectives of the project : Develop Algorithms for image processing

Major Learning Outcomes : SAR imaging, Time Domain Backprojection

Details of Papers/patents : No patents

Brief Description of working environment, expectations from the company : The company's environment is very learning friendly. Everyone is very experienced yet they are also learning a lot of things here. Seniors are very helpful too irrespective of departments. My reporting manager is also quite helpful.

Academic courses relevant to the project : Advance Digital Signal Processing

PS-II Station : Piramal Group Tech - Customer Excellence, Bengaluru

Faculty

Name: Ankur Pachauri

Student

Name: NAMAN DIMRI .(2022AAPS1547H)

Student Write-up

PS-II Project Title: Omnichannel MIS for WhatsApp, SMS and Email

Short Summary of work done during PS-II : Created the omnichannel response MIS, Branch calling MIS and service for the Omnichannel system in ADO. NET. This includes various procedures running the backend database which have been created by our team. Also, front end has been created using HTML, CSS and JavaScript.

Tool used (Development tools - H/w, S/w) : Visual Studio and MS SQL Server management system

Objectives of the project : To create a centralized system for controlling and assessing performance of Voicebots and other communication channels

Major Learning Outcomes : C#, Queries in MS SQL, data types kn C#, Visual Studio

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Not a lot of work to be done as developer. Work environment is flexible but deadlines have to be met.

Academic courses relevant to the project : C programming, DBMS

Name: DEEPAK GAIROLA .(2022A3PS0535H)

Student Write-up

PS-II Project Title: Omnichannel Voicebot Integration

Short Summary of work done during PS-II : Creating GUI/dashboards in Visual studio through C# coding (MVC applications) and working on company database for extracting and viewing data.

Tool used (Development tools - H/w, S/w) : MS SQL, Visual Studio

Objectives of the project : To create an omnichannel service (which includes whatsapp, email, sms, manual call and voicebot calls) in order to reach to customers.

Major Learning Outcomes : Got hands on experience in big databases and writing advance queries in MS SQL.

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : Work environment was very nice, everyone were very helpful especially our manager. There weren't any tight deadlines given to us but we were expected to complete the work in a given period of time.

Academic courses relevant to the project : DBMS, C programming

PS-II Station : Piramal Pharma Limited - CPD, Mumbai

Faculty

Name: Ankur Pachauri

Student

Name: SHIVAM GUPTA .(2022A3PS1297H)

Student Write-up

PS-II Project Title: MTD Dashboard Re engineering

Short Summary of work done during PS-II : During my PS-II internship at Piramal Pharma Solutions, I worked on automating the Month-to-Date (MTD) revenue reporting pipeline using Python, AWS, Snowflake, and Apache Airflow. The project focused on replacing manual data processing with an automated ETL workflow that ingests, transforms, validates, and loads daily revenue data into Snowflake for financial reporting. I designed and enhanced Airflow DAGs to orchestrate the complete workflow, implemented incremental loading while preserving historical data, and performed extensive data validation to ensure data accuracy and consistency. I also identified and resolved production

issues, improved pipeline reliability through debugging and monitoring, and supported the migration of the workflow from the legacy Azure/Databricks environment to AWS and Snowflake. The automation significantly reduced manual effort, improved the timeliness of MTD reporting, and enabled business users to access accurate daily revenue data for operational and financial decision-making. Through this project, I gained practical experience in cloud-based data engineering, ETL pipeline development, production support, workflow orchestration, and data quality management in an enterprise environment.

Tool used (Development tools - H/w, S/w) : Programming Languages: Python, SQL Cloud Services: AWS (Amazon S3) Data Warehouse: Snowflake Workflow Orchestration: Apache Airflow

Objectives of the project : To automate the Month-to-Date (MTD) revenue pipeline by enabling reliable daily data ingestion, transformation, and loading into Snowflake, ensuring accurate financial reporting while reducing manual effort.

Major Learning Outcomes : Gained hands-on experience in building and maintaining production-grade ETL pipelines using Python, AWS, Snowflake, and Apache Airflow.
Learned to design incremental data loading strategies while preserving historical data integrity.
Developed skills in debugging production workflows, validating data quality, and resolving pipeline failures.
Understood cloud-based data engineering practices, including orchestration, data migration, and automation.
Improved knowledge of financial reporting pipelines and the importance of reliable, accurate, and timely data delivery for business decision-making.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Piramal Pharma provided a professional, collaborative, and learning-oriented work environment within the IT team. As a Data Scientist Intern, I worked on real business problems involving data automation, analytics, and cloud-based data processing. The team encouraged knowledge sharing, regular technical discussions, and independent problem-solving while providing guidance whenever required. Working on production-related tasks gave me valuable exposure to industry practices, software development workflows, and cross-functional collaboration.
The organization emphasized quality, accuracy, and continuous improvement, allowing me to contribute to projects that had a direct business impact. I gained practical experience with Python, SQL, AWS, Snowflake, and Apache Airflow while developing and enhancing automated data

workflows for financial reporting.

From the company, I expected opportunities to work on real-world projects, learn modern technologies, and understand how data-driven solutions are implemented in an enterprise environment. These expectations were fulfilled through hands-on project ownership, mentorship from experienced professionals, and exposure to production systems. Overall, the internship helped me strengthen my technical skills, improve my problem-solving abilities, and gain a deeper understanding of how data science and data engineering support business operations.

Academic courses relevant to the project : DSA, OOPs, ML

PS-II Station : Pluss Advanced Technologies Ltd - Plant Process, Gurgaon

Faculty

Name: Robin C Jayaram

Student

Name: KUHIKAR DISHA AJAY(2024H1010018P)

Student Write-up

PS-II Project Title: Phase change material development, characterization, scale-up studies and process safety assessment for thermal energy storage applications.

Short Summary of work done during PS-II : During my PS-II internship at Pluss Advanced Technologies Ltd., I worked on the development, characterization, and industrial process assessment of Phase Change Materials (PCMs) for thermal energy storage applications. My work involved laboratory-scale formulation development, preparation trials, density measurement, thermal conductivity testing, T-history analysis, and freeze-deformation studies to evaluate thermophysical performance. I investigated a customer complaint related to dimensional deformation of PCM-filled products during freezing and conducted systematic trials involving different container geometries and formulation additives to identify an optimized solution. I also studied scale-up aspects by evaluating

reproducibility between laboratory batches and understanding industrial manufacturing challenges. Additionally, I carried out conceptual process engineering studies including process flow design, material balance, equipment selection, solvent recovery, VOC control, effluent treatment, HAZOP analysis, and ATEX zone classification for safe and sustainable manufacturing. The internship provided practical exposure to product development, process optimization, quality assurance, industrial safety, and environmental compliance while strengthening my analytical, technical, and documentation skills.

Tool used (Development tools - H/w, S/w) : Hardware: KD2 Pro Thermal Conductivity Analyzer, DSC, Analytical Balance, Hot Plate Magnetic Stirrer, Temperature-Controlled Freezer, Vernier Caliper, Thermocouple. Software: Microsoft Excel, Microsoft Word, Microsoft PowerPoint, AutoCAD (for PFD/P&ID)

Objectives of the project : Develop and optimize Phase Change Material (PCM) formulations for thermal energy storage applications. • Characterize thermophysical properties using standard analytical techniques. • Investigate freeze-induced deformation and resolve customer complaints through formulation and geometry optimization. • Study scale-up aspects for industrial manufacturing. • Perform process engineering studies including material balance, equipment selection, HAZOP, ATEX classification, VOC control, and ETP design.

Major Learning Outcomes : Understanding of PCM formulation and thermal energy storage technologies.
Hands-on experience in laboratory formulation development and characterization. Knowledge of T-history analysis, thermal conductivity, density and DSC interpretation. Exposure to process scale-up principles and industrial manufacturing.
Understanding of HAZOP, ATEX classification, VOC control and environmental management. Improved technical documentation, analytical thinking and problem-solving skills.

Details of Papers/patents : No papers or patents were published during the internship.

Brief Description of working environment, expectations from the company : Pluss Advanced Technologies Ltd. provided a professional research and industrial environment focused on innovation in thermal energy storage materials. The organization encouraged analytical thinking, experimentation, documentation, and continuous learning while maintaining high standards of quality and safety. I worked closely with the R&D and Quality teams, participating in laboratory experiments, product development activities, customer complaint investigations, and process engineering studies. The company expected interns to be proactive, maintain accurate experimental records, follow

laboratory safety protocols, analyze experimental data critically, and contribute effectively to ongoing research projects. The exposure to multidisciplinary teams enhanced my understanding of industrial research, process development, quality management, and engineering decision-making.

Academic courses relevant to the project : Heat Transfer, Mass Transfer, Chemical Reaction Engineering, Process Design, Process Equipment Design, Process Safety & Risk Assessment, Instrumentation & Process Control, Mechanical Operations, Thermodynamics, Environmental Engineering.

PS-II Station : Pluss Advanced Technologies Ltd- Product Mapping, Gurgaon

Faculty

Name: Robin C Jayaram

Student

Name: NINAD MAHENDRA PATIL(2024H1010021P)

Student Write-up

PS-II Project Title: PCM based thermal storage system for industrial applications

Short Summary of work done during PS-II : During my PS, I was working in collaboration with another company to develop thermal storage solutions (using PCM) to store excess heat in an industry.

Tool used (Development tools - H/w, S/w) : NA

Objectives of the project : To develop a PCM based thermal storage system to store excess heat.

Major Learning Outcomes : Learned about phase change materials and their significance in reducing carbon footprints

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment was very good. The office timings were flexible, and everyone in the organization was approachable.

Academic courses relevant to the project : Heat transfer

PS-II Station : Pocket FM Private Limited - Product Analytics, Bengaluru

Faculty

Name: Shwetha Vittal

Student

Name: TUSHAR GANESH BHAVSAR(2024H1030116G)

Student Write-up

PS-II Project Title: Data Analytics and Performance Monitoring for Pocket FM Platform

Short Summary of work done during PS-II : During my PS-II internship at Pocket FM as a Product Analytics Intern, I worked on analytics and experimentation projects that supported data-driven product decisions. My responsibilities included extracting and analyzing data from Databricks using SQL, developing and maintaining interactive dashboards in Amazon QuickSight, and performing data validation to ensure reporting accuracy. I optimized SQL queries to improve the daily dashboard refresh process by reducing execution time and enhancing performance. I also supported the A/B experimentation workflow by validating experiment configurations, verifying user segmentation and traffic allocation, and ensuring correct control and treatment group assignments. Additionally, I created and configured experiments using the Eppo experimentation platform by defining experiment parameters and enabling tracking for accurate performance analysis. I contributed to enhancing

existing dashboards by integrating new datasets and developing additional analytical views to improve business reporting and stakeholder visibility. Throughout the internship, I collaborated with cross-functional teams to understand business requirements and translate them into effective analytics solutions. This experience strengthened my technical skills in SQL, Databricks, Amazon QuickSight, product analytics, query optimization, and experimentation frameworks while improving my analytical thinking, problem-solving ability, and understanding of how data is used to drive product and business decisions in a real-world production environment.

Tool used (Development tools - H/w, S/w) : Databricks ,Quick Sight ,Eppo

Objectives of the project : To gain hands-on experience in product analytics through data extraction, dashboard development, SQL optimization, and A/B testing while enhancing technical, analytical, and problem-solving skills in a real-world industry environment.

Major Learning Outcomes : Gained hands-on experience in product analytics, SQL, Databricks, Amazon QuickSight, dashboard development, query optimization, and A/B experimentation in a real-world production environment.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Pocket FM was professional, collaborative, and focused on data-driven decision-making. Team members were supportive and encouraged continuous learning while providing opportunities to work on real-world analytics projects. The company expected interns to understand business requirements, deliver accurate analytical solutions, communicate effectively with stakeholders, and take ownership of assigned tasks while adhering to project timelines and quality standards.

Academic courses relevant to the project : Advance Database management System ,Data mining

PS-II Station : Prashanu Hospital - Analyst, Palghar

Faculty

Name: Sandeep Kayastha .

Student

Name: SAAHIL MEHTA(2021B4A71078P)

Student Write-up

PS-II Project Title: PATIENT DATABASE DEVELOPMENT AND INFORMATION SYSTEMS DESIGN

Short Summary of work done during PS-II : Prashanu Hospital, a small multi-speciality healthcare facility in Palghar, Maharashtra, operates almost entirely on paper-based records across its OPD, IPD, pharmacy, and billing departments. Patient information exists in fragmented physical registers with no shared identifier, no audit trail, and no mechanism to generate operational reports. The internship began with a structured system study — observations across all departments, semi-structured interviews with doctors, nurses, and administrative staff, and a detailed analysis of existing workflow inefficiencies. The primary technical contribution was the design and PostgreSQL implementation of a normalised relational database system. A seven-table schema covering patients, visits, prescriptions, medicines, billing, inventory log, and IPD admissions was designed from scratch using Entity-Relationship modelling and normalised to Third Normal Form. Full referential integrity was enforced through foreign key constraints, and data quality was ensured via NOT NULL and CHECK constraints at the database level. Seven operational reporting views were built and validated, covering active IPD patients, stock alert thresholds, billing summaries, prescription history, and daily OPD activity. A phased data migration plan was drafted to transition historical paper records into the new system, with Phase 1 scripts written and tested. The system provides Prashanu Hospital its first structured digital foundation, on top of which a frontend application and further modules can be built.

Tool used (Development tools - H/w, S/w) : SQL

Objectives of the project : The primary contribution of this report is the design, normalisation, and SQL implementation of a relational patient database system.

Major Learning Outcomes : SQL, Data Analysis

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Open and Communicative Working environment where help was given where needed

Academic courses relevant to the project : Database Systems

PS-II Station : Prashanu Hospital - Data Analysis, Palghar

Faculty

Name: Sandeep Kayastha .

Student

Name: NANAVATY AKASH ANISH(2021B4A72322P)

Student Write-up

PS-II Project Title: Patient Database Development

Short Summary of work done during PS-II : This Practice School project was undertaken at Prashanu Hospital with the objective of studying hospital workflows and developing a Patient Database System to improve information management. The work began with a detailed analysis of the OPD, IPD, pharmacy, billing, and administrative processes to understand how patient information is generated, stored, and utilized. Based on the observations and requirements gathered from hospital staff, a relational database was designed to manage patient records, prescriptions, medicine inventory, billing details, and inventory transactions. The database schema was implemented using SQL with appropriate relationships and constraints to ensure data consistency and integrity. Testing was performed using sample datasets to validate functionality and system performance. The project provided valuable exposure to healthcare information systems, database design, requirement analysis, and software development methodologies. It also highlighted the importance of digital solutions in improving operational efficiency, reducing manual effort, and supporting better healthcare administration.

Tool used (Development tools - H/w, S/w) : SQL

Objectives of the project : Create a functional database for patient management

Major Learning Outcomes : SQL, Databases, Operations

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Prashanu Hospital was professional, collaborative, and conducive to learning. The hospital staff were supportive and provided valuable insights into day-to-day operations, patient management procedures, and administrative workflows. The initial expectations from the organisation included understanding existing hospital processes, documenting workflows, and identifying opportunities for digitalisation and process improvement. As the internship progressed, the focus shifted towards designing and developing a patient database system to support efficient information management. The organisation expected a systematic approach to problem-solving, active engagement with stakeholders, and the development of practical solutions that could contribute to improving operational efficiency and data management practices.

Academic courses relevant to the project : Database Management, Operations Research

PS-II Station : Prashanu Hospital - Supply Chain, Palghar

Faculty

Name: Sandeep Kayastha .

Student

Name: BANSAL HARSHVARDHAN RAJENDRA KUMAR(2021B5A30896P)

Student Write-up

PS-II Project Title: 0 to 1 Software for Rural Hospital in a Tier-3 Locality Designed for Managing Budgets, Inventory and Material Requisitions

Short Summary of work done during PS-II : The internship at Prashanu Hospital, Palghar focused on designing a 0-to-1 hospital management software for a 15-bed tier-3 private hospital operating entirely on manual systems - paper cash ledgers, physical stock registers, and WhatsApp-based procurement. The first phase covered discovery and design. Through interviews with 15 staff members, workflow shadowing, and benchmarking with three comparable hospitals, five core pain points were identified: no department-level budget visibility, frequent inventory stockouts, untracked consumption, a 3-5 day requisition cycle, and no audit trail. This produced initial specifications for three software modules: Budget Management, Inventory Management, and Material Requisition. The second phase focused on validation and handoff. Six bi-weekly design review sessions and structured usability testing with eight staff members refined each module, achieving task completion rates of 94%, 88%, and 91% respectively. Issues identified in testing were resolved before finalisation. The phase concluded with formal sign-off from the hospital founder and a complete developer handoff package covering 20 user stories, 77 acceptance criteria, API endpoint definitions, a risk register, and a phased pilot deployment plan.

Tool used (Development tools - H/w, S/w) : Notion, Google sheets, Google doc

Objectives of the project : New product development in domain of inventory and budget management and material requisitions

Major Learning Outcomes : 0 to 1 Product Thinking, Field research in low tech environments, Healthcare Domain Knowledge

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Prashanu Hospital is a privately-owned, 15-bed regional healthcare facility in Palghar, Maharashtra, operated by Dr.Prashanu Hospital is a privately-owned, 15-bed regional healthcare facility in Palghar, Maharashtra, operated by Dr. Anita Koti. The hospital functions across clinical, administrative, and support zones, with six in-house doctors and approximately twenty-five nursing and support staff. It serves a mixed urban and rural patient population across a 35-kilometre radius, with obstetrics and gynaecology as its primary revenue stream.
The working environment was office-based, embedded within the hospital's day-to-day operations.

This meant direct access to all staff roles and operational workflows throughout the internship, which was essential for the discovery and validation work. Internet connectivity was intermittent, with daily outages of two to six hours - a constraint that shaped the entire product architecture. The team culture was informal and trust-driven, typical of a small private facility where most decisions flow through the founder.

Academic courses relevant to the project : Computer Programming, Principles of Economics

PS-II Station : ProteanTecs - Infrastructure Automation, Bengaluru

Faculty

Name: Swapna S Kulkarni

Student

Name: AMANAGANTI ROHAN REDDY(2021B4A32377H)

Student Write-up

PS-II Project Title: Physical Design RTL2GDSII

Short Summary of work done during PS-II : Performed complete RTL2GDSII runs on a range of process nodes, tools, and designs to validate new customer features, product validation, and flow enhancement, utilizing the in-house automation flow. Perfomed complete IP hardening with a tapeout-ready GDS for cusomer-requested sensors from the company's line of products, while satisfying the specifications requested by the customer.

Tool used (Development tools - H/w, S/w) : Synopsys and Cadence RTL2GDS toolset (FC, DC, Genus, Innovus, PrimeTime, etc.), Tcl scripting

Objectives of the project : Physical Design

Major Learning Outcomes : Gain exposure on physical design aspect of chip designing (RTL2GDS), flow methodology, challenges associated with advanced nodes and Industry approach of solving issues. Additionally gained experience in automating parts of the design flow for reduced time to delivery.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The team is very tightly knit, where everyone is easy to approach. One is expected to utilize their time and the available resources well during their time there. No one restricts you from using the available resources for personal learning, and all mentors and seniors are ready to help with any issues you could be facing at any time.

Academic courses relevant to the project : ADVD

PS-II Station : PWC-BSCO, Bengaluru

Faculty

Name: A Michael Alphonse

Student

Name: AYUSH KUMAR TIWARI(2022AAPS0196G)

Student Write-up

PS-II Project Title: Tulip Implementation

Short Summary of work done during PS-II : End to end client interaction . Front end consulting role

Tool used (Development tools - H/w, S/w) : Tulip

Objectives of the project : Shop floor digitisation

Major Learning Outcomes : Consulting and systematic thinking

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Great

Academic courses relevant to the project : None

PS-II Station : PWC-CEDA, Bengaluru

Faculty

Name: A Michael Alphonse

Student

Name: UDBHAV DWIVEDI(2022A3PS0483P)

Student Write-up

PS-II Project Title: Data Science and Machine Learning Training

Short Summary of work done during PS-II : Completed training in Data Science and Machine Learning using Microsoft Azure, including data preprocessing, model development, evaluation, and deployment. Worked on hands-on exercises and use cases to gain practical exposure to cloud-based AI/ML workflows and industry best practices.

Tool used (Development tools - H/w, S/w) : Microsoft Azure Machine Learning, Azure AI Services, Python, Jupyter Notebook, Pandas, NumPy, Scikit-learn, Matplotlib.

Objectives of the project : To gain practical knowledge of Data Science and Machine Learning concepts, techniques, and industry applications through structured training and hands-on projects.

Major Learning Outcomes : Major Learning Outcomes:
Hands-on experience with Microsoft Azure Data Science and Machine Learning services.
Training, evaluation, and optimization of Machine Learning models.
Data preprocessing, feature engineering, and model deployment concepts.
Exposure to MLOps workflows and cloud-based AI/ML solutions.
Improved analytical and problem-solving skills through real-world use cases.

Details of Papers/patents : -NA-

Brief Description of working environment, expectations from the company : Worked in a professional corporate environment at PwC, collaborating with mentors and team members while learning Data Science and Machine Learning concepts through Microsoft Azure. The work involved structured training, hands-on exercises, and exposure to industry-standard tools and workflows.

Academic courses relevant to the project : Computer Programming

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Name: KRITI THACKER(2022A3PS1119G)

Student Write-up

PS-II Project Title: Cloud Engineering and Data Analytics

Short Summary of work done during PS-II : Mostly training in above fields and some client work on data modernisation

Tool used (Development tools - H/w, S/w) : S/W

Objectives of the project : Training

Major Learning Outcomes : Consulting

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Pretty flexible overall. 8 days a month work from office otherwise you can work from home.

Academic courses relevant to the project : DSA, CP

Name: SAMARTH SINGH(2022A3PS0458P)

Student Write-up

PS-II Project Title: Data Engineering

Short Summary of work done during PS-II : Using both technical & soft skills to solve real world problems

Tool used (Development tools - H/w, S/w) : Databricks

Objectives of the project : To migrate the data from on prem to cloud

Major Learning Outcomes : Technical skills improved & gained more exposure to corporate

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Collaborative & helpful

Academic courses relevant to the project : DSA, CP

Name: PIYUSH PATRA(2021B5A31961G)

Student Write-up

PS-II Project Title: CEDA

Short Summary of work done during PS-II : During my PS-II internship at PwC as a Cloud Engineering and Data Analytics Intern, I underwent structured training on cloud technologies, Generative AI, and Agentic AI to build a strong foundation in modern AI-driven enterprise solutions. As part of the internship, I worked on developing AI agents for automating Standard Operating Procedure (SOP) document processing. The primary project involved designing and implementing intelligent agents capable of understanding, retrieving, and processing information from SOP documents to assist users with security and operational workflows. I contributed to the development of domain-specific agents, including a **Vulnerability Agent**, which was designed to analyze vulnerability-related SOPs and provide context-aware responses. The project involved prompt engineering, document ingestion, retrieval-augmented generation (RAG), agent orchestration, and integration of large language models to enable efficient knowledge retrieval and task automation. Throughout the internship, I gained hands-on experience with enterprise AI development, cloud-based workflows, collaborative software development practices, and agile methodologies while working closely with mentors and team members.

Tool used (Development tools - H/w, S/w) : Python, AI, GenAI, AI agent

Objectives of the project : GenAI

Major Learning Outcomes : ML, DL, AI, GenAI, Agentic AI

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : During my internship at PwC as a Cloud Engineering and Data Analytics Intern, I worked in a collaborative, professional, and learning-oriented environment. The team encouraged open communication, knowledge sharing, and proactive problem-solving while providing guidance whenever required. I had opportunities to work on cloud technologies, data analytics, and business-oriented solutions, which helped me understand how technical skills are applied to solve real-world challenges.

I expected the company to provide a supportive environment where I could learn from experienced professionals, gain practical exposure to industry tools and workflows, and contribute meaningfully to projects. I also looked forward to receiving constructive feedback, mentorship, and opportunities to enhance both my technical and professional skills. Overall, the internship met these expectations by fostering continuous learning, teamwork, and a strong focus on delivering high-quality solutions.

Academic courses relevant to the project : None

PS-II Station : PWC-CTIO, Gurgaon, Mumbai.

Faculty

Name: Eht E Sham

Student

Name: RUTHIK REDDY CHITTI .(2022A7PS0204H)

Student Write-up

PS-II Project Title: Rosie

Short Summary of work done during PS-II : The work mainly focuses on Worked on the development and integration of 37 MCP (Model Context Protocol tools within the Rosie discovery-agent platform. These tools-implemented as a compiled Rust binary exposed over stdio-cover signal/category/outcome lookups and 30 deterministic compute handlers used to assess portfolio-company signals. Responsibilities included building and wiring the tool layer, ensuring deterministic and auditable compute outputs (with a SQL audit trail), and validating behaviour through unit tests with mocked O Followed strict coding standards (typed Python, 30 lines/function) and passed quality gates (pytest, CodeQL, Veracode) before integration.

Tool used (Development tools - H/w, S/w) : Hardware (H/W) MacBook (macOS) development workstation Standard peripherals (multi-monitor setup for code + Ul testing) Software (S/W) Languages: Python 3, Rust, TypeScript/JavaScript Backend/Agent runtime: Claude Agent SDK, FastMCP (MCP servers)

Objectives of the project : To make a signal driven analysis built on top of Claude SDK for the blackstone portfolio companies

Major Learning Outcomes : CLAUDE SDK,Rust,Python MCP

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The working environment is good ,but thing is timings which will be shifted based on US folks andtheir requirements

Academic courses relevant to the project : Machine learning,Object orientated programming.

Name: SHASHWAT AGRAWAL(2021B1A30811P)

Student Write-up

PS-II Project Title: End-to-End Tax Compliance Automation Pipeline

Short Summary of work done during PS-II : During PS-II, I designed and implemented a Human-in-the-Loop (HITL) framework to transform the tax compliance automation pipeline into an interactive, auditable workflow. I engineered a framework across seven unique checkpoints, embedding 42 risk heuristics and reviewer actions to expose low-confidence decisions to tax preparers. To handle manual overrides safely, I authored four deterministic cascade strategies that keep downstream data consistent without re-incurring expensive LLM compute costs. I also built a natural-language interface allowing reviewers to execute plain-English corrections using an intent classifier with structured fallback thresholds. Finally, I refactored the codebase to centralize state management, establishing a resilient "stop, resume, and undo" loop that tracks approvals and prepares the architecture for future web-console integration.

Tool used (Development tools - H/w, S/w) : Python, Large Language Models (LLMs), Cursor, Claude Code

Objectives of the project : To automate repetitive, manual, and resource-intensive corporate income tax compliance workflows.

Major Learning Outcomes : Learned how to design and build a multi-checkpoint Human-in-the-Loop

framework spanning 7 distinct gates and 42 risk heuristics. Figured out the implementation of complex, deterministic cascade strategies (such as multi-file regeneration, internal recomputations, and index patches) to guarantee absolute data consistency across downstream artifacts whenever a human reviewer overrides a pipeline decision.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment was collaborative, fast-paced, and encouraged interns to take ownership of their work. I was trusted with responsibilities beyond routine implementation, including developing parts of a Human-in-the-Loop (HITL) workflow, preparing demonstrations for stakeholders, documenting internal processes, and interacting with multiple teams to resolve technical and operational issues. Team members were approachable and supportive, and I received regular guidance while still having the autonomy to explore solutions independently. The internship also highlighted the importance of communicating across teams with different technical backgrounds and adapting to evolving project requirements. The company expected interns to be proactive, willing to learn new technologies quickly, and capable of working in a dynamic environment where requirements could change based on stakeholder feedback.

Academic courses relevant to the project : Object Oriented Programming

PS-II Station : PWC-People Tech, Mumbai

Faculty

Name: Sai Kishor Jangiti .

Student

Name: DIVYANSHU VASHISHTH(2022AAPS0258P)

Student Write-up

PS-II Project Title: AI Agents Development for Enterprise Usage I

Short Summary of work done during PS-II : The project lever- ages Large Language Models (LLMs), the LangChain and LangGraph frameworks, and the ReAct (Reasoning and Act- ing) paradigm to build intelligent agents capable of orchestrat- ing multi-step workflows. Key technologies include Retrieval Augmented Generation (RAG) for knowledge-based queries, semantic search using vector embeddings and FAISS, and tool- calling agents for interacting with external systems.

Tool used (Development tools - H/w, S/w) : langchain, langgraph

Objectives of the project : The project lever- ages Large Language Models (LLMs), the LangChain and LangGraph frameworks, and the ReAct (Reasoning and Act- ing) paradigm to build intelligent agents capable of orchestrat- ing multi-step workflows.

Major Learning Outcomes : AI agents

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company :

Academic courses relevant to the project : Computer programming

PS-II Station : Qapita Fintech India Private Limited - Equity Management, Hyderabad

Faculty

Name: Uma Nagarajan .

Student

Name: ATHARV BARAI(2022AAPS0333G)

Student Write-up

PS-II Project Title: Agentic Document Processing & Execution

Short Summary of work done during PS-II : During my six-month internship at Qapita Fintech, I developed an agentic AI-powered document processing pipeline that automates the extraction, validation, and execution of business rules from legal documents using LLMs. I built components for document parsing, rule identification, and agentic information extraction, integrated rule execution with Zen Engine, and helped migrate the solution into a scalable web application using FastAPI, LangGraph, PostgreSQL, Docker, and React. I also contributed to a WhatsApp integration proof of concept using Twilio and Chatwoot and added AWS Bedrock model support for another document processing application.

Tool used (Development tools - H/w, S/w) : Python, FastAPI, React, PostgreSQL, Docker, LangGraph, AWS Bedrock, Twilio, Chatwoot.

Objectives of the project : Use Agentic Techniques to process a document and extract data from it and make it executable

Major Learning Outcomes : Agentic Workflows, Software Engineering

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment was professional, collaborative, and supportive. Team members were approachable and willing to provide guidance whenever needed, which made it easy to learn and contribute effectively. The work culture was generally relaxed and flexible, although project deadlines and deliverables could occasionally make the workload more intensive. The company expected interns to take ownership of their tasks, learn quickly, communicate progress regularly, and actively contribute to ongoing projects. Overall, the internship provided a good balance between independent work, mentorship, and hands-on industry experience.

Academic courses relevant to the project : OOP, Artificial Intelligence, DBMS, FoDSA

PS-II Station : QUALCOMM - , Hyderabad

Faculty

Name: Madhuri Bayya .

Student

Name: SANDEEP KUMAR MAYA NAGARAJAN(2024H1400080H)

Student Write-up

PS-II Project Title: Design and Enhancement of automation tools for power analysis and suspend validation

Short Summary of work done during PS-II : Objective of the Project (One Line) To enhance and automate engineering workflows for power analysis and suspend-debug investigations by improving the functionality, reliability, and usability of the WattWise and PowerPulse frameworks. Summary of Work Done (<250 Words) During the internship, enhancements were made to two internal engineering tools, WattWise and PowerPulse, with the goal of reducing manual effort involved in first-level investigations and improving overall engineering productivity. The work focused on strengthening automation, improving analysis capabilities, and enhancing report generation to support faster and more consistent investigations. For WattWise, improvements were introduced to increase parser robustness, support additional input templates and dataset formats, and strengthen subsystem-specific analyses such as APC and DDR evaluation. Enhancements were also made to comparison workflows and automated report generation, enabling engineers to identify regressions and behavioral changes more efficiently while reducing the need for manual data inspection. For PowerPulse, the work concentrated on automating suspend-debug workflows, including state transition execution, log collection, validation, and report generation. Additional validation checks and subsystem-specific analyses were incorporated to improve debugging coverage. Parsing mechanisms were enhanced to handle diverse log formats reliably, while richer system-level visibility was provided through the integration of clocks, regulators, and other low-power infrastructure information into automated reports. The combined improvements resulted in more reliable and scalable workflows, reduced turnaround time for investigations, increased consistency across analyses, and enabled engineers to focus more on root-cause analysis and problem resolution rather

than repetitive data processing and report preparation tasks.

Tool used (Development tools - H/w, S/w) : Python

Objectives of the project : To enhance and automate engineering workflows for power analysis and suspend-debug investigations by improving the functionality, reliability, and usability of the WattWise and PowerPulse frameworks

Major Learning Outcomes : Python, Automation, Power Analysis and Optmization

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Good environment, however too much expectations from a candidate.

Academic courses relevant to the project : Nil

Name: SHRISTI BIYANI(2024H1230162P)

Student Write-up

PS-II Project Title: Low power design and verification

Short Summary of work done during PS-II : Worked on verifying power design and upf. Designing and verifying an automation scripting for complete process of generating upf and it's verification

Tool used (Development tools - H/w, S/w) : Python, linux

Objectives of the project : Power intent design, UPF

Major Learning Outcomes : Vlsi, low power design, upf

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Good experience

Academic courses relevant to the project : NA

Name: MAMIDIPALLI LAKSHMI SRI NISCHAY(2024H1230308P)

Student Write-up

PS-II Project Title: Spec based functional coverage for network on chip

Short Summary of work done during PS-II : Initially I started with AI tasks like building a RAG, then worked on prompt based approach to do a deterministic task then worked on a ongoing project for a NOC and implemented few tests on NOC design and completed POC for functional coverage for spec based verification which will decrease the coverage holes in DV.

Tool used (Development tools - H/w, S/w) : LLM models, python, system verilog, uvm, verdi, VCS, vim editor, linux shell

Objectives of the project : To execute functional coverage for a NOC and automate the process for different NOCs

Major Learning Outcomes : Learnt flow of test bench architecture of NOC and understood existing coverage model and implemented a New coverage model which improves quality of the verification and qualifies a RTL design as good.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : working environment is very good. My manager guided me through the internship and planned the activities properly throughout the internship. Expectations are like showing enthusiasm for learning new things and asking more questions if we don't know about any particular topic.

Academic courses relevant to the project : advanced vlsi architecture, Vlsi test and testability(this course should be opted in 2nd sem).

Name: KASARLA RAJIV REDDY(2024H1030080P)

Student Write-up

PS-II Project Title: AI-ASSISTED CAMERA SOFTWARE DEBUGGING: DEVELOPMENT OF AUTOMATED FAULT ANALYSIS FRAMEWORKS AND AI TOOLING

Short Summary of work done during PS-II : This internship at Qualcomm focused on leveraging Artificial Intelligence to optimize software debugging within the Camera Software Domain. The primary goal was to streamline troubleshooting workflows across the Android Camera Framework, Hardware Abstraction Layer (HAL), and Image Signal Processor (ISP) architecture. The work progressed through three major phases. The initial phase involved architecture ramp-up, environment setup, and mastering log collection and visualization infrastructure. The second phase focused on creating a step-by-step reasoning framework using Large Language Models (LLMs) integrated into an internal AI Debugging Platform. The final phase involved full-scale AI tooling integration, which included building a Model Context Protocol (MCP) server, establishing a Retrieval-Augmented Generation (RAG) system for automated source code indexing, and deploying custom debugging workflows. These implementations successfully automated key analytical processes, enhanced cross-team collaboration via OpenCode integration, and effectively mitigated challenges related to LLM context window constraints.

Tool used (Development tools - H/w, S/w) : target device, Android Camera Framework, Camera HAL, ISP Pipeline, AI Debugging, MCP, RAG, OpenCode, Git, Gerrit, Log Analysis

Objectives of the project : implement and develop ai tools for existing eco system

Major Learning Outcomes : During my internship, I gained practical, hands-on experience working with Android Camera HAL components and ISP processing pipelines. Beyond the technical skills, I received significant industry exposure by navigating a massive enterprise codebase and collaborating across teams. I also learned to strictly adhere to industry standards for software development, debugging protocols, and version control, preparing me for real-world engineering challenges.

Details of Papers/patents : N.A

Brief Description of working environment, expectations from the company : The working environment at Qualcomm is highly collaborative, technically rigorous, and fast-paced. As part of the Camera Software team, the environment demands cross-functional interaction with various hardware and software architecture teams. The company sets high expectations for interns, requiring deep analytical thinking, rapid adaptation to complex proprietary architectures, and high ownership of deliverables. Autonomy is highly encouraged, especially when researching and integrating cutting-edge technologies like LLMs and MCP servers into legacy debugging pipelines.

Academic courses relevant to the project : Operating Systems
Computer Architecture
Data Structures and Algorithms
Object-Oriented Programming (C++/Java)
Introduction to Artificial Intelligence / Machine Learning

Name: MODAK AKSHAY RAJENDRA(2024H1230171P)

Student Write-up

PS-II Project Title: AI driven automation and SoC design verification fundamentals

Short Summary of work done during PS-II : The internship started off with getting familiar with the SoC design verification flow. To fully understand this flow one needs to be familiar with C as well as design verification fundamentals so some time was spent on learning these concepts. Then I learned about applying AI driven and scripting based automation. Finally we applied automation to some of the debugs which are commonly done for various teams. Some of these debugs involve detecting common faults such as hung transactions in a bus protocol tracker or finding active signals in a large FSDB.

Tool used (Development tools - H/w, S/w) : Synopsys Verdi, python, Langchain, Linux, C, GNU make

Objectives of the project : Apply AI driven automation to the SoC design verification process to improve efficiency in the debugging process.

Major Learning Outcomes : got better at python scripting, Improved understanding of C and build systems, learned about the SoC design verification flow, learned about AI driven automation.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The work environment has been excellent. Everyone is very approachable which has helped me to learn many new concepts. The work that I have been given has been interesting.

Academic courses relevant to the project : Embedded system design
CAD for IC design
VLSI design
VLSI architecture

Name: GOURAV KHANDELWAL(2024H1230172P)

Student Write-up

PS-II Project Title: DFT

Short Summary of work done during PS-II : Done many process using AI, Automate those processes and gain different different domain Knowledge. Learnt different protocols with tracker comparisons, Learnt BIST process.

Tool used (Development tools - H/w, S/w) : Linux, VCS

Objectives of the project : Use BIST for functional check

Major Learning Outcomes : DFT, Protocols, AI

Details of Papers/patents : BIST process, Procotols

Brief Description of working environment, expectations from the company : Working

environment in Qualcomm is really good. No extra pressure, Food is also good.

Academic courses relevant to the project : Verilog, Digital Desig system.

Name: KEERTHAN SHRIRAM KARVAJE(2021B5A31258P)

Student Write-up

PS-II Project Title: End-to-End Physical Design Implementation and Automation of Digital Blocks

Short Summary of work done during PS-II : Successfully performed the complete end-to-end Physical Implementation for the given block using Cadence Innovus. Developed a reusable Tcl automation script to verify that various tricky paramte checks were being met. Executed final Signoff checks and implemented ECOs based on the results to ensure a clean handoff.

Tool used (Development tools - H/w, S/w) : Cadence Innovus

Objectives of the project : - To gain a practical understanding of the complete PD flow on industrial designs. - To perform block-level floorplanning and P&R, analyzing and optimizing for key metrics using Cadence Innovus. - To develop automation scripts (Tcl) to improve design efficiency. - To execute final signoff checks to ensure design integrity and readiness for handoff.

Major Learning Outcomes : End to End VLSI Design Flow.
Major Signoff Checks such as:
- Static Timing Analysis.
- Logical Equivalence Check.
- Physical Verification.
- Low power checks.

Scripting in Perl and Tcl.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Others at the workplace were helpful and kind. They expect good work ethics.

Academic courses relevant to the project : N/A

Name: VIDYARENU SWAMY(2022AAPS1584P)

Student Write-up

PS-II Project Title: Analysis and Optimization of Waiver Reusability in SoC Low-Power Intent Verification

Short Summary of work done during PS-II : This work focuses on analysing the current RTL waiver translation process from IP blocks and subsystems to SoC-level design flows. It investigates the violations and tool flows to identify the key issues affecting waiver consistency and reusability. A comparative analysis was done with the current and ideal processes to highlight the issues being faced. The results present opportunities for improving waiver definition practices and reducing debugging effort. Based on the violation reduction percentage across a few chips, this study recommends the optimised waiver application methodology for more efficient and robust SoC low-power team work flows.

Tool used (Development tools - H/w, S/w) : In house tools, Linux

Objectives of the project : To achieve maximum reusability of the sub system and IP waivers at the SoC level, in order to improve efficiency and reduce time taken by the team for debugging process

Major Learning Outcomes : Understand the translation of waivers/errors and warnings to the SoC level and how to optimise the debugging process. Also learnt about UPF, power design techniques, power management cells, and verification

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Good opportunities for learning, great exposure. Need to adhere to deadlines otherwise friendly work environment

Academic courses relevant to the project : Advd. In ECE, mostly communication related concepts

so personally felt the work here to be different than my courses

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Name: ABHINAV PURBEY(2022AAPS1187G)

Student Write-up

PS-II Project Title: EDK2 based boot optimization

Short Summary of work done during PS-II : Had to reduce boot time for Automotic SOCs using various optimiation techniques

Tool used (Development tools - H/w, S/w) : C/C++/JTAG

Objectives of the project : Reduce Boot time

Major Learning Outcomes : Optimization of codebase

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Good working culture, good food, good team and employees.

Academic courses relevant to the project : MUP

Name: MAHIMA PRAGNYA BHATTARAM .(2022A7PS2018H)

Student Write-up

PS-II Project Title: Migrating FastRPC to Accel Driver Framework

Short Summary of work done during PS-II : Working on shifting Qualcomm's FastRPC from one driver to another, working and testing on qualcomm's latest and unreleased chipsets.

Tool used (Development tools - H/w, S/w) : Putty, Git, Docker, Latest Qualcomm SoCs, etc.

Objectives of the project : Migrating FastRPC to Accel Driver, sub tasks related to this

Major Learning Outcomes : Kernel development, Development flow at workplaces

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Very helpful team

Academic courses relevant to the project : Operating Systems, Computer Programming

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Name: SAGAR PATIL(2024H1230107H)

Student Write-up

PS-II Project Title: CPU Physical Design

Short Summary of work done during PS-II : Worked on key physical design steps like floorplanning, placement, CTS and routing. Got to know about UPF and some other terminologies related to physical design. Got exposure to cadence Innovus tool.

Tool used (Development tools - H/w, S/w) : Innovus

Objectives of the project : To translate a logical circuit (netlist) into a physical, manufacturable layout on a silicon wafer.

Major Learning Outcomes : Physical design steps, Innovus

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : To work on a block of CPU for physical design steps starting from floorplanning to routing.

Academic courses relevant to the project : CAD for IC Design

Name: ANIKET SOHAN BISOI(2024H1400063P)

Student Write-up

PS-II Project Title: Pre and Post Silicon Validation

Short Summary of work done during PS-II : Device driver development, pre and post silicon validation

Tool used (Development tools - H/w, S/w) : S/w - trace32 lauterbach, c programming

Objectives of the project : Consumer electronics

Major Learning Outcomes : Driver development and VLSI

Details of Papers/patents : Not Applicable

Brief Description of working environment, expectations from the company : Great scope for learning, fast faced environement

Academic courses relevant to the project : Embedded Systems Design, Software for Embedded Systems, VLSI Design

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Name: ROHIT N(2024H1230064G)

Student Write-up

PS-II Project Title: DFT design

Short Summary of work done during PS-II : During my Practice School at Qualcomm , I worked with the Automotive BIST Verification team and gained practical exposure to Design-for-Testability methodologies used in automotive SoCs. The work focused on understanding and verifying In-System BIST features that enable periodic health monitoring and fault detection during the product's operational life. I studied the overall DFT architecture, including test modes, BIST controllers, memory and logic test concepts, scan-based test infrastructure, and the interaction between functional and test logic. I was involved in understanding verification flows for BIST-related RTL, including testbench structure, stimulus generation, expected-result checking, and debugging of simulation failures. I also learned how different operating conditions, reset sequences, clocking scenarios, and configuration settings can affect BIST execution. The PS provided exposure to automotive reliability expectations, fault coverage concepts, and the importance of robust verification for safety-oriented semiconductor products. Overall, the experience strengthened my foundation in DFT, RTL verification, SystemVerilog-based simulation, and SoC-level test architecture.

Tool used (Development tools - H/w, S/w) : Linux, tetramax, arpg tools

Objectives of the project : To make design easily testable

Major Learning Outcomes : Learnt about scan architectures and compression technology

Details of Papers/patents : Na

Brief Description of working environment, expectations from the company : The working environment at Qualcomm was professional, collaborative, and learning-oriented. The team encouraged asking technical questions, understanding the complete context before working on a task, and communicating progress clearly during regular discussions. Team members were supportive in explaining DFT concepts, verification flows, project-specific methodologies, and debugging approaches.

The company expected interns to be punctual, responsible, and proactive in learning. Key expectations included completing assigned tasks within the planned timeline, maintaining quality in simulations and documentation, following coding and verification guidelines, and reporting issues clearly with relevant observations. Interns were also expected to take ownership of their work, participate actively in technical discussions, seek clarification whenever required, and maintain confidentiality while working with internal designs and tools.

Academic courses relevant to the project : Reconfigurable computing, vlsi design

Name: MONARK BOKADIA(2022A3PS1216P)

Student Write-up

PS-II Project Title: Custom CPU block physical design implementation

Short Summary of work done during PS-II : During my internship, I worked on the physical design implementation of a custom CPU sub-block using Cadence Innovus. I developed and optimized the floorplan through boundary definition, macro placement, and pin assignment to improve routing and timing performance. I studied industry-standard signoff methodologies, including Static Timing Analysis (STA), Physical Verification (DRC/LVS), and Power Delivery Network (PDN) analysis. I performed place-and-route iterations to optimize cell density and achieve timing closure. Additionally, I analyzed PDN effective resistance (Reff) and developed TCL scripts to automate the placement of timing-critical instances into low-Reff regions. This optimization reduced IR drop, improved Vmin, and enhanced the overall Power, Performance, and Area (PPA) of the design.

Tool used (Development tools - H/w, S/w) : Cadence Innovus, TCL, Linux, GVim

Objectives of the project : To learn about the Physical Design flow and achieve the timing closure for a block

Major Learning Outcomes : I got to learn about the Physical Design flow along with STA signoff methodology and placement optimization

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The internship was carried out in a collaborative and technically driven work environment within the CPU Physical Design team. The work involved regular interactions with experienced engineers, guidance from mentors, and exposure to industry-standard EDA tools and design methodologies. The environment encouraged continuous learning through technical discussions, design reviews, and hands-on implementation tasks. Emphasis was placed on problem-solving, automation, design optimization, and adherence to industry signoff standards, providing valuable practical experience in advanced VLSI physical design.

Academic courses relevant to the project : Electrical Science, Electronic Devices, Digital Design, ADVD, MuE

Name: R V ARUN(2024H1230173P)

Student Write-up

PS-II Project Title: Network-on-chip in SoCs

Short Summary of work done during PS-II : Learn about on-chip protocols and NoC architectures in detail. Assisted in design work and deliverables in the NoC front end flow.

Tool used (Development tools - H/w, S/w) : Company internal tools

Objectives of the project : Help design and deliver a NoC

Major Learning Outcomes : On-chip protocols, NoC architecture

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Main expectation was to learn protocols and understand them in detail. The goal was to assist in design work and understanding the flow, deliverables and teams involved in front end design.

Academic courses relevant to the project : Advanced VLSI architecture, digital design.

Name: CHAMA SAI SREENIVASA REDDY(2024H1400123P)

Student Write-up

PS-II Project Title: SYSTEM-LEVEL TESTCASE VALIDATION AND AUTOMATION SUPPORT IN

POST-SILICON VALIDATION ENGINEERING

Short Summary of work done during PS-II : During the Practice School-II internship, I worked in the post-silicon validation domain, focusing on system-level testcase validation and automation support activities. The initial phase involved understanding the semiconductor validation environment, hardware setup, firmware workflows, debugging infrastructure, and automation frameworks used within the organization. The primary work carried out included executing system-level testcases on actual hardware platforms, monitoring execution behaviour, analyzing execution logs, and verifying expected functionality. Testcases were validated to ensure correct operation, stability, and repeatability before being considered for integration into automation frameworks. Debugging activities involved examining firmware logs, register information, and execution traces to identify and analyze failures or abnormal behaviour. In addition, I gained exposure to automation workflows used for regression testing and long-run support projects. This included understanding testcase automation requirements, log collection mechanisms, and automation readiness verification procedures. The work provided practical experience in semiconductor validation methodologies, debugging techniques, hardware-software interaction analysis, and execution log analysis. Overall, the internship has helped me develop a better understanding of post-silicon validation processes and industry-standard validation practices while contributing to testcase validation and automation support activities within a real-world semiconductor development environment.

Tool used (Development tools - H/w, S/w) : python , trace 32

Objectives of the project : To provide the automation support to automotive projects in qualcomm

Major Learning Outcomes : During the Practice School-II internship, I gained practical exposure to post-silicon validation workflows and semiconductor product validation methodologies. I developed an understanding of how system-level testcases are executed and validated on actual hardware platforms before integration into automation frameworks.

Key learning outcomes include understanding semiconductor validation environments, firmware and hardware interactions, execution log analysis, debugging methodologies, and regression testing workflows. I learned how to analyze testcase behaviour, verify expected functionality, identify abnormal system behaviour, and support failure analysis using logs and debugging information.

The internship also provided exposure to automation frameworks used for testcase execution, log collection, reporting, and regression validation. I gained knowledge of automation readiness verification, testcase stability assessment, and the importance of repeatability in validation environments.

Additionally, I improved my problem-solving, analytical, and debugging skills through hands-on

experience with real-world semiconductor validation activities. The internship enhanced my understanding of industry-standard development practices, teamwork, technical communication, and structured engineering workflows used in semiconductor product development and validation.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Qualcomm India Private Limited is highly professional, collaborative, and technology-driven. The organization provides exposure to advanced semiconductor product development processes, particularly in post-silicon validation, debugging, and automation workflows. Team members work closely across different domains including hardware, firmware, validation, and automation engineering, enabling effective knowledge sharing and problem solving.

During the internship, I have been working in a validation environment involving execution of system-level testcases on actual hardware platforms, analysis of execution logs, debugging support, and automation readiness verification. The work requires attention to detail, analytical thinking, and a systematic approach to identifying and resolving issues.

My expectations from the company include gaining deeper practical understanding of semiconductor validation methodologies, hardware-software interaction, debugging techniques, and automation frameworks used in large-scale semiconductor projects. I also expect to enhance my technical skills by working with experienced engineers, understanding industry-standard workflows, and contributing to real-world validation activities. The internship provides an excellent opportunity to bridge the gap between academic knowledge and industrial practices while developing skills relevant to semiconductor product development and validation engineering.

Academic courses relevant to the project : The academic courses that were relevant to the project include:

* Digital Design and Logic Circuits
* Microprocessors and Microcontrollers
* Computer Architecture
* Embedded Systems
* VLSI Design
* Digital System Design
* Hardware Description Languages

Name: MADHAV KRISHNA(2022A3PS0508P)

Student Write-up

PS-II Project Title: Automation in DFT

Short Summary of work done during PS-II : During my Practice School-II at Qualcomm, I worked in the Design for Testability (DFT) team, focusing on the automation of RTL Logic Design Rule Checking (RLDRC) and Digital Logic Design Rule Checking (DLDRC) workflows. The project involved understanding the complete DFT flow, including scan-based testing, controllability, observability, ATPG, MBIST, and pre- and post-synthesis DFT validation. A major part of my work involved analyzing existing manual RLDRC and DLDRC processes and identifying bottlenecks that consumed significant engineering effort. To address these challenges, I developed automation scripts for generating filelists, creating SGDC constraint files, orchestrating DRC runs, and summarizing tool outputs. The automation framework was designed to be modular, configurable, fault-tolerant, and reusable across multiple projects. I also worked on validating the generated outputs against existing manual flows, debugging issues, and enhancing the framework with advanced capabilities such as state resumption, project-independent execution, and automated metadata extraction. Through this work, I gained practical exposure to industrial VLSI design methodologies, EDA tool flows, and software development practices used in large-scale semiconductor projects. The project successfully reduced manual effort, improved execution efficiency, and demonstrated the benefits of automation in DFT verification environments.

Tool used (Development tools - H/w, S/w) : Synopsys SpyGlass, Verdi Debugger, Python, Shell, Scripting

Objectives of the project : Do scripting in DFT and try to automate the flow

Major Learning Outcomes : Beyond the technical aspects of DFT and automation, I developed important professional skills during the internship. Working on time-critical tasks taught me how to prioritize activities effectively, manage deadlines, and deliver results within constrained schedules. I learned to handle challenging situations by systematically analyzing problems, breaking them into smaller tasks, and identifying practical solutions. The iterative nature of debugging and automation development improved my patience, adaptability, and problem-solving abilities. Additionally, collaborating with team members and incorporating feedback helped strengthen my communication

skills and ability to work efficiently in a professional engineering environment.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Qualcomm provided a highly professional and collaborative working environment that encouraged continuous learning and technical growth. The DFT team maintained an open culture where discussions, code reviews, and technical guidance were readily available. Regular interactions with mentors and team members helped in understanding complex VLSI concepts, industrial design flows, and best engineering practices.

The work environment emphasized ownership, problem-solving, and timely delivery of tasks. Engineers were encouraged to independently analyze problems, propose solutions, and validate their implementations while maintaining high standards of quality. The project exposed me to real-world semiconductor design challenges, large-scale codebases, and industry-standard EDA tools.

The expectations from interns included learning the assigned domain quickly, contributing meaningfully to ongoing projects, communicating progress effectively, and adapting to changing requirements. The experience strengthened my technical knowledge, improved my ability to work under deadlines, and provided valuable insight into how large semiconductor companies develop and verify complex System-on-Chip designs.

Academic courses relevant to the project : Digital Design

Name: SIDDHARTH JAIN(2022AAPS0253P)

Student Write-up

PS-II Project Title: An Advanced Retrieval-Augmented Generation System for Technical Documentation

Short Summary of work done during PS-II : Designed and implemented an end-to-end RAG system for GPU technical documentation at Qualcomm. Built PDF and HTML ingestion pipelines with symbol detection and hybrid indexing (BM25, SPLADE, ChromaDB). Developed a LangGraph-based registry-first query pipeline with iterative reformulation, query contextualization, and citation generation. Deployed FastAPI backend with LDAP authentication, RBAC, session management, and MCP

integration for AI agents. System supports 10 knowledge bases covering GPU programming guides, OpenCL, Vulkan, OpenGL ES, and errata. Also developed personal-productivity PowerShell scripts for ANGLE build/deployment, graphics frame capture and replay on Android, and real-time logcat monitoring.

Tool used (Development tools - H/w, S/w) : S/w: Python, FastAPI, LangGraph, ChromaDB, BM25, SPLADE, Vite (JavaScript), LDAP, MCP (Model Context Protocol), ADB, ANGLE, gclient/gn/autoninja (Chromium build toolchain), PowerShell, SSH, Git; H/w: Android test devices, Linux build server

Objectives of the project : Design and implement robust ingestion pipelines for technical documentation; build an accurate hybrid retrieval system combining symbol-aware lookup with semantic vector search and LLM-based reasoning; deploy through authenticated web interface with RBAC; expose knowledge base to AI agents via MCP; explore ANGLE graphics library build process and debugging workflows

Major Learning Outcomes : Designed and implemented a complete end-to-end RAG system for technical documentation; learned hybrid retrieval combining BM25, SPLADE sparse indexing, and ChromaDB vector search; built FastAPI backend with LDAP authentication and role-based access control; implemented LangGraph-based query pipeline with iterative reformulation; gained practical experience with ANGLE build toolchain, graphics frame capture and replay, and GPU driver log analysis via ADB logcat

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Qualcomm India Private Limited is a leading semiconductor and telecommunications company. The internship was in the GPU Software team in Hyderabad, working on AI-assisted documentation tools and graphics debugging. The environment was collaborative and technically rigorous with access to internal documentation, build infrastructure, and Android test devices. The team provided strong mentorship through regular code reviews and technical discussions. Expectations included delivering production-quality software, following engineering best practices, and contributing to real internal tools used by GPU engineers. The work culture emphasized ownership, continuous learning, and cross-team collaboration.

Academic courses relevant to the project : Natural Language Processing, Database Systems, Software Engineering, Computer Networks, Operating Systems, Information Retrieval, Computer Graphics

Name: ROHAN YOGESH KHARE(2024H1230112G)

Student Write-up

PS-II Project Title: Design verification of GPU subsystem

Short Summary of work done during PS-II : Core responsibilities include developing and maintaining verification testbenches, executing regressions, analyzing simulation logs, and tracking functional coverage using industry-standard EDA tools. Additionally, I leverage enterprise server infrastructure to run compute-heavy agentic AI workflows and translate complex technical concepts into functional hardware models.

Tool used (Development tools - H/w, S/w) : Qualcomm internal tools, SV, UVM

Objectives of the project : UVM, System verilog understanding, Testbench modification.

Major Learning Outcomes : UVM, System verilog understanding, Testbench modification.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Qualcomm expects high technical proficiency and strong ownership of pre-silicon validation methodologies. Building on your successful transition from an intern to a full-time Engineer, you are expected to leverage your expertise in UVM and SystemVerilog to ensure the reliability of complex graphics hardware, specifically GPU cache subsystems

Academic courses relevant to the project : Computer Architecture, VLSI Architecture, Reconfigurable computing

Name: HARSH RAI(2022AAPS0431G)

Student Write-up

PS-II Project Title: Compress Offload via Pipewire

Short Summary of work done during PS-II : Working on Embedded Linux Devices and writing Userspace side code to enable compressed offload support via DSP.

Tool used (Development tools - H/w, S/w) : C programming, bitbake, devtool, Github, Gerrit

Objectives of the project : Enable compressed audio playback via DSP offload

Major Learning Outcomes : Insights into Embedded Linux Userspace

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Manageable workload, can be hectic at times but can also be relaxed at other times. Office environment is positive.

Academic courses relevant to the project : Operating Systems, Computer Programming

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PS-II Station : Qube Research and Technology India LLP, Mumbai

Faculty

Name: Arindam Roy .

Student

Name: ANJANEYA BAJAJ(2022A7PS0164P)

Student Write-up

PS-II Project Title: Automated Exchange Notification Monitoring and Hybrid Retrieval Systems

Short Summary of work done during PS-II : This project automates exchange notification monitoring at Qube Research and Technolo- gies using a cloud-based data pipeline that fil- ters out duplicate alerts. It features a multi- agent AI search system, allowing users to eas- ily find accurate information and receive real- time updates directly through Streamlit and Slack.

Tool used (Development tools - H/w, S/w) : Python, AWS, Postgres/ PgAdmin, Coder, Podman

Objectives of the project : This project automates exchange notification monitoring at Qube Research and Technolo- gies using a cloud-based data pipeline that fil- ters out duplicate alerts. It features a multi- agent AI search system, allowing users to eas- ily find accurate information and receive real- time updates directly through Streamlit and Slack.

Major Learning Outcomes : AWS, Python programming, web scraping, Postgres internals

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Good environment, learnt alot of new things - encouraged to ask questions and take initiative.

Academic courses relevant to the project : Intro to LLMs, Cloud Computing, Data Structure and Algorithms, Database Management Systems

PS-II Station : Qure.ai Technologies Pvt. Ltd, Mumbai

Faculty

Name: Swarna Chaudhary .

Student

Name: ASHIT JAIN(2022A7PS0606G)

Student Write-up

PS-II Project Title: Designing and architecting software at qure

Short Summary of work done during PS-II : Developed an asynchronous task execution python package on top of celery

Tool used (Development tools - H/w, S/w) : python, django, celery

Objectives of the project : Develop asynchronous task execution support for Qure app

Major Learning Outcomes : code review, clean code practices, architecture,

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Everyone's supportive, company expects employees to take ownership of their work

Academic courses relevant to the project : DBMS, cn, os

PS-II Station : Qure.ai Technologies Pvt. Ltd. - Full Stack Engineer (AI Domain), Bengaluru

Faculty

Name: Swarna Chaudhary .

Student

Name: VIHARI BHUPATHI .(2022AAPS0399H)

Student Write-up

PS-II Project Title: -

Short Summary of work done during PS-II : During my six-month internship at Qure.ai, I worked as part of the backend engineering team on projects aimed at improving the development workflow and backend infrastructure. My work involved automating parts of the software development process, contributing to improvements in the build system, and assisting in the optimization of backend applications. I also worked on analyzing application startup performance and evaluating different approaches to improve development efficiency. In addition, I gained exposure to containerization, version control, continuous integration, and cloud-based development practices. Throughout the internship, I collaborated with experienced engineers, participated in code reviews, and learned how large-scale software systems are developed and maintained in an industry environment. Overall, the internship provided valuable hands-on experience in backend engineering.

Tool used (Development tools - H/w, S/w) : Python, Django, Docker, Bazel, Git, GitHub, GitHub Actions, PostgreSQL, Linux, AWS, CI/CD tools

Objectives of the project : To contribute to improving the company's backend development workflow by automating routine processes, optimizing development tools, and enhancing the efficiency and reliability of the software development environment.

Major Learning Outcomes : I gained practical experience working in a professional software engineering environment and developed an understanding of how large-scale backend systems are designed, tested, and maintained. I improved my knowledge of development workflows, build systems, and containerization.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment was friendly, collaborative. Team members were approachable and always willing to help. The company expected interns to work on projects that could improve existing products or increase efficiency.

Academic courses relevant to the project : NA

PS-II Station : Rahi Platform Technologies, Pune

Faculty

Name: Ankur Pachauri

Student

Name: SAUMITRA(2021B2A83019G)

Student Write-up

PS-II Project Title: ENTERPRISE FINTECH BACKEND DEVELOPMENT: LOS MODULE APIs, AI-POWERED KYC OCR PIPELINE, AND MULTI-LENDER CREDIT UNDERWRITING PLATFORM

Short Summary of work done during PS-II : The internship at Rahi Platform Technologies, Pune, spanned six months and involved contributions across three streams of work. The first stream was backend engineering within the Loan Origination System. The midsem phase focused on implementing the PUT API for the ApplicationActivityDetails module, covering the full hexagonal layer stack from controller through manager, adapter, repository, and mapper, with a fetch-then-modify update pattern to prevent silent data loss. The post-midsem phase expanded to the Value Added Services Insurance module — designed and built from scratch — delivering five CRUD endpoints for VAS records and five Beneficiary Management endpoints with insurance-type-specific cardinality enforcement, premium computation from a configuration grid, and fee module integration to carry opted-in products into disbursement. A PAN Verification Service was also implemented using a factory-based provider abstraction for KYC identity validation. Supplementary contributions included bug-fixing across four defect categories, unit test authoring using JUnit 5 and Mockito, and routine codebase maintenance. The second stream was a standalone AI-powered OCR pipeline built in Java. The pipeline combined OpenCV-based image preprocessing, Tesseract LSTM OCR with a dual-strategy quality selection mechanism, and AWS Bedrock Claude Haiku with document-specific prompt engineering for intelligent structured field extraction. PAN format validation via regex and Aadhaar digit masking were implemented for compliance. The system supports five Indian identity document types: PAN Card, Aadhaar, Passport, Driving Licence, and Voter ID. The third stream was the design and architecture of an AI-Assisted Multi-Lender Credit Underwriting Platform. The design introduced a Canonical Customer Profile pattern to enable PII-safe evaluation of CRIF bureau reports,

a deterministic rule engine and obligation engine for policy compliance and NMO computation, MongoDB-backed multi-lender policy versioning, and an AI-powered underwriting summary generator with a conversational assistant using OpenAI tool calling.

Tool used (Development tools - H/w, S/w) : Tools Used for Development Languages Java 17, Python 3, JavaScript / TypeScript Frameworks & Libraries Spring Boot, Spring Data JPA, Spring MVC, FastAPI, React, Vite AI & Cloud Services AWS Bedrock (Claude Haiku 4.5), AWS SDK for Java, OpenAI API (GPT-

Objectives of the project : To develop and deploy backend APIs for a Loan Origination System following hexagonal architecture, build an AI-powered OCR pipeline for automated KYC identity document extraction, and design a multi-lender credit underwriting platform that combines deterministic policy evaluation with AI-generated summaries — collectively streamlining loan origination, document processing, and credit decisioning workflows in production fintech environments.

Major Learning Outcomes : Here are your Major Learning Outcomes, written clearly and specifically from your actual work:

Major Learning Outcomes

Gained practical understanding of hexagonal (ports and adapters) architecture in a production Java Spring Boot codebase — separating domain logic from infrastructure through controller, manager, adapter, repository, and mapper layers with independent testability at each boundary.

Developed proficiency in REST API design and implementation for financial systems — including safe fetch-then-modify update patterns, DTO-domain-entity transformation pipelines, and Liquibase-managed schema evolution coordinated with entity class changes.

Built hands-on experience with enterprise-grade feature development from scratch — designing domain models, writing Liquibase changesets, implementing cardinality-enforced business rules at the service layer, and integrating a new module with existing fee and disbursement infrastructure (VAS Insurance Module).

Learned factory-based third-party provider abstraction for KYC integrations — enabling provider-agnostic verification flows where switching or adding a provider requires only a new implementation class and a configuration change (PAN Verification Service).

Acquired practical skills in AI-assisted document processing — combining OpenCV preprocessing techniques (CLAHE, morphological operations, bilateral filtering), Tesseract LSTM OCR with dual-strategy quality selection, and AWS Bedrock Claude Haiku with document-specific prompt engineering for structured field extraction.

Understood the importance of prompt engineering for structured AI output — designing document-

type-specific prompts with field format constraints, OCR error correction hints, and strict JSON output instructions to maximise extraction accuracy from noisy text.

Developed awareness of PII protection as an architectural concern — enforcing data boundaries through a Canonical Customer Profile pattern that strips sensitive fields before any AI model invocation, and implementing Aadhaar masking and PAN format validation for compliance.

Gained experience in multi-lender policy management — designing configuration-driven systems where business rules are stored as structured data rather than hardcoded logic, enabling lender onboarding and policy updates without code changes.

Strengthened production debugging and testing discipline — systematic layer-by-layer request tracing, structured logging at adapter boundaries for identifier propagation issues, and writing JUnit 5 and Mockito unit tests that encode expected behaviour rather than merely exercising code paths.

Developed an appreciation for the full software delivery lifecycle in a professional engineering environment — working within sprint cycles, submitting code for review, resolving defect tickets, maintaining codebase health through dependency upgrades and dead code removal, and treating schema and code changes as jointly versioned artefacts.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working Environment and Company Expectations

Rahi Platform Technologies is a fintech product company based in Pune that builds and maintains a Loan Origination System and Loan Management System for banks and non-banking financial companies. The engineering team follows an agile sprint-based workflow with regular code reviews, pull request processes, and defect tracking through sprint cycles.

The working environment was collaborative and production-oriented. As an intern, I was embedded within the backend engineering team and treated as a contributing engineer rather than an observer. Work was assigned through sprint tasks and defect tickets, and all code submitted for review was expected to meet the same quality standards as that of full-time engineers — clean architecture, proper layer separation, meaningful test coverage, and consistent logging.

The company expected interns to ramp up quickly on the existing codebase, understand and respect the established hexagonal architecture conventions, and deliver working, testable features within sprint timelines. There was a strong emphasis on writing maintainable code rather than just functional code — meaning proper DTO-domain-entity separation, explicit mapper methods, and schema changes coordinated with entity class updates.

Beyond implementation, interns were expected to take ownership of their tasks — proactively debugging issues, writing unit tests for their own code, and documenting public APIs. Communication was expected to be clear and timely, with blockers raised early rather than at the deadline.

Overall, the environment provided genuine exposure to how production fintech software is built, reviewed, and maintained at a professional level.

Academic courses relevant to the project : CS F213: Object oriented programming

PS-II Station : Ramboll India Pvt Ltd, Hyderabad

Faculty

Name: Mahesh Kumar Hamirwasia .

Student

Name: KISHANKUMAR HARESHKUMAR MISHRA(2024H1430024H)

Student Write-up

PS-II Project Title: Radiator supporting steel frame structures

Short Summary of work done during PS-II : I have done various projects during PS II, such as volvo truck garage utilisation facility, where I need to check deflections, moments, shear after application of new loading. Apart from that I have worked on radiator supporting steel frame structures which was an industrial structure and I have designed it with eurocodes.

Tool used (Development tools - H/w, S/w) : Strusoft software, excel sheet

Objectives of the project : Design of steel structure based on eurocode

Major Learning Outcomes : How to design and incorporate concepts of design of steel structure as per eurocode.

Details of Papers/patents : Written one detailed report of complete internship

Brief Description of working environment, expectations from the company : Quite friendly and seniors are too much supportive and growth oriented. No much pressure of deadlines.

Academic courses relevant to the project : Advance structural engineering, Structural optimization, foundation engineering, Advanced steel structure

PS-II Station : Red Nucleus, Pune

Faculty

Name: Bharathi R .

Student

Name: NIKITHA S PATEL(2024H1460279P)

Student Write-up

PS-II Project Title: Commercial -brand planning, product launch

Short Summary of work done during PS-II : Learnt to QC the deck, support major tasks like building market landscape for the disease understanding the current situation in the market and help the client by developing strategies to enetrr the competitive market

Tool used (Development tools - H/w, S/w) : Powerpoint and excel

Objectives of the project : To help the clients launch their product into any particular market of interest

Major Learning Outcomes : Learnt secondary research , how to conduct primary market research to pressure test the finding from secondary research

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Company expects your research findings to be accurate reliable, proactiveness and ability to comprehend

Academic courses relevant to the project : None

Name: DELORA HELOISE CARDOSO(2024H1530209P)

Student Write-up

PS-II Project Title: Product Launch

Short Summary of work done during PS-II : I worked on a pharmaceutical product launch strategy project for a client. Under the guidance of my mentors, I conducted market research, analyzed the competitive landscape, evaluated target patient and physician segments, and assessed key market opportunities. I contributed to the development of a comprehensive launch strategy by identifying critical success factors, potential challenges, and actionable recommendations for market entry and product positioning. The project involved data analysis, synthesis of industry insights, and preparation of strategic deliverables to support the client's commercialization objectives. This experience enhanced my understanding of pharmaceutical marketing, market access, and strategic decision-making in the healthcare industry.

Tool used (Development tools - H/w, S/w) : Ppt, Excel

Objectives of the project : To provide a stratergical launch plan to the client

Major Learning Outcomes : Launch stratergy planning, PPT, Excel

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The PS-II internship provided exposure to a professional and collaborative work environment focused on solving real-world challenges in the pharmaceutical and healthcare industry. The organization emphasized analytical thinking, effective communication, teamwork, and adherence to project timelines. Regular interactions

with mentors and team members facilitated continuous learning and provided guidance on approaching strategic business problems.
The company expected interns to demonstrate professionalism, ownership of assigned tasks, attention to detail, and a willingness to learn. Interns were encouraged to conduct thorough research, analyze data critically, and contribute meaningful insights to ongoing projects. Effective presentation of findings, responsiveness to feedback, and the ability to work independently while collaborating with the team were also important expectations.
Overall, the internship offered valuable industry exposure and helped develop skills in research, problem-solving, strategic analysis, and professional communication within a client-oriented environment.

Academic courses relevant to the project : IPR but would recommend including more relevany courses wrt Pharma Consulting

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Name: PATEL AENISH KUMAR ANANT KUMAR(2024H1460222P)

Student Write-up

PS-II Project Title: Brand planning, new product planning

Short Summary of work done during PS-II : It was great learning experience. I learnt secondary reaserch, survey design and slide design as per client expectations.

Tool used (Development tools - H/w, S/w) : Power point

Objectives of the project : To support client

Major Learning Outcomes : Secondary reaserch, design survey

Details of Papers/patents : No

Brief Description of working environment, expectations from the company : No

Academic courses relevant to the project : Clinical research

Name: SHAILI VIRENDRA CHAUHAN(2024H1460205P)

Student Write-up

PS-II Project Title: Commercial Planning Development for client company's drug

Short Summary of work done during PS-II : I learned the basic foundation when it comes to making a commercial plan for a drug product. Firstly there's a lot of secondary research that goes into scaling the disease landscape, market assessment, competitive landscape, strategy building and key performances indicators. Disease overview can involve understanding the indications a drug can treat and the lines of treatment. Market assessment includes addressable patient population as well as the market share and position of the product. Competitive landscape is analysis where do the competitors stand in the market. What are they doing differently, which patients are they targeting, what kind of brand messaging are they using, their pharmacological effects etc. Situation Analysis comprise of the two aspects explained so far and beyond, such as account prioritisation as well. Once we have understood the situation, we can develop the strategies to tackle the problem, that is for the drug to remain relevant and have profitable outcomes for the company. The strategies for the client product revolved around improving their promotions and advertisements in a positive light to navigate out of the misleading impression created by the competitors. Towards the end of the project, a Key performance indicator framework was developed to track the success of these strategies. Such as %awareness created amongst Health care professional about the brand's efficacy etc .

Tool used (Development tools - H/w, S/w) : Tools such as Power User rin Microsoft PowerPoint and Excel were frequently used

Objectives of the project : To develop a strategy that is commercially viable for the drug to maintain its market position despite loss of exclusivity

Major Learning Outcomes : Refined Powerpoint Power user skills, analytical skills, business acumen, communication skills and clinical research knowledge

Details of Papers/patents : Papers related to the disease the drug was targeting was referred to from reliable sources such as PMC, ASCO, clinical trial.gov etc.

Brief Description of working environment, expectations from the company : The working environment at Red Nucleus is amazing. Follows a flat hierarchy with every employee always being extremely patient and willing to help and teach us the right way to do things. They encourage us to share our ideas and ask questions without hesitation.

Academic courses relevant to the project : Clinical research, Case studies, MBA, pharmacy adminstration and management

PS-II Station : Redwood Software, Hyderabad

Faculty

Name: Y V K Ravi Kumar .

Student

Name: ABHISHEK UPADHYAY(2024H1030063H)

Student Write-up

PS-II Project Title: Enterprise Software Engineering, Security Analysis, Test Automation and Product Modernization at Redwood Software

Short Summary of work done during PS-II : During my PS-II internship at Redwood Software, I worked on enterprise product engineering activities across Report2Web and JSCAPE MFT. I started with KT sessions, local environment setup, production build configuration, and understanding the Report2Web architecture, including publishing, indexing, client tools, databases, and release workflows. I contributed to multiple R2W engineering tasks such as security fixes, JDBC dependency upgrade, publishing restrictions for unsupported file types, Broken Object Level Authorization analysis, regression testing, and release candidate build generation. I also worked on GitHub migration by cleaning repository history, removing secrets and large binaries, and supporting CI/CD modernization. A major contribution was building an AI-assisted Playwright automation framework

for R2W using TypeScript and reusable page objects. This framework helped automate more than 40 Jira-driven test cases and created a scalable base for future regression automation. One of my most impactful projects was the SharePoint Modern Authentication migration for a critical customer escalation. The customer published nearly 10,000 documents daily to SharePoint, and Microsoft was retiring the legacy authentication flow. I helped implement and validate the modern authentication patch, which was delivered five days before the deadline and received recognition at Redwood. In the later phase, I worked on JSCAPE MFT security analysis involving Jackson deserialization vulnerabilities and AS2 replay protection. Overall, the internship gave me strong exposure to enterprise software development, security engineering, DevOps, automation, and customer-focused product delivery.

Tool used (Development tools - H/w, S/w) : Hardware / Environment Company-provided laptop Windows development environment Remote desktop machines / build VMs Jenkins build machines Hybrid work setup Software / Development Tools IntelliJ IDEA Eclipse Visual Studio / Visual Basic build setup Apac

Objectives of the project : The main objective of the PS-II internship was to gain hands-on experience in enterprise product engineering by contributing to real production-level tasks at Redwood Software. The project involved understanding the architecture of Report2Web, setting up local and production-like development environments, working on security fixes, supporting release engineering activities, improving test automation, and contributing to modernization initiatives.

Major Learning Outcomes : 1. Understood enterprise-level product architecture and maintenance practices.

2. Gained hands-on experience with Java-based web applications deployed on Apache Tomcat.

3. Learned build and release workflows using Jenkins, Ant, NAnt, GitHub, and Bitbucket.

4. Worked on real security issues including authorization flaws, dependency vulnerabilities, deserialization risks, and replay attack analysis.

5. Built practical understanding of Veracode, Rapid7, SAST, DAST, and SCA scan findings.

6. Developed an AI-assisted Playwright automation framework using TypeScript and Page Object Model.

7. Gained experience in customer escalation handling through the SharePoint Modern Authentication migration.

8. Understood modern authentication concepts using Azure AD, MSAL, certificates, and SharePoint Online.

9. Learned repository migration, secret removal, large binary cleanup, and CI/CD modernization.

10. Improved debugging, communication, documentation, ownership, and cross-team collaboration

skills.

Details of Papers/patents : Not Applicable.

Brief Description of working environment, expectations from the company : The working environment at Redwood Software was professional, collaborative, and engineering-driven. I worked in a hybrid mode and collaborated with product engineering, DevOps, Support, Release, and Security teams. The company environment encouraged independent problem-solving while also providing strong technical guidance through KT sessions, code reviews, team discussions, and mentoring.
The expectations from the company were aligned with real product engineering responsibilities. I was expected to understand the existing product architecture, debug issues independently, document findings clearly, participate in Jira-based workflows, raise pull requests, test fixes, and communicate progress regularly. Since the products are used by enterprise customers, the focus was not only on writing code but also on reliability, compatibility, security, release stability, and customer impact.
I also worked on time-sensitive customer escalation tasks, where coordination with Support and DevOps was important. This helped me understand how professional software teams handle urgent customer requirements while maintaining engineering quality.
Overall, the work environment was supportive but also challenging in a positive way. It gave me exposure to production systems, legacy codebases, security vulnerabilities, CI/CD pipelines, automation frameworks, and cross-functional collaboration. The experience helped me grow technically as well as professionally.

Academic courses relevant to the project : Data Structures and Algorithms
Object Oriented Programming
Database Systems
Operating Systems
Computer Networks
Software Engineering
Information Security / Cybersecurity
Web Technologies
Cloud Computing
Software Testing
DevOps / CI-CD related coursework

Name: RAJPUT ROHAN SINGH(2024H1030169H)

Student Write-up

PS-II Project Title: Ci cd migration of the entire product

Short Summary of work done during PS-II : Migration of ci pipeline

Tool used (Development tools - H/w, S/w) : Git,cpp

Objectives of the project : Se migrate existing ci pipelines to actions

Major Learning Outcomes : GitHub,devops

Details of Papers/patents : Na

Brief Description of working environment, expectations from the company : Good work culture

Academic courses relevant to the project : Cloud computing

Name: RISHIKESH SONI(2024H1030180H)

Student Write-up

PS-II Project Title: Security hardening and product engineering for cerberus and jscape mft server

Short Summary of work done during PS-II : The Practice School – II internship was carried out at Redwood Software on the JSCAPE MFT Server (formerly Cerberus FTP Server) product team, a mature enterprise secure file transfer platform supporting FTP, FTPS, SFTP, HTTPS, and AS2 protocols. The internship spanned two phases across seven repositories. The first phase focused on product feature development: UI bug fixes, IP firewall management improvements, DR licence notice conditional rendering, public share acknowledgment exclusion, and web client file selection fixes in the Cerberus codebase. Alongside this, security configuration was hardened by enabling HMAC-ETM MAC algorithms by default for SFTP and reordering cipher and MAC algorithm lists by cryptographic strength. CI/CD improvements included separating unit and integration test pipelines, fixing the

installer build, and maintaining the Playwright UI test suite — including dynamic installer version resolution from JFrog Artifactory and upgrade scenario testing. The second phase shifted to security engineering in the JSCAPE codebase. Unauthenticated access to keystore REST endpoints was remediated (MFT-8192). A systematic zip-slip path traversal fix was applied across nine file-handling action classes including \texttt{WriteFileAction}, \texttt{UnzipFileAction}, and email attachment handlers, each covered by dedicated security regression tests (MFT-8201). Unit test coverage was provided for a four-phase TLS/SSL trust and hostname validation hardening initiative. MySQL 8.0 was also added as a CI database backend in the integration test framework. In total, contributions spanned frontend development, cryptographic configuration, security vulnerability remediation, and CI/CD automation across both the Cerberus and JSCAPE product lines.

Tool used (Development tools - H/w, S/w) : Vs studio, intellij, github, github actions

Objectives of the project : Full knowledge of the product frontend, backend, architectural, security

Major Learning Outcomes : How to use AI effectively, how does a industry level project gets ready, what to think and not just technology think towards customer pov aswell

Details of Papers/patents : Na

Brief Description of working environment, expectations from the company : The environment is friendly to ask silly questions, happy place and only 3 days working from office, seniors teach and let us take ownership and not just hand over work

Academic courses relevant to the project : Cloud computing, NLP

PS-II Station : Refroid Technologies, Hyderabad

Faculty

Name: Naga Vamsi Krishna Jasti .

Student

Name: PREMITH RAJATHESH(2024H1060078G)

Student Write-up

PS-II Project Title: Design and Modeling of Liquid Cooling Systems for Data Center Thermal Management

Short Summary of work done during PS-II : During my Practice School-II internship at Refroid Technologies Pvt. Ltd., I worked on the design, analysis, prototyping, and simulation of liquid cooling systems for data center thermal management applications. The primary objective of the project was to develop a coolant flushing cart for filling, draining, and circulating PG25 coolant within liquid-cooled data center infrastructure. The work involved component selection, hydraulic system design, reservoir design, and development of detailed engineering documentation. Structural analyses were performed using analytical calculations and finite element analysis (FEA) to validate the integrity of the cart frame and coolant reservoir. Computational Fluid Dynamics (CFD) simulations were conducted to evaluate flow distribution, reservoir circulation characteristics, and sensor placement within the system. In addition, 1D simulation models of a thermal load bank and coolant distribution unit (CDU) were developed using OpenModelica. A custom PG25 coolant property model was implemented for load bank simulations, while AixLib media models were utilized for CDU analysis. The developed models were used to predict flow distribution, pressure losses, and thermal performance under various operating conditions. The simulation results were validated against CFD analyses, demonstrating good agreement between the two approaches. Through this project, I gained practical experience in thermal-fluid system design, CFD, OpenModelica-based system modeling, simulation validation, and the development of liquid cooling solutions for modern data center applications.

Tool used (Development tools - H/w, S/w) : Ansys Fluent, Ansys Workbench, Open modelica, Microsoft Office tools, Latex

Objectives of the project : To design and analyze a coolant flushing cart for liquid-cooled data centers, develop CFD and OpenModelica models of the load bank and CDU, and validate system performance through hydraulic and thermal simulations.

Major Learning Outcomes : Gained hands-on experience in liquid cooling systems, CFD analysis, OpenModelica-based 1D modeling, hydraulic system design, structural validation, thermal-fluid

engineering, simulation validation, and industrial product development for data center cooling applications.

Details of Papers/patents : No papers published. Patent application for the coolant flushing cart system is currently under preparation.

Brief Description of working environment, expectations from the company : Refroid Technologies Pvt. Ltd. provided an excellent learning environment throughout the duration of my Practice School-II internship. As a growing company operating in the rapidly evolving field of liquid cooling solutions for AI and high-performance data centers, the organization offered exposure to emerging technologies and real-world engineering challenges. The dynamic nature of the industry ensured that there was always something new to learn, whether related to thermal management, hydraulic system design, simulation, prototyping, or product development.

Despite being a relatively small organization, the company fostered a collaborative and supportive work culture. Team members from different engineering disciplines were approachable and willing to share their knowledge and experience, which greatly accelerated my learning process. Regular technical discussions and interactions with experienced professionals provided valuable insights into industrial practices and engineering decision-making.

The company encouraged independent problem-solving while also providing the necessary guidance whenever required. This balance helped me develop both technical competence and professional confidence. Working on projects directly related to liquid-cooled data center infrastructure allowed me to apply academic concepts to practical applications and gain hands-on experience with industry-standard tools and methodologies.

Overall, the internship provided a highly rewarding experience that contributed significantly to my technical growth, professional development, and understanding of the rapidly expanding data center cooling industry.

Academic courses relevant to the project : FINITE ELEMENT METHOD, Computational Fluid dynamics, COMP AIDED ANAL & DESIGN.

PS-II Station : Regional Remote Sensing Center-North, NRSC, ISRO, New Delhi

Faculty

Name: Rajesh Kumar Tiwary .

Student

Name: VAIDIK A SHARMA(2021B5A82509P)

Student Write-up

PS-II Project Title: CMIP6 GCMs evaluation over Indian subcontinent: Bias Correction, Derived MCDM Ranking Protocol and SSP Scenario Analysis with Quantum-Classical Super-Resolution architecture based Downscaling and Orographic Input Assessment

Short Summary of work done during PS-II : This project presents a comprehensive framework for the evaluation, bias correction, super-resolution, and downscaling of CMIP6 global climate models using advanced quantum-classical artificial intelligence techniques across multiple SSP climate scenarios. A mathematically derived Multi-Criteria Decision Analysis (MCDM) protocol is developed for systematic ranking and selection of CMIP6 models based on climatological, statistical, and physical performance indicators. The study incorporates bias correction methods to reduce systematic deviations from observational datasets and investigates the influence of orographic variability on regional climate behavior and downscaling performance over complex terrain regions. To enhance spatial resolution and climate reconstruction, novel Parameterized Quantum Circuit (PQC) architectures and quantum pipelines are designed alongside Denoising Diffusion Probabilistic Models (DDPMs) and advanced deep learning approaches for classical super-resolution and downscaling. Comparative evaluation against existing deep learning algorithms is performed using quantitative metrics and climatological diagnostics to assess predictive accuracy, robustness, and computational efficiency. The framework is further applied to analyze future climate projections under different Shared Socioeconomic Pathway (SSP) scenarios, aiming to improve the reliability, spatial fidelity, and interpretability of next-generation regional climate projections while exploring the applicability of quantum machine learning techniques in climate science and Earth system modeling.

Tool used (Development tools - H/w, S/w) : Python(ML/DL, Geospatial and Geoinformatics packages, Scientific Programming packages), Anaconda,NetCDF,Panoply (NASA),ESGF,Numba, Qiskit, Pennylane, GIS.

Objectives of the project : The primary objective of this project is to evaluate and bias-correct CMIP6 global climate models through a mathematically derived Multi-Criteria Decision Analysis (MCDM) protocol for systematic model ranking and selection based on multiple climatological and statistical performance indicators. Subsequent studies into Shared Socio-economy pathway(SSP245,370,585) scenerios. The project further aims to investigate the role of orographic influences on regional climate variability and downscaling accuracy while developing a hybrid quantum-classical framework for climate super-resolution and spatial downscaling. Novel Parameterized Quantum Circuit (PQC) architectures and quantum pipelines are designed for quantum-enhanced super-resolution, alongside the implementation of Denoising Diffusion Probabilistic Models (DDPMs) and advanced deep learning methods for classical downscaling and high-resolution climate reconstruction. The study also seeks to perform comparative evaluation against existing deep learning algorithms and state-of-the-art super-resolution approaches using quantitative performance metrics and climatological diagnostics to assess accuracy, robustness, and computational efficiency, ultimately improving the spatial fidelity and predictive reliability of regional climate projections.

Major Learning Outcomes : Atmospheric and Climate Sciences, Deep Learning, Quantum Programming, Diffusion models.

Details of Papers/patents : Under review and submission.

Brief Description of working environment, expectations from the company : The institute provided me with access to cutting-edge technology and resources necessary for my research work. The institute had positive expectations from the students, which included actively participating in research discussions, conducting experiments, analyzing data, and contributing to the project's objectives. I was expected to demonstrate a strong understanding of programming and mathematical physics based techniques, as well as a willingness to learn and adapt to new concepts. The institute emphasized the importance of attention to detail, accuracy in data analysis, and effective communication of findings. I was encouraged to think critically, and propose innovative ideas to improve the project's outcomes. Furthermore, the institute expected to meet project deadlines, manage time efficiently, and interact collaboratively with the mentor. It encouraged a collaborative and supportive work environment, where ideas were openly shared and feedback was given constructively. Overall, the working environment fostered a growth mindset, encouraged continuous learning, and provided ample opportunities to contribute meaningfully to the objectives of national and global importance.

Academic courses relevant to the project : Atmospheric Phyiscs, Functional Analysis, Signals and Systems, Probability and Statistics, Neural Networks, AI/ML, Information Theory, Decision Theory,

Mathematical Methods of Physics, Quantum Mechanics, Quantum Info and Computing, Linear Algebra.

PS-II Station : RingCentral India Pvt Ltd, Bengaluru

Faculty

Name: Raja Vadhana Prabhakar .

Student

Name: YASH KANTAMNENI .(2022A7PS0120H)

Student Write-up

PS-II Project Title: Database Schema Rollback

Short Summary of work done during PS-II : Implemented Liquibase database schema rollback using a releasespecific Docker image and a Spinnaker pipeline to run the same. Integrated automated rollback testing into existing promotional pipelines and automated tag addition after every release. Apart from the project, worked on several development tickets.

Tool used (Development tools - H/w, S/w) : Java, SpringBoot, Docker, Helm, Jenkins, Spinnaker, JUnit

Objectives of the project : To implement Liquibase database schema rollback using a release-specific Docker image and a Spinnaker pipeline to run the same. To integrate automated rollback testing into existing promotional pipelines and automate tag addition after every release.

Major Learning Outcomes : 1. Backend development using Java and SpringBoot, concepts like dependency injection, inversion of control, testing using JUnit
2. CI/CD process (build & deploy using Jenkins and Spinnaker)
3. Containerization using Docker images and packaging using Helm charts

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Was a part of the Platform RnD team, consisting of five members, all backend engineers. Our India manager managed all 3 platform teams and hence wasn't involved in our day-to-day tasks. Project and tasks were assigned by our US technical manager, and we had weekly meets with him at night. Everybody was friendly, helpful and supportive.

Academic courses relevant to the project : OOPS, DBMS

Name: SHARVIL POTDAR(2022A7PS0724G)

Student Write-up

PS-II Project Title: AI Voicemail Intelligence and Product framework optimization

Short Summary of work done during PS-II : Onboarding & Discovery: Completed domain training, mastered the Jira release cycle, and identified "Voicemail Intelligence" as the core intern project, developing its first clickable prototype. Product Definition & Architecture: Defined four core features (AI Summary, Categorisation, Escalation, Priority) and expanded the scope into a comprehensive "Communications Intelligence Suite" covering Voicemail, Pre-Call, and Post-Call. Also resolved critical iOS CallKit technical restrictions for the Pre-Call interface. Data Validation & Finalization : Conducted a data defense to justify all features across mobile and desktop platforms. Secured final stakeholder sign-off on the PRD, which was featured as a key deliverable for senior leadership and the PS-II internship report.

Tool used (Development tools - H/w, S/w) : Jira, Confluence, Gemini, Claude

Objectives of the project : Product management process learning and reduce time to adress voicemail using AI summary and AI category labels

Major Learning Outcomes : JIRA, Confluence, Stakeholder Management

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : RingCentral fosters a collaborative, inclusive, and innovation-driven working environment centered around an "employee-first" culture. Operating globally as an AI-first communications powerhouse, the company balances high-tech execution with a supportive community.
RingCentral maintains an output-oriented, high-standard culture where employees are expected to drive customer-centric innovation

Academic courses relevant to the project : NA

Name: MEHAK MAHAJAN .(2022A3PS0585H)

Student Write-up

PS-II Project Title: Blog sharing platform creation and feature migration

Short Summary of work done during PS-II : Worked on pre-existing feature with main app migration and improvement, handled the bugs in the process and the feature itself. Created a small AI-powered full stack personal project in the first half of the internship as well.

Tool used (Development tools - H/w, S/w) : Gitlab, Cursor

Objectives of the project : Create a full stack blog platform with fully functional local setup and AI-powered assistance within the app. Migrate feature from pre-existing repositories to main RC Events app.

Major Learning Outcomes : SDLC

Details of Papers/patents : nil

Brief Description of working environment, expectations from the company : Friendly, collaborative, easy to ask for help. Expected work to be challenging and something new from college coursework, was able to receive advanced knowledge training from mentors and work of that level.

Academic courses relevant to the project : OOP, DSA

PS-II Station : RISA Labs, Inc - Healthcare -Product, Bengaluru

Faculty

Name: Uma Nagarajan .

Student

Name: PARV ABHIJEET SINGHANIA(2021B1A43004G)

Student Write-up

PS-II Project Title: AI Product Development

Short Summary of work done during PS-II : worked as apm to build AI pipelinnes. Fast paced environment requiring intense efforts but high potential for learning and growth.

Tool used (Development tools - H/w, S/w) : Claude, Notion, GitHub, Gsheets

Objectives of the project : Building AI Pipelines for complex oncology workflows

Major Learning Outcomes : PM and AI

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Fast paced environment requiring intense efforts but high potential for learning and growth.

Academic courses relevant to the project : NA

PS-II Station : RT Vision Technologies Pvt. Ltd - Design and Implementation, Greater Noida

Faculty

Name: Harish Kumar J. R.

Student

Name: HARSH AWASTHI(2024H1400091H)

Student Write-up

PS-II Project Title: Nanosecond Accuracy for Synchronization using Precision Time Protocol (PTP)

Short Summary of work done during PS-II : During my PS-II internship at RT Vision Technologies Pvt. Ltd., I worked on developing a high-precision time synchronization infrastructure based on IEEE 1588 Precision Time Protocol (PTP). The project involved building a Stratum-1 PTP Grandmaster using a Raspberry Pi 5 synchronized with a GPS receiver through PPS and NMEA signals. Using chrony, gpsd, ptp4l, and phc2sys, the system achieved nanosecond-level synchronization accuracy through hardware timestamping. I configured and validated synchronization between the Grandmaster, Host Boundary Clock, and multiple slave devices. The synchronized network was integrated into a multi-camera train inspection system utilizing Teledyne DALSA Genie Nano GigE cameras. I worked on validating camera synchronization, timestamp consistency, and image acquisition accuracy using PTP-locked clocks. Additionally, I developed and tested software components using Embedded Linux and Sapera LT APIs, automated system startup using systemd services, and performed extensive performance validation. The final system successfully achieved sub-microsecond synchronization across network nodes and camera devices, providing a reliable timing framework for industrial machine vision applications.

Tool used (Development tools - H/w, S/w) : Hardware: Raspberry Pi 5 Intel UP Squared Pro BeaglePlay ABOX 5200 Industrial PC NEO-M9N GPS Module Teledyne DALSA Genie Nano Cameras Gigabit Ethernet Network Infrastructure Software: Ubuntu 24.04 LTS Embedded Linux

Yocto Project linuxptp (ptp4l, phc2s

Objectives of the project : Design and implement a Stratum-1 IEEE 1588 PTP Grandmaster using Raspberry Pi 5 and GPS. Achieve nanosecond-level clock synchronization across distributed embedded systems. Configure and validate PTP synchronization between Grandmaster, Boundary Clock, and Slave Nodes. Synchronize multiple Teledyne DALSA Genie Nano cameras for timestamp-accurate image acquisition. Develop and validate a multi-camera acquisition framework for industrial train inspection applications.

Major Learning Outcomes : Understanding of IEEE 1588 Precision Time Protocol and synchronization architectures.
Hands-on experience with Embedded Linux and Yocto Project.
Linux networking, hardware timestamping, and PHC configuration.
GPS and PPS-based time synchronization techniques.
Development and debugging of distributed embedded systems.
Industrial camera integration using Teledyne DALSA Sapera LT API.
System-level debugging, automation using systemd, and performance validation.
Exposure to real-world industrial automation and railway inspection systems.

Details of Papers/patents : nil

Brief Description of working environment, expectations from the company : RT Vision Technologies provided a highly professional research and development environment focused on industrial machine vision, embedded systems, and precision timing technologies. The organization encouraged independent problem-solving while offering continuous technical guidance from experienced engineers and mentors.
The work environment promoted hands-on learning through direct interaction with industrial hardware, embedded Linux systems, networking equipment, and machine vision cameras. Regular discussions, design reviews, and debugging sessions helped in understanding practical engineering challenges and industry standards.
The company expected interns to actively participate in technical discussions, take ownership of assigned tasks, maintain proper documentation, and demonstrate strong analytical and debugging skills. Team collaboration, professionalism, and continuous learning were highly valued. This environment significantly improved both my technical expertise and workplace communication skills while providing exposure to real-world industrial product development.

Academic courses relevant to the project : Embedded Systems

Computer Architecture
Microprocessors and Interfacing
Operating Systems
Computer Networks
Digital Design
Embedded Linux
Real-Time Systems
Object Oriented Programming
Data Structures and Algorithms

PS-II Station : RT Vision Technologies Pvt. Ltd - Development ICP Algorithm, Greater Noida

Faculty

Name: Harish Kumar J. R.

Student

Name: PARAG KANTHED(2024H1400108P)

Student Write-up

PS-II Project Title: Ptp mechanism implementation

Short Summary of work done during PS-II : Implemented a ptp grandmaster clock to replace the previously used ntp clock , it required decoupling the network clock master into a seperate node acting as the master for the entire network and providing clock to the entire network. Inorder to achieve this we had to create a custom kernel for the node that uses prempt rt patch and has hardware support for ptp. Inorder to create the custom kernel we had used musl library instead of glibc which provides massive size reduction , and then created multiple layers for setting up hardware to be able to take pps and nmea signal from the gps , along with this we also had to utilize multiple third party user space application which utilizes this signal from the gps and synchronises internal clock and the NIC

clock to sub - microsecond accuracy.

Tool used (Development tools - H/w, S/w) : LINUX , Yocto project , intel upsquared pro 7000 , GPS ublock Neo M9N

Objectives of the project : Implementation of ptp mechanism for legacy architecture which currently uses ntp

Major Learning Outcomes : Creating custom kernel using yocto project

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Working environment is great , people are friendly , and projects are really good .

Academic courses relevant to the project : Embedded systems design and software for embedded systems

PS-II Station : Rupeeflo (DMA Rupeeflo Technologies Private Limited) - Product Management, Bengaluru

Faculty

Name: Uma Nagarajan .

Student

Name: HARIOM MAYURE .(2022A3PS0534H)

Student Write-up

PS-II Project Title: Process Optimisation and Automation of Digital Notarisation Workflow

Short Summary of work done during PS-II : I worked on optimising the workflows in the digital notarisation flow. Created edge functions for document notary format generation and automated seal placement in the document. This reduced the workload from the notaries to provide the notarised documents which in turn reduced the Turn Around Time for all the customers.

Tool used (Development tools - H/w, S/w) : Supabase, Zoho esign, Jupyter Notebook

Objectives of the project : Optimise the workflow for digital notarisation of Rupeeflo and identify and suggest solutions for decreasing the Turn Around Time for the workflow

Major Learning Outcomes : Learnt to understand the workflows of any process and identify the blockers creating delays in it.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Work enviornment is good and positive. Everyone is helpful around and can freely approach any person in the office for any help.
Expectations were to complete the work in time as it was a very fast paced enviornment normally found in a startup.

Academic courses relevant to the project : NA

PS-II Station : Sandisk, Bengaluru

Faculty

Name: Shreyas Suresh Rao .

Student

Name: SAI MANISH REDDY AMBATI(2024H1030045H)

Student Write-up

PS-II Project Title: Design and Automation of Data Validation Workflows Between APIs and Analytics Platforms.

Short Summary of work done during PS-II : Validate the complete dashboard of the analytics tool with the api data .

Tool used (Development tools - H/w, S/w) : S/w, Robot framework, python, playwright, git

Objectives of the project : Automate the validation of data between the internals tools and the program analytics tools.

Major Learning Outcomes : Automation, Validation, git

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment is really good where we have good work life balance and good help and support from the team. I have learned a lot from this team.

Academic courses relevant to the project : Operating system, python backend,

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Name: MONIKA KARASANI(2024H1230113H)

Student Write-up

PS-II Project Title: ZQ calibration

Short Summary of work done during PS-II : During the internship, I worked on developing a hybrid ZQ calibration engine model aimed at improving impedance matching in high-speed I/O systems. The core task involved integrating a Verilog-A–based control model with pre-existing OCD (Off-Chip Drivers) pull-up and pull-down networks to create a cohesive and efficient calibration framework. I analyzed how calibration logic dynamically adjusts impedance values to ensure signal integrity across

varying operating conditions. A key aspect of the work was designing the control mechanism in Verilog-A to accurately interface with circuit-level components while keeping the model computationally efficient. I also validated the model through simulations, ensuring that it achieved precise impedance calibration without significantly increasing simulation time. This required careful handling of trade-offs between model accuracy and performance. Additionally, I performed debugging with help of my mentor and refinement of the integration to ensure seamless interaction between behavioral and circuit-level blocks. Overall, the work provided practical exposure to impedance calibration techniques, analog modeling, and system-level design considerations in semiconductor environments.

Tool used (Development tools - H/w, S/w) : Cadence Virtuoso

Objectives of the project : To develop a hybrid ZQ calibration engine model that integrates a Verilog-A based control model with pre-existing OCD pull-up and pull-down networks, ensuring accurate impedance calibration while maintaining simulation efficiency.

Major Learning Outcomes : The learnings from this internship will help me apply strong fundamentals of Verilog-A modeling and impedance calibration in future roles related to analog and high-speed circuit design. I will be able to design efficient and accurate models while understanding practical trade-offs between performance and simulation time. The exposure to system-level integration will assist me in working on complex engineering problems and collaborating effectively across teams. Additionally, the problem-solving and debugging skills I developed will help me approach technical challenges in a structured and analytical manner.

Details of Papers/patents : No papers published or patents filed during the internship

Brief Description of working environment, expectations from the company : The working environment during the internship was highly professional, collaborative, and technically driven, providing exposure to real-world semiconductor design practices. The team encouraged continuous learning, problem-solving, and knowledge sharing, allowing me to interact with experienced engineers and gain insights into industry workflows. The environment emphasized precision, efficiency, and adherence to design standards, which helped me develop a disciplined approach to engineering tasks. Support from mentors and team members played a key role in understanding complex concepts and successfully completing assigned work.

From the company, I expected opportunities to gain hands-on technical experience, work on meaningful projects, and learn industry-relevant tools and methodologies. The organization met these expectations by assigning practical tasks related to ZQ calibration and Verilog-A modeling, enabling

me to apply theoretical knowledge to real scenarios. I also expected guidance and feedback, which was consistently provided, helping me improve both technical and professional skills. Overall, the internship offered a positive and growth-oriented environment aligned with my learning goals.

Academic courses relevant to the project : Digital IC Design, Analog CMOS IC Design

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Name: ARIJEET RAKSHIT(2024H1030183H)

Student Write-up

PS-II Project Title: DESIGN AND ANALYSIS OF NVME-BASED SSD FIRMWARE PRODUCTION FLOW A STUDY OF NVME ARCHITECTURE, MEMORY TECHNOLOGIES AND LIGHTWEIGHT FIRMWARE PRODUCTION

Short Summary of work done during PS-II : This project studied the design and analysis of an NVMe-based SSD firmware production flow from both conceptual and practical perspectives. The work began with understanding NVMe protocol fundamentals, including host-controller interaction, queue-based command execution, namespace abstraction, and low-latency operation over PCIe. It then examined key memory technologies used in SSDs, specifically SRAM for fast internal buffering, DRAM for larger temporary storage, and NAND Flash as the primary non-volatile medium for firmware and user data retention. Building on these foundations, the project analyzed the firmware production lifecycle used to bring SSDs into a deployable state, covering stages such as boot initialization, firmware image handling, configuration, and activation. A key focus was identifying process simplification opportunities through lightweight production concepts, aimed at reducing manual effort and improving consistency. Overall, the work provides a structured view of how protocol behavior, memory architecture, and production engineering come together to influence SSD readiness, reliability, and efficiency in an industry-oriented environment.

Tool used (Development tools - H/w, S/w) : Hardware: NVMe SSD platform, host development system. Software: Git, Github, C++, Python-based tooling, PySide6 (Qt for Python) for GUI work, firmware/production scripts, NVMe specification documents.

Objectives of the project : The project aims to develop a clear understanding of NVMe-based SSD systems by studying the NVMe protocol (architecture, queues, namespaces, and command

processing), examining core memory technologies such as SRAM, DRAM, and NAND Flash, and analyzing the firmware production workflow from boot and firmware loading to configuration and controller activation. It also seeks to bridge theoretical concepts with practical industry-oriented production behavior and explore lightweight firmware production methods that simplify operations, reduce manual parameter handling, and improve overall usability and efficiency.

Major Learning Outcomes : 1.Gained a strong understanding of NVMe architecture, including submission/completion queues, namespaces, and command lifecycle.
2.Understood the role of SRAM, DRAM, and NAND Flash in SSD performance, buffering, persistence, and reliability.
3.Learned the practical firmware production flow, including boot sequence, firmware loading, configuration, and controller bring-up.
4.Connected protocol-level concepts with real production-stage constraints such as usability, repeatability, and operational efficiency.
5.Explored lightweight production ideas to reduce manual parameter handling and improve production workflow quality.

Details of Papers/patents : 1.NVMe Specification (NVM Express, Inc., 2024): Core reference for command sets, queue architecture, namespace model, and controller-host behavior.
2.SRAM and DRAM technical references: Used to compare volatility, latency, density, refresh behavior.

Brief Description of working environment, expectations from the company : The project was carried out in an industry-oriented engineering environment at SanDisk, where the workflow emphasized practical understanding of SSD firmware production while maintaining confidentiality and process discipline. The working setup involved interaction with NVMe SSD concepts, firmware production stages, and supporting software tools used for analysis and workflow simplification. The environment was structured, mentor-driven, and focused on converting theoretical knowledge into production-relevant understanding. Regular guidance from domain experts helped align learning with real engineering practices such as boot flow awareness, firmware image handling, configuration consistency, and reliability-focused thinking.
From the company side, the key expectations were to build strong conceptual clarity in NVMe architecture and memory technologies, understand the end-to-end firmware production flow, and contribute toward process improvement through lightweight production ideas. Emphasis was placed on disciplined documentation, clear technical communication, and responsible handling of information. The expected outcome was not only technical learning but also professional readiness: the ability to analyze workflows, identify simplification opportunities, and present structured,

implementation-aware insights that are useful in an industrial storage-systems context.

Academic courses relevant to the project : Computer Architecture and Organization
Operating Systems
Data Structures and Algorithms
Database and File Systems
Computer Networks

Name: NYALAM PRADEEP(2024H1230126H)

Student Write-up

PS-II Project Title: Power bus simulation

Short Summary of work done during PS-II : During my Practice School–II internship at SanDisk India Device Design Centre, I worked on the project "Power Bus Simulation and IR Drop Analysis of NAND Peripheral Circuits." The primary objective was to study the impact of parasitic resistance on the Power Delivery Network (PDN) of NAND peripheral circuits and evaluate its effect on circuit performance and reliability. The work involved designing and simulating circuit layouts using Cadence Virtuoso, extracting parasitic resistance values from the layout, and implementing a worst-case IR drop model by introducing the maximum extracted resistance at the VDD input of each circuit block. Simulations were performed under both ideal and worst-case conditions, and the resulting waveforms were analyzed using Synopsys Verdi to study supply voltage variation, current consumption, and signal slew rate degradation during read and write operations. The analysis demonstrated how dynamic IR drop causes voltage droop, increased propagation delay, and degraded signal transitions under high switching activity. The project also provided exposure to power integrity analysis, layout parasitic extraction, PDN optimization techniques, and waveform debugging in advanced NAND memory designs. Through this work, I gained practical experience with industry-standard EDA tools, strengthened my understanding of VLSI design concepts, and developed analytical and problem-solving skills essential for semiconductor product development.

Tool used (Development tools - H/w, S/w) : Cadence virtuoso, synopsys verdi

Objectives of the project : To analyze the impact of parasitic resistance on the Power Delivery

Network (PDN) of NAND peripheral circuits using Cadence Virtuoso. To extract layout parasitic resistances and develop a worst-case IR drop model by introducing maximum resistance at the VDD pins of circuit blocks. To compare ideal and worst-case operating conditions by evaluating VDD voltage, current consumption, and signal slew rate through simulation. To understand the effect of IR drop on power integrity, timing performance, and reliability of NAND peripheral circuits.

Major Learning Outcomes : Acquired practical experience with Cadence Virtuoso for layout design, parasitic extraction, and circuit simulation.
Gained an in-depth understanding of Power Delivery Networks (PDN), static and dynamic IR drop, voltage droop, and power integrity concepts.
Learned to perform waveform analysis using Synopsys Verdi to evaluate VDD behavior, current spikes, and signal slew degradation.
Developed knowledge of worst-case modeling techniques and their importance in ensuring reliable and robust VLSI circuit operation under high switching conditions.

Details of Papers/patents : Reviewed literature on Power Delivery Network (PDN) optimization, including techniques such as metal width optimization, via optimization, and decoupling capacitor insertion.

Brief Description of working environment, expectations from the company : The working environment at SanDisk India Device Design Centre was highly professional, collaborative, and focused on innovation. Team members were supportive and encouraged continuous learning through regular technical discussions, mentoring sessions, and constructive feedback. I had the opportunity to work with experienced engineers using industry-standard EDA tools such as Cadence Virtuoso and Synopsys Verdi, which provided valuable exposure to real-world semiconductor design and verification workflows. The organization emphasized teamwork, technical excellence, and adherence to quality standards while giving interns the responsibility to contribute to meaningful engineering projects.

Academic courses relevant to the project : VLSI Design, CAD for IC design, Digital Design

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Name: HARSH GUPTA(2022A3PS0418P)

Student Write-up

PS-II Project Title: Code coverage enhacement for client SSD firmware

Short Summary of work done during PS-II : I was tasked to write Python test scripts to enhance coverage for edge cases inside SSD firmware. Testing framework is built in house. I hade to understand existing test cases and design patterns. And write new test cases or modify existing test cases.

Tool used (Development tools - H/w, S/w) : JTAG, Visual studio, Vs code, In house testing softwares

Objectives of the project : Increase code coverage

Major Learning Outcomes : Embedded programming, Debugging, C programming

Details of Papers/patents : Na

Brief Description of working environment, expectations from the company : Everyone is very approachable. Great learning curve for embedded software. Work is challenging and not redundant. Good work life balance. Typically 9-10hr work day for 5 day a week. 1 day wfh per week.

Academic courses relevant to the project : C programming, Operating systems, oops

PS-II Station : Sarda Metals & Alloys Ltd - Mechanical, Vizianagaram

Faculty

Name: Panchagnula Jayaprakash Sharma .

Student

Name: PRUDHVI RAJ NEELAM(2022A4PS1460G)

Student Write-up

PS-II Project Title: Control of particulate matter from furnace off gases

Short Summary of work done during PS-II : Learnt about different types of gas cleaning plants and worked on improving the existing one and optimised it's performance

Tool used (Development tools - H/w, S/w) : Nil

Objectives of the project : To Optimise the performance of Gas cleaning plant

Major Learning Outcomes : Learnt about the working of gas cleaning plant

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Work environment is good and all the employees are supportive and helpful,

Academic courses relevant to the project : Fluid mechanics, heat transfer, solid mechanics, manufacturing process

PS-II Station : Saviynt, Bengaluru

Faculty

Name: Raghavendra Singh

Student

Name: RAGHURAM ALURU(2022A7PS1349G)

Student Write-up

PS-II Project Title: AI Platform Engineering

Short Summary of work done during PS-II : I built the Log Insights Generator, a Python-based threat detection engine that analyzes SAP Firefighter audit logs using LLM-powered agents. The system ingests emergency access session logs from Elasticsearch and runs them through a six-stage pipeline. First, a YAML-driven scope filter splits events by use case using match_any and exclude rules. Then, parallel ReAct agent sessions are launched per use case, where the LLM autonomously queries Elasticsearch using nine read-only tools to investigate hypotheses about fraud patterns. The agents operate under bounded autonomy with a maximum of 7 iterations, 4 calls per tool, and a 600-second timeout. The system supports two LLM backends: a stateful Kiro CLI client for development and a stateless Saviynt HTTP API for production that replays conversation context each turn. After the agents produce findings, an evidence verification stage rejects any finding citing hallucinated event IDs by checking them against source data. An adversarial challenger then reviews findings in batches against SAP domain documentation covering false positive rules, evidence grading tiers, and legitimate business patterns, issuing CONFIRMED, ADJUSTED, or FALSE_POSITIVE verdicts. A confidence gate routes findings below 0.70 to manual review with structured reasoning. The system persists findings, reports with token tracking metrics, and complete LLM audit trails. A Flask frontend displays findings with evidence drill-down and a token usage dashboard. The engine currently detects vendor master manipulation, PO manipulation, SO manipulation, and privilege escalation patterns.

Tool used (Development tools - H/w, S/w) : Python 3.10+, Elasticsearch, Flask, Pydantic, PyYAML, python-dotenv, Docker, Claude LLM (via Saviynt AI Platform HTTP API and Kiro CLI), Git, VS Code

Objectives of the project : To ingest gigabytes of logs we generate every session and generate important insights for auditors

Major Learning Outcomes : Learned to design and implement autonomous LLM agent systems with proper safety bounds including

iteration caps, tool call budgets, and wall-clock timeouts. Gained experience with Elasticsearch for structured log querying,

Pydantic for runtime data validation, and building dual-mode backends supporting both stateful and stateless LLM interactions.

Understood how to prevent LLM hallucination through evidence verification, how adversarial prompting can reduce false positives,

and how to calibrate severity based on evidence quality tiers. Learned YAML-driven configuration patterns for extensible systems.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : I worked in Saviynt's Bengaluru office within the AI
Platform team that focuses on applying LLM capabilities to identity governance use cases. The team operates in agile sprints with
daily standups. For this project I was given the problem statement of detecting threats in SAP Firefighter logs and expected to
independently design the full architecture, choose the tech stack, and deliver a working system. The company wanted a
production-viable solution rather than a prototype, so reliability concerns like hallucination prevention, bounded execution, and
full audit logging were requirements from the start. I worked closely with SAP domain experts to understand Firefighter session
semantics and build accurate detection prompts. The expectation was iterative delivery with working demos every two weeks showing
incremental capability additions from basic log parsing through to the complete adversarial pipeline. Code was version controlled
on GitLab with CI configuration for automated checks.

Academic courses relevant to the project : Artificial Intelligence, Machine Learning, Database Systems, Information Retrieval,
Computer Networks, Data Structures and Algorithms, Operating Systems

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Name: ISHAAN THAKKAR(2022A7PS0378G)

Student Write-up

PS-II Project Title: IGA

Short Summary of work done during PS-II : I was first given a task to create an AI agent to generate a Pre-req document generator and then automating the Jira workflow and then upgrading one Client environment

Tool used (Development tools - H/w, S/w) : Saviynt product,Gemini,claude,kiro, Amazon queue, javascript, playwright,python,java

Objectives of the project : Upgrading the client environment

Major Learning Outcomes : Saviynt product

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Working environment was dynamic and little hectic

Academic courses relevant to the project : Computer Networks,DBMS

PS-II Station : SBE Engineering & infrastructure PVT. LTD, Jodhpur

Faculty

Name: Anupam Singhal .

Student

Name: ABUL BASHAR(2024H1440028P)

Student Write-up

PS-II Project Title: Construction Management, Quality Monitoring and Engineering Construction Practices in RCC Institutional Building Project

Short Summary of work done during PS-II : During my Practice School-II internship at SBE Engineering and Infrastructure Pvt. Ltd., I worked as a Planning Engineer Intern with major exposure to construction execution and site supervision of an RCC Institutional Building project. My

responsibilities included studying architectural and structural drawings, layout verification, monitoring excavation activities, PCC work, footing reinforcement, footing concreting, and column construction up to plinth level. I was also involved in observing reinforcement detailing, shuttering, alignment checks, concreting procedures, curing practices, and progress monitoring. The project consists of an RCC framed structure supported on isolated footings with provisions for future expansion up to G+3 floors. The internship provided practical exposure to construction sequencing, load transfer mechanisms, quality monitoring, labour coordination, and material management. Through regular interaction with engineers, supervisors, and workers, I gained a deeper understanding of RCC construction methodology and practical challenges encountered during project execution. The experience significantly enhanced my technical knowledge, engineering judgement, communication skills, and ability to relate academic concepts with field implementation.

Tool used (Development tools - H/w, S/w) : AutoCAD, MS PowerPoint, MS EXCEL, MS WORD,

Objectives of the project : TO EXPERIENCE REAL CHALLENGES DURING EXECUTION OF A PROJECT

Major Learning Outcomes : CONSTRUCTION EXECUTION AND MANAGEMENT

Details of Papers/patents : No papers or patents were produced during the internship period.

Brief Description of working environment, expectations from the company : The internship was carried out at SBE Engineering and Infrastructure Pvt. Ltd., which provided a dynamic and practical construction environment. Although I joined as a Planning Engineer Intern, I was given significant exposure to site execution and construction supervision activities. The working environment encouraged active participation in technical discussions, site inspections, and engineering decision-making.

The company expected interns to understand project drawings, monitor construction activities, coordinate with labour teams, and observe quality and safety practices on site. Emphasis was placed on learning through practical exposure, taking initiative, and developing problem-solving abilities. The organization provided opportunities to interact with engineers, supervisors, contractors, and workers, which helped in understanding the multidisciplinary nature of construction projects.

Overall, the working environment was supportive, technically enriching, and focused on developing both engineering competence and professional skills.

Academic courses relevant to the project : Construction Planning and Management, Structural Analysis, Quantity Surveying and Estimation

PS-II Station : Schlumberger (SLB), Pune

Faculty

Name: Samata Satish Mujumdar .

Student

Name: HARSH JAIN(2022A4PS0348G)

Student Write-up

PS-II Project Title: Tpi team

Short Summary of work done during PS-II : Nice

Tool used (Development tools - H/w, S/w) : Creo

Objectives of the project : Training

Major Learning Outcomes : Hydraulic

Details of Papers/patents : Na

Brief Description of working environment, expectations from the company : Good

Academic courses relevant to the project : Na

PS-II Station : Schneider Electric, Mumbai, Mysore, Ahmednagar, Vadodara

Faculty

Name: Manoj Subhash Kakade .

Student

Name: ADITYA SAMBHAJI GAIKWAD(2022A4PS1001G)

Student Write-up

PS-II Project Title: New MCB Automation

Short Summary of work done during PS-II : Automated MCB manufacturing and testing line, Performed trials of welding for different weld groups, Performed trials for grinding automation for PMR.

Tool used (Development tools - H/w, S/w) : Creo, AutoCAD, EZCAD, Excel, LabView, Word

Objectives of the project : To automate the manufacturing line of an upcoming product

Major Learning Outcomes : Learnt about how processes are automated and challenges faced. Also learnt about R&D of product.

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : Great working environment with hands on experience. Main goals were to learn as much as possible and to use my knowledge and skills to add value to the company.

Academic courses relevant to the project : Robotics

PS-II Station : Serum Institute of India Pvt Ltd, Pune

Faculty

Name: Bharathi R .

Student

Name: SIDDHESH RUPESH MARDA(2024H1290005H)

Student Write-up

PS-II Project Title: Research and Development of Polysaccharide Conjugate Vaccine

Short Summary of work done during PS-II : As a member of the project team, I conducted an extensive literature review on polysaccharide conjugate vaccines and their role in preventing bacterial infections. I contributed to understanding the principles of polysaccharide purification, carrier protein selection, and conjugation strategies used in vaccine development. I assisted in collecting, analyzing, and compiling scientific data from research articles, prepared project documentation and presentations, and participated in evaluating vaccine formulation, characterization methods, and quality control parameters. This work enhanced my understanding of vaccine research, biopharmaceutical development, and modern immunization technologies.

Tool used (Development tools - H/w, S/w) : Ascent, People strong, eLMS etc.

Objectives of the project : The primary objective of polysaccharide conjugate vaccine development is to improve the immune response against bacterial polysaccharide antigens by conjugating them with carrier proteins. This approach enhances immunogenicity, induces long-term immune memory, provides effective protection in infants and adults, reduces disease transmission, and supports large-scale vaccination programs for preventing serious bacterial infections.

Major Learning Outcomes : This project provided an understanding of the complete development process of polysaccharide conjugate vaccines, including polysaccharide extraction and purification, carrier protein selection, conjugation chemistry, formulation, and quality evaluation. It highlighted how conjugation converts weakly immunogenic polysaccharides into highly effective vaccines capable of inducing strong T-cell dependent immune responses and long-term immunological memory. The project also enhanced knowledge of vaccine characterization techniques, manufacturing challenges, regulatory requirements, and the critical role of conjugate vaccines in preventing life-threatening

bacterial diseases and improving global public health.

Details of Papers/patents : Scientific papers and patents related to polysaccharide conjugate vaccines were reviewed to understand vaccine development, conjugation techniques, immunogenicity, manufacturing processes, quality control, and recent technological advancements in vaccine

Brief Description of working environment, expectations from the company : The project was carried out in a professional research-oriented environment focused on vaccine development and biopharmaceutical innovation. The working atmosphere encouraged scientific learning, teamwork, critical thinking, and problem-solving through the study of current research, technologies, and industrial practices. Regular discussions, literature reviews, and technical presentations helped in developing a deeper understanding of vaccine design, manufacturing processes, quality control, and regulatory requirements.
From the company, I expected continuous guidance from experienced professionals, exposure to industry-standard research and development practices, and opportunities to enhance my technical and analytical skills. I also expected access to scientific resources, constructive feedback, and a collaborative work culture that promotes learning and innovation. Such an environment is essential for bridging the gap between academic knowledge and industrial applications, helping students gain practical insights into the biotechnology and pharmaceutical sectors. Overall, the experience contributed significantly to my professional development and understanding of modern vaccine research and development.

Academic courses relevant to the project : Immunology

PS-II Station : ServiceNow, Hyderabad / Bengaluru

Faculty

Name: Gopalakrishnan Venkiteswaran .

Student

Name: ADITYA PRASHANT ARKASALI(2024H1030046G)

Student Write-up

PS-II Project Title: AUTOMATED WORKFLOW FOR CUSTOM DOCUMENT GENERATION

Short Summary of work done during PS-II : Began the internship with onboarding, orientation, and access setup across two team transitions, gaining early hands-on exposure to the ServiceNow Now Platform. After settling into the second team, received a project brief, completed knowledge transfer, and evaluated multiple technical approaches before committing to the most feasible one. Spent the core months in active development — building, iterating, and incorporating regular manager feedback — while consistently handling ad hoc tasks involving Python, SQL, Snowflake, HTML/CSS, and AI tooling. Moved into a rigorous QA and testing phase covering unit, integration, and end-to-end testing, resolving issues across multiple passes until the system reached a stable state. Wrapped up with system refinement, comprehensive documentation, and handover preparation, culminating in a final presentation delivered to the manager and stakeholders. The internship provided end-to-end exposure to the professional software development lifecycle within a large enterprise environment, across a modern and diverse technology stack.

Tool used (Development tools - H/w, S/w) : Python, SQL, Snowflake, ServiceNow Now Platform Documentation, Streamlit

Objectives of the project : Build an automated system that handles this workflow end-to-end with minimal manual intervention

Major Learning Outcomes : 1. Navigating ambiguity and pivoting with purpose
Built a POC, assessed its feasibility, and pivoted to a better approach — learning that the first solution is rarely the final one. Communicating and executing a pivot decisively is a core professional skill.
2. The full lifecycle of a professional project
Experienced a project end-to-end — from brief and KT through development, testing, documentation, and final delivery. This gave a ground-level understanding of how software actually moves through an organization.
3. Balancing project work with ad hoc demands
Consistently managed unplanned ad hoc tasks alongside a long-running project without dropping either workstream. Learned to context-switch, re-prioritize quickly, and still meet milestones.
4. Testing is a discipline, not a checkpoint
Regression issues, integration gaps, and E2E failures each revealed different layers of a system's

health. Learned to test with intent, log systematically, and fix without breaking what already works.

5. Communication amplifies technical work

From project plan presentations to final stakeholder delivery and handover documentation, learned that how you present your work matters as much as the work itself. Clarity and structure in communication directly impact how your output is received

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Work environment is very conducive to growth. Teams are very respectful, smart and growth oriented.

Academic courses relevant to the project : Advanced Database Mining, Artificial Intelligence,

PS-II Station : SgurrEnergy, Pune

Faculty

Name: Arun Maity .

Student

Name: SHREYAS RAVINDRA SHINGADE(2024H1430181H)

Student Write-up

PS-II Project Title: Sgurr Energy pune

Short Summary of work done during PS-II : I got trained in Module mounting Structure, also reviewed geotech and mix design report, and pile design

Tool used (Development tools - H/w, S/w) : Staad pro, CFS, All pile

Objectives of the project : To study the design and structural aspects of Module Mounting Structures

(MMS) used in solar PV projects. 2. 3. To review geotechnical investigation reports, including borehole data, trial pits, groundwater levels, and soil classification, for foundation suitability. To analyse concrete mix design reports, focusing on strength, durability, workability, and compliance with IS Code

Major Learning Outcomes : Expertise on staad pro, is875 part 3

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Everything is good nothing to complaint

Academic courses relevant to the project : Wind analysis is875 part 3 , connection design, pile design, is1893 , is13920

Name: KALLURI SAI GANESH(2024H1430190H)

Student Write-up

PS-II Project Title: Renewable energy

Short Summary of work done during PS-II : Learnt how to design different type of structures in solar industry

Tool used (Development tools - H/w, S/w) : Staad pro, Ms office, allpile, RCDC

Objectives of the project : Adding value to the world's energy transition

Major Learning Outcomes : Learning how to design different types of structures

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : It was very good

Academic courses relevant to the project : IS 875 part 3 and IS 1893

PS-II Station : ShareChat, Bengaluru

Faculty

Name: Raja Vadhana Prabhakar .

Student

Name: RONIT KUNKOLIENKER(2022A7PS0091G)

Student Write-up

PS-II Project Title: Dynamic Diversity Alpha for ShareChat Video Feed

Short Summary of work done during PS-II : Multiple iterations of function design, implementation, deployment and testing to determine optimal value of temperature-equivalent alpha parameter in DPP kernel individually for each user from user features like engagement.

Tool used (Development tools - H/w, S/w) : Go, Git, SQL, IPython, Databricks, Eppo

Objectives of the project : To personalise the diversity-relevance tradeoff in the video feed for each user.

Major Learning Outcomes : Recommender System Theory, Exploratory Data Analysis, Continuous Integration/Continuous Deployment

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Flexible, supportive, intellectually stimulating work environment.

Academic courses relevant to the project : Machine Learning, Foundations of Data Science,

PS-II Station : Shell India Markets Pvt Limited, Bengaluru

Faculty

Name: Santosh Khandgave

Student

Name: ARJUN SHIVAKUMAR .(2022A1PS2006H)

Student Write-up

PS-II Project Title: Market Intelligence Research for Shell

Short Summary of work done during PS-II : Conducted market research and cost modelling for shell, for various equipment and contracts

Tool used (Development tools - H/w, S/w) : Excel, PowerBI

Objectives of the project : Conduct different market intel studies for shell

Major Learning Outcomes : Learned how to conduct should cost modelling

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : Very relaxed work environment, no micromanaging, they only wanted the work done and didn't care how else i used my time

Academic courses relevant to the project : none

Name: SUYASH PRABHU DESAI(2022A1PS0998G)

Student Write-up

PS-II Project Title: MARKET INTELLIGENCE ASSIGNMENTS INVOLVING BENCHMARKING AND SHOULDCOST MODELLING ALONG WITH CONTRACT RENEWALS FOR SHELL

Short Summary of work done during PS-II : The Market assignments involved conducting structured market research into map supplier landscapes, identifying market escalations, and analyzing cost drivers across key procurement categories. Benchmarking studies were undertaken to compare Shell's contracting practices, pricing trends, and service performance with recognized industry references, enabling the identification of improvement opportunities and improving overall efficiency.

Tool used (Development tools - H/w, S/w) : MS excel, power Bi, PPT

Objectives of the project : Benchmarking using Should Cost modelling to generate valuable insights for contract negotiations. Building a bottom up model for escalations for future prediction in various categories.

Major Learning Outcomes : This internship provided immersive experience in financial optimization through cost modeling and competitive benchmarking. Primary learning outcomes included constructing "should-cost" and Total Cost of Ownership (TCO) clean-sheet models to isolate cost drivers across raw materials, freight, and labor.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Working environment in shell was so good with good transport facilities from the company. It would have been better if certain days were work from home.

Academic courses relevant to the project : Process economics

PS-II Station : Siemens EDA India Private Limited- Winter (Digital Profile), Noida

Faculty

Name: Pawan Sharma .

Student

Name: ANIRBAN NAYAK .(2022A3PS0705H)

Student Write-up

PS-II Project Title: Development and Integration of Functional Coverage for JESD204 Avery VIP

Short Summary of work done during PS-II : 1) Creation of coverage collector component with 25+ coverpoints and 15+ crosses for JESD204B; and 20+ coverpoints and 10+ crosses for JESD204C 2) Creation of a link parameter randomization class to enable constrained random verification for the VIP 3) Detection and debugging of 8 major bugs in the BFM, 8 major bugs in the test sequences and numerous minor bugs and inconsistencies 4) Achievement of 100% coverage closure for JESD204B 5) Creation of a coverage checking script in python and its integration with Gitlab CI/CD configuration file that notifies any instance of coverage drop through a summary table and shares the relevant coverage reports along with run command templates for faster debugging 6) Structural contributions to the regression script in perl incorporating necessary aspects for enabling and implementing coverage 7) Corrections to the documentation in the VIP for enabling proper generation of Natural Doc HTML files

Tool used (Development tools - H/w, S/w) : VSCode, QuestaSim, Questa Visualizer, Github Copilot

Objectives of the project : Performing functional coverage for JESD204B/C Verification IP

Major Learning Outcomes : Fundamentals of SystemVerilog
Fundamentals of UVM
Studying Technical Specifications
Working with GIT Version Control System

Working in Linux systems
In-Depth Understanding of Functional Coverage
Debugging with Questa Vizualizer
AI-assisted Scripting in Python/Perl/YAML
Coding with the long-term view
Being a team player and communicating effectively
Importance of clean and comprehensive documentation

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment will be amazing in terms of learning support. The team members will be very open to helping and clearing doubts. They care about your growth and learning. You get to work on real client deliverable projects. In return, they do expect you to deliver results so there's always a little pressure.

Academic courses relevant to the project : Computer Programming, Digital Design, Foundations of Data Structures and Algorithms, Object Oriented Programming, Operating Systems, Computer Architecture

PS-II Station : Siemens Energy India Limited, Gurgaon

Faculty

Name: Sudeep Kumar Pradhan .

Student

Name: ANUKRITI SINGH(2022A3PS0316G)

Student Write-up

PS-II Project Title: Training on Industrial Automation Softwares

Short Summary of work done during PS-II : Learnt about automation softwares

Tool used (Development tools - H/w, S/w) : TIA Portal

Objectives of the project : Learn about softwares used in industrial automation

Major Learning Outcomes : Learnt about automation softwares
Different verticals of the department

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Encouraging working environment, everyone from top management to immediate seniors were approachable and helpful

Academic courses relevant to the project : NA

PS-II Station : Siemens PLM, , Pune

Faculty

Name: Pawan Sharma .

Student

Name: VATSAL GOYAL .(2021B1A32325H)

Student Write-up

PS-II Project Title: Developement and enhancement of Data Catalog Service

Short Summary of work done during PS-II : developed a microservice called Data Catalog using

java spring boot MVC architecture. More than 20API's were developed to achieve the usecase.

Tool used (Development tools - H/w, S/w) : Java

Objectives of the project : To write the code of a mvc based springboot microservice using API's

Major Learning Outcomes : Java spring boot, Python langchain

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Very good working environment, great work life balance, good learning opportunities

Academic courses relevant to the project : Oops, DBMS, fdsa, OS

PS-II Station : SiFive India Pvt Ltd, Bengaluru

Faculty

Name: A Rekha .

Student

Name: GANDHALE PARTH SOPAN .(2021B4A32365H)

Student Write-up

PS-II Project Title: Timing Analysis and Floorplanning in RTL-to-GDSII Flow

Short Summary of work done during PS-II : The internship offered a comprehensive and immersive introduction to the physical design flow, allowing me to experience first hand how complex digital systems progress from RTL descriptions to physically realizable layouts. Through floorplan experimentation, timing and congestion analysis, tool-driven optimization, and the development of

automation scripts, I gained a practical understanding of the iterative nature of PD and the many tradeoffs that guide decision-making. The work strengthened my technical foundation in using industrial EDA tools such as Synopsys Fusion Compiler, PrimeTime, and Verdi, while also introducing me to the dynamic, feedback-driven workflow that characterizes real-world implementation. Just as importantly, it helped me develop a more intuitive sense of how logical structure, physical layout, and tool behavior intertwine in determining final PPA outcomes. The experience demonstrated that successful physical design requires not only technical knowledge of tools and scripts but also the ability to reason about design hierarchy, timing dependencies, and physical constraints at a system level.

Tool used (Development tools - H/w, S/w) : Fusion Compiler, PrimeTime, Verdi, Git, Github

Objectives of the project : Focusing on the RTL-to-GDSII flow with an emphasis on meeting timing requirements.

Major Learning Outcomes : The learnings of the internship reflect a combination of technical contributions to ongoing
physical design work and substantial growth in understanding the RTL-to-GDSII
implementation process. Although specific design data remains confidential, the broader
outcomes can be described meaningfully by examining how the experiments, analysis,
and automation efforts shaped the design workflow.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : It's a helpful learning environment and there's an emphasis on ramping up quickly (as aided by the company) and to start contributing meaningfully. My mentor was a very helpful guy, as well as my manager, and I learned a lot from them.

Academic courses relevant to the project : Computer Architecure, Digita Design, Analog and Digital VLSI Design, FPGA Lab

PS-II Station : Sigma Infosolutions Limited - , Bengaluru

Faculty

Name: Shwetha Vittal

Student

Name: HRISHIKESH KADAM(2022A3PS1150G)

Student Write-up

PS-II Project Title: Tech Intern

Short Summary of work done during PS-II : AI assisted development of ERP system along with assisting QA and development team to test and push code to staging

Tool used (Development tools - H/w, S/w) : Cursor, DBeaver and Copilot

Objectives of the project : Creating and assisting developers in making an ERP system

Major Learning Outcomes : Learnt to manage the gaps between product managers and developers

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Good and healthy environment, amazing enthusiastic clients that push for betterment and good and understanding mentorship

Academic courses relevant to the project : OS, basic CS courses

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Name: ABHIRAM JUTURU .(2021B4A83143H)

Student Write-up

PS-II Project Title: Ai full stack dev

Short Summary of work done during PS-II : Building erp system with cursor

Tool used (Development tools - H/w, S/w) : Cusor vs code dbeaver

Objectives of the project : Building ERP platform

Major Learning Outcomes : Full stack dev

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Strict deadlines and stressful

Academic courses relevant to the project : None

PS-II Station : Singlestore India Pvt Ltd, Hyderabad

Faculty

Name: Sai Kishor Jangiti .

Student

Name: OMKAR SHASHANK SATHE(2021B1A72280G)

Student Write-up

PS-II Project Title: Performance improvements in SingleStore Engine

Short Summary of work done during PS-II : Add new monitoring metrics to SingleStore Engine to track customer stats for better visibility. Added local SSD for faster performance on query execution

Tool used (Development tools - H/w, S/w) : C++, VSCode

Objectives of the project : Performance improvements in SingleStore Engine

Major Learning Outcomes : Learnt about distributed databases and the how durability and replication are guaranteed.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Good working environment. Manager and team members are supportive and overall conducive for growth and learning

Academic courses relevant to the project : Database Systems, Operating Systems, Data Structures and Algorithms

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Name: AMAN KIRITKUMAR PATEL(2022A7PS0152P)

Student Write-up

PS-II Project Title: S3 Pipelines optimization + iceberg pipelines compatibility

Short Summary of work done during PS-II : During my internship, I worked with the Engine Ingest team, gaining hands-on experience in large-scale data ingestion and processing systems. My primary project involved designing and implementing a new ingestion mechanism for S3 pipelines from scratch using a Kinesis Data Streams-based approach. This solution significantly improved pipeline latency and was successfully deployed to production. Through this work, I developed practical knowledge of various AWS services, including S3, EventBridge, SNS, SQS, Kinesis Data Streams, and CI/CD workflows. I later contributed to the company's SaaS platform, where I independently developed end-to-end UI functionality for Kafka pipeline creation workflows. This project deepened my understanding of Kafka architecture, including producers, brokers, topics, partitions, consumers, AWS MSK clusters, and PrivateLink connectivity. The feature was successfully released to production. In addition to development work, I prepared design proposals for Azure Workload Identity integration and

automation of DNS mappings for Kafka PrivateLink configurations. I also contributed to improving user experience by enhancing multiple UI components within the platform. A significant part of my learning involved understanding Apache Iceberg, including its architecture, ingestion workflows, and V2/V3 specifications. I gained insights into concepts such as deletion vectors and row-level operations. Towards the latter part of my internship, I worked on ensuring backward compatibility for Iceberg pipelines across engine upgrades by implementing mechanisms that allowed destination tables to use appropriate query behavior based on their supported capabilities. Overall, the internship provided extensive exposure to cloud technologies, distributed systems, data platforms, and production-scale software development.

Tool used (Development tools - H/w, S/w) : AWS, Github, Linux, Cursor, Claude Code, Glean(company internal AI tool for understanding docs and specs), Slack, C++, Go, Python, rigorous testing of features

Objectives of the project : 1. To reduce the latency of S3 pipelines. 2. Make the iceberg pipelines more compatible.

Major Learning Outcomes : Learnt the complete flow of pipelines which is critical for any database company to ingest cloud data into their own first for further processing. Learnt many resource offerings of AWS and Azure clouds in detail, mainly around s3 buckets, event bridge notifications, kinesis streams, Kafka clusters, VPNs, MSK Private Links etc.
Another thing mainly learnt is the iceberg open table format in much detail, specially the V2 and V3 specs.
Also learnt many frontend concepts along the way for a couple of tasks in Helios.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : My internship experience provided me with a highly positive and enriching work environment. The organization fosters a collaborative culture where employees across different levels of seniority are approachable, supportive, and willing to share their knowledge. One aspect I particularly appreciated was the absence of a rigid hierarchical structure in day-to-day interactions. Whether communicating with senior software engineers, staff engineers, or managers, discussions were always open, respectful, and encouraging.
The mentors and managers I worked with were extremely helpful and responsive. They welcomed questions, provided detailed explanations, and actively encouraged learning. I had the opportunity to receive feedback on my design documents from experienced engineers, which significantly

contributed to my technical and professional growth.
The company operates with a flexible work culture that emphasizes ownership and results rather than fixed working hours. While collaboration with globally distributed teams occasionally required late-night meetings, these interactions offered valuable exposure to international work practices and cross-functional communication.
The expectations from interns primarily revolved around taking initiative, learning continuously, and delivering quality work. Employees were encouraged to contribute ideas and participate in discussions regardless of their role or experience level. This inclusive approach created an environment where interns felt valued and motivated to learn.
Overall, the internship offered an excellent balance of mentorship, technical learning, flexibility, and professional development, making it a highly rewarding experience.

Academic courses relevant to the project : DBMS, OS, OOPS, Linux fundamentals, C++, Python, ML, DL.

Name: PARTH MEHTA .(2022A7PS0043H)

Student Write-up

PS-II Project Title: Software Engineer Intern

Short Summary of work done during PS-II : Was maintaining the build and release manager of Singlestore, mainly working with go code. Managing the backend of the service and ensuring the CI pipeline is always healthy for the engineering team. Mainly to do with deep understanding of k8s, docker and backend technologies

Tool used (Development tools - H/w, S/w) : Vs code (linux), slack, cursor

Objectives of the project : Maintaining the build and release manager of Singlestore, mostly backend

Major Learning Outcomes : Go language, kubernetes, docker, ci/cd pipelines, concurrency, backend

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Great work, touching production code frequently (which is rare among interns), great mentors, very supportive, a lot of ownership of code, huge responsibilities ~ almost like FTE, good work-life balance, and loaddsss to learn

Academic courses relevant to the project : None lol, maybe some OS

Name: HARSH NISHANT LALAI(2021B3A72665G)

Student Write-up

PS-II Project Title: Design and Implementation of Iceberg Variant Ingestion Support in the SingleStore Engine

Short Summary of work done during PS-II : During my PS-II internship at SingleStore with the Engine team, I worked on understanding and extending the database engine's ingestion support for Apache Iceberg tables. My work began with onboarding into the development workflow, build system, testing process, and code review practices used in a production-grade distributed database. I initially worked on code quality and debugging tasks, including understanding static-analysis-driven fixes and safe systems programming practices. Later, my focus shifted to Apache Iceberg internals and the ingestion pipeline. I studied Iceberg metadata, schema projection, field IDs, and Parquet variant encoding, and used this knowledge to debug and implement support for ingesting Iceberg variant columns into JSON-compatible forms. The work involved changes across C++ and Java components, dependency debugging, parser and runtime updates, feature-flag propagation, decoding logic, and end-to-end validation through tests. Overall, the internship gave me hands-on exposure to database internals, large-scale systems code, and production engineering workflows.

Tool used (Development tools - H/w, S/w) : Software/Development Tools: SingleStore codebase, C++, Java, Coverity, fork-arrow, vcpkg, Maven, memsqltest, Python test files, Yacc/Bison grammar files, Spark SQL, Iceberg pipeline tests, CI/debug build tools, Kafka, S3/MinIO, Apache Iceberg and Parquet-

Objectives of the project : Understand the architecture and workflow of a production-grade

distributed database engine. Study Apache Iceberg internals, especially metadata layout, schema handling, and update/delete mechanisms. Debug and enhance the SingleStore ingestion pipeline to support Iceberg variant columns and map them into JSON-compatible representations. Contribute production-quality code, tests, and fixes across C++ and Java components of the system.

Major Learning Outcomes : Gained practical experience working in a large production C/C++ and Java codebase.
Improved debugging skills across build issues, dependency conflicts, runtime failures, and segmentation faults.
Developed a strong understanding of Apache Iceberg, including schema projection, field IDs, metadata hierarchy, and variant handling.
Learned how to design, implement, and validate end-to-end ingestion features with targeted and CI-safe tests.
Strengthened understanding of systems programming practices such as memory safety, defensive coding, and integration across multiple layers of a database engine.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : SingleStore provided a professional engineering environment centered around real-world product development in a distributed database system. As part of the Engine team, I was expected to learn the internal development workflow, understand existing code paths, debug complex issues, and contribute changes that met production coding and testing standards. The work involved regular mentor guidance, code reviews, iterative feedback, and validation through unit and regression tests. The environment emphasized ownership, careful debugging, safe coding practices, and understanding system behavior across multiple layers rather than making isolated changes. I was also expected to study relevant technical concepts independently, connect them to product requirements, and progressively take on deeper implementation tasks. This made the internship both challenging and highly educational, as it combined theoretical learning with hands-on contribution to a production-grade system.

Academic courses relevant to the project : CP, DBMS, DSA, OOPS

Name: OM JIGNESH JOSHI(2021B3A70958G)

Student Write-up

PS-II Project Title: Monitoring Systems, Alert Automation, RAG and AI Benchmarking for Database Applications

Short Summary of work done during PS-II : During my internship at SingleStore, I worked on projects related to Artificial Intelligence, database systems, and information retrieval. The first phase of the internship focused on benchmarking Text-to-SQL systems using industry-standard datasets such as BIRD and SPIDER. This involved analyzing dataset compatibility with SingleStore, correcting benchmark inconsistencies, validating SQL queries, and improving evaluation accuracy. I also integrated LLM-as-a-Judge methodologies for qualitative assessment of model outputs and developed automated evaluation pipelines using GitHub Actions. To facilitate performance monitoring and analysis, I created Grafana dashboards that visualized benchmark metrics and trends. The second phase of the internship focused on Retrieval-Augmented Generation (RAG) systems. I researched and implemented various retrieval techniques, including embeddings, vector search, BM25-based retrieval, hybrid search, document chunking, and cross-encoder reranking. Using these components, I designed and developed a complete end-to-end RAG pipeline capable of retrieving relevant information and generating accurate responses. Finally, I worked on productionizing the RAG solution using publicly available SingleStore documentation as the knowledge source. This included automating document ingestion, optimizing retrieval quality, and deploying a scalable knowledge retrieval system. Through these projects, I gained practical experience in AI evaluation, large language models, information retrieval, database technologies, automation, and the deployment of enterprise-grade AI applications.

Tool used (Development tools - H/w, S/w) : Ubuntu Linux, SingleStore, Python, SQL, Git, GitHub, GitHub Actions, Grafana, Docker, Visual Studio Code (VS Code), Jupyter Notebook, OpenAI APIs, Hugging Face Transformers, Sentence Transformers, BM25 Retrieval Frameworks, Cross-Encoder Models, Vector Se

Objectives of the project : To evaluate, improve, and deploy AI-powered database solutions by benchmarking Text-to-SQL systems, developing Retrieval-Augmented Generation (RAG) pipelines, and building scalable evaluation and retrieval frameworks for SingleStore applications.

Major Learning Outcomes : Gained practical experience in evaluating and benchmarking Text-to-SQL systems using industry-standard datasets such as BIRD and SPIDER.

Developed a strong understanding of Large Language Models (LLMs), prompt engineering, and AI evaluation methodologies, including LLM-as-a-Judge frameworks.
Learned to design, implement, and optimize Retrieval-Augmented Generation (RAG) pipelines using embeddings, chunking, vector search, BM25 retrieval, and cross-encoder reranking.
Acquired hands-on experience in building automated evaluation and deployment workflows using GitHub Actions and CI/CD practices.
Enhanced proficiency in database technologies, SQL query analysis, schema mapping, and SingleStore database systems.
Developed skills in creating monitoring and analytics dashboards using Grafana for tracking benchmark performance and system metrics.
Strengthened problem-solving and debugging abilities through the investigation of benchmark inconsistencies, data compatibility issues, and retrieval performance challenges.
Gained exposure to productionizing AI solutions, including document ingestion, knowledge base management, and scalable retrieval systems.
Improved research, technical documentation, and independent learning skills while working on emerging AI technologies.
Developed a deeper understanding of how modern organizations build, evaluate, and deploy AI-powered systems for real-world applications.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : SingleStore provided a collaborative and innovation-driven work environment focused on solving real-world challenges in database systems and artificial intelligence. The engineering culture encouraged independent problem-solving, continuous learning, and knowledge sharing, while also providing guidance and support from mentors and team members whenever required. Regular discussions, code reviews, and project updates ensured alignment with team goals and promoted professional growth.
As an intern, I was entrusted with meaningful projects involving AI benchmarking, Text-to-SQL evaluation, Retrieval-Augmented Generation (RAG) systems, and production-oriented engineering workflows. This allowed me to work with modern technologies and gain hands-on experience in both research and software development.
My expectations from the company were to gain exposure to large-scale software systems, understand industry best practices, work on impactful projects, and learn from experienced engineers. These expectations were met through opportunities to contribute to ongoing initiatives, explore emerging AI technologies, and develop solutions that addressed practical business needs. The internship provided a balance between technical challenges and learning opportunities, helping me

strengthen both my technical and professional skills while gaining valuable insight into the workings of a leading technology company.

Academic courses relevant to the project : Database Systems
Data Structures and Algorithms
Object-Oriented Programming
Design and Analysis of Algorithms
Operating Systems
Computer Networks

Name: DEV RAVINDRA CHHEDA(2022A7PS0134P)

Student Write-up

PS-II Project Title: Development of MCP servers, backend infra and CI/CD for AI and compute platform

Short Summary of work done during PS-II : Developed different components of software in the AI and compute platform across backend, frontend, CI/CD pipelines. Partly developed and will continue to develop and own the MCP service as a full time.

Tool used (Development tools - H/w, S/w) : Golang, python, react, git, Cursor, Claude code.

Objectives of the project : Develop various features in the singlestore AI and compute platform

Major Learning Outcomes : Learned a lot of software development practices followed in industry.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working environment was really great. Everyone was friendly, approachable and helpful. Manager, mentor and HR were very helpful and helped with any kind of technical or non technical challenges we encountered.

Academic courses relevant to the project : Database Management systems, operating systems, computer networks, compiler constructions, object oriented programming, data structures and algorithms.

Name: ADITYA AGARWAL(2021B3A70870P)

Student Write-up

PS-II Project Title: Resource Governance and Json Optimization

Short Summary of work done during PS-II : Resource Governance and Json Optimization

Tool used (Development tools - H/w, S/w) : Vscode and internals

Objectives of the project : Resource Governance and Json Optimization

Major Learning Outcomes : C++, Python, Kubernetes,Linux

Details of Papers/patents : No

Brief Description of working environment, expectations from the company : Very good

Academic courses relevant to the project : Oops

PS-II Station : Skydo - Product Growth, Bengaluru

Faculty

Name: Smitha Sarma Ranganathan

Student

Name: SAKSHAM JAIN .(2021B4A82925H)

Student Write-up

PS-II Project Title: Multiple Projects

Short Summary of work done during PS-II : Worked on multiple cross-functional projects focused on operational efficiency and AI-driven automation at Skydo. Initially contributed to a project aimed at automating customer ticket resolution using AI to streamline support workflows and reduce manual effort. Later worked on identifying efficiency improvement areas across three different teams, analyzing existing processes, and proposing end-to-end workflow optimizations to improve productivity and operational effectiveness.

Tool used (Development tools - H/w, S/w) : App script, Metabase, Zoho

Objectives of the project : To automate customer ticket resolution using AI

Major Learning Outcomes : None

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The work culture was good. I have enjoyed my PS.

Academic courses relevant to the project : None

PS-II Station : Smurfit WestRock - Water Treatment process, Valsad

Faculty

Name: Raghuraman S .

Student

Name: ROHIT VIJAYKUMAR(2022A1PS1484G)

Student Write-up

PS-II Project Title: Zero liquid discharge and R2S Anaerobic reactor

Short Summary of work done during PS-II : During my internship at Smurfit Westrock, I gained hands-on experience in industrial wastewater treatment by monitoring daily Effluent Treatment Plant (ETP) and Zero Liquid Discharge (ZLD) operations. I focused on tracking the plant's total water inventory and managing the flow rates between different processing tanks using SCADA control software. A key part of my work involved understanding process dilution: I analyzed how recycling treated biowater back into the Pre-Acidification (PA) tank helps dilute highly concentrated raw wastewater (with an inlet COD of 27,200 mg/L and VFA of 11,545 mg/L). This crucial dilution step protects the specialized R2S anaerobic reactor from organic shocks, stabilizes the system, and ensures steady water flow, giving me a practical understanding of industrial chemical engineering and closed-loop water management.

Tool used (Development tools - H/w, S/w) : Scada DCS, Microsoft Excel, DWSIM

Objectives of the project : I was part of the team for recommissioning of R2S Anerobic reactor in the Effluent treatment plant at Smurfit westrock, understood the zero liquid discharge process in the ETP plant.

Major Learning Outcomes : I learned the work ethics to follow in an Industry
I learned how to deal with people in the plant, how to follow and adhere to strict safety protocols
Understood imdustrial wastewater management and learned all process parameters.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : It was a good working enviroment with supportive people all around. Working in a plant is tough as you need to constantly check unit operations by climbing heights, checking equipments or do calculations on risky

areas.

The company expects utmost safety and responsibility while working in plant. They expect us to work diligently and with utmost honesty.

Academic courses relevant to the project : Enviromental courses

Chemical engineering courses

Basic Mechanical courses

PS-II Station : Snivaa Consulting Engineers, Pune

Faculty

Name: Rajiv Gupta .

Student

Name: ANIRUDDHA SANJAY KHAIRE(2024H1430045P)

Student Write-up

PS-II Project Title: Structural Analysis & Design of Steel & RCC Structure

Short Summary of work done during PS-II : During the internship, industry-standard software including ETABS, STAAD.Pro, and RCDC were extensively used. ETABS was utilized for the analysis and design of reinforced concrete buildings, while RCDC was employed for reinforcement detailing and preparation of structural drawings. STAAD.Pro was used for the analysis and design of steel structures in accordance with IS 800:2007 (Limit State Method).

Tool used (Development tools - H/w, S/w) : Softwares : STAAD.PRO, ETABS, RCDC, AUTOCAD,SAFE

Objectives of the project : Bridge Gap Between Academics & Industry Practice

Major Learning Outcomes : Enhance Structural Analysis Skills

Details of Papers/patents : Structural Analysis & Design of Steel & RCC Structure

Brief Description of working environment, expectations from the company : Overall experience was average. The company was very small and project was not huge enough to get good exposure. We did only part project. Not had chance to complete single project.

Academic courses relevant to the project : Earthquake Engineering, Dynamics of Structure, Concrete Structure Design , Foundation Engineering, Finite Element Analysis

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Name: THANEDAR AADITYA ABHAY(2024H1430043P)

Student Write-up

PS-II Project Title: Analysis and Design of RCC Structures

Short Summary of work done during PS-II : Great experience.

Tool used (Development tools - H/w, S/w) : ETABS, SAFE, RCDC,SKETCHUP

Objectives of the project : To get hands on experience on analysis, design and optimization of structures.

Major Learning Outcomes : Hands on experience in the field of structural engineering, application of theoretical knowledge to real world projects/ problems, Improved proficiency in the use of softwares.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Good working environment

Academic courses relevant to the project : Advanced Foundation Engg, RCC, DSS

PS-II Station : Societe Generale Global Solution Center, Bengaluru

Faculty

Name: Smitha Sarma Ranganathan

Student

Name: CHIRAG SHARMA .(2022AAPS0301H)

Student Write-up

PS-II Project Title: DDT big data control

Short Summary of work done during PS-II : I worked on a big data control security system called DDT, or Data Detection Transfer. The core problem DDT solves is data exfiltration. The bank needs to know if sensitive information is being leaked outside the organization. To achieve this, the DDT pipeline monitors employee internet activity via proxy logs, running that data through a machine learning model to flag abnormal transfers. Those flagged cases are then routed to process owners in Paris for investigation. My task was to diagnose the failure, migrate the codebase, and modernize the underlying architecture. The final outcome is that a critical security pipeline is now fully operational in production on modern infrastructure. Today, it is actively running and providing the bank with accurate, validated visibility into insider threats at an enterprise scale.

Tool used (Development tools - H/w, S/w) : AKS, Python, Scikit-learn, PySpark

Objectives of the project : Migration of big data control

Major Learning Outcomes : Learnt how enterprise level big data controls work

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Great working

environment, good culture. One of the best WLB companies. Expectations are minimal.

Academic courses relevant to the project : ML

Name: HARPREET KAUR GANDHI(2024H1030194H)

Student Write-up

PS-II Project Title: CFI - Calculator on Fixed Income

Short Summary of work done during PS-II : During my six-month internship with the Calculator on Fixed Income (CFI) team at Société Générale, I focused on improving application reliability and supporting our global software deployment cycles. My work was divided into two key areas: First, I took ownership of a data latency issue where the risk monitoring screens were occasionally displaying cached numbers instead of live market data. To resolve this, I engineered a cache-busting hard refresh mechanism that directly linked our Angular frontend with the backend .NET APIs. Alongside, I was also working on to resolve few SonarQube issues. Second, the team trusted me with the responsibility of acting as the Feature Team Release Manager for two major global production updates. In this role, I coordinated comprehensive pre-deployment testing checklists, and aligned timelines directly with our Global Release Managers in Paris. By maintaining strict organization and clear tracking, we successfully pushed both software releases live across our global desks with zero system glitches or business interruptions. I was also assigned to work on an internal blotter screen using WinForms to help team for smoother work transition. Ultimately, this project gave me valuable experience moving beyond isolated academic programming to deliver real, measurable value within a massive, high-stakes enterprise codebase.

Tool used (Development tools - H/w, S/w) : Software Tools: Angular Framework, .NET (C#), WinForms APIs, Git (Version Control), and Jira (Agile Project Management). Also used other internal tools by organization

Objectives of the project : The main objective was to improve the reliability and data accuracy of the bank's internal risk calculation tools used by the Middle Office. This involved resolving a specific data lag issue on the monitoring dashboards and managing the step-by-step coordination of global software deployments to ensure the platform updated without any system downtime.

Major Learning Outcomes : Gained practical experience connecting Angular user interfaces with robust .NET backends to manage real-time enterprise data streams smoothly.
Managed deployment checklists and supported live production updates across global environments.
Developed a solid understanding of how core software infrastructure safeguards daily risk validation and compliance tracking.
Enhanced professional communication by coordinating directly with remote engineering teams and release managers in Paris.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Société Générale provides a highly professional and well-structured engineering environment. From the very beginning, interns are fully integrated into active engineering teams and given real, production-level responsibilities rather than simulation exercises.
The company expects interns to be proactive, write clean and maintainable code, test their deliverables thoroughly, and take genuine accountability for their assigned work. Because the software we manage directly impacts banking operations and regulatory compliance, a high degree of precision, attention to detail, and careful risk consciousness are strongly expected.
The overall team culture is incredibly supportive and collaborative. Senior engineers, tech leads, and managers maintain an open, approachable hierarchy and are always willing to explain complex financial workflows or technical architecture when you face a roadblock. The firm also places a strong emphasis on cross-border teamwork and smooth, clear communication across its global offices.

Academic courses relevant to the project : Data Structures and Algorithms, Object-Oriented Programming (OOP), Software Engineering Architecture, and Database Management Systems (DBMS).

Name: KRITIN GOYAL .(2022A3PS1660H)

Student Write-up

PS-II Project Title: Trade Processing and compliance

Short Summary of work done during PS-II : IDE Migration: Successfully migrated the ETP (Eliot Trade Processing) application's development environment from IntelliJ IDEA to Visual Studio Code to minimize developer machine overhead. ELK Stack Monitoring: Engineered an automated monitoring system utilizing Logstash, Elasticsearch, and Kibana to track Oracle database tablespace growth. This system proactively mitigated the risk of capacity-induced trading pipeline outages. Core System Migration: Facilitated a critical migration of the primary trade_id variable from a 32-bit integer to a 64-bit long. This involved refactoring over 150 independent microservices and making approximately 3,000 code changes to prevent a systemic integer overflow. Code Radar Tool: Developed a custom static analysis tool called "Code Radar". It parsed Java Abstract Syntax Trees (AST) paired with semantic AI to automatically flag 412 hidden, ambiguously named variables for migration, drastically reducing manual review times.

Tool used (Development tools - H/w, S/w) : Hardware- Laptop; Software- Java Springboot, Sybase Sql, Hibernate, Python, ELK Stack, Kubernetes, Docker, Apache Spark, RabbitMQ

Objectives of the project : Database Monitoring, Deal data enrichment and validation automation

Major Learning Outcomes : Learnt about core fundamentals of backend engineering using Sprinboot, Got hands on exposure to multiple azure tools and their applications. Learnt how big scalabale applications handle vast amounts of data, how enhancements are made in applications with a vast codebase and what is the release process for working in team of engineers.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment of Societe generale is good. The work load is manageable although or certain days it may get hectic but not that often. The work is entirely tech related but one needs strong Functional Knowledge about how banking works in general as well. A lot of the codebase is a legacy codebase so a lot of work is also about migration from old tech to new. The expectations from a employee/intern are team player, good technical knowledge about the technology used in the application they are working on, person who takes initiative and a learner. From a technical perspective a person should be fluent in one coding language (lile java and Sprinboot framework, or Python & FastAPI) and SQL

Academic courses relevant to the project : DBMS, OOPS, OS, AI, ML, FDSA

Name: SANJANA PRABHUGARI(2024H1030160H)

Student Write-up

PS-II Project Title: XOne Application

Short Summary of work done during PS-II : I worked on the real life scenerios in the xone application development according to the requirement. One task was related to the china internal and external currency and i have worked on few other tasks which helped me understand the real world system.

Tool used (Development tools - H/w, S/w) : Xone, sql, testing tools, .net

Objectives of the project : To learn about the trading and the accounting section.

Major Learning Outcomes : Learnt about the trades and the accounting system to be maintained and learnt .net

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : I liked the environment of the Company.

Academic courses relevant to the project : Dbms, programming

PS-II Station : Sodexo, Pune

Faculty

Name: Smitha Sarma Ranganathan

Student

Name: ESWAR PANDURU(2024H1540841P)

Student Write-up

PS-II Project Title: Business development and market mapping in healthcare and senior living segments

Short Summary of work done during PS-II : I worked in the Healthcare and Senior Living business segment at Sodexo India Services Pvt. Ltd., supporting business development initiatives. My responsibilities included market mapping of hospitals, medical colleges, and senior living communities across Maharashtra, Gujarat, and Tamil Nadu. I developed a structured prospect database containing institutional information, bed capacities, governing trusts, stakeholder details, and contact information. I also conducted stakeholder identification and outreach activities through telephone calls and emails to understand organizational structures and identify decision-makers. Based on observations during outreach, I refined communication strategies according to different institution types such as multispeciality hospitals, super-speciality hospitals, medical colleges, and senior living communities. The internship also involved follow-up communication and appointment generation to support future business development activities.

Tool used (Development tools - H/w, S/w) : Microsoft Excel, LinkedIn, Telephone Communication, ChatGPT

Objectives of the project : To identify potential business opportunities in the Healthcare and Senior Living segments. To develop a structured database of hospitals, medical colleges, and senior living communities. To identify key stakeholders and support business development through market mapping and lead generation.

Major Learning Outcomes : Understanding institutional business development.
Stakeholder identification and organizational hierarchy analysis.
Market research and database development.
Segment-based outreach strategies.
Professional communication and relationship management.

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : The working environment at Sodexo was collaborative, professional, and learning-oriented. I worked closely with

my industry mentor and the Healthcare and Senior Living business development team, receiving regular guidance and feedback on assigned tasks. The internship encouraged independent research while providing opportunities for discussions and reviews whenever required.
The organization emphasized ownership, accuracy, and continuous learning. Expectations included maintaining structured databases, conducting quality market research, meeting project timelines, and communicating professionally with prospective clients. Regular interactions with the team helped me understand practical business development processes and institutional sales within the healthcare sector.

Academic courses relevant to the project : Marketing Management
Advanced Excel
Managerial Communication
Strategic Management

PS-II Station : Solanova Energy - Data Science, Gorakhpur

Faculty

Name: Chetana Anoop Gavankar .

Student

Name: PUPPALA REVANTH KUMAR(2021A7PS2692P)

Student Write-up

PS-II Project Title: DEVELOPMENT AND DEPLOYMENT OF A CUSTOMIZED CUSTOMER RELATIONSHIP MANAGEMENT (CRM) SYSTEM

Short Summary of work done during PS-II : The project involved the development and deployment of a customized Customer Relationship Management (CRM) system for Solanova Energy. The CRM was designed to centralize customer and lead information that was previously managed through Google Sheets and WhatsApp. Key activities carried out during the project included frontend

development using React.js, migration of approximately 360 customer records, customization of the platform according to organizational requirements, implementation of a quotation generation module, user account configuration, and employee training. The implemented system streamlined customer management processes, simplified quotation generation, and improved information accessibility across telemarketing, sales, and operations teams. The project also provided practical exposure to web application development, business process digitization, data migration, and user onboarding in a real-world environment.

Tool used (Development tools - H/w, S/w) : REACT JS,SHEETS,APIs

Objectives of the project : The objective of the project was to design and implement a web-based CRM platform that would streamline business operations by providing a centralized system for managing customers, leads, and organizational data. The application was developed with a focus on usability, accessibility, and alignment with the company's workflow requirements.

Major Learning Outcomes : REACT JS,LEADERSHIP

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The work environment was good, and my mentor was very understanding. However, although I joined for a Data Science role, I was only assigned product-related work and did not get the opportunity to work on Data Science tasks.

Academic courses relevant to the project : DBMS,OOPS

PS-II Station : Solanova Energy - Product, Gorakhpur

Faculty

Name: Sidharth Mishra .

Student

Name: SUMIT SINGH RATHORE(2022D2PS1546P)

Student Write-up

PS-II Project Title: Product Management and Business Process Optimization for Solar EPC Operations

Short Summary of work done during PS-II : Solanova Tech Pvt. Ltd. provided a dynamic startup environment where employees worked closely across multiple functions, including sales, operations, installation, liaisoning, and product management. The organization encouraged ownership of tasks, continuous learning, and collaborative problem-solving. As an intern, I was given opportunities to work on real business challenges instead of isolated academic assignments. Regular interactions with different teams helped me understand cross-functional workflows and the importance of effective communication. The company emphasized data-driven decision-making, operational efficiency, and customer satisfaction. The expectations from interns included taking initiative, learning quickly, proposing practical solutions, maintaining professionalism, and contributing meaningfully to ongoing projects. This environment significantly improved my technical, analytical, and interpersonal skills while exposing me to the functioning of a rapidly growing renewable energy startup.

Tool used (Development tools - H/w, S/w) : Google Sheets, Microsoft Excel, Google Apps Script, Looker Studio, CRM Software, Microsoft Office, Canva, and a laptop/desktop.

Objectives of the project : To understand and optimize business processes in a solar EPC startup by applying product management and data analytics techniques. To develop dashboards, automate workflows, and support CRM-driven operational improvements for enhanced business efficiency.

Major Learning Outcomes : Gained practical experience in product management, business analytics, CRM implementation, dashboard development, and process automation in a solar EPC startup.

Details of Papers/patents : No papers or patents were published as part of the PS-II project.

Brief Description of working environment, expectations from the company : Worked in a collaborative startup environment with cross-functional teams, focusing on real business problems,

data-driven decision-making, and process improvement.

Academic courses relevant to the project : Product Management, Operations Management, Data Analytics, Strategic Management, Organizational Psychology, and Business Communication.

PS-II Station : Sona Comstar,Gurugram, Gurgaon

Faculty

Name: Sameer Gupta .

Student

Name: ATUL SHARMA(2024H1410068H)

Student Write-up

PS-II Project Title: Predicting failure in differentials

Short Summary of work done during PS-II : Predicting the lubrication film thickness in the working condition of the differential gears. Correlation of the experimental/testing results for the pitting and be bending failure in the bevel gears.

Tool used (Development tools - H/w, S/w) : Solid edge, Siemens NX, Excel

Objectives of the project : To predict the life of the differential gears

Major Learning Outcomes : Correlation of FEA results with hand calculations for predicting the gear life.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Overall good

Academic courses relevant to the project : FEA, Machine Design, Tribology, Strength of materials

PS-II Station : ST Microelectronics, Noida

Faculty

Name: Rajesh Kumar Tiwary .

Student

Name: SHARMA DHRUV TARKESHWAR(2024H1230174P)

Student Write-up

PS-II Project Title: Sta and physical design

Short Summary of work done during PS-II : Physical design and sta

Tool used (Development tools - H/w, S/w) : Innovus, calibre, Prime time

Objectives of the project : Vlsi Physical design

Major Learning Outcomes : Vlsi physical design

Details of Papers/patents : No

Brief Description of working environment, expectations from the company : Good

Academic courses relevant to the project : Yes

Name: ROHAN ARORA(2021B1A31693P)

Student Write-up

PS-II Project Title: Carrying out Synthesis and PnR on IMC based NPU blocks

Short Summary of work done during PS-II : Performing Synthesis, PnR (Place and Route) and Timing Analysis using Synopsys Design Compiler and Synopsys Fusion Compiler. Got to work on advanced tech nodes (18 nm technology). Got to work on AIMC (Analog In Memory Computing) and DIMC (Digital In Memory Computing) Tile tape out which are part of NPU architecture.

Tool used (Development tools - H/w, S/w) : Synopsys Design Compiler, Synopsys Fusion Compiler, Synopsys PrimeTime, Cadence Genus , Cadence Virtuso, Verizon, Python, TCL

Objectives of the project : Developed and facilitated tape-out of IMC blocks that are part of NPU architecture

Major Learning Outcomes : Got to be part of live project going for tape out. Worked on advanced tech nodes and carrying out back end process of tape out including Synthesis, PnR and Timing Analysis.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working environment is good with large and spacious office space. Learning varies among different teams. Less transparency regarding PPO. Work is not very hectic and completes within 9-5 though there is mandatory 5 day work from office.

Academic courses relevant to the project : Analog Digital VLSI, Digital Design, Microelectronics Circuits, Semiconductor Fabrication, Computer Architecture,

PS-II Station : Standard Chartered - Data Engineer, Bengaluru

Faculty

Name: Gaurav Nagpal .

Student

Name: SATYAM KUMAR(2021B1A42813G)

Student Write-up

PS-II Project Title: Automation, Data Engineering and Control Analytics using Dataiku

Short Summary of work done during PS-II : During my PS-II internship at Standard Chartered Bank, I worked within the Group Internal Audit and Analytics team on multiple automation and analytics initiatives. My work primarily involved developing, validating, and optimizing automated controls used for audit and risk-monitoring activities. I worked on a High Value Payments Automation use case where transactions exceeding predefined thresholds were validated against callback requirements and classified into successful and exception records. I also performed testing and validation of approximately 25–30 automated controls across multiple countries to ensure output accuracy and reliability. In addition, I integrated Dataiku outputs with Tableau dashboards to improve reporting and visualization capabilities for auditors and business users. One of the key projects involved simplifying highly complex Dataiku workflows by converting more than 130 visual recipes into approximately 30 optimized code recipes using Python, SQL, and PySpark, resulting in significant performance improvements. I also contributed to the development and integration of more than 15 automated controls by creating workflow structures, implementing business logic, configuring automation scenarios, and preparing technical documentation. Furthermore, I worked on a Traded Risk Control use case that monitored portfolio transfers between the Banking Book and Trading Book to ensure compliance with governance and regulatory requirements.

Tool used (Development tools - H/w, S/w) : Dataiku ,Tableau,Python,PySpark,SQL,Microsoft Excel & MS PowerPoint

Objectives of the project : The primary objective of the project was to develop, validate, optimize, and maintain automated controls used for audit and risk-monitoring activities within Standard Chartered Bank. The work involved building and enhancing Dataiku workflows, validating existing control outputs, integrating reporting solutions using Tableau, simplifying complex workflows through

visual-to-code migration, and supporting governance and compliance requirements through automation.

Major Learning Outcomes : • Dataiku workflow development and management
• Automated control development and validation
• Workflow optimization and visual-to-code migration
• Data transformation using SQL, Python, and PySpark
• Dashboard development and reporting using Tableau
• Audit analytics and risk-monitoring processes
• Data validation and quality assurance techniques
• Documentation and governance practices
• Stakeholder communication and project management
• Understanding of banking controls and compliance requirements

Details of Papers/patents : No research papers or patents were published as part of the PS-II project work.

Brief Description of working environment, expectations from the company : The working environment at Standard Chartered Bank was highly professional, collaborative, and learning-oriented. I worked within the Group Internal Audit and Analytics function, where the focus was on leveraging data and automation to improve audit effectiveness and control monitoring.
The organization emphasized accuracy, accountability, documentation, and adherence to governance standards. Since the outputs generated by automated controls could directly support audit and risk-management activities, maintaining quality and reliability was considered extremely important.
The company expected interns to proactively learn new technologies, understand business requirements, communicate effectively with managers, and deliver assigned tasks within defined timelines. The internship provided exposure to real-world business challenges, enterprise-scale datasets, workflow automation, and modern analytics platforms, making it a valuable learning experience.

Academic courses relevant to the project : Computer Programming

PS-II Station : Standard Chartered Modelling and Analytics Centre Pvt Ltd, Bengaluru

Faculty

Name: Gaurav Nagpal .

Student

Name: MAHIN PATEL(2021B3A41086P)

Student Write-up

PS-II Project Title: SCMAC

Short Summary of work done during PS-II : We made Automated pipeline for data visualization in Tableau

Tool used (Development tools - H/w, S/w) : VS code and Tableau

Objectives of the project : Made Pipeline for automation

Major Learning Outcomes : AI, Analysis and Model Monitoring

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Very flexible working environment 9-5 and 3 days office only in.a week

Academic courses relevant to the project : Statistics and Risk

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Name: TANISH HORA(2022AAPS0774G)

Student Write-up

PS-II Project Title: AI/ML in Credit Risk Modelling and Automation of Model Validation Workflows

Short Summary of work done during PS-II : During the internship at Standard Chartered Modelling and Analytics Centre, I worked across four areas of credit risk modelling and analytics. I built and productionalised a multi-view IFRS 9 model monitoring dashboard in Tableau, covering metrics such as population stability, discriminatory power, and calibration. I developed machine learning based challenger models for a portfolio using financial and qualitative data, evaluating performance against the incumbent model and the practical trade-offs involved in model adoption. I contributed to sovereign risk model development, including aspects of economic cycle definition and model calibration, and independently explored the use of NLP techniques to convert unstructured reports into structured inputs for predictive modelling, an initiative that was well received internally. I also contributed to a team project automating parts of a regulatory documentation process using AI, reducing manual effort in preparing and updating technical submissions.

Tool used (Development tools - H/w, S/w) : Tableau, Python, Refract(Python-based cloud platform for code execution), scikit-learn, NLP libraries

Objectives of the project : To support the credit risk modelling function through model monitoring, development, validation, and automation of associated workflows.

Major Learning Outcomes : Gained practical exposure to the full credit risk model lifecycle in a regulated banking environment, including model monitoring, challenger model development, regulatory model methodology, and AI-assisted automation of regulatory documentation. Developed proficiency in Tableau for dashboard design, applied machine learning techniques to financial and qualitative data, learned NLP methods for converting unstructured text into quantitative features, and understood how governance and interpretability constraints shape model adoption decisions in a regulated industry.

Details of Papers/patents : Not applicable. No papers or patents were filed during the course of this internship.

Brief Description of working environment, expectations from the company : The working environment at the Standard Chartered Modelling and Analytics Centre was relaxed, friendly, and genuinely enjoyable, while still maintaining the rigour expected in a regulated financial institution. The team was approachable and easy to work with, and the overall culture felt more collaborative than

hierarchical, with flexibility around work patterns including hybrid working. Mentors were generous with their time and consistently explained the regulatory context behind tasks rather than treating them as isolated exercises, which made the learning curve much smoother.
At the same time, given that model outputs feed into regulatory submissions and capital decisions, there was a clear expectation of accuracy, ownership, and attention to detail in all deliverables. Communication mattered, both in documenting technical work clearly and in presenting findings to stakeholders without a deep quantitative background. Proactivity was encouraged and well recognised, as reflected in the positive reception of an independent side project undertaken during the internship. Strong performance during the internship is also viewed favourably for future opportunities at the company, including potential pre-placement offers, which added a sense of purpose to the work without making the environment feel pressured.

Academic courses relevant to the project : Probability and Statistics, Principles of Management

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Name: MANAN GUPTA(2021B4A41689P)

Student Write-up

PS-II Project Title: Irb tableau dashboard

Short Summary of work done during PS-II : Worked on tableau dashboard and used python to automate the regulatory white papers

Tool used (Development tools - H/w, S/w) : Python, tableau

Objectives of the project : Create tableau dashboard

Major Learning Outcomes : Understand about the risk roles involved in the sector

Details of Papers/patents : Na

Brief Description of working environment, expectations from the company : Good, supportive, relaxed

Academic courses relevant to the project : Na

PS-II Station : STMicroelectronics - Digital Design & Verification, Noida

Faculty

Name: Rajesh Kumar Tiwary .

Student

Name: VASHISHTH PATEL(2021B4A82781G)

Student Write-up

PS-II Project Title: Dft flow on stellar processors

Short Summary of work done during PS-II : Developed Burn in pattern for stuck at fault model debugged different DRC violations, did DFT checks at different RTL milestones on RTL codes, Automated various workflows

Tool used (Development tools - H/w, S/w) : Tetramax, Spyglass, Simvision

Objectives of the project : Achieving high test and fault coverage at every RTL milestone

Major Learning Outcomes : ASIC flow implementation, DFT coverage metrics

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working environment is friendly and supportive

Academic courses relevant to the project : Digital design

Name: KARTHIKEYA KUCHIBHATLA .(2021B3A31024H)

Student Write-up

PS-II Project Title: DFT and automation intern

Short Summary of work done during PS-II : -

Tool used (Development tools - H/w, S/w) : --

Objectives of the project : scan insertion

Major Learning Outcomes : -

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : It was good enough and team was also supportive.

Academic courses relevant to the project : NA

PS-II Station : Strand Life Sciences, Bengaluru

Faculty

Name: Bharathi R .

Student

Name: REJAKSHI CHATTERJEE(2024H1290013P)

Student Write-up

PS-II Project Title: PERFORMING ACCURATE INTERPRETATION AND CLASSIFICATION OF GERMLINE GENETIC VARIANTS ASSOCIATED WITH HEREDITARY CANCER SYNDROMES

Short Summary of work done during PS-II : The project involved the interpretation and classification of germline genetic variants identified through hereditary cancer testing. Variants were evaluated using ACMG/AMP guidelines by integrating evidence from population databases, clinical repositories, scientific literature, functional studies, and computational prediction tools. The work focused on assessing the clinical significance of genetic variants to support hereditary cancer risk assessment and molecular diagnostics.

Tool used (Development tools - H/w, S/w) : StrandOMS, StrandLims, ClinVar, gnomAD, UCSC Genome browser, SpliceAI Lookup, MutationTaster, Varsome, Franklin, FLOSSIES, Ensmbl, UniProt, NCB1 GeneReviews, PubMed.

Objectives of the project : Analyze variants identified from Next Generation Sequencing (NGS) data, Collect and evaluate evidence from multiple sources, Apply ACMG/AMP variant classification criterias, Generate clinically relevant variant classification, Support hereditary cancer risk assessment

Major Learning Outcomes : Understood the importance of accuracy, documentation, and quality standards in clinical genomics, Learned to analyze complex biological data in a structured and systematic manner, Gained exposure to real-world applications of genomics in healthcare and precision medicine, Improved skills in scientific literature review and evidence-based decision making, Enhanced knowledge of NGS-based genetic testing workflows and molecular diagnostics, Developed an understanding of germline cancer genomics and hereditary cancer syndromes.

Details of Papers/patents : N.A.

Brief Description of working environment, expectations from the company : Working environment is highly stressful and can be more streamlined in many areas for smoother execution.

Academic courses relevant to the project : Molecular Mechanisms of Gene Expression, Adavanced Cell and Molecular Biology.

Name: NAGASHREE S(2024H1290008H)

Student Write-up

PS-II Project Title: COMPILATION OF SCIENTIFIC LITERATURE, CLINICAL DATA INTERPRETATION, AND REPORTING OF HEREDITARY CANCERS

Short Summary of work done during PS-II : Worked on the analysis and interpretation of NGS-based germline cancer variants using the StrandOmics platform. Performed variant classification according to ACMG guidelines by integrating evidence from literature, public databases, and bioinformatics tools, followed by preparation of accurate clinical reports based on patient phenotype and cancer type.

Tool used (Development tools - H/w, S/w) : Strand omics

Objectives of the project : To understand the workflow of NGS-based germline cancer testing and perform sequence variant analysis using the StrandOmics platform. To classify variants according to ACMG guidelines, integrate evidence from literature, databases, and bioinformatics tools, and generate accurate clinical reports based on patient cancer type.

Major Learning Outcomes : Understanding of NGS based germline cancer testing.

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : The working environment at Strand Life Sciences was supportive, collaborative, and learning oriented. My mentor was approachable and provided valuable guidance throughout the internship, while my colleagues were friendly and helpful. Although the internship was conducted in a work from home setting, communication and teamwork were well organized. The company encouraged accuracy, continuous learning, and independent problem-solving, allowing me to gain practical experience in NGS based variant interpretation, ACMG classification, and clinical reporting using the StrandOmics platform.

Academic courses relevant to the project : Molecular biology

PS-II Station : Synchrony - Backend Developer, Hyderabad

Faculty

Name: Y V K Ravi Kumar .

Student

Name: SHAH PRIYANK HITESH KUMAR(2024H1030092P)

Student Write-up

PS-II Project Title: Technology intern

Short Summary of work done during PS-II : Worked on application migration from on-prem server to aws cloud

Tool used (Development tools - H/w, S/w) : Terraform, aws cloud

Objectives of the project : Worked on application migration from on-prem server to aws cloud

Major Learning Outcomes : Learn new tech stack

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : N/A

Academic courses relevant to the project : Cloud computing

Name: METHUKU SAI PRANEETH(2024H1120186P)

Student Write-up

PS-II Project Title: Enterprise Application Development, Performance Optimization, Security Enhancement and AI-Driven Accessibility Solutions

Short Summary of work done during PS-II : During my PS-II internship, I worked on multiple enterprise software initiatives involving backend development, performance optimization, cloud security, workflow systems, and accessibility-focused innovation. One of the major contributions involved analyzing and optimizing the Promo Adjustment Service, where a lookup-map-based approach was studied to improve performance and scalability by reducing algorithmic complexity. I also gained exposure to HashiCorp Vault integration through Spring Cloud Config Server, enabling secure secret management and eliminating hardcoded credentials from applications. In addition, I worked on understanding Spring Boot workflow systems involving REST APIs, timeline tracking, status management, and frontend integration. I also explored an AI-enabled accessibility proof-of-concept focused on converting speech and text into sign-language representations for users with hearing impairments. Throughout the internship, I participated in enterprise service analysis, API workflow tracing, debugging activities, and technical discussions. These activities helped me develop a strong understanding of enterprise application architecture, cloud security practices, scalability engineering, and modern software development methodologies.

Tool used (Development tools - H/w, S/w) : Software: IntelliJ IDEA VS Code Postman MySQL Workbench Splunk Confluence Bitbucket HashiCorp Vault Spring Boot PCF (Pivotal Cloud Foundry)

Objectives of the project : Understand enterprise-scale software systems and workflows. Improve application performance through optimization techniques. Study secure configuration management using HashiCorp Vault. Develop and understand Spring Boot workflow applications. Explore AI-enabled accessibility solutions. Gain exposure to cloud-native and distributed application architectures.

Major Learning Outcomes : Enterprise Backend Development using Java and Spring Boot.
REST API Design and Development.
Performance Optimization and Complexity Analysis.
Design Patterns and SOLID Principles.
Enterprise Service Analysis and API Workflow Tracing.
HashiCorp Vault Secret Management.
Cloud Security Fundamentals.
Production Issue Debugging using Splunk.
Distributed Systems Fundamentals.
Workflow Management Systems.

Enterprise Modernization and Architecture.
Accessibility-Focused AI Solutions.

Details of Papers/patents : No papers or patents were published as part of the internship work.

Brief Description of working environment, expectations from the company : The working environment was highly collaborative and focused on learning, innovation, and problem-solving. Team members actively participated in technical discussions, code reviews, debugging sessions, and knowledge-sharing activities. The organization followed structured software development practices and encouraged continuous learning through technical documentation, mentorship, and hands-on project exposure. Expectations included understanding enterprise applications, learning modern software engineering practices, contributing to assigned tasks, participating in meetings, and continuously improving technical skills. The environment provided opportunities to work with experienced professionals and gain practical exposure to enterprise-scale software systems, cloud technologies, security practices, and modern development tools. This helped bridge academic concepts with real-world engineering challenges and improved both technical and professional competencies.

Academic courses relevant to the project : Object Oriented Programming
Data Structures and Algorithms
Software Engineering
Distributed Systems
Cloud Computing

Name: ROOPKARAN SINGH(2024H1030039G)

Student Write-up

PS-II Project Title: Migration from Rollout.io to Unify

Short Summary of work done during PS-II : Learned how cloudbees platform works.

Tool used (Development tools - H/w, S/w) : Java , springboot

Objectives of the project : Migration feature flags

Major Learning Outcomes : Java, springboot

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working remotely. Flexibility in working choice

Academic courses relevant to the project : Computer networks

PS-II Station : Tata Institute of Fundamental Research, Hyderabad

Faculty

Name: Sanjay Vidhyadharan .

Student

Name: ATHARVA SHRIKANT DESHMUKH .(2021B5A12538H)

Student Write-up

PS-II Project Title: Designing an ultrafast THz spectrometer

Short Summary of work done during PS-II : My work entailed designing a THz based spectrometer using a femtosecond laser. To this end , I had to familiarize myself with the working of ultrafast lasers. The working of ultrafast lasers involves non-linear optics . I had to also study about the optical components necessary to build the spectrometer. Based on various designs proposed and presented in research papers , I designed a THz generation and detection setup. This setup was further integrated with the spectrometer.

Tool used (Development tools - H/w, S/w) : Literature survey for the topic was done using Google

Scholar. Simulation work was carried out on Python and Julia.

Objectives of the project : To build a THz based spectrometer using a femtosecond laser.

Major Learning Outcomes : Learnt non-linear optics , working of ultrafast femtosecond lasers and THz radiation.

Details of Papers/patents : None , further design validation and testing will be needed.

Brief Description of working environment, expectations from the company : The working environment was very conducive to my work. I met with experts in the field and interacted with them about their work in the field. My project guide was very helpful in directing me throught my project. They expected me to learn the basics of lasers first and then start working on the design . TIFR is an excellent place to work if you are interested in research in the field of physics.

Academic courses relevant to the project : Optics , Electromagnetic theory , Quantum Mechanics.

PS-II Station : Taurus Asset Management Company Limited, Gurgaon

Faculty

Name: Sidharth Mishra .

Student

Name: SHUBHANG PRAKHAR(2021B3A82866G)

Student Write-up

PS-II Project Title: Durability and Capital Allocation in the Indian NBFC Sector

Short Summary of work done during PS-II : The project focused on developing an equity research framework to identify durable financial institutions through multi-layered moat analysis. The study

analyzed four Indian NBFCs—Muthoot Finance, Manappuram Finance, Aavas Financiers, and Aptus Value Housing Finance—using eight years of financial data across different economic cycles. The work involved financial analysis, peer comparison, management evaluation, portfolio monitoring, primary research, and preparation of investment insights. The final outcome was a structured framework to assess competitive advantages, capital allocation quality, and long-term business durability.

Tool used (Development tools - H/w, S/w) : MS Office, ACE Equity, Screener

Objectives of the project : Objective 1: Develop a reproducible equity research framework to identify durable financial institutions through multi-layered moat analysis beyond conventional metrics. Objective 2: Apply the framework to four Indian NBFCs using eight years of data to quantify business durability and management responses across cycles. Objective 3: Integrate equity research skills developed at Taurus Mutual Fund—including portfolio monitoring, financial modelling, IC note writing, and primary research—into an actionable investment framework.

Major Learning Outcomes : Developed practical skills in equity research, financial statement analysis, valuation, and investment thesis building. Learned to evaluate businesses through durability, moat analysis, capital allocation, and through-cycle performance frameworks. Gained experience in portfolio monitoring, IC note preparation, primary research, and interpreting management commentary.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment at Taurus Mutual Fund was research-oriented, analytical, and focused on disciplined investment decision-making. The company expected interns to develop independent viewpoints, conduct detailed financial analysis, monitor portfolio companies, and present well-researched investment insights. The internship provided exposure to professional equity research practices, including investment committee processes, financial modelling, industry analysis, and primary research.

Academic courses relevant to the project : Financial Management, Security Analysis & Portfolio Management, Fundamentals of Finance and Accounting, Business Analysis & Valuation.

PS-II Station : Teaser, Gurgaon

Faculty

Name: Bhamidipati Vaishali .

Student

Name: DHANANJAY SHALLEY .(2021A7PS0401H)

Student Write-up

PS-II Project Title: AI automation systems and CRM pipelines

Short Summary of work done during PS-II : Built and deployed end to end workflows for the team to use for tracking project timelines, CRM pipelines for follow up on lead generation tools.

Tool used (Development tools - H/w, S/w) : Clickup, Claude, Super AGI, Tryowbot, Zepic

Objectives of the project : Create a streamlined tracker for managing projects using ClickUp

Major Learning Outcomes : D2C marketing knowledge

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment was easy to adapt, designated team leads and smooth management. The company being a startup still has decent principles which were followed and the expectations were met eventually assigning the projects.

Academic courses relevant to the project : Machine learning, AI,DBMS

PS-II Station : Techture Structures, Indore, Indore

Faculty

Name: Rajesh Kumar .

Student

Name: SAUMYA JAIN(2022A4PS1300G)

Student Write-up

PS-II Project Title: BIM

Short Summary of work done during PS-II : During my Practice School–II internship at Techture Structures, Indore, I worked as a BIM Intern using Revit, Navisworks, and AutoCAD. My responsibilities included clash coordination, tagging and annotating pipes and lighting fixtures, and supporting project documentation. The internship enhanced my BIM knowledge, technical skills, and understanding of construction workflows.

Tool used (Development tools - H/w, S/w) : Revit Navisworks

Objectives of the project : To learn about BIM

Major Learning Outcomes : Revit Navisworks

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Techture Structures provided a professional and collaborative working environment focused on learning and technical excellence. The company expected interns to be proactive, detail-oriented, and willing to learn BIM tools and workflows while contributing effectively to project coordination and documentation tasks.

Academic courses relevant to the project : Autocad(engineering graphics)

PS-II Station : Techture Structures, Nagpur, Nagpur

Faculty

Name: Anshuman .

Student

Name: AMILA DEY(2024H1300055P)

Student Write-up

PS-II Project Title: NHSRCL project

Short Summary of work done during PS-II : Developed detailed architectural BIM models using Autodesk Revit for project design development and construction documentation. Responsible for creating and managing architectural elements including walls, wall openings, doors, windows, floors, ceilings, roofs, stairs, and railings in accordance with project requirements and BIM standards.Key areas of work included architectural BIM modeling, wall and opening creation, floor modeling, glazing systems, curtain walls, facade panel modeling, custom family development

Tool used (Development tools - H/w, S/w) : Revit.

Objectives of the project : Architectural modeling on Revit

Major Learning Outcomes : Basic understanding in Revit

Details of Papers/patents : BIM & Infrastructure Modeling

Brief Description of working environment, expectations from the company : Working environment is good... All leaders and employees are very supportive and helpful.

Academic courses relevant to the project : I have gained knowledge during my PSII. And it is

totally related to architectural background which is not relevant to my academic courses

PS-II Station : Telus AI - Solution Engineering, Bengaluru

Faculty

Name: S.P.Vimal .

Student

Name: SYED AMEEN .(2021B5AA3046H)

Student Write-up

PS-II Project Title: Synthetic Photos and Dataset Generation

Short Summary of work done during PS-II : I worked on two synthetic data generation projects at AI. The first was the Synthetic Photo Album Generator, a LangGraph-based pipeline that produces complete photo accounts for synthetic personas with consistent identity, locations, relationships and visual appearance, for use in AI training where real user data cannot be used. The pipeline generates personas across six layers (demographics, visual profile, relationships, locations, temporal arcs, behavioural history), produces album images using a vision-language model with reference anchors for face, location and pet consistency, and applies quality control through DeepFace face similarity validation, embedding-based persona deduplication and four reviewer approval gates with checkpointing. A Template Library was added to store and reuse approved persona templates, significantly reducing generation time and improving consistency across new accounts. The second project was the Synthetic Dataset Generator, a multi-module pipeline that produces noisy enterprise datasets and question-SQL-answer triplets at scale for benchmarking text-to-SQL agents. It includes a Dataset Generator producing CSV files with intentional data-quality issues, a Column Documentation Updater that enriches column metadata using an LLM, an FTS Export script for production-format deliverables, a Triplet Generator that uses Fuelix and DuckDB to generate, validate and ground triplets through retry logic and an evaluator agent, and a learned-rules mining system. An n8n QC Agent built on top of the pipeline scores triplets across seven quality parameters in parallel

using LangChain and OpenAI integrations.

Tool used (Development tools - H/w, S/w) : Python, Jupyter Notebook, LangGraph, LangChain, DuckDB, n8n, DeepFace, OpenAI text-embedding-3-large, pandas, Pillow, SQLite, VS Code, GitHub

Objectives of the project : Synthetic Photos and Dataset Generation

Major Learning Outcomes : Designed and built production-grade Gen AI pipelines that combine LLM generation with deterministic validation and human-in-the-loop quality control. Gained hands-on experience with stateful workflow design using LangGraph and n8n, embedded analytical SQL with DuckDB, image generation with reference grounding, and embedding-based deduplication. Developed strong evaluation engineering skills by designing automated scoring rubrics, approval gates and self-improving learned-rules systems. Improved cross-functional collaboration and the ability to deliver multiple AI projects in parallel within tight timelines.

Details of Papers/patents : No papers or patents were published or filed during the course of this internship.

Brief Description of working environment, expectations from the company : The internship was carried out at Telus International, Bangalore, in the Solutions Engineering team focused on Generative AI. The team operates in a hybrid working environment, with a mix of in-office collaboration and remote work. The team is structured into a mix of solution engineers, pre-sales architects and AI managers who collaborate on client-facing projects, with mentorship and regular code reviews built into the workflow.

The company expected interns to contribute directly to production-grade systems rather than work on isolated learning exercises. Expectations included taking ownership of well-defined modules within larger pipelines, writing clean and well-documented code, integrating with the company's existing tooling (Fuelix, n8n, Retool, in-house AI platform), and delivering reliable, repeatable solutions that other team members could maintain. The company also expected proactive communication, the ability to estimate and meet timelines, attendance at sprint and review meetings, and rigorous testing of every deliverable before submission. Throughout the internship, mentors set clear deliverables for each project, provided technical guidance during weekly syncs, and encouraged independent problem solving while remaining available for blockers. This environment provided an excellent balance between guided learning and real ownership of production work.

Academic courses relevant to the project : ML, AI, Computer Programming, DBMS, FDSA, OOPS, TRW

PS-II Station : Telus AI - Product Management, Bengaluru

Faculty

Name: S.P.Vimal .

Student

Name: BALAGANGADHAR M BHAT(2022A8PS0058G)

Student Write-up

PS-II Project Title: EVALUATION AND ENHANCING DATA ANNOTATION WORKFLOWS

Short Summary of work done during PS-II : Conducted a comprehensive competitor analysis of 18 data annotation platforms across 250+ features to benchmark GTS against industry leaders. Performed end-to-end user journey analysis of Labelbox to study workflow design and usability best practices. Evaluated the effectiveness of GTS's pre-labelling pipeline through analysis of annotation job data and user behaviour, identifying key workflow inefficiencies and proposing recommendations for improving productivity measurement, user experience, and AI-assisted annotation workflows.

Tool used (Development tools - H/w, S/w) : Excel, Google Sheets, Labelbox, Ground Truth Studio (GTS), Claude AI, ChatGPT, PDF documentation tools, and web-based research resources.

Objectives of the project : To evaluate and improve the TELUS Digital GTS annotation platform through competitor benchmarking, user workflow analysis, and assessment of pre-labelling effectiveness, with the goal of identifying opportunities for enhanced productivity, usability, and product competitiveness.

Major Learning Outcomes : Gained understanding of the AI data annotation ecosystem and leading annotation platforms.
Learned how product benchmarking is conducted using structured feature comparison frameworks.

Developed skills in user journey mapping, UX analysis, and workflow evaluation.
Understood the role of AI-assisted annotation and pre-labelling in improving annotation efficiency.
Learned to analyze operational data, identify root causes of inefficiencies, and formulate data-driven product recommendations.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The work environment was supportive and professional, with a strong emphasis on independence. Interns were expected to proactively seek tasks, complete them responsibly, submit their work for review, and incorporate feedback to improve their deliverables.

Academic courses relevant to the project : Business communication, Creative thinking amd other humanities

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Name: SAANIDHYA CHARAN .(2022A3PS0533H)

Student Write-up

PS-II Project Title: Contributor Lifecycle Analytics and Quality Optimization using Data Analytics and Product Management

Short Summary of work done during PS-II : During my PS-II at TELUS Digital, I worked as a Product Management and Data Analytics Intern in the Growth & Reuse team. My work focused on analyzing the contributor lifecycle and improving onboarding and quality processes through data-driven insights. I extensively used BigQuery and SQL to analyze large datasets related to contributor sourcing, qualification, onboarding, and production quality. I developed multiple Looker Studio dashboards, including Time-to-Qualify, Funnel Success Rate, Qualification-to-Quality, Contributor Journey Analytics, and CSAT dashboards. These dashboards provided real-time visibility into contributor performance and onboarding bottlenecks. I also worked on product-related initiatives such as drafting Product Requirement Documents (PRDs), evaluating survey and feedback collection tools, and analyzing user feedback collected through GA4. Additionally, I studied contributor pain points and recommended improvements to enhance the onboarding experience and product usability. The internship provided me with hands-on exposure to product management, business intelligence, and

large-scale analytics in an AI-driven organization.

Tool used (Development tools - H/w, S/w) : Google BigQuery, SQL, Looker Studio, Google Analytics 4 (GA4), Google Tag Manager (GTM) Amplitude, Google Sheets, Linear and Microsoft Office

Objectives of the project : Analyze contributor lifecycle from sourcing to production. Develop dashboards to monitor onboarding, qualification, and quality metrics. Identify bottlenecks in contributor onboarding and task quality. Improve decision-making through data-driven insights and reporting. Support product improvements using user feedback and analytics.

Major Learning Outcomes : Developed expertise in SQL and BigQuery for large-scale data analysis.
Built interactive dashboards using Looker Studio.
Learned Product Requirement Document (PRD) creation and feature evaluation.
Gained practical exposure to GA4 and Google Tag Manager.
Improved analytical thinking and data-driven decision making.
Understood contributor lifecycle management in AI data operations.

Details of Papers/patents : No papers or patents were published as part of the internship work.

Brief Description of working environment, expectations from the company : TELUS Digital provides a collaborative, data-driven, and innovation-focused working environment. The organization encourages interns to take ownership of projects and contribute to real business problems. Teams operate in a highly collaborative manner with regular discussions, feedback sessions, and cross-functional interactions among product, operations, analytics, and engineering teams.
During PS-II, I was expected to independently analyze datasets, develop dashboards, identify business insights, and propose product improvements. The company emphasized data-driven decision-making, accountability, effective communication, and continuous learning. I was encouraged to proactively identify opportunities for improvement and present actionable recommendations.
The internship environment fostered both technical growth and professional development by providing exposure to modern analytics tools, product management practices, and AI operations at scale. This experience significantly enhanced my analytical abilities, problem-solving skills, and understanding of how data and product strategy contribute to business growth.

Academic courses relevant to the project : Not much courses provide exposure to Product Management but courses like Principles of Management and Technical Report Writing might help.

PS-II Station : Telus International - Software Engineering, Bengaluru

Faculty

Name: S.P.Vimal .

Student

Name: ANURAG SINGH(2021B5A72874G)

Student Write-up

PS-II Project Title: Frontend Engineering and AI Systems for Ground Truth Studio (GTS)

Short Summary of work done during PS-II : During my PS-II internship at TELUS International, I worked as a Software Development Engineer Intern in the Ground Truth Studio (GTS) team. My work involved frontend engineering, production support, and AI systems development. I implemented multiple production features including Attribute QC for Segmented 2D Polylines, APC Task Type support for Sequential Point Cloud Segmentation, Line3D Ground Mesh Duplication, and Class Attribute Overlay for 3D QC workflows. I actively participated in frontend oncall rotations, investigating and resolving production issues affecting annotation workflows and platform stability. Across the internship, I contributed to feature development, bug fixing, root cause analysis, and code reviews. A major contribution was the development of Oncall Agent V2, an AI-powered ticket classification and investigation system. The solution leveraged Claude APIs, MCP Protocol, Zoho Desk APIs, Docker, CircleCI, and AWS ECR to automate ticket triage and engineering investigations. The system achieved an escalation classification accuracy of 87.8% on real production tickets. Overall, the internship provided hands-on exposure to large-scale software systems, AI-enabled automation, cloud deployment, and production-grade engineering practices.

Tool used (Development tools - H/w, S/w) : Hardware: MacBook Development Environment Software & Technologies: TypeScript React Node.js KonvaJS ThreeJS Git & GitHub Linear Sentry Docker CircleCI AWS ECR Claude API MCP Protocol Zoho Desk API VS Code

Objectives of the project : Develop and enhance features for the Ground Truth Studio (GTS) annotation platform. Resolve production issues and participate in frontend oncall rotations. Design and implement AI-powered automation systems for support ticket classification and investigation. Gain hands-on experience with large-scale production software systems and deployment pipelines.

Major Learning Outcomes : Developed expertise in large-scale TypeScript and React codebases.
Learned production debugging using Sentry and root cause analysis techniques.
Gained experience in 2D and 3D visualization using KonvaJS and ThreeJS.
Designed and developed AI-agent based systems using LLMs and MCP Protocol.
Understood CI/CD workflows, containerization, and cloud deployment.
Improved collaboration, code review, and software engineering best practices.

Details of Papers/patents : No papers or patents were published as part of the internship work.

Brief Description of working environment, expectations from the company : TELUS International provided a highly collaborative and professional software engineering environment. The internship involved working within an agile development setup consisting of sprint planning, code reviews, design discussions, daily stand-ups, and production support responsibilities.
The organization emphasized ownership, quality, and continuous learning. Interns were expected to contribute directly to production systems, participate in bug triaging, collaborate with experienced engineers, and follow industry-standard development practices. Significant emphasis was placed on writing maintainable code, understanding customer impact, and delivering reliable solutions.
The work environment encouraged proactive learning, technical discussions, and cross-functional collaboration. Engineers were approachable and provided mentorship across frontend engineering, AI systems, debugging methodologies, and deployment infrastructure. The experience offered exposure to real-world software engineering challenges and industry-grade development workflows.

Academic courses relevant to the project : Data Structures and Algorithms
Object Oriented Programming
Software Engineering
Database Systems
Operating Systems
Computer Networks
Probability and Statistics
Design and Analysis of Algorithms

PS-II Station : Tenstorrent, Bengaluru

Faculty

Name: Shree Prasad M

Student

Name: HARSHIT SARAF(2021B1A32742P)

Student Write-up

PS-II Project Title: AXI TB Development

Short Summary of work done during PS-II : The work represents an in-depth exploration of System IP DV methodologies, with particular emphasis on AXI protocol validation, test infrastructure development, and automation tool creation. Through extensive hands-on experience in the System IP team, the project encompasses deep understanding of System IP components, development of sophisticated verification infrastructure including checkers and directed tests, and implementation of innovative automation tools. Key contributions include AXI checker development, comprehensive debugging activities, and the creation of AI-driven verification tools demonstrating significant improvements in verification efficiency. The report details practical implementation experiences with industry-standard tools and methodologies, including comprehensive coverage of SystemVerilog UVM (Universal Verification Methodology) for building robust verification environments, providing valuable insights into modern verification practices.

Tool used (Development tools - H/w, S/w) : Synopsys VCS, Verdi

Objectives of the project : AI Inference Chip Design- TB Development of AXI IP

Major Learning Outcomes : TB Development of AXI IP

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Expect to be

working as a contract service based employee with 0 placement expectations

Academic courses relevant to the project : computer architecture

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Name: NIKHIL MAHESH TAMBOLI(2021B2AA1603G)

Student Write-up

PS-II Project Title: RISCV Design Verification

Short Summary of work done during PS-II : Did design verification of front end and shared cache of RISCV cores. Also did functional safety verification of sharedcache.

Tool used (Development tools - H/w, S/w) : VCS, VCZOIX, VERDI, PYTHON, SYSTEM VERILOG, CPP

Objectives of the project : DV

Major Learning Outcomes : SV, DV, UVM, Caches

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Fast paced but great learning and good people.

Academic courses relevant to the project : Digital Design, Computer Architecture

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Name: ARYAMAN KUSHWAHA .(2021B5AA2412H)

Student Write-up

PS-II Project Title: AI Triage tool

Short Summary of work done during PS-II : Make tool where AI triages fails to already filed JIRAs

Tool used (Development tools - H/w, S/w) : Cursor

Objectives of the project : Make tool where AI triages fails to already filed JIRAs

Major Learning Outcomes : AI

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Nice

Academic courses relevant to the project : -

PS-II Station : Texas Instruments - Analog, Bengaluru

Faculty

Name: Sathisha Shet K .

Student

Name: ISHAN LAKHERA(2022A3PS0616G)

Student Write-up

PS-II Project Title: Design Verification of Hotswap Controllers

Short Summary of work done during PS-II : Did DV if hotswap controllers and efuses, using DMS sims and uvm environment

Tool used (Development tools - H/w, S/w) : System verilog, uvm, xcelium

Objectives of the project : Design Verification

Major Learning Outcomes : Verification methodology

Details of Papers/patents : Na

Brief Description of working environment, expectations from the company : Good working environment, goals oriented approach, getting the work done in stipulated time period

Academic courses relevant to the project : Digital design

Name: HARISH RAGAVENDHAR S K(2024H1230122P)

Student Write-up

PS-II Project Title: Design verification of pulsox model

Short Summary of work done during PS-II : > Worked on UVM-based verification of digital designs by developing testbenches, sequences, drivers, monitors, scoreboards, and coverage components. Performed functional verification of RTL modules, created constrained-random test scenarios, analyzed simulation results, debugged design and testbench issues, and ensured protocol compliance through assertions and coverage-driven verification. Gained hands-on experience with SystemVerilog, UVM methodology, and industry-standard simulation and debugging tools.

Tool used (Development tools - H/w, S/w) : Xcelium

Objectives of the project : To create a uvm model

Major Learning Outcomes : Rtl Verification

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : I am looking for a

collaborative and learning-oriented work environment where I can apply and enhance my technical skills in VLSI, digital design, and semiconductor technologies. I expect to work with experienced engineers who can provide guidance and mentorship while encouraging innovation and problem-solving. At Texas Instruments, I hope to gain exposure to real-world product development, industry-standard design flows, and cutting-edge semiconductor technologies.
I value a workplace that promotes continuous learning, teamwork, and professional growth. I look forward to contributing effectively to projects, taking ownership of responsibilities, and developing both my technical and interpersonal skills. Through this opportunity, I aim to strengthen my understanding of design and verification methodologies, improve my engineering expertise, and make meaningful contributions to the organization's goals while building a strong foundation for my career in the semiconductor industry.

Academic courses relevant to the project : Rc computing,vlsi design,vlsi architecture, advanced vlsi architecture,vlsi test and testability

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Name: DATE KEDAR ANAND(2021A3B52396P)

Student Write-up

PS-II Project Title: Palladium Emulation and Device Network Topology Configuration API

Short Summary of work done during PS-II : Palladium Emulation and Device Network Topology Configuration API

Tool used (Development tools - H/w, S/w) : C,Linux, Python, Hardware EVMs

Objectives of the project : Palladium Emulation and Device Network Topology Configuration API

Major Learning Outcomes : C, Linux, Driver Development

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Palladium Emulation and Device Network Topology Configuration API

Academic courses relevant to the project : Digital Design, Embedded System Design

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Name: A VINIL .(2022A3PS1648H)

Student Write-up

PS-II Project Title: End-to-End Behavioral Modeling of X-Ray Source, Spectral Filtering, Sensor Response, and Analog Front-End in Photon Counting Systems

Short Summary of work done during PS-II : -

Tool used (Development tools - H/w, S/w) : -

Objectives of the project : To develop a simulation for photon counting system

Major Learning Outcomes : Unix operation, python modelling

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : -

Academic courses relevant to the project : -

Name: ANANYA TIWARI(2024H1230068G)

Student Write-up

PS-II Project Title: Design and validation of highly precise dc voltmeter

Short Summary of work done during PS-II : Designing and validation of highly precise dc voltmeter. did automation code for SPI communication and finding INL of ADC. Configured the ADC using python

code.

Tool used (Development tools - H/w, S/w) : Python, ADC,DAC evaluation kit

Objectives of the project : To validate a highly precise and compact dc voltmeter

Major Learning Outcomes : Learning about validation tecniques, digital multimeter design and architecture and various components involved in it. Adc front end design and signal conditioning circuit design

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working environment was very good. Got hands-on on latest technology and industry level instruments. Very co-operative people who brings out the best ways to learning.

Academic courses relevant to the project : Analog IC Design, Analog mixed signal design

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Name: VARUN REDDY GADIKOTA .(2022A3PS0673H)

Student Write-up

PS-II Project Title: Design of programmable slew rate source for characterization of RF buffers and synthesizers

Short Summary of work done during PS-II : Worked with hardware, matlab.

Tool used (Development tools - H/w, S/w) : Signal generators, oscilloscopes, filters, MATLAB

Objectives of the project : same as title

Major Learning Outcomes : Main outcome that i was able to extract is the importance of verifying information and scrutinising data. For example, if something worked, did i have a good understanding of why it did? If it didn’t, what could be the possible reasons.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working environment was good. Professional, but there were times where we felt like there wasn't enough guidance when the intention was to minimise micromanagement. There is no restriction on how many hours minimum you have to stay in the office and it is completely left to the intern's discretion. The important thing is that you get the work done on time.

Academic courses relevant to the project : Signals and systems, communication systems, Microwave engineering, Digital signal processing, NPTEL course in PLL design

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Name: JATIN YADAV KAVETI .(2022AAPS0404H)

Student Write-up

PS-II Project Title: RF peak detector

Short Summary of work done during PS-II : During my PS-II internship at Texas Instruments, I worked on the design and evaluation of a wideband RF power detection system for high-frequency clock measurement applications. The objective was to extend RF power measurement capability beyond the operating range of a standalone detector by implementing a heterodyne receiver architecture. I studied RF mixers, logarithmic power detectors, frequency translation, conversion loss, linearity, and intermodulation effects to understand the system-level trade-offs. A behavioral MATLAB model was developed to simulate the complete signal chain, including an RF attenuator, passive mixer, low-pass filter, IF amplifier, and LMH2110 logarithmic detector. The model incorporated frequency-dependent mixer conversion loss, detector characteristics, and calibration data to estimate detector output voltage over the 10–30 GHz frequency range. I analyzed the system's sensitivity, dynamic range, conversion loss, frequency response, and calibration characteristics, generating power budgets, calibration tables, and performance plots for different operating frequencies. The impact of mixer VSWR, attenuation, and IF gain on overall system performance was also evaluated. Additionally, I investigated RF mixer performance metrics such as conversion loss, compression, linearity, harmonics, and intermodulation products, and prepared technical documentation and presentations explaining the system architecture, modeling methodology, and simulation results. This

work provided practical experience in RF system design, behavioral modeling, and high-frequency measurement techniques while strengthening my understanding of microwave circuits and instrumentation.

Tool used (Development tools - H/w, S/w) : Matlab cadence virtuoso altium excel

Objectives of the project : Design a RF peak detector circuit that can measure clock signals upto 30Ghz

Major Learning Outcomes : Understood the analog industry and various circuits and terms involved in the analog domain and various tools such as altium MATLAB cadence virtuoso

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Texas Instruments provided a professional, collaborative, and technically enriching work environment that encouraged continuous learning and independent problem-solving. The internship involved working closely with experienced engineers and mentors, who provided regular technical guidance, design reviews, and constructive feedback throughout the project. Team discussions and knowledge-sharing sessions facilitated a deeper understanding of RF systems, analog circuit design, and measurement techniques while exposing interns to industry-standard engineering practices.

The work culture emphasized analytical thinking, technical accuracy, and systematic documentation. Engineers were encouraged to validate design decisions through simulations, theoretical analysis, and discussions rather than relying solely on assumptions. Access to industry-standard tools, technical literature, and experienced professionals created an ideal environment for learning advanced concepts in RF and analog design.

The company expected interns to take ownership of their assigned projects by understanding the underlying theory, conducting independent research, developing simulation models, and presenting technical findings in a clear and structured manner. Strong emphasis was placed on problem-solving, effective communication, and maintaining high-quality documentation. Interns were also expected to actively participate in technical discussions, seek feedback when required, and continuously improve their designs based on observations and mentor recommendations.

Overall, the internship provided valuable exposure to industrial research and development practices while strengthening both technical competence and professional skills required for a career in semiconductor and RF system design.

Academic courses relevant to the project : Analog electronics,Communication systems,EMFME

Name: ARYAN ASHISH ARORA(2022A3PS0492P)

Student Write-up

PS-II Project Title: Wireless Connectivity

Short Summary of work done during PS-II : Over the past few months, I executed a series of critical architecture upgrades, system reliability fixes, and test automation enhancements for a Wi-SUN FAN platform target running FreeRTOS and Nanostack. Key engineering contributions include: * Protocol & Daemon Re-architecture: Successfully extracted complex MQTT 3.1.1 client logic out of resource-constrained MCU firmware and refactored it into the wfantund host daemon. Developed a modular C++ state machine with a dual-channel transport path that dynamically routes local border-router traffic via direct Linux TCP sockets while utilizing TCP Spinel mesh paths for remote nodes. * System Optimization & Porting: Ported the OpenCSMP agent library across five distinct TI SoC families. Resolved persistent stability bottlenecks by isolating and fixing high-traffic memory leaks in lower-MAC confirm handlers and engineering a dual-channel CoAP socket demultiplexer to safely handle interleaved traffic. * Build Architecture & Automation: Introduced a flexible, per-project compiler flag injection model that automatically strips out ~5.35 KB of TCP object code to conserve flash space on memory-constrained hardware variants. * CI/CD Pipeline Upgrades: Built a programmable bash and Python test automation framework capable of dynamic scope filtering across multi-node networks. The pipeline aggregates real-time execution telemetry and batch-uploads test results directly to the Jira Zephyr Scale (TM4J) REST API for end-to-end verification visibility.

Tool used (Development tools - H/w, S/w) : C, cpp, vs code, ti boards

Objectives of the project : Work in wireless connectivity protocols

Major Learning Outcomes : Wireless Connectivity protocols, embedded systems

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Great work culture and environment.

Academic courses relevant to the project : Computer programming, microprocessor

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Name: AVYAKTH DEVARAJAN .(2022A3PS0637H)

Student Write-up

PS-II Project Title: Evaluation of Automotive SerDes Interfaces Using MIPI CSI-2 Image Transmission Pipelines

Short Summary of work done during PS-II : Simulated NRZ and PAM4 Data Transmission using Python, Developed scripts to validate devices using python, Worked on validating-devices and configured custom C-code, Learnt how to use Allegro and designed a PCB for validation purposes

Tool used (Development tools - H/w, S/w) : Python, C, Allegro, Custom TI-tool

Objectives of the project : Configure Devices for Post-Silicon Validation

Major Learning Outcomes : Learnt about Validation and PCB Design, brushed up on C

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : 9 hour workdays; can work at your own pace, at least as far as internships are concerned

Academic courses relevant to the project : Computer Programming, Communication Systems, Basics of Analog Circuits

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Name: AARYA AMEET AGAVEKAR(2022A3PS0428G)

Student Write-up

PS-II Project Title: Product engineering projects

Short Summary of work done during PS-II : Worked on a total of 5 problem statements.All the problems had a different learning outcome.I learnt to perform the responsibilities of a product engineer over new product developments in TI

Tool used (Development tools - H/w, S/w) : Internal tools of TI

Objectives of the project : Understand the workflow as a part of product engineering

Major Learning Outcomes : Understood all the responsibilities of the product engineer in the lifetime of a product

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Excellent working environment. There is a lot of flexibility with regards to what your work environment looks like as long as you get the necessary work done

Academic courses relevant to the project : Ed, advd, mue

PS-II Station : Texas Instruments - Embedded Software, Bengaluru

Faculty

Name: Shree Prasad M

Student

Name: KARTIK VERMA .(2021B3AA0554H)

Student Write-up

PS-II Project Title: Zebu and Test Infra

Short Summary of work done during PS-II : Ownership of entire soc testing platforms

Tool used (Development tools - H/w, S/w) : zebu,typescript,python,c

Objectives of the project : Zebu and Test Infra bringup and ownership

Major Learning Outcomes : Ownership of entire soc testing platforms

Details of Papers/patents : n/a

Brief Description of working environment, expectations from the company : good people, great team

Academic courses relevant to the project : n/a

Name: RAHUL SIDDAPPA HIREKODI(2024H1400135G)

Student Write-up

PS-II Project Title: Lab automation and software support for validation tool chain

Short Summary of work done during PS-II : During my Practice School-II at Texas Instruments, I worked on automation and validation support activities for Analog Front-End (AFE) software platforms. My primary responsibilities included automating the installation and setup of validation software , reducing manual effort and improving deployment consistency. I developed and enhanced Python-based automation scripts for software installation, execution, and regression testing workflows.

Tool used (Development tools - H/w, S/w) : Python, Pylint ,Git/GitLab,TI Latte,VNC,VMware workstation

Objectives of the project : To automate the installation and setup process of AFE validation software

Major Learning Outcomes : Gained hands-on experience in software automation using Python.Learned validation and testing methodologies used in the semiconductor industry.

Details of Papers/patents : No papers or patents were published as part of the internship work.

Brief Description of working environment, expectations from the company : Texas Instruments provided a highly professional and collaborative work environment that encouraged continuous learning and innovation. Team members were supportive and readily available for technical discussions, enabling efficient problem-solving and knowledge sharing. The organization followed structured development and validation processes, allowing interns to gain exposure to industry-standard workflows and best practices.

Academic courses relevant to the project : Computer Programming
Software Engineering
Operating Systems
Computer Architecture
Digital Electronics
Microprocessors and Interfacing
Embedded Systems

Name: AARYA VARDHAN SHANDILYA(2022A3PS1734P)

Student Write-up

PS-II Project Title: Ethernet Link between PC and FPGA

Short Summary of work done during PS-II : Architecture & Integration: Developed a 100G/400G Ethernet validation subsystem on the AMD-VCU129 evaluation board, integrating high-speed network stacks and utilizing QSFP-DD loopback links for physical layer testing. Protocol Acceleration: Implemented a TCP Offload Engine (TOE) to handle automated packet encapsulation and network stack processing directly on-chip, significantly reducing host processor overhead. Data Pipeline Engineering: Designed custom, high-throughput Verilog modules, including cascaded FIFO buffers, AXI Master interfaces, and AXI DataMover configurations to ensure seamless, lossless data transfer. Validation & Debugging: Built dedicated traffic generator modules and packet integrity checkers.

Conducted real-time hardware debugging and waveform analysis using Vivado ILA (Integrated Logic Analyzer) to tune SerDes parameters and ensure robust link stability.

Tool used (Development tools - H/w, S/w) : Vivado, Kernel, Bash scripting

Objectives of the project : To achieve 100 Gbps throughput

Major Learning Outcomes : I learnt about networking in Hardware and its benefits over traditional methods

Details of Papers/patents : Not applicable

Brief Description of working environment, expectations from the company : The project was executed in a high-concurrency, agile hardware development environment. The day-to-day workflow centered around cross-functional collaboration between RTL design, verification, and systems engineers. We utilized a continuous integration pipeline for hardware builds, balancing simulation-based verification (using UVM and system-level testbenches) with hands-on physical lab validation. The lab environment required operating high-frequency oscilloscopes, BERTs (Bit Error Rate Testers), and thermal chambers to replicate strenuous data center conditions.

Academic courses relevant to the project : ADVD,AnE, OS, CompArch

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Name: ARPIT VARAHMIHIR(2021B4AA1499P)

Student Write-up

PS-II Project Title: AM13x TI ARM MCU Software Migration and Driver Development

Short Summary of work done during PS-II : EPI-Based External SDRAM Enablement for AI Inferencing — As part of a customer requirement from Anker (China), I led the bringup of the External Peripheral Interface (EPI) driver on the AM13x MCU SDK. The driver enables transparent memory-mapped access to external SDRAM, significantly expanding the device's effective memory capacity. This was motivated by the need to offload large neural network model weights from the constrained 128 KB on-chip SRAM to external memory, enabling the TinyEngine NPU to perform AI inference on

the AM13E230x at the edge. Pseudo RTC HAL Wrapper — In response to a customer requirement from Hilti, I developed a Pseudo Real-Time Clock (RTC) Hardware Abstraction Layer on the AM13x platform. This wrapper replicates the clock monitoring and drift detection behaviour available on STM32G4 devices, allowing customers migrating from STM32 to maintain equivalent timekeeping functionality without a dedicated RTC peripheral. Motor Control Migration Guide — I contributed to a motor control migration project, producing documentation and driver-level examples to support customers transitioning their motor control applications to the AM13x platform. AM13x Academy Content — I contributed to the AM13x Academy, Texas Instruments' curated learning resource for the AM13x MCU series. This covers peripheral usage, SDK workflows, and device architecture, and serves as the primary onboarding reference for customers evaluating or designing with the AM13x family. Application Note: AI Model Offloading via EPI — I authored an application note on offloading AI model weights to external SDRAM using the EPI driver. This document, published live on ti.com, demonstrates the end-to-end workflow from EPI configuration to DMA-based weight streaming into on-chip SRAM for TinyEngine NPU inference.

Tool used (Development tools - H/w, S/w) : CCS, Sysconifg, Logic Analyser, VSCode

Objectives of the project : To develop and document production-quality peripheral drivers and software enablement content for the AM13E230x MCU ecosystem, spanning EPI-based external SDRAM bringup for edge AI inferencing, a Pseudo RTC HAL for clock monitoring, platform migration support from STM32G4, and customer-facing application notes and academy content published on ti.com.

Major Learning Outcomes : The internship provided hands-on experience bridging the gap between hardware specification and production-quality software — reading peripheral documentation at the register level (TRM/datasheet), translating that into a layered driver architecture, and validating the output against real silicon on an evaluation module. Working across customer-driven deliverables — from an AI memory-expansion problem (Anker/EPI) to a platform migration (STM32G4 → AM13x) to a safety-adjacent HAL wrapper (Hilti/Pseudo RTC) — developed the ability to context-switch between deeply technical implementation work and documentation-facing outputs like application notes and academy content, which is the practical reality of applications engineering in an MCU software team.

Details of Papers/patents : Worked on a Migration Guide and an Appnote during the course of my internship. Both of which are live on ti.com.
STM32G4 to AM13x Migration Guide — I contributed to the AM13E230 STM32G4 Migration Guide (SDAA226), a user's guide published on ti.com that

Brief Description of working environment, expectations from the company : During my Practice School II internship at Texas Instruments, Bengaluru, I contributed to five deliverables across the AM13x MCU software ecosystem.

EPI-Based External SDRAM Enablement for AI Inferencing — As part of a customer requirement from Anker (China), I led bringup of the EPI driver on the AM13x MCU SDK, enabling transparent memory-mapped access to external SDRAM. This allowed large neural network model weights to be offloaded from the constrained 128 KB on-chip SRAM to external memory, enabling the TinyEngine NPU to perform AI inference on the AM13E230x at the edge.

Pseudo RTC HAL Wrapper — For a Hilti customer requirement, I developed a Pseudo RTC Hardware Abstraction Layer on AM13x, replicating the clock monitoring and drift detection behaviour of STM32G4 devices to support customers migrating from that platform.

Motor Control Migration Guide — I contributed documentation and driver-level examples to support customers transitioning motor control applications to the AM13x platform.

AM13x Academy Content — I contributed to the AM13x Academy, TI's curated learning resource covering peripheral usage, SDK workflows, and device architecture for customers onboarding to the AM13x family.

Application Note: AI Model Offloading via EPI — I authored an application note, live on ti.com, demonstrating end-to-end offloading of AI model weights to external SDRAM via the EPI driver, with DMA-based streaming to on-chip SRAM for TinyEngine NPU inference.

Academic courses relevant to the project : Embedded Systems for Electronics

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Name: DEBANGSHU PATNAIK .(2022A3PS1468H)

Student Write-up

PS-II Project Title: 1) Firmware update tool for next generation USB-PD controller, 2) Technical Assistant for USB-PD related queries and debugging issues

Short Summary of work done during PS-II : Same as title for the most part. Making a tool to handle firmware updates for a new generation USB-PD controller using Raspberry Pi Pico and TI TIVA microcontrollers. An AI + RAG based assistant to help with USB-PD queries and issues.

Tool used (Development tools - H/w, S/w) : Raspberry Pi Pico, I2C, TI TIVA microcontroller, RAG,

LLMs

Objectives of the project : Refer to title

Major Learning Outcomes : Better solution building skills

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Nice, friendly people, open to talk about stuff, ready to help.

Academic courses relevant to the project : Embedded systems

PS-II Station : The Affordable Organic Store, Hyderabad

Faculty

Name: Parag Rastogi

Student

Name: CHAKINALA ASHISH .(2021B2A83139H)

Student Write-up

PS-II Project Title: Product Management

Short Summary of work done during PS-II : Marketing, publishing ads there is nothing to learn new things

Tool used (Development tools - H/w, S/w) : chatgpt

Objectives of the project : Marketing

Major Learning Outcomes : nothing

Details of Papers/patents : No

Brief Description of working environment, expectations from the company : marketing intern: meta ads only

Academic courses relevant to the project : Not at all this does not related to the our academics

PS-II Station : The Confederation of Indian Industry (CII), Hyderabad

Faculty

Name: Rakesha Chandra Dash .

Student

Name: HARSH PATEL(2024H1550257P)

Student Write-up

PS-II Project Title: Decarbonization Pathway for Pharmaceutical Units

Short Summary of work done during PS-II : During my PS-II within the Energy Team, my primary focus was on advancing industrial energy efficiency, decarbonization, and circular economy principles for MSMEs in the Telangana region, specifically targeting the rice mill, pharmaceutical, and foundry sectors. The core of my work involved executing comprehensive Resource Efficiency and Cleaner Production (RECP) assessments and developing detailed benchmarking flows for industrial clusters. I evaluated water resource management frameworks, particularly zero liquid discharge (ZLD) systems, to ensure strict alignment with CPCB and CGWA extraction regulations. Finally, I translated complex environmental engineering data into strategic reports and data-dense presentations to drive actionable sustainability strategies for industry stakeholders.

Tool used (Development tools - H/w, S/w) : Microsoft Office Suite (Excel, PowerPoint, Word) and specialized software for technical documentation, data visualization, and engineering flow diagramming.

Objectives of the project : To execute Resource Efficiency and Cleaner Production (RECP) assessments that drive decarbonization and energy optimization across targeted MSME sectors. To evaluate industrial water frameworks, specifically Zero Liquid Discharge (ZLD) systems, ensuring strict CPCB and CGWA regulatory compliance.

Major Learning Outcomes : Mastered practical RECP assessments and industrial benchmarking to drive sustainability strategies in the MSME sector. Gained applied regulatory expertise in CPCB and CGWA guidelines for industrial water management and Zero Liquid Discharge (ZLD) systems.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment is functional, though integrating into the established corporate culture requires significant resilience and cultural adaptability. Navigating the internal team dynamics and unspoken organizational hierarchies can be complex, demanding strong interpersonal skills to effectively collaborate across distinct regional team structures. The company's expectations remain strictly focused on technical deliverables and high-impact results. Interns are expected to operate with high autonomy, executing rigorous environmental engineering tasks—such as RECP assessments—and delivering precise, data-backed reports. Ultimately, success in this setting requires balancing the stringent demands for scientific accuracy with the diplomatic tact needed to manage challenging, cross-functional workplace dynamics.

Academic courses relevant to the project : Yes

PS-II Station : The Digital Group, Pune

Faculty

Name: Pravin Yashwant Pawar .

Student

Name: PARAM SRIVARDHAN P(2021B3A71095P)

Student Write-up

PS-II Project Title: Swagger doc automation

Short Summary of work done during PS-II : Built an end-to-end automated pipeline using n8n that generates Swagger/OpenAPI documentation for the HRMS Node.js backend, submodule by submodule, without manual API documentation effort.

Tool used (Development tools - H/w, S/w) : N8N, Claude Code, VScode

Objectives of the project : Automate the process of generating the API documentation with LLMs

Major Learning Outcomes : Workflow Automation, API structure

Details of Papers/patents : No patents/papers

Brief Description of working environment, expectations from the company : The role operates in a professional software development setting, contributing to an enterprise HRMS product built on a modern stack — React frontend, Node.js/Express backend, and ASP.NET legacy layers. Day-to-day work involves working independently on feature development, debugging, and tooling, using VS Code, n8n for workflow automation, and Claude Code for AI-assisted development.

Academic courses relevant to the project : DBMS, Introduction to LLM, DSA

Name: KHYATI LOYA .(2022A1PS1696H)

Student Write-up

PS-II Project Title: Requirement Engineering and Functional Optimization for Digital HRMS

Short Summary of work done during PS-II : During my Practice School-II internship at The Digital Group, I worked as a Business Analyst Intern on the Digital HRMS platform. My responsibilities included requirement engineering, functional analysis, UI/UX prototyping, workflow automation design, and support for the modernization of HRMS modules from .NET to React architecture. I conducted competitive benchmarking and feature gap analysis against leading HRMS platforms such as Workday, SAP SuccessFactors, and Darwinbox. I participated in requirement gathering activities, prepared business requirements, user stories, and Product Backlog Items (PBIs), and collaborated with stakeholders to define functional specifications. I designed and enhanced multiple HRMS modules including Leave Apply, Optional Holiday, Work From Home, Claim Comp-Off, Re-Assign Request, Attendance Calendar, Leave Credit Rules, and Mobile Notification features. I also contributed to workflow automation initiatives such as automated leave accruals, event-based leave credits, workflow cleanup mechanisms, and approval process optimization. In addition, I participated in functional testing, defect analysis, documentation, and quality assurance activities. The internship provided extensive exposure to Agile development methodologies, enterprise software systems, stakeholder management, and business analysis practices while strengthening my analytical, communication, and problem-solving skills.

Tool used (Development tools - H/w, S/w) : Microsoft Loop, Visual Studio Team Foundation Server (TFS), Microsoft Teams, Microsoft Visio, MS Excel, MS PowerPoint, MS Paint, AI-based UI Prototyping Tools, Digital HRMS Application, Google Workspace, SQL (Basic)

Objectives of the project : Perform requirement engineering for Digital HRMS modules. Support migration of legacy .NET modules to React-based architecture. Conduct feature gap analysis and competitive benchmarking. Design UI/UX prototypes for HRMS functionalities. Develop business requirements, user stories, and PBIs. Improve workflow automation and system configurability. Enhance mobile notification and employee self-service capabilities. Support testing, validation, and quality assurance activities.

Major Learning Outcomes : Practical application of Business Analysis techniques.
Requirement elicitation and documentation.
Agile-Scrum project execution.
HRMS functional understanding.
UI/UX prototyping and workflow design.
Stakeholder communication and collaboration.
Functional testing and defect analysis.

Product benchmarking and feature gap analysis.
Enterprise software development lifecycle exposure.
Improved professional communication and documentation skills.

Details of Papers/patents : No papers or patents were published during the PS-II period.

Brief Description of working environment, expectations from the company : The Digital Group provided a professional and collaborative Agile work environment focused on enterprise HRMS product development. I worked closely with Business Analysts, QA Engineers, Product Owners, HR stakeholders, and development teams. The organization emphasized requirement engineering, documentation quality, stakeholder communication, and continuous learning. Tasks were managed through Agile processes, with regular review meetings, requirement discussions, and feedback sessions.
The company expected interns to understand business requirements, perform functional analysis, prepare documentation, design user stories and workflows, participate in testing activities, and communicate effectively with stakeholders. Ownership, accountability, attention to detail, and timely completion of assigned deliverables were highly valued. The internship provided exposure to real-world software development practices, enterprise HRMS systems, Agile methodologies, and professional workplace communication.

Academic courses relevant to the project : Product and Brand Management
Strategic Management
Probability and Statistics
Process Optimization and Systems Analysis
Data Analysis and Decision Making
Management Minor Courses
Technical Report Writing and Professional Communication

PS-II Station : Thrissur Expressway Limited, Palakkad district

Faculty

Name: Mahesh Kumar Hamirwasia .

Student

Name: YASH VIKAS YADAV(2024H1300191H)

Student Write-up

PS-II Project Title: QA/QC Road Construction

Short Summary of work done during PS-II : I learn mix design of DBM and BC , material checking, microsurfacing material checking QA/QC , Road Marking

Tool used (Development tools - H/w, S/w) : Equipment DSR machine

Objectives of the project : Mix design and QA/Qc

Major Learning Outcomes : Mix design, PMB checking, Microsurfacing

Details of Papers/patents : No

Brief Description of working environment, expectations from the company : No

Academic courses relevant to the project : Highway construction, pavement material characterization, road asset management

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PS-II Station : Titan Company Limited - Hosur, Hosur

Faculty

Name: Santosh Khandgave

Student

Name: PATIL VISHAL VIKAS(2024H1410107P)

Student Write-up

PS-II Project Title: Creo Toolkit Engineering Drawing Automation

Short Summary of work done during PS-II : In my PS , I worked on Creo Toolkit automation framework that automatically generates and standardizes engineering drawings directly from the 3D model workspace.

Tool used (Development tools - H/w, S/w) : Creo, Creo Toolkit, C++, Excel

Objectives of the project : To implement an Creo Toolkit automation framework that automatically generates and standardizes engineering drawings directly from the 3D model workspace.

Major Learning Outcomes : Learned about Creo modeling software, Creo Toolkit.
Automated the 2D drawing generation in Creo using Creo toolkit to reduce the design cycle time.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : working environment is good, people care about and respect their time, everyone is open to share knowledge and helpful always.

Academic courses relevant to the project : From my M.Tech, I would say my projects help me, in that I have used Fusion 360 API to automate the bearing defects visualization, in some side projects FEM concepts helped me,
from B.Tech subjects such as Engineering drawing, Engineering Mechanics.

PS-II Station : Transvolt Mobility Pvt. Ltd - , Mumbai

Faculty

Name: Arindam Roy .

Student

Name: NANDITA GURU THURAVIL(2021A1PS3067G)

Student Write-up

PS-II Project Title: Design and Development of a Backend System for Transportation Management and Route-Based Incident Analysis in Electric Mobility

Short Summary of work done during PS-II : Worked on backend development and testing of web portals used for the monitoring and handling of fleet and vehicle details across multiple sites and projects

Tool used (Development tools - H/w, S/w) : Python, SQL, Excel, Jira, Confluence

Objectives of the project : To gain hands-on experience with operational data in an industrial setting — working with the kind of real, inconsistent data that field operations produce rather than structured academic datasets. To contribute to backend development of internal web portals used to aggregate and present fleet data across departments. To develop an understanding of how a multi-state EV fleet management company functions end-to-end, particularly the role of IT in enabling that. To connect academic knowledge in data analytics and software development to practical application.

Major Learning Outcomes : Data hadling for a large scale data collection system, Understanding of the work behind a web portal system

Details of Papers/patents : No patents or papers submitted

Brief Description of working environment, expectations from the company : Working environment was peaceful and productive. All team members were very welcoming and ready to help with any issue. Company involved me in many of the important projects from the start of the internship itself, helping me to learn my role and responsibility through.

Academic courses relevant to the project : Report Writing, Effective Public Speaking

PS-II Station : Twilio, Bengaluru

Faculty

Name: Sangeetha Viswanathan .

Student

Name: NISHANTH M S(2021B3A72176G)

Student Write-up

PS-II Project Title: Scalable Workflow Orchestration, Load Testing, and Service Migration at Twilio

Short Summary of work done during PS-II : During my PS-II at Twilio, I worked on backend infrastructure and distributed systems engineering projects. A major part of my work involved building a proof of concept to evaluate Temporal as a replacement for Hazelcast. This included validating workflow versioning, deferred events, and automated timeout handling for long-lived workflows. I also contributed to migrating a production service from the ABBA architecture to Twilio's internal Kubernetes platform (OTK), where I participated in staging cutover testing and infrastructure validation. Another significant contribution was developing a unified load-testing framework using Grafana K6. Using this framework, I validated a production service under more than three times the production traffic (~60 million requests over a 12+ hour duration) while monitoring metrics using Datadog, Rollbar, and Buildkite. Additionally, I collaborated on implementing workflow versioning within Twilio's actor framework to support long-lived conversations in production systems. The internship provided exposure to large-scale distributed systems, observability tooling, infrastructure migration, and production engineering workflows.

Tool used (Development tools - H/w, S/w) : Languages: Java, JavaScript Frameworks/Platforms: Temporal, Kubernetes (OTK), Grafana K6 Monitoring Tools: Datadog, Rollbar, Buildkite Other Tools: Docker, Git

Objectives of the project : Evaluate Temporal as a replacement for Hazelcast in distributed workflow

management. Build scalable and reliable backend infrastructure for long-lived workflows. Develop a load-testing framework for validating production-scale systems. Support migration of services to Twilio's internal Kubernetes platform.

Major Learning Outcomes : Gained practical experience with distributed systems and workflow orchestration.
Learned production-grade load testing and performance monitoring techniques.
Understood Kubernetes-based service deployment and migration workflows.
Improved debugging, observability, and infrastructure validation skills.
Experienced collaboration in large-scale engineering teams and production environments.

Details of Papers/patents : No papers or patents were published as part of the internship work.

Brief Description of working environment, expectations from the company : Twilio provided a highly collaborative and fast-paced engineering environment focused on building scalable and reliable communication infrastructure. The work culture emphasized ownership, problem-solving, and engineering quality. Interns were expected to contribute to real engineering tasks rather than isolated learning projects.
The team environment involved regular technical discussions, design reviews, debugging sessions, and collaborative planning. Engineers were encouraged to understand production systems deeply, validate assumptions through testing, and maintain high reliability standards.
There was significant focus on observability, performance monitoring, and scalable infrastructure practices. The internship also required adapting to large codebases, internal tooling, and distributed service architectures.
The company encouraged independent learning, proactive communication, and structured problem-solving while also providing mentorship and technical guidance whenever needed. Overall, the experience gave strong exposure to industry-scale backend engineering and distributed infrastructure systems.

Academic courses relevant to the project : Object Oriented Programming, Database, Distributed Systems, Data Structures and Algorithms

Name: SHASHANK SHUKLA .(2022A8PS0765H)

Student Write-up

PS-II Project Title: No project as such, worked on a lot of tickets

Short Summary of work done during PS-II : Added DLD feature in the company's internal tool Oneadmin. Wrote Cluster tests for various microservices owned by my team (Voice connectivity). Made Design changes to the architecture of the services to make them more reliable and robust.

Tool used (Development tools - H/w, S/w) : Github, Docker, Buildkite, Kubernetes, ArgoCD

Objectives of the project : Adding new design changes and maintaining the microservices owned by the Voice team.

Major Learning Outcomes : You have to have proper context of the task given to you before starting to make code changes. Don't move forward at all without having clear context of the task. Learn to use AI efficiently for menial tasks such as doc preparation, ppt making etc. The expectations have now modified because of the heavy usage of AI. The same task, if was expected before to be done in 3-4 weeks would now be expected to be done in about 1 week. So, whatever mid-exploration you have to do, keep that for later, which you can do in your free time, but while working on the ticket/task, focus on the relevant stuff only.
Connect with your seniors at the start itself, try to learn from them what kind of tools they use and what is their work style. This would help incorporating those efficient work styles from the get-go rather than getting reprimanded by the manager and then doing this.

Details of Papers/patents : Nothing as such

Brief Description of working environment, expectations from the company : The working environment in the company is quite nice. There is no one pressurizing you at all for your tasks. Everybody works remotely, so you have to be responsible for your own work and complete your tasks by the deadline.
You can reach out to anyone (not just in your team) to ask something which has got you stuck in your task (make sure to have done your homework before doing so), everyone's really helpful in that sense. Make sure to take ownership of your work and try to be curious. Don't just take the tasks given to you at their face value. Try to understand the "what" and "why" behind them from your seniors. That is something your team would really appreciate no matter in which team you are.
The company provides with all the help that is needed. I did not feel negligence in that sense at all. You have to be the one taking ownership and reaching out to people and searching through the

resources whenever you get stuck. Don't hesitate to reach out to your mentor especially.

Academic courses relevant to the project : OOPS, DBMS, Basic System Architecture, Computer Networks

PS-II Station : UBER - Data Analytics, , Hyderabad

Faculty

Name: Akshaya G .

Student

Name: ANUSHKA SHARMA(2022A1PS1476G)

Student Write-up

PS-II Project Title: Identity Fraud Data Analytics

Short Summary of work done during PS-II : Worked with Uber's Data Analytics team to streamline driver fraud verification. Corrected key metric mappings in scorecards, automated insight generation for routine updates and resolved region-specific bottlenecks.

Tool used (Development tools - H/w, S/w) : SQL, Python, Tableau, Excel,

Objectives of the project : To improve accuracy of fraud detection at Uber through queries, automations, dashboards and chatbots

Major Learning Outcomes : Gained hands-on experience in fraud detection workflows, writing complex SQL, running statistical anomaly checks, building Tableau dashboards, and prompt engineering for improvising AI tools.

Details of Papers/patents : N.A.

Brief Description of working environment, expectations from the company : Uber's Hyderabad center offered an energetic, fast-paced, and highly collaborative setup centered on real-world data challenges. The team expected me to take real ownership of regional bottlenecks and deliver reliable data analysis.

Academic courses relevant to the project : N.A.

PS-II Station : UBER - Data Science, , Bengaluru

Faculty

Name: Akshaya G .

Student

Name: AKSHAY SHUKLA(2022A7PS0087P)

Student Write-up

PS-II Project Title: ML model for Battery Level Approximation for Drainage Estimation

Short Summary of work done during PS-II : The BLADE ML project focused on developing and productionalising an end-to-end machine learning system for real-time EV battery range prediction at Uber. The work involved replacing an existing heuristic-based model with a LightGBM-based quantile regression framework capable of generating accurate battery drainage estimates along with uncertainty bounds (P10/P50/P90). Extensive feature engineering, session-aware data splitting, and comparative evaluation of multiple ML models such as LightGBM, XGBoost, and CatBoost were performed to improve prediction quality and reduce systematic bias. The project also involved building scalable training and inference pipelines using Uber's Michelangelo CanvasFlex infrastructure, Bazel, and Triton Inference Server. Custom Python serving wrappers were developed to support dual model variants for Connected Vehicle and Manual Range Entry drivers. Significant effort was spent in handling production challenges including repository migration, deployment configuration, dependency

management, and real-time inference integration with backend Go services. The final deployed system substantially reduced prediction error bands and improved the reliability of downstream systems such as Battery Aware Matching and Charger Recommendation.

Tool used (Development tools - H/w, S/w) : Uber-One Devpod, Triton CPU Inference Servers, Peloton Resource Pools, Python 3.11, LightGBM, XGBoost, CatBoost, Pandas, NumPy, Scikit-learn, Ray, Bazel, CanvasFlex, Michelangelo MA Studio, Triton Inference Server, Git, GitHub, VS Code Remote-SSH, Spark S

Objectives of the project : The primary objective of the BLADE ML project was to build a highly accurate, scalable, and production-ready EV battery range prediction system for Uber's electric vehicle ecosystem. The project aimed to replace the existing heuristic-based MVP with a data-driven ML solution capable of providing reliable real-time battery drainage estimation along with calibrated uncertainty bounds (P10/P50/P90). Additional objectives included reducing prediction bias, improving dispatch and charger recommendation decisions, supporting both Connected Vehicle and Manual Range Entry drivers, and successfully deploying the model through Uber's Michelangelo/CanvasFlex infrastructure for real-time inference at scale.

Major Learning Outcomes : This project provided hands-on experience in building and productionalising an end-to-end ML system at scale. Major learnings included advanced feature engineering, quantile regression using LightGBM, session-aware data splitting to prevent leakage, and designing dual-model architectures for different user scenarios. It also involved deploying custom Python ML models through CanvasFlex and Triton, integrating models with large-scale backend services, handling real-world MLOps challenges, and optimizing inference infrastructure. Additionally, the project strengthened understanding of scalable ML pipelines, model validation, debugging distributed systems, and balancing engineering trade-offs between performance, maintainability, and production reliability.

Details of Papers/patents : No research papers or patents were published as part of this project. However, extensive technical documentation, design memos, implementation reports, deployment diffs, and internal presentations were created to support the development, validation, and p

Brief Description of working environment, expectations from the company : The working environment at the Uber Bangalore Science team was highly collaborative, fast-paced, and research-driven, with strong emphasis on solving real-world large-scale problems using data science and machine learning. The team worked extensively with production-grade ML systems, distributed

infrastructure, and internal platforms such as Michelangelo and CanvasFlex. Interns were expected to quickly understand complex systems, independently debug issues, contribute production-quality code, and actively participate in technical discussions and design decisions.
The expectations from the company included strong analytical thinking, ownership of tasks, clean and scalable implementation practices, and the ability to bridge research with production deployment. Considerable importance was given to understanding business impact, maintaining high engineering standards, and documenting work thoroughly. Team members were encouraged to collaborate across engineering and science functions while also demonstrating initiative in solving ambiguous technical challenges independently.

Academic courses relevant to the project : Machine Learning, Artificial Intelligence, Data Structures and Algorithms, Database Systems, Object Oriented Programming, Probability and Statistics, Design and Analysis of Algorithms, Operating Systems, Computer Networks, Distributed Computing, Software

PS-II Station : UBER - Software Engineer, , Bengaluru

Faculty

Name: Akshaya G .

Student

Name: MADHAV GUPTA(2022A7PS0078P)

Student Write-up

PS-II Project Title: Spend Analyzer

Short Summary of work done during PS-II : Built an AI agent that analyzes and flags anomalous spends in U4B

Tool used (Development tools - H/w, S/w) : Langgraph, Go, Glue, React, Graphql

Objectives of the project : Build Spend Analyzer agent for Uber for Business

Major Learning Outcomes : AI agent

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Can become hectic near project releases. While on regular days workload is fine, during crunch times the managers will expect work to be done no matter what

Academic courses relevant to the project : Parallel Computing, Operating Systems, OOP

Name: SIMRAN SESHA RAO .(2022A7PS0002H)

Student Write-up

PS-II Project Title: ENHANCING RIDER EXPERIENCE FOR INTERCITY TRIPS

Short Summary of work done during PS-II : during PS-II (≤250 words) During my Practice School-II at Uber Technologies, I worked with the Uber Intercity team on four production-scale software engineering projects. I developed an AI-powered in-app chatbot using Large Language Models (LLMs) and Model Context Protocol (MCP) to provide riders with accurate, route-specific information. I implemented a Return Trip Upsell feature that encouraged riders to book return journeys through deep linking and backend integration. I also enhanced the visibility of the Call 2 Ride booking option on Uber's SEO web pages by implementing responsive UI improvements for both desktop and mobile platforms using React. Additionally, I contributed to Regista, Uber's internal fleet management platform, by implementing multiple operational improvements including driver management, feature flag based deployments, and dashboard enhancements. Throughout the internship, I participated in feature design, implementation, testing, code reviews, experimentation, and production rollout while collaborating closely with cross-functional teams.

Tool used (Development tools - H/w, S/w) : React, JavaScript/TypeScript, Java, gRPC, Thrift RPC, LangStudio, MCP Gateway, Flipr (Feature Flags), Git, Internal Uber developer tools, Analytics

dashboards, IDEs (IntelliJ/VS Code), Testing frameworks.

Objectives of the project : To enhance the Uber Intercity rider experience by developing AI-powered and product features that improve booking experience, increase conversions, enhance web discoverability, and optimize internal fleet management tools.

Major Learning Outcomes : - End-to-end software development lifecycle in a production environment.
- Building AI-powered applications using LLMs and MCP.
- Backend, frontend and mobile integration.
- Feature flag based deployments.
- Experimentation and A/B testing.
- Writing scalable, production-quality code and collaborating through code reviews.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Uber provided a collaborative, fast-paced engineering environment focused on delivering high-quality production software. Engineers were encouraged to take end-to-end ownership of features, participate in design discussions, write scalable code, perform testing, and monitor production rollouts. Regular code reviews, mentoring sessions, and cross-functional collaboration with product managers, designers, and backend teams helped improve both technical and communication skills. The company expected interns to learn quickly, proactively solve problems, maintain high coding standards, and contribute meaningfully to customer-facing products while following software engineering best practices.

Academic courses relevant to the project : NA

PS-II Station : UBS – Graduate Trainee , (Pune / Hyderabad)

Faculty

Name: Niranjan Swain .

Student

Name: JAYANTH K V R(2022A7PS1102G)

Student Write-up

PS-II Project Title: Application Modernization and Platform Migration

Short Summary of work done during PS-II : During my six-month internship at UBS Business Solutions. My primary responsibility was contributing to migrating a legacy Angular application to the organization's React-based Neo platform. This involved recreating existing functionality using modern frontend technologies, implementing reusable components, developing dynamic forms, adding validations, handling dependent user interactions, and ensuring that the functionality was implemented. In addition to frontend development, I participated in backend migration from JDK 8 to JDK 17. This included identifying compatibility issues, validating fixes, and assisting with testing and deployment activities. I also gained exposure to enterprise backend technologies, including Java, Spring Boot, SQL, and Oracle Database, while integrating frontend components with REST APIs and existing business services. It also involved understanding and contributing to deployment and DevOps processes. I studied GitLab CI/CD pipelines, deployment workflows, environment configurations, and release processes across development, testing, and production environments. I also assisted with deployment standardization initiatives to improve consistency and maintainability across multiple services. Throughout the internship, I worked in an Agile development environment and collaborated with experienced engineers on large-scale enterprise applications. I participated in sprint-based development cycles, daily stand-up meetings, code reviews, testing activities, and deployment processes. These experiences helped me develop strong problem-solving, communication, and teamwork skills while gaining insight into how modern software systems are designed, developed, maintained, and delivered in a professional setting. Overall, the internship provided valuable exposure to full-stack development, application modernization, platform migration, CI/CD practices, and enterprise software engineering, significantly strengthening both my technical and professional capabilities.

Tool used (Development tools - H/w, S/w) : Vscode, Intellij Idea, SQL developer, Github copilot

Objectives of the project : Frontend Migration, JDK migration and CI/CD pipeline management.

Major Learning Outcomes : This internship provided hands-on experience in full-stack application

development, application modernization, and platform migration using technologies such as React, TypeScript, Java, and Spring Boot. I gained practical exposure to enterprise software development practices, including REST API integration, CI/CD pipelines, deployment workflows, and Agile methodologies. Working on large-scale business applications also strengthened my problem-solving, collaboration, and professional communication skills.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : At the start of my internship, I was given time to adjust to the working conditions and complete my mandatory training to understand the work culture better. After that, my manager asked me about my interests and assigned work accordingly. Then, I had weekly checkups with him to discuss my progress on the work and tasks for the upcoming weeks. After that, I was gradually integrated into the team and given work on the projects they were working on. There were no strict deadlines imposed on me, I completed the work in a timely manner.

Academic courses relevant to the project : OOP, Computer Networks, DBMS, Operating Systems.

Name: NISHTA CHAUDHARY .(2022A3PS0583H)

Student Write-up

PS-II Project Title: Enhancing payment platform reliability

Short Summary of work done during PS-II : During my PS-II at UBS, Hyderabad, I developed two engineering solutions to enhance the reliability, security, and automation of the payment platform. First, to resolve an operational visibility gap across our microservices, I built a centralized application monitoring dashboard using Java, Spring Boot, and JavaScript. I replaced manual service checks with continuous HTTP polling of microservice endpoints to dynamically render real-time statuses (Green/Red) on a UI. This allowed infrastructure teams to instantly isolate system failures, drastically reducing our Mean Time to Resolution (MTTR). Second, I eliminated security risks by removing hardcoded credentials from our Selenium and Cucumber testing frameworks. I re-engineered the pipeline to utilize dynamic runtime secret fetching from Azure Key Vault (AKV) and User Assigned Managed Identities (UAMI). I also optimized our enterprise GitLab CI/CD pipeline (.gitlab-ci.yml) to

automatically download software dependencies from secure Nexus repositories. Finally, I replaced manual execution with scheduled cron jobs to achieve a fully autonomous, hands-free cloud execution environment.

Tool used (Development tools - H/w, S/w) : Git, selenium, Gitlab, Intellij, Nexus

Objectives of the project : To enhance the operational reliability, security and deployment automation of the payment platform with the WMPC core payments pipeline

Major Learning Outcomes : Full stack development, Pipeline automation, core payments infrastructure, cloud architecture and security

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at UBS Hyderabad was highly collaborative, structured, and professional. Working within a large-scale enterprise team, I was exposed to a culture that strongly values mentorship, workflow optimization, and high workplace efficiency. My manager, teammates, and peers were incredibly supportive, welcoming me into the team and trusting me with critical, hands-on project responsibilities from day one.

The office environment successfully bridges the gap between academic knowledge and real-world industrial applications. It is a fast-paced but psychologically safe workplace where asking questions is encouraged, and continuous professional growth is prioritized. Communication across teams is streamlined, and there is a shared commitment to maintaining strict industry standards. Overall, the environment provided an exceptional, eye-opening introduction to the corporate technology sector, helping me dramatically improve both my technical confidence and professional communication skill.

Academic courses relevant to the project : OOPS, DBMS

PS-II Station : UBS - RAS Executive Treasury, Pune

Faculty

Name: Niranjan Swain .

Student

Name: VINEET KRISHNA(2022A7PS1197G)

Student Write-up

PS-II Project Title: RAS Executive Treasury

Short Summary of work done during PS-II : performing standardised daily processes and solving issues with them as required.

Tool used (Development tools - H/w, S/w) : Access DB, Excel

Objectives of the project : Perform daily BAUs, resolve adhoc queries, add new functionalities to existing process

Major Learning Outcomes : Excel functions

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Environment is very relaxed as long as mistakes are not made, in which case a few extra demands are made

Academic courses relevant to the project : DBMS

PS-II Station : UBS - RAS GAM, Pune

Faculty

Name: Niranjan Swain .

Student

Name: VEDAANT ACHUTHAN(2021B5A41173G)

Student Write-up

PS-II Project Title: Control Group

Short Summary of work done during PS-II : Worked as a member of control group while at UBS. Handled data processing for financial instruments, coordinated with stakeholders to ensure timely deliverance of data. Also worked on a pilot intern project to reduce turnaround time for access requests.

Tool used (Development tools - H/w, S/w) : None

Objectives of the project : Member of Control Group

Major Learning Outcomes : Corporate Life, Teamwork, Understanding of Financial Controls, Data Integrity

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Upscale, very understanding and good.

Academic courses relevant to the project : None

PS-II Station : UBS- Global Quantitative Risk Modelling, Mumbai

Faculty

Name: Niranjan Swain .

Student

Name: DAGGUMALLI MANISH(2021B3A31900H)

Student Write-up

PS-II Project Title: Lombard Lending Models

Short Summary of work done during PS-II : Worked on development and maintenance of quantitative models used in risk evaluation of Lombard Loans for various asset classes

Tool used (Development tools - H/w, S/w) : R, Gitlab

Objectives of the project : To learn and implement Quantitative Modelling for accurate Lombard Lending

Major Learning Outcomes : Learn how Quantitative Risk Modelling is done

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Relaxed

Academic courses relevant to the project : None

PS-II Station : UBS QRM, Mumbai

Faculty

Name: Niranjan Swain .

Student

Name: ATHARVA PANKAJ DESHPANDE(2021B4A82309G)

Student Write-up

PS-II Project Title: Developing a migration tool for sensitivity analysis

Short Summary of work done during PS-II : During my internship, I performed quarterly parameter checks for the Margin Period of Risk model from October 2025 to March 2026, which calculates the bank's exposure to unprotected market fluctuations and facilitates the termination of outstanding illiquid trades. To improve efficiency and reduce costs, I automated these previously manual Excel checks using R-programming and utilized the same language to generate report graphs and tables instead of using the paid Tableau software. Additionally, I executed the February 2026 monthly parameter check, updating the production code to integrate feedback from the MRMC and align with current governance standards to ensure the risk models accurately reflected market realities. I also conducted a sensitivity analysis between the Zeus and ACQA platforms using R-programming, where I identified critical discrepancies in data storage formats and precision levels. This analysis was vital for ensuring stable, accurate, and trustworthy risk calculations during the bank's transition to the ACQA platform. Finally, towards the conclusion of my internship, I managed bond and equity monitoring to categorize securities invested in UBS. This process allowed for the assignment of correct thresholds to calculate Liquidation Days and successfully identified illiquid bonds and equities.

Tool used (Development tools - H/w, S/w) : R , Python, SQL , Databricks, Risklab, Gitlab, Copilot

Objectives of the project : The key objective of my project is to extract and clean the data from the existing Oracle server, compare the differences in sensitivities and develop a migration tool using SQL, Python and R programming to migrate to Microsoft Azure.

Major Learning Outcomes : Writing reports to MRMC, Data calibration, using the Bloomberg terminal for analysis of equities, R programming, Python, SQL, Tableau

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment is very professional, senior mentors are friendly and impart knowledge and solve queries whenever needed.
The company has a mandatory training programme after onboarding which needs to be completed in order to understand the norms of the company.

Further, free access to Coursera enables students to learn major courses in the initial phase of the internship.

Academic courses relevant to the project : Although having basic knowledge of finance and programming should be sufficient, doing finance minor courses will be very helpful.

Name: STITI SAMBHAB DAS(2021B4AA0770P)

Student Write-up

PS-II Project Title: Investment Risk Stress testing

Short Summary of work done during PS-II : I worked in development of a streamlit based python dashboard helping the concerned people alert the datas. I worked on the enhancement of R code for climate approach.

Tool used (Development tools - H/w, S/w) : Python, R

Objectives of the project : Help the Investment Risk Stress testing in smooth functioning

Major Learning Outcomes : Python libraries, R programming, corporate life

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Very cooperative and helpful, a lot of bitsian seniors in the company

Academic courses relevant to the project : Probability and Statistics, Computer Programming

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PS-II Station : UBS-CFO - Group Treasury (LFMG, India), Mumbai

Faculty

Name: Niranjan Swain .

Student

Name: RACHIT CHOUDHARY(2021B3A42147G)

Student Write-up

PS-II Project Title: Initial Margin Buffer Model

Short Summary of work done during PS-II : During my internship at UBS, I worked on the Dynamic Initial Margin Buffer Model within the Group Treasury function. As part of the internship, I developed an understanding of various derivative products, including futures, options, swaps, and forwards, and their role in financial markets. I also gained insight into liquidity management practices at financial institutions, focusing on how banks monitor funding requirements, manage collateral, and maintain sufficient liquidity buffers to meet regulatory requirements and support day-to-day operations.

Tool used (Development tools - H/w, S/w) : S/w - Excel, Databricks, Python, SQL

Objectives of the project : Develop a dynamic IM Buffer Model

Major Learning Outcomes : Developed a strong understanding of various derivative products and their role in financial markets. Gained practical exposure to liquidity management practices within a global financial institution. Learned how quantitative models are used to estimate liquidity needs and support effective treasury and risk management. Improved analytical and problem-solving skills by applying financial concepts to real-world business scenarios.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Great working environment, great mentors

Academic courses relevant to the project : DRM, FRAM

PS-II Station : UBS-FPA&R - PPNR, Mumbai

Faculty

Name: Niranjan Swain .

Student

Name: VINAYAK HARIVANSH PANDEY(2021B3AA1030P)

Student Write-up

PS-II Project Title: FPAR - Financial Modelling Intern

Short Summary of work done during PS-II : Made presentations, did some analytical modelling on excel, was not able to develop a full statistical model as they already had made all the required models and currently only required maintenance. Provided some macro commentary but all in all not a very educative environment.

Tool used (Development tools - H/w, S/w) : Risklab, Gitlab, Python, R, Power Automate, Office Suite

Objectives of the project : Provide revenue and expense projections for various business divisions.

Major Learning Outcomes : Using automation tools like power automate, doing basic regression on R, Python and some basics of etiquettes of financial modelling on excel

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Working environment is slow, it's a GCC, you will have to find things to do, no one is going to bring anything to you other than the regular stuff your manager will be giving you. Best way to stand out in this place is to have a good grasp on both finance and coding, work on projects that require both and talk to the

people of the team, then you are going to be converted for sure.

Academic courses relevant to the project : Econometrics, Data Science, Macro Economics

PS-II Station : UBS-Product Control AMER, Pune

Faculty

Name: Niranjan Swain .

Student

Name: KETALA SOHAN KUMAR(2022A7PS1233G)

Student Write-up

PS-II Project Title: Product control -AMER

Short Summary of work done during PS-II : Looking into PnL vie of trader.

Tool used (Development tools - H/w, S/w) : Excel and company related tools

Objectives of the project : To look into PnL

Major Learning Outcomes : Stock market account and Excel

Details of Papers/patents : Na

Brief Description of working environment, expectations from the company : Good work environment, great and supportive team.

Academic courses relevant to the project : NA

PS-II Station : UBS-RC MRR, Pune

Faculty

Name: Niranjan Swain .

Student

Name: ANAGHA B MENON(2021B5A41535G)

Student Write-up

PS-II Project Title: Market Risk Reporting

Short Summary of work done during PS-II : At UBS Mumbai, I worked first in Market Risk Reporting, owning a daily RegVaR & SVaR report and two monthly risk summaries, then transitioned to Risk Control Operations, taking on daily VaR Closure. I also received cross-training in Controls and MRQ analytics amid an ongoing team integration.

Tool used (Development tools - H/w, S/w) : Internal tools (Variance, Unify, ARisk, OneRisk) and Microsoft Excel

Objectives of the project : To support and contribute to end-to-end market risk management processes at UBS Group AG.

Major Learning Outcomes : End-to-end regulatory risk reporting, practical application of VaR and SVaR under Basel III, daily VaR Closure operations including data validation and sign-off, proficiency in Variance, Unify and ARisk Cube Views, exposure to FINMA reporting requirements, and cross-functional experience across MRR, RCO and MRQ teams.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Interns receive

structured onboarding and comprehensive training before taking on live responsibilities, and the pace varies between fast daily production windows and analytical weekly and monthly cycles. The training requires self-driven learning and ownership, no spoon feeding, you set deadlines and timelines for yourself and drive however fast or slow you wish to go.

Academic courses relevant to the project : Statistics, M3

PS-II Station : UGX Systems Pvt Ltd., Gurgaon

Faculty

Name: Harish Kumar Aggarwal .

Student

Name: ADITYA SHARMA(2022A7PS1183P)

Student Write-up

PS-II Project Title: Data automation/integration using n8n and anthropic api based custom agent

Short Summary of work done during PS-II : I worked on three interconnected projects that together form a complete manufacturing data integration platform. The first project was a **universal data integration workflow** built using n8n, designed to ingest manufacturing data from clients regardless of whether they share it via webhooks, REST APIs, or direct database access — all through a single configurable pipeline with no per-client custom code. The second project was a **Django REST API** implementing a 5-level manufacturing hierarchy (Organisation → Plant → Division → Line → Asset) with JWT-based authentication, token rotation, and granular multi-tenant access control, allowing each organisation's data to remain fully isolated and securely governed. The third and most technically involved project was **ATLAS**, an AI-powered analytics agent built on Anthropic's Claude API. I began by improving its performance through DuckDB for ad-hoc SQL analytics, a FAISS-based semantic cache, and IVF-PQ Voronoi clustering to scale vector search efficiently. I then redesigned its architecture, decoupling it from Django and rebuilding it as an independent FastAPI microservice

with a Redis-backed session store, communicating with Django exclusively through authenticated HTTP calls. Together, these projects gave me practical, end-to-end experience across workflow automation, secure API design, and AI agent engineering in a real production environment.

Tool used (Development tools - H/w, S/w) : python, sql, react, django, docker, n8n

Objectives of the project : Organization of data and performing analysis on data

Major Learning Outcomes : Gained confidence and real industry expertise

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : UGX Systems Pvt. Ltd. operates out of a modern office space in Gurugram, with an open-plan layout that encourages close collaboration between developers, the DevOps team, and product managers. As an intern, I was seated within the core engineering pod, working alongside two senior backend engineers and a product lead who oversaw the Factory OS platform. The environment was fast-paced but supportive — daily stand-ups were held at 10 AM to sync on priorities, and a more detailed sprint planning session took place every Monday. Code reviews were taken seriously, with all merge requests requiring at least one senior engineer's approval before being merged into the main branch.

The company follows an agile development methodology, with two-week sprints tracked on a Jira board. I was expected to maintain the same standards as full-time engineers: writing clean, documented, and tested code, communicating blockers early, and presenting my progress during sprint reviews. Given the sensitivity of manufacturing client data, strict adherence to security practices — such as never hardcoding credentials and always routing data access through authenticated APIs — was a non-negotiable expectation from day one.

Beyond technical delivery, I was expected to take ownership of my modules end-to-end: from requirement discussions with the product team, through implementation, to deployment and post-release monitoring. Mentorship was readily available, but the expectation was clear — to operate with the independence and accountability of a junior engineer, not just an intern observing from the sidelines.

Academic courses relevant to the project : ML

PS-II Station : UST- COO - Kochi, Cochin

Faculty

Name: Sindhu S .

Student

Name: BODAPUDI UDAY SHANKAR .(2022A3PS0655H)

Student Write-up

PS-II Project Title: Tokenisation using blockchain

Short Summary of work done during PS-II : Built the tokenisation platform.

Tool used (Development tools - H/w, S/w) : VScode to run the code, hyperledger for permissioned chain, ethereum and avalanche as public chains, rest api to build the api gateway for the platform.

Objectives of the project : To build a real world asset tokenisation platform using blockchain technology.

Major Learning Outcomes : Learned multiple programming languages- solidity, java script, python, GO. Finance- digital assets, traditional trade cycles, workflows between multiple stakeholders (transfer agents, custodians, brokers, investors, clearing houses, etc), on-chain finance, cryptocurrency. Blockchain- multi- blockchain architecture, systems architecture, etc.

Details of Papers/patents : Not yet published.

Brief Description of working environment, expectations from the company : The working environment is great, learned a lot from the mentors, gained corporate experience, technical and communication skills improved a lot in this internship. They expected the same(to improve and implement).

Academic courses relevant to the project : Nothing.

PS-II Station : UST Infinity labs, Thiruvananthapuram

Faculty

Name: Sindhu S .

Student

Name: ADITHYAN S NAIR .(2022A8PS0748H)

Student Write-up

PS-II Project Title: Autonomous navigation

Short Summary of work done during PS-II : Setting up and implementation of autonomous navigation for drones

Tool used (Development tools - H/w, S/w) : Linux , python , Cpp

Objectives of the project : Set up autonomous navigation for quadcopter drone and mecanum robot

Major Learning Outcomes : ROS 2, NAV , SLAM

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Relaxed , corporate enviornment

Academic courses relevant to the project : None

Name: JERIN VARGHESE BIJU(2022A3PS0440G)

Student Write-up

PS-II Project Title: Design and Implementation of an Autonomous Drone and LLM-Directed Dual-Arm Pick-and-Place System

Short Summary of work done during PS-II : During my 24-week Practice School-II at UST Innovation Labs, Thiruvananthapuram, I worked on two autonomous robotic systems. The first was a PX4-based autonomous drone integrating an Intel RealSense D435 depth camera and TF-02 rangefinder for obstacle avoidance, validated through Gazebo SITL simulation and real-world flight tests with PID-tuned lateral positioning. In the second phase, I integrated a local obstacle-avoidance planner and diagnosed a critical hardware-simulation discrepancy: the planner worked correctly in Gazebo but failed on real hardware due to an under-provisioned serial baud rate (57600) for MAVLink messages, since Gazebo's UDP-based SITL bypasses serial constraints entirely. The second system was an LLM-directed dual-arm pick-and-place platform: a Dobot Magician performs conveyor-belt grasping using an HSV color-segmentation pipeline, a four-state FSM, and PID control, while a uArm Swift Pro, directed by a Groq-hosted Llama 3.3 70B LLM, performs sorting, stacking, and pyramid-building from natural-language commands. A Kinect v2 RGB-D camera provided workspace perception, with 9-point affine calibration achieving a mean coordinate error of about 2.88 mm on 25 mm blocks. Both arms were integrated into an end-to-end two-arm material-flow pipeline, coordinated via a ROS2 signalling architecture (dobot_node and uarm_node) enforcing staging-before-scan-before-plan sequencing. The work strengthened my skills in embedded systems debugging, computer vision, multithreaded control, sensor calibration, and LLM-driven robotic planning

Tool used (Development tools - H/w, S/w) : Gazebo, ROS, Python, Git

Objectives of the project : To design, implement, and validate an autonomous PX4-based drone with depth-camera obstacle avoidance, and an LLM-directed dual-arm pick-and-place system (Dobot Magician + uArm Swift Pro) using computer vision, PID control, and natural-language task planning, integrated into a single end-to-end robotic pipeline.

Major Learning Outcomes : Gained hands-on experience in PX4/ROS-based drone integration and hardware-vs-simulation debugging, real-time computer vision (HSV segmentation, perspective/affine calibration), multithreaded PID and FSM-based robot control, integrating LLMs (Llama 3.3 70B via Groq) for natural-language robotic planning, and coordinating multi-robot systems using ROS2 — overall strengthening my root-cause debugging and end-to-end system integration skills.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : UST Innovation Labs, Thiruvananthapuram, provided a collaborative, lab-based working environment with peer interns working on related robotics and embedded systems projects in a shared lab space. The setting encouraged informal knowledge-sharing across projects — interns frequently exchanged debugging insights and hardware resources (e.g., camera modules, controllers) despite working on independent project tracks. Mentors were available for technical guidance, particularly during integration and debugging phases, while day-to-day execution was largely self-directed.

Academic courses relevant to the project : Control Systems, Microprocessors & Microcontrollers, Digital Signal Processing, Linear Algebra, Probability & Statistics, Electronic Devices, Network Theory, Power Electronics (for actuator/motor control basics)

PS-II Station : Varaha ClimateAg Private Limited - Growth and Strategy, Gurgaon

Faculty

Name: Gaurav Nagpal .

Student

Name: PRATYAKSH PRADEEV(2021B1A42808G)

Student Write-up

PS-II Project Title: Growth and Strategy

Short Summary of work done during PS-II : During my six-month PS-II at Varaha ClimateAg, I worked across the field operations of a large biochar carbon-removal project (GCSP1013, Global Artisan C-Sink standard). My work spanned four areas. First, partner and site management — I

coordinated ~24 implementation partners across the Cotton-stalk and Prosopis biomass streams, spanning Gujarat, Rajasthan, Yavatmal (Maharashtra) and Karnataka, handling onboarding, points-of-contact and day-to-day operations. Second, camera compliance and live-feed monitoring — I built a daily monitoring system from scratch (0→1), tracking camera ON/OFF and site activity, designing a discrepancy-marker framework, and running escalations for outages and SOP breaches through a summary dashboard. Third, I leveraged a long-standing relationship with the CEO of Gamait to close a camera-supply and onboarding deal, scaling compliance from zero to ~65–70 sites, including securing signed declarations before installation and resolving escalations. Fourth, biochar distribution and GCS/annex reporting — I compiled production and distribution data into monitoring reports and annexes for credit submission. Across January–May 2026 this covered ~34,062 t of biochar and ~99,617 t of gross CO_2e, spanning 244 production villages and 1,87,632 kiln cycles. Overall, I sat between field partners and the verification process, owning the data trail that turns biochar production into verified carbon-removal credits.

Tool used (Development tools - H/w, S/w) : Microsoft Excel / Google Sheets (tracking, GCS bulk-upload templates, dashboards); the camera live-feed monitoring platform [eseepro]; Varaha's KALKI dMRV mobile app (geotagged, timestamped batch evidence); the Global C-Sink Registry for credit submissi

Objectives of the project : To support Varaha's field biochar carbon-removal programme end-to-end: manage a partner network of ~24 implementation partners across the Cotton-stalk and Prosopis biomass streams; build camera-based live-feed compliance monitoring from scratch to verify field production; and convert verified biochar production and distribution into Global C-Sink (GCS) carbon-credit submissions through monitoring reports and annexes.

Major Learning Outcomes : Learned how carbon-removal credits are generated end-to-end — from field production to verification, distribution and registry submission under the Global Artisan C-Sink standard. Built a compliance-monitoring system from zero, which taught me data structuring, discrepancy tracking and escalation management. Strengthened stakeholder and partner coordination across ~24 partners and four states, and saw firsthand how relationship-building translates into results — closing a camera-supply deal that scaled compliance from 0 to ~65–70 sites. Developed ownership and the ability to turn loosely defined problems into structured, auditable deliverables.

Details of Papers/patents : Global Artisan C-Sink Methodology, Puro Biochar Methodology

Brief Description of working environment, expectations from the company : The technical

exposure was valuable and the stipend generous, but the culture and support around the role were noticeably weaker. Onboarding was almost absent : for the first couple of months I wasn't introduced to the wider team or given a clear point of contact, which left me isolated and slow to integrate. The role was heavily operations-driven, and the work stayed repetitive for much of my tenure : largely maintaining drives, circulating reporting sheets, and coordinating with partners by call. I repeatedly asked for more substantive work and was told it would follow once I "streamlined" my tasks; but when streamlining needed support from the product or tech teams, that support was consistently deferred and never materialised. My mentor's support on data management was genuinely good. However, backing from my reporting manager and team lead was limited : feedback was infrequent and critical without being constructive. As operations were partner-led, cross-team and partner communication was at times unprofessional, and when flagged, little corrective action followed. Having come from a previous SEM-I PS II station with exceptional mentorship , where, despite a wider and more demanding tool stack, strong hand-holding meant I never struggled : the contrast made one thing clear: culture and mentorship, far more than the difficulty of the work, determine how well a newcomer settles and performs. My key expectation from the company would be stronger onboarding, managers who support problem-solving over only critiquing, and a genuine commitment to professional, respectful communication.

Academic courses relevant to the project : Environmental Science , Probability and Statistics , Business Communication , Power Plant Engineering, Sustainability, Engineering Optimisation, Fundamentals of Finance and Accounting, Business Analysis ands Valuations, Security Analysis and Portfolio Man

PS-II Station : VConnecTech, Hyderabad

Faculty

Name: Rakesha Chandra Dash .

Student

Name: PRADDUMNA RAJENDRA RAUT(2024H1060080G)

Student Write-up

PS-II Project Title: Development of Edge-AI Enabled Smart Surveillance Hardware and Regulatory Compliance Frameworks

Short Summary of work done during PS-II : During the PS-II internship, worked as a Product Manager Intern focusing on the development lifecycle of a next-generation AI-powered IP surveillance camera series. Spearheaded the technical transition of the camera's core system architecture to a more advanced processor, significantly improving on-board edge processing efficiency for human and vehicle detection algorithms. Managed an aggressive development sprint aimed at executing a functional prototype within a highly compressed timeframe, ensuring alignment across hardware and software engineering tracks. Beyond core product development, took ownership of the domestic regulatory roadmap by conducting extensive research into STQC (Standardisation Testing and Quality Certification) requirements. Formulated comprehensive compliance checklists, vulnerability frameworks, and essential technical documentation necessary to clear security evaluations for government and commercial surveillance hardware deployment. Additionally, supported structural and strategic workflows for defense-grade technology proposals, utilizing advanced engineering methodologies to evaluate system ruggedness and component integration.

Tool used (Development tools - H/w, S/w) : Hardware: Evaluation boards, camera sensor modules, edge-processing testbeds. Software / Engineering Tools: SolidWorks (enclosure and structural design considerations), ANSYS (preliminary thermal and structural simulations), MATLAB, agile project managem

Objectives of the project : To architect and drive the product lifecycle of an AI-powered surveillance camera utilizing an advanced System-on-Chip (SoC) for localized, edge-based object detection. To manage an accelerated hardware prototyping sprint, transitioning the system architecture to meet strict performance and delivery timelines. To conduct extensive regulatory research and establish comprehensive documentation/checklists required for STQC certification compliance for domestic surveillance hardware.

Major Learning Outcomes : Edge Hardware Architecture Optimization: Gained hands-on experience evaluating and selecting processing platforms for localized AI inference.
Regulatory Compliance & Security Standards: Developed a deep understanding of Indian hardware compliance ecosystems, specifically the technical and security benchmarks mandated by STQC certification.
Agile Hardware Product Management: Mastered cross-functional coordination, technical requirement

drafting (PRDs), and scoping deliverables under highly aggressive prototype timelines.

Details of Papers/patents : None / Internal Technical Product Requirement Documents (PRDs), Hardware Architecture Specifications, and Compliance Certification Frameworks.

Brief Description of working environment, expectations from the company : The organization provides a dynamic, fast-paced, and highly entrepreneurial engineering environment centered around cutting-edge hardware design and edge AI solutions. The organizational culture places a premium on high autonomy, rapid iteration, and proactive problem-solving. Interns are expected to operate with the ownership mindset of full-time product tracks, frequently managing high-stakes sprints where prototype turnarounds are compressed into 15 to 30 days.
Cross-functional collaboration is highly active, requiring daily synchronization between hardware engineering, software deployment, and compliance teams. The company expects interns to bridge the gap between technical feasibility and regulatory compliance, offering an excellent environment for engineers looking to master deep-tech product management.

Academic courses relevant to the project : Product Design and Development, Computer Aided Design (CAD), Embedded Systems Architecture, Finite Element Analysis (FEA), Optimization Techniques.

PS-II Station : VE Commercials, Indore

Faculty

Name: Glynn John .

Student

Name: OMKAR SUNIL SAHASRA BHOJANE(2024H1060148P)

Student Write-up

PS-II Project Title: Engine Development

Short Summary of work done during PS-II : *Various kinds of data analysis and understanding the importance of why they are done; collecting vehicle data by going on trials on them and understanding any abnormalities and how to tackle any issue in engine or the vehicle; telemetry data tracking and understanding the importance of it.

Tool used (Development tools - H/w, S/w) : *Excel, AVL CONCERTO, Delphi VISU

Objectives of the project : To understand how an engine is developed, performance is improved & stringent emission regulations are met. by test the engine at a engine and chassis dyno setup then actually testing the calibration on vehicle.

Major Learning Outcomes : *IC engine in depth
*Engine after treatment systems
*engine calibration
*exhaust emission control
*tackling real field issues by using root cause analysis

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : *Friendly work environment, very helpful colleagues and motivational mentors
*Expecting to learn a lot about combustion and calibration engineering and hopefully make a career in this field.

Academic courses relevant to the project : *IC Engines
*Engine performance and testing
*Root cause analysis
*Design of experiments and optimization

Name: NIRAJ MITTAL(2024H1060156P)

Student Write-up

PS-II Project Title: 1-D Torsional Vibration of Driveline

Short Summary of work done during PS-II : Automotive drivelines are subjected to torsional excitations arising from engine torque fluctuations, which can induce vibrations affecting durability and NVH performance. The objective of this project was to develop a lumped 1-D parameter model of the driveline — from flywheel to wheel — to predict its torsional natural frequency and vibration amplitude. The work began with understanding the driveline architecture and power transmission path. FEM models of individual components (clutch, transmission, propeller shaft, and differential) were developed to extract torsional stiffness values, and mass moments of inertia were calculated analytically. Natural frequencies of individual components were validated against analytical results, showing good agreement. The main challenge was coupling these components into a unified driveline model. Three approaches were explored: a linear 6-DOF model, energy-based reduction to 1-DOF, and inertia reflection using torque/gear-ratio equations. The first two methods yielded inaccurate results due to inadequate coupling and incorrect inertia scaling respectively. The torque-reflection method — which correctly accounts for speed transformation across gear stages — successfully predicted the coupled driveline frequency at 29.18 Hz against a physical test benchmark of 30 Hz (~2.7% error), with equivalent stiffness also matching closely (1875.5 vs 1873 N·m/rad). A Simscape model was additionally built using torsional springs and inertia discs with a periodic torque excitation input, capable of predicting angular deflection amplitude over time. Correlation of this model with physical test results is currently in progress. Tools used: MATLAB, Simscape (MATLAB/Simulink), FEM software Key outcome: A validated MATLAB model for rapid torsional frequency prediction, and a Simscape framework for amplitude estimation to support early-stage driveline design decisions.

Tool used (Development tools - H/w, S/w) : MATLAB, Simulink

Objectives of the project : To develop a lumped 1-D parameter model of the driveline extending from flywheel to wheel and predict natural frequency.

Major Learning Outcomes : Driveline Architecture and Power Transmission and Torsional vibration measurement

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Interactive environment where you have to collaborate and work in other departments, work pressure is alright if you can manage.

Academic courses relevant to the project : Dynamics and Vibration, Vehicle Dynamics, Machine Design

PS-II Station : Vegapay Technology Private Limited - Engineering, Bengaluru

Faculty

Name: Ashish Narang .

Student

Name: SUBHAM SHREYASH(2021B2A82381G)

Student Write-up

PS-II Project Title: Automation Testing & API Validation in FinTech Infrastructure

Short Summary of work done during PS-II : During the internship at Vegapay, I worked as a Software Developer Intern in the Automation and Testing Team, focusing on backend API testing, automation, and platform development for a fintech card-issuance infrastructure. I extensively tested and validated REST APIs across modules including Limit Management, Rewards, Charges, Block Codes, Card Processing, Billing, Transactions, Collections, and Customer Management — verifying request parameters, authentication, response structures, status codes, and business rules, with Oracle SQL queries used to confirm that database state matched API responses. I developed and optimized automation test suites in Java using TestNG, REST Assured, and Maven, introducing reusable utility classes, dynamic payload generation, and centralized configuration to improve regression coverage and maintainability. I built an environment-driven test execution framework on GitHub Actions, enabling on-demand suite execution across Unity UAT, SSFB UAT, YBL UAT, and Multi-Clearance environments. I contributed to the development of a CMS Simulator — a Spring Boot platform with a simulation engine, dynamic request builders, API logging, and state management — to replicate production-like financial workflows including onboarding, transactions, billing, repayments, and refunds. I also integrated Slack notifications for real-time execution reporting and implemented a

QA Daily Bug Digest using JIRA APIs and email automation. Additionally, I migrated automation suites to the new Multi-Clearance architecture (updated authentication and settlement flows) and performed monitoring, debugging, and deployment validation using Kibana and ArgoCD, improving system reliability across QA and UAT environments.

Tool used (Development tools - H/w, S/w) : Software: Java, Spring Boot, TestNG, REST Assured, Maven, Postman, Swagger, Oracle Database, SQL, JetBrains DataGrip, IntelliJ IDEA, GitHub, GitHub Actions (YAML/CI-CD), Kibana, ArgoCD, Slack Webhooks, JIRA APIs, JSON/HTTP. Hardware: Standard development

Objectives of the project : To design, develop, and enhance automated testing frameworks for fintech microservices, reducing manual validation effort and improving release quality; to validate complex financial workflows (Billing, Transactions, Rewards, Limit Management, Collections, Card Processing) through automated API testing; to build environment-driven test execution pipelines using GitHub Actions; to develop a CMS Simulator for large-scale simulation of customer onboarding, account lifecycle, transactions, billing, and collections; to implement monitoring and reporting mechanisms (Slack notifications, QA Daily Bug Digest); and to support migration of automation suites to the Multi-Clearance platform architecture.

Major Learning Outcomes : Hands-on proficiency in Java, Spring Boot, and REST API testing using Postman, REST Assured, and TestNG; design of reusable, modular automation frameworks with dynamic payload generation; Oracle SQL-based database verification and data-integrity validation; CI/CD pipeline development with GitHub Actions and YAML workflows; deployment monitoring and debugging using Kibana and ArgoCD; understanding of fintech domain concepts (card lifecycle, billing cycles, transaction authorization, settlement, rewards, credit limits); and professional skills in Agile teamwork, cross-team collaboration, and structured debugging.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Vegapay is a fintech infrastructure company in Bangalore that enables banks, fintech startups, and enterprises to launch and manage credit card and payment products through a secure, microservices-based platform. The working environment was collaborative and Agile-driven, with specialized teams for Backend Development, Automation & QA, Database & Infrastructure, Product & Integration, and DevOps. As an intern in the Automation and Testing Team, I was treated as a full contributor — given ownership of automation modules, framework enhancements, and platform development tasks (CMS Simulator), with continuous mentorship from my manager and technical guidance from the team. The company

expects interns to quickly become productive: writing production-quality automation code, independently debugging issues across distributed microservices, verifying database operations, participating in release cycles, and communicating results clearly. There is strong emphasis on reliability, security, and accuracy given the financial domain, so thorough validation, regression testing, and attention to detail are expected in all deliverables. The environment provided excellent exposure to real-world CI/CD practices, deployment monitoring, and large-scale fintech system operations.

Academic courses relevant to the project : Object-Oriented Programming, Database Systems, Computer Networks, Software Engineering, Data Structures & Algorithms, Operating Systems

PS-II Station : Vegapay Technology Private Limited - Product Management, Gurgaon

Faculty

Name: Ashish Narang .

Student

Name: PRISHA AGARWAL(2022A7PS0121P)

Student Write-up

PS-II Project Title: Designing Financial Products: A Product Management Approach

Short Summary of work done during PS-II : During PS-II at Vegapay Technology, I worked as a Product Management Intern within the Product Team, contributing to multiple fintech products and internal initiatives. My work primarily involved requirement analysis, product scoping, documentation, workflow design, policy analysis, and stakeholder coordination. I worked extensively on Credit Line on UPI (CLOU) projects, where I managed client requirements, prepared Product Requirement Documents, analysed loan capabilities, and ensured alignment between client expectations and system capabilities. I also contributed to the design of a Merchant Loan product by documenting end-

to-end workflows between UPI applications, PSPs, NPCI Switch, and Vegapay, designing API requirements, creating database structures, and defining product orchestration. Other major projects included analysing the impact of billing cycle changes on loan interest calculations, documenting and redesigning Loan Policy frameworks, creating Bank Reporting requirements, evaluating refund impacts on loan cancellation policies, and validating client communication requirements. I also participated in technology handovers, client discussions, sprint planning, policy reviews, and cross-functional coordination activities. The internship provided practical exposure to fintech product development and helped me understand how financial products are conceptualized, documented, and prepared for implementation within a large-scale digital lending ecosystem.

Tool used (Development tools - H/w, S/w) : Hardware Company-issued Laptop External Communication and Meeting Infrastructure Software and Platforms Atlassian Confluence – Documentation and Knowledge Management Overleaf / LaTeX – Professional Documentation and Report Preparation Metabase – Reporting

Objectives of the project : The primary objective of the internship was to gain practical exposure to Product Management within the fintech industry and contribute to the design, documentation, and implementation planning of financial products. The internship focused on understanding lending systems, payment ecosystems, product requirement engineering, policy design, and stakeholder management. Specific objectives included developing Product Requirement Documents (PRDs), analysing business requirements, designing product workflows, documenting loan and policy frameworks, evaluating edge cases, supporting client implementations, and facilitating coordination between Product, Technology, QA, Data, Operations, and Business teams.

Major Learning Outcomes : Developed a strong understanding of fintech products including Credit Line on UPI (CLOU), Merchant Loans, Loan Policies, Billing Systems, Reporting Frameworks, and Dispute Management.

Learned end-to-end Product Requirement Engineering, including requirement gathering, product scoping, documentation, stakeholder discussions, and technology handovers.

Gained experience in designing PRDs, BRDs, flowcharts, orchestration diagrams, API specifications, test cases, and acceptance criteria.

Developed the ability to identify business and technical edge cases and analyse their impact on system behaviour.

Learned how to bridge the gap between business requirements and technical implementation through structured documentation.

Improved analytical thinking, problem-solving, communication, stakeholder management, and cross-functional collaboration skills.

Gained exposure to industry frameworks such as UPI, digital lending, loan servicing, billing systems, and financial policy management.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Vegapay Technology provided a highly collaborative and fast-paced fintech work environment where product decisions directly impacted client implementations and financial products. The organization followed an agile and cross-functional approach involving Product, Technology, QA, Data, Design, Operations, and Business teams. Daily stand-ups, sprint planning meetings, product reviews, client discussions, and technology handovers formed an integral part of the work culture.
As a Product Management Intern, I was expected to take ownership of assigned projects, understand business requirements, analyse existing system capabilities, and create detailed documentation that could be used by implementation teams. The company encouraged independent thinking, problem-solving, and active participation in discussions regardless of role or experience level. Interns were expected to contribute meaningfully to ongoing projects rather than merely observe workflows.
The environment promoted continuous learning and provided opportunities to interact with senior management, product leaders, developers, and clients. This exposure helped me understand both the business and technical aspects of fintech products. The company also encouraged research-driven decision making, requiring product managers to study industry trends, banking policies, regulatory guidelines, and competitor solutions before proposing product enhancements.

Academic courses relevant to the project : Database Management System

PS-II Station : Victoria's Secret - MBA Business Analytics, Bengaluru

Faculty

Name: Smitha Sarma Ranganathan

Student

Name: SHREYA GUPTA(2024H1540840P)

Student Write-up

PS-II Project Title: CATEGORY PROPENSITY MODEL AND HK REPORT ANALYSIS FOR CUSTOMER BEHAVIOR INSIGHTS

Short Summary of work done during PS-II : During my internship at Victoria's Secret & Co., I worked on two key projects: Category Propensity Modeling and HK Report Analysis. The primary project involved developing machine learning models to predict customers' likelihood of purchasing products from specific categories such as All Bras, BBV Bras, and PINK Bras. The work included data extraction from Snowflake, data preprocessing, feature engineering, outlier treatment, Near Zero Variance (NZV) filtering, feature selection using LASSO Regression and XGBoost, hyperparameter tuning, and model evaluation. Model performance was assessed using lift analysis, decile analysis, percentile analysis, and threshold-based targeting approaches. The developed models successfully identified high-propensity customer segments that could be targeted through personalized marketing campaigns. In parallel, I worked on HK Report Analysis to study customer acquisition patterns, product performance, and purchasing behavior. I generated actionable business insights that supported merchandising and marketing teams in understanding customer preferences and category-level performance. The internship provided practical exposure to real-world applications of machine learning and analytics in the retail industry while strengthening technical and business problem-solving skills.

Tool used (Development tools - H/w, S/w) : Python, SQL, Snowflake, Microsoft Azure Machine Learning, Scikit-learn , XGBoost, Microsoft Excel

Objectives of the project : Develop a Category Propensity Model to predict the likelihood of customers purchasing products from specific categories and enable targeted marketing campaigns. Additionally, analyze HK Reports to generate insights on customer behavior, product performance, and purchasing trends for data-driven business decision-making.

Major Learning Outcomes : Developed end-to-end machine learning models for customer purchase prediction.
Gained experience in feature engineering, feature selection, and model evaluation techniques.
Learned to work with large-scale retail datasets using Snowflake and Azure Machine Learning.
Applied lift, decile, and percentile analysis for model validation.
Developed business understanding of customer behavior, marketing campaigns, and retail analytics.

Enhanced skills in data-driven decision-making and communicating analytical insights.

Details of Papers/patents : No papers or patents were published as part of the internship project. The work was focused on internal business analytics and machine learning applications for Victoria's Secret & Co.

Brief Description of working environment, expectations from the company : The internship was carried out within the Data Science and Analytics team at Victoria's Secret & Co. The work environment was collaborative, data-driven, and focused on solving business problems through analytics and machine learning. Regular interactions with team members, project mentors, and business stakeholders provided opportunities to understand both technical and business aspects of retail analytics.

The company expected interns to actively contribute to ongoing projects by performing data analysis, developing predictive models, generating insights, and documenting findings. Emphasis was placed on understanding business requirements, maintaining data quality, and delivering actionable recommendations.

The internship provided exposure to enterprise-scale datasets, cloud-based platforms such as Snowflake and Azure Machine Learning, and real-world marketing analytics applications. The experience encouraged independent problem-solving, continuous learning, and effective communication of analytical results to support business decision-making.

Academic courses relevant to the project : Business Analytics
Machine Learning
Data Mining
Predictive Analytics
Statistical Methods for Analytics
Database Management Systems
Big Data Analytics
Marketing Analytics
Data Visualization
Programming for Analytics (Python & SQL)

PS-II Station : Viralo - Rigi Careers, Bengaluru

Faculty

Name: Reddy Rani Vangimalla .

Student

Name: PARITOSH RAJEEV MATHAD(2021B5A31890G)

Student Write-up

PS-II Project Title: Research, Analysis, AI-tooling and Social Media Marketing for driving the growth and improving Operational Efficiency from the Founders' Office

Short Summary of work done during PS-II : Work type had a great variety : conducting research, browsing reports, analysing and compiling data, presenting in decks, helping in hiring, operations, bilding AI tools (vine coding) deploying them, marketing om social media sites (organic seeding), at times manually QCing videos, opinionating on them, etc

Tool used (Development tools - H/w, S/w) : Claude Code, Google Cloud Platform, Excel, Sheets, Company HR app for hiring, media apps

Objectives of the project : Build AI tools for aiding in manual work, conduct market research, analyse and interpret data, make visuals and decks, market on social media, help in hiring and general operational efficiency

Major Learning Outcomes : AI tool building, How to present data to different peet groups, How hiring works at a startup, Research papers/articles/reports in the microdrama domain

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working environment was good, felt encouraged to work and managers were supportive in understanding my decisions, helping me improve, gave quality feedback. Expectations from the company were as anyone would expect from a start up, work chaos, variety in work, new experiences, challenging tasks at times.

Academic courses relevant to the project : NA

PS-II Station : VISA, Bengaluru

Faculty

Name: Neha Vinayak .

Student

Name: TEJASVINI GOEL .(2022A7PS1672H)

Student Write-up

PS-II Project Title: Releaseflow

Short Summary of work done during PS-II : I worked on 3 projects- 1. UI test automation using playwright/cucumber. 2. Api testing along with manual overrides as required. 3. Releaseflow- an end to end release management automation tool

Tool used (Development tools - H/w, S/w) : Spring boot, jenkins, nexus, checkmarx, playwright, cucumber , API testing

Objectives of the project : Automating the complete release process

Major Learning Outcomes : Claude code, validating ai responses and handling hallucinations

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Visa has one of the best work cultures, however with the current amount of AI based automation happening, it is important to stay updated with latest internal dev tools coming out in the company and outside, and leveraging them to do 10x the work you would manually

Academic courses relevant to the project : OOPs, DBMS

Name: SAMRATH SINGH KHANUJA(2022A7PS1171P)

Student Write-up

PS-II Project Title: AI-DRIVEN MULTI-AGENT SYSTEM FOR SITE RELIABILITY ENGINEERING USING VISA LOG DATA

Short Summary of work done during PS-II : Engineered and deployed an autonomous, stateful AI-driven multi-agent framework within Visa's enterprise production stack to automate site reliability engineering (SRE) and log analysis workflows. The platform utilizes a modular five-tier architecture designed to ingest high-velocity telemetry streams, sanitize heterogeneous log data into structured JSON formats, and optimize token efficiency for downstream processors. The intellectual core consists of eight specialized autonomous AI agents operating under the principle of separation of concerns. Among these, an Anomaly Detection Agent continuously flags structural variations; a Correlation Agent monitors internal thresholds to establish causal relationships and alert on-call teams; and a Remediation Agent executes diagnostics via state-of-the-art LLM APIs to deliver both immediate and long-term recovery workflows. To ensure deterministic state management and robust multi-turn collaboration loops, each independent agent node is encapsulated in a custom runtime wrapper and orchestrated via a centralized scheduler using Docker containers. The system establishes direct integration with internal corporate infrastructure, bridging raw log ingestion with automated incident response by programmatically instantiating and escalating tracking tickets. Having successfully cleared stringent corporate security and compliance reviews, the live production deployment eliminates brittle, rule-based legacy heuristics. By delivering human-level Root Cause Analysis (RCA) and predictive system degradation metrics in real time, the framework drastically reduces Mean Time to Detection (MTTD) and Mean Time to Resolution (MTTR) while minimizing human operational overhead.

Tool used (Development tools - H/w, S/w) : Claude Code, Docker, OpenAI API, AWS

Objectives of the project : To design and deploy an end-to-end, AI-driven multi-agent framework that automates enterprise-scale log analysis, anomaly detection, and root cause analysis to optimize

site reliability engineering (SRE) metrics within production environments.

Major Learning Outcomes : Mastered the architecture of stateful, cyclic multi-agent AI frameworks using production-grade orchestration and token optimization to bridge the gap between theoretical machine learning and enterprise-scale Site Reliability Engineering.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Visa Inc. operates a high-octane, enterprise-scale engineering environment centered around deep systems thinking, stringent security compliance, and an uncompromising culture of innovation. Given its role as a critical global financial technology network, the operational ecosystem demands absolute infrastructure reliability and engineering excellence. Navigating this space requires working alongside highly collaborative, senior engineering teams to translate advanced technical paradigms into deterministic, scalable business outcomes. The organization's expectations from an engineering intern are rooted in ownership, technical agility, and professional maturity. Interns are expected to rapidly transition from academic software principles to large-scale industrial execution. This includes actively contributing to cross-functional initiatives—such as the rapid creation of client-centric prototype solutions during high-pressure innovation bootcamps—while mastering developer tools and corporate APIs. Crucially, the company expects interns to address core operational bottlenecks by designing robust, non-intrusive software assets capable of handling massive, high-velocity enterprise data streams without introducing latency overhead. Engineering outputs are expected to meet rigorous production standards, requiring interns to navigate strict corporate security reviews, continuous integration pipelines, and code compliance layers. Ultimately, Visa expects its engineers to possess the technical vision to transition workflows from brittle, legacy scripts to advanced, autonomous architectures that measurable lower critical system metrics like MTTD and MTTR, minimizing human operational overhead.

Academic courses relevant to the project : OOP

Name: SUCHIT CHEBOLU(2021B1A72281P)

Student Write-up

PS-II Project Title: AI powered card reviewer platform

Short Summary of work done during PS-II : There is a manual review process of carda that issues(banks) submit to visa for verification, I woked on the automation of this process using an AI reviewer and helped training pytorch models involved in this process and integrating the same with the legacy codebase.

Tool used (Development tools - H/w, S/w) : Python, GenAI

Objectives of the project : Automation of manual internal processes

Major Learning Outcomes : OpenCV vision libraries, python

Details of Papers/patents : Na

Brief Description of working environment, expectations from the company : Great environment with great mentors and was able to learn a lot

Academic courses relevant to the project : CS courses

Name: SANCHAY KETAN SINHA .(2022A3PS0607H)

Student Write-up

PS-II Project Title: Platform engineering application for cloud

Short Summary of work done during PS-II : Worked on 1 application end to end using ai, building varied different features

Tool used (Development tools - H/w, S/w) : Java, spring boot, angular

Objectives of the project : Building features for application

Major Learning Outcomes : Learnt a lot about technical projects, how corporate works

Details of Papers/patents : Na

Brief Description of working environment, expectations from the company : Visa focuses a lot into building through ai, so that's a unique opportunity where you can expand your learning without any hiccups

Academic courses relevant to the project : Oops, os, ai, ml, dbms, fdsa

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Name: PRIYANSH R DALSANIA(2024H1030089P)

Student Write-up

PS-II Project Title: ML-powered Anomaly Detection in Weekly Aggregated Transaction Data

Short Summary of work done during PS-II : Worked on developing an ensemble anomaly detection and explanation model powered by ML and AI models to find and explain anomalous weeks in terms of total transaction count across the weeks, and attributing the possible macroeconomic factors behins it.

Tool used (Development tools - H/w, S/w) : Copilot, Claude Code, Mermaid, ChatGPT, HuggingFace, sklearn

Objectives of the project : Predict and explain anomalies in weekly agg data and attribute macroeconomic factors

Major Learning Outcomes : Shipping Deployment ready software at large scale companies

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Calm, supportive, very practical expectations, great manager, good learning resources

Academic courses relevant to the project : ML, NLP, LLM, Cloud Computing

Name: SANA JOSE .(2022A3PS0636H)

Student Write-up

PS-II Project Title: A Chatbot-Based System for Automating Internal Report Requests

Short Summary of work done during PS-II : During my Practice School-II internship at Visa Inc., I worked on developing AI-powered chatbot solutions to automate the retrieval of internal reports and enterprise data. The primary project involved building a chatbot-based system for retrieving client configuration reports using natural language interactions, reducing manual effort and improving report turnaround time. The solution leveraged Large Language Models (LLMs), LangGraph-based workflow orchestration, React, FastAPI, and PostgreSQL to provide users with self-service access to business-critical information. As part of the internship, I also contributed to enhancing an existing Risk Profile Chatbot by migrating it from a Streamlit proof-of-concept to a production-ready enterprise application. This involved redesigning the application architecture, improving scalability and maintainability, and integrating it with enterprise systems and databases. In addition to application development, I participated in backend API development, database integration, deployment, validation, and troubleshooting of enterprise applications. I performed end-to-end testing, resolved deployment and connectivity issues, and contributed to ensuring reliable system performance. The deployed chatbot solutions received positive feedback from users by enabling faster, self-service retrieval of reports while reducing dependence on manual support processes. Overall, the internship provided valuable hands-on experience in full-stack software development, Generative AI, enterprise application development, and business process automation, while strengthening my technical, problem-solving, and collaborative skills in a professional engineering environment.

Tool used (Development tools - H/w, S/w) : React & TypeScript, Python (FastAPI), PostgreSQL

Objectives of the project : The objective of this project was to develop AI-powered chatbot solutions that automate the retrieval of client configuration and risk profile reports using natural language interactions. The project aimed to reduce manual effort, minimize dependency on support teams, and improve report turnaround time by integrating Large Language Models (LLMs), LangGraph workflows, and enterprise data sources into a scalable, production-ready application.

Major Learning Outcomes : Gained hands-on experience in developing enterprise-scale full-stack applications using React, FastAPI, and PostgreSQL.

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : The working environment at Visa Inc. was collaborative, professional, and focused on innovation. I had the opportunity to work as part of an experienced engineering team, where I was exposed to enterprise software development practices, agile workflows, and modern AI technologies. Regular interactions with team members through meetings, code reviews, and technical discussions fostered continuous learning and encouraged knowledge sharing.

Throughout the internship, I was entrusted with meaningful responsibilities, including developing and enhancing enterprise applications, integrating backend services, deploying applications, and working on AI-powered chatbot solutions. The guidance and constructive feedback provided by my manager and team members helped me strengthen both my technical and professional skills.

The company encouraged independent problem-solving while providing support whenever required. Working on real-world projects allowed me to understand software development lifecycles, enterprise system integration, and the practical application of Generative AI in business process automation.

Overall, the internship provided a highly enriching learning experience, enabling me to apply my academic knowledge to real-world challenges while developing industry-relevant technical, analytical, and teamwork skills.

Academic courses relevant to the project : Database Systems,Object-Oriented Programming,Artificial Intelligence / Machine Learning

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Name: MEGHADITYA GIRI .(2022A7PS0155H)

Student Write-up

PS-II Project Title: Digital Rules Repository

Short Summary of work done during PS-II : During my Practice School-II internship at Visa Inc., I worked on the Digital Rules Repository (DRR), a full-stack enterprise application aimed at centralizing operational and compliance rules that were previously scattered across multiple internal systems such

as Flare, GitHub, VRSA, spreadsheets, and documents. My primary responsibilities involved developing backend services using Java 17, Spring Boot, Spring Data JPA, and MySQL, and building frontend components using Angular 16 and the Visa Design System (VDS). I implemented RESTful APIs to support rule creation, retrieval, update, and deletion, designed database entities for structured rule storage, and developed functionality for bulk rule ingestion from Excel and CSV files using Apache POI. I also integrated the frontend with backend services, contributed to API documentation using Swagger/OpenAPI, and participated in debugging, testing, and code reviews to ensure a robust and maintainable solution. Beyond technical development, I worked in an Agile environment, participating in sprint planning, Jira-based task tracking, collaborative design discussions, and peer code reviews. This internship provided valuable exposure to enterprise software development, scalable system architecture, API design, full-stack development, and collaborative engineering practices while contributing to a production-oriented platform that improves rule governance, traceability, and operational efficiency across Visa.

Tool used (Development tools - H/w, S/w) : Spring, Angular, Mysql, Trino, Claude, Starrocks, Airflow, Cloudview

Objectives of the project : To create a platform to manage rules and associated information of Visa as a centralised way and future use that in downstream applications as well.

Major Learning Outcomes : Technical: Spring, Angular, Mysql, Trino, AI tools, etc. ; Non-Technical: Team work, collaboration, leadership etc.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : During my 6-month internship at Visa, I experienced a highly professional, collaborative, and fast-paced work environment. Teams were supportive and encouraged open communication, which made it easy to seek guidance and share ideas. I was given ownership of meaningful tasks and had the opportunity to work with modern technologies while interacting with experienced professionals. The culture emphasized continuous learning, problem-solving, and delivering high-quality results, which helped me grow both technically and professionally

Academic courses relevant to the project : DSA, OOPS, DBMS, DAA, CN, OS

Name: UDAY SUDANI .(2022A7PS0136H)

Student Write-up

PS-II Project Title: SLA Engine Design and Implementation

Short Summary of work done during PS-II : Designed SLA Engine for Compliance cases on transactions and implemented a recovery mechanism to recover from pod crashes in active-active deployment. Additionally contributed to other features on the product itself like extending the SLA system to other case types, as well as implementing a pathway to notify downstream payment systems

Tool used (Development tools - H/w, S/w) : IntelliJ IDE, Datagrip, Bruno, VATC(Uses Anthropic's Claude), Kubernetes Mirantis, Jenkins, Spring

Objectives of the project : To architect, design and implement an SLA engine for Compliance on Transactions

Major Learning Outcomes : Spring Framework, System design, Oracle DB, Visa Batch Framework, Enterprise Java.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Supportive environment overall where mentors and other team members would be ready to answer queries and guide me along.
The company expected that I should learn the way the team delivers features and shall take ownership of assigned work. While at the same time asked me to analyse and implement the required features with excellence.
Overall a good environment and suitable expectations to learn and grow as an intern.

Academic courses relevant to the project : Object Oriented Programming, Software Engineering, Computer Networks, Database Systems.

PS-II Station : Vitalize Healthcare, Pilani

Faculty

Name: Anjani Srikanth Koka .

Student

Name: KARAN PRATAP SINGH SIKARWAR(2022A2PS1661P)

Student Write-up

PS-II Project Title: PRODUCT

Short Summary of work done during PS-II : Created an HIMS, optimizing clinical workflows

Tool used (Development tools - H/w, S/w) : GitHub, Figma, Notion, MSOffice

Objectives of the project : Create a HIMS

Major Learning Outcomes : Product management

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : Very comfortable and growing environment

Academic courses relevant to the project : none

PS-II Station : Viven.ai, Bengaluru

Faculty

Name: Febin A Vahab .

Student

Name: SARTHAK SOMANI .(2021B1A70793H)

Student Write-up

PS-II Project Title: AI Knowledge Capture

Short Summary of work done during PS-II : Built an AI interviewer to interview and capture the knowledge of a user so that can be answered in his absence.

Tool used (Development tools - H/w, S/w) : laptop, Chatgpt, cursor

Objectives of the project : To make a AI Interview to capture the tacit undocumented knowledge of a user.

Major Learning Outcomes : Had fun with WebRTC. GPT Realtime Api and tokenmaxxing

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : good

Academic courses relevant to the project : oops

PS-II Station : Volvo Eicher Commerical Vehicles, Bhopal

Faculty

Name: Glynn John .

Student

Name: KRISHNAN NILAKANTAN(2024H1060103H)

Student Write-up

PS-II Project Title: Medium Duty Engines Program

Short Summary of work done during PS-II : My work involved contributing to multiple projects under the Medium Engine Development Program, where technologies developed for Volvo platform engines were adapted and integrated into Eicher heavy-duty engines. A major part of my work focused on the design and development of a cam profile for an engine braking application. I utilized Microsoft Excel for generating and analyzing cam profile data and conducted experimental studies on a heavy-duty engine already equipped with an engine braking system. Based on the experimental data obtained, the cam profile was adapted and implemented for the target engine. The designed cam profile was incorporated into the camshaft and assembled with the complete valve train system for validation and performance assessment. In addition, I initiated the creation of a new part number for the developed component and implemented the necessary Engineering Change Management (ECM) documentation through the KOLA software system. My responsibilities also included working on various engine subsystems such as the crank train, piston assembly, cylinder head, and engine block. Furthermore, I performed root cause analysis (RCA) on crank train components that exhibited field failures. This involved systematic investigation using quality tools such as Fishbone (Ishikawa) diagrams to identify the potential causes of failure and determine the most probable root cause, thereby supporting corrective and preventive actions for improved product reliability.

Tool used (Development tools - H/w, S/w) : Creo Parametric, KOLA, RAPID, Microsoft Excel, KNOX

Objectives of the project : 1. To design engine parts for braking applications 2. To design new product to enhance engine efficiency and weight reduction.

Major Learning Outcomes : Learnt about engineering change softwares for product lifecycle management.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Friendly Working environment, all members of team are helpful. Working area is very neat, clean and aesthetic. Lighting of the office is nice and decorative.
Company provides breakfast and lunch in office. Very minimal Charges are cut from the salary for food and transportation. Bus service is provided by company for pickup and drop service from various spots in the city.
The company must really invest on improving the quality of breakfast and lunch.

Academic courses relevant to the project : IC engines, Product design and development, Quality control assurance and reliability, Thermal engineering, Tribology, GD&T, Engineering Drawing.

PS-II Station : Wakefit Technologies , Bangalore

Faculty

Name: Arindam Roy .

Student

Name: GULLA HARSHAVARDHAN(2024H1540846P)

Student Write-up

PS-II Project Title: Process Excellence and Continuous Improvement Frameworks in Middle Mile Logistics

Short Summary of work done during PS-II : During the six-month residency at Wakefit Innovations Limited, a series of data-driven supply chain optimization initiatives were executed within the Process Excellence department of Supply Chain Management. The primary objective was to diagnose inefficiencies and minimize logistical expenditures across the Middle Mile network using a three-pronged framework: financial cost-benefit analysis, labor work-measurement diagnostics, and volumetric vehicle space engineering. Key contributions include:Packaging In-Sourcing Analysis:

Conducted a financial feasibility study to transition from external sourcing to in-house manufacturing of 3-ply corrugated boxes, revealing an annual savings of Rs. 22 lakhs with an empirical 1.4-year equipment payback period. Warehouse Labor Optimization: Implemented a video-based frame-by-frame Time Motion Study (TMS) in the Accessories Warehouse that eliminated non-value-added material handling wastes, reducing workforce requirements by 35% while maintaining service levels. Administrative Streamlining: Executed a Day in the Life Of (DILO) study to expose systematic administrative data redundancies, justifying the automation of dashboard solutions. Traqo Platform Standardization: Standardized transportation tracking by authoring a formal Standard Operating Procedure (SOP) across four critical logistics modules. Volumetric Space Engineering: Coordinated on-the-ground physical logistics pilots using 6-foot pallet heights and horizontal sofa-stacking configurations. These optimizations maximized vehicle cube utilization inside transit containers, projecting up to Rs. 20 lakhs in monthly transportation cost savings across the wider supply chain network.

Tool used (Development tools - H/w, S/w) : Software ToolsTraqo Platform: The central web-based Middle Mile Vehicle Tracking Software used to coordinate transit requests, monitor fleet movements, log terminal arrivals, and manage shipment documentation. MIGO (SAP / ERP Framework): The centralized

Objectives of the project : To gain an advanced understanding of D2C supply chain mechanics, warehouse workflows, and multi-tier logistics frameworks. To apply data-driven industrial engineering principles (cost analysis, TMS, and DILO) to live fulfillment environments. To take full ownership of executing, managing, and sustaining process transformations directly on the ground. To design, execute, and monitor empirical pilot studies targeting vehicle volumetric load optimization under safety and structural constraints. To codify fragmented operational practices into formal Standard Operating Procedures (SOPs) for regional consistency. To collaborate with cross-functional supply chain stakeholders within an agile corporate structure.

Major Learning Outcomes : CapEx & ROI Evaluation: Gained proficiency in auditing raw cost sheets, structuring financial feasibility matrices, and modeling equipment payback timelines to justify executive capital allocation.

Scientific Work Measurement: Mastered frame-by-frame video deconstruction and behavioral shadowing (TMS & DILO) to turn unstructured human activities into quantifiable productivity metrics.

Supply Chain Risk Management: Learned how aggressive optimizations (like raising pallet thresholds) introduce structural constraints like cargo stress, enhancing my understanding of trial risk mitigation and packaging design.

Project Management & Standardization: Bridged the gap between data tracking and field

management by authoring detailed SOPs and physically supervising floor teams to ensure compliance.
Data-Driven Decision Making: Gained experience in gathering uncorrupted data from fragmented operational settings, isolating variables, and presenting financial impacts to senior leadership.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Working Environment-The project was executed on-site within the fast-paced, data-driven, and agile corporate ecosystem of Wakefit Innovations Limited. Operating directly within the active fulfillment nodes, Mother Warehouses, and logistics lanes of the Bangalore and Hyderabad clusters, the environment bridged the gap between theoretical operations management and large-scale industrial reality. The workplace demanded hands-on operational engineering directly in the trenches. This required continuous collaboration with cross-functional supply chain stakeholders, including loading floor teams, transport planners, plant architects, and regional logistics managers. Expectations from the CompanyAs an active operational unit within Supply Chain Management, the Process Excellence division does not function in a purely advisory capacity; it is expected to own the complete lifecycle of continuous improvement initiatives. The primary corporate mandate was to scientifically diagnose hidden inefficiencies, eliminate non-value-added material or administrative wastes, and secure clear, recurring bottom-line financial savings across the Middle Mile network. The company expected data-driven, mathematically validated solutions backed by strict financial analysis, such as modeling equipment payback periods for CapEx proposals. Furthermore, there was a strict expectation to successfully transition from diagnostics to ground execution. This involved physically managing and supervising live operational pilots—such as container space engineering trials—and codifying fragmented floor activities into formal, robust Standard Operating Procedures (SOPs) to guarantee permanent compliance across diverse national facilities.

Academic courses relevant to the project : Supply Chain Management, Managerial Economics,

PS-II Station : Walmart Global Tech India, Bengaluru

Faculty

Name: Monali Tushar Mavani .

Student

Name: AARUSH SRIVASTAVA .(2022A7PS0210H)

Student Write-up

PS-II Project Title: Java Development for Label Generation Service

Short Summary of work done during PS-II : Engaged in software development of label generation application spanning multiple services and functionalities. Mainly worked in Java for dev work and used deployment tools like Github, k8s, Jenkins, jFrog, etc. with multiple production deployments of implemented features.

Tool used (Development tools - H/w, S/w) : Java, REST APIs,Github, k8s, Docker, Azure, Cosmos, OpenObserve, BigQuery

Objectives of the project : To engage in software development and deployment of label generation service features and functionalities

Major Learning Outcomes : Enterprise application development, CI/CD Pipelines and mechanisms and tools for deployment, Testing and validation tools and processes, API creation, Database connections and structure

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : Good working environment with friendly team members and leadership. Clear expectations to participate as an active and ready-to-learn software engineer working on regular sprint-to-sprint work, with objectives based on business requirements.

Academic courses relevant to the project : OOPS, DBMS

Name: SUMIT SUBHASH KAPATKAR(2024H1120218P)

Student Write-up

PS-II Project Title: GenAi Catalog Normalization

Short Summary of work done during PS-II : During my Practice School–II internship at Walmart Global Tech, I worked on the development of an AI-driven catalog attribute normalization framework aimed at improving data consistency and quality across large-scale e-commerce platforms. The project involved evaluating multiple approaches, including zero-shot Large Language Model (LLM) inference, prompt engineering, and embedding-based semantic retrieval techniques, to address the challenges of standardizing seller-provided product attributes. Building on these findings, I developed a parameter-efficient fine-tuning solution using Gemma 3 4B and Low-Rank Adaptation (LoRA) to learn enterprise-specific taxonomy mappings from historical catalog data. The solution achieved significant improvements in normalization accuracy across diverse product categories and was complemented by an end-to-end inference pipeline and a Streamlit-based demonstration application. The internship provided valuable exposure to Generative AI, Large Language Models, Machine Learning, and enterprise-scale AI system development while offering practical experience in solving real-world business problems.

Tool used (Development tools - H/w, S/w) : 1. Python 2. PyTorch 3. Hugging Face Transformers 4. PEFT (Parameter-Efficient Fine-Tuning) 5. LoRA (Low-Rank Adaptation) 6. Streamlit 7. NVIDIA A100 GPU

Objectives of the project : The objective was to develop an AI-powered Catalog Attribute Normalization system that automatically converts seller-provided product attribute values into standardized catalog values using Large Language Models (LLMs). The solution aimed to improve catalog quality, reduce manual effort, ensure consistency across product data, and enhance downstream applications such as search, recommendations, and analytics.

Major Learning Outcomes : During this internship, I gained practical experience in applying Generative AI and Large Language Models (LLMs) to solve real-world e-commerce catalog normalization problems. I learned how to fine-tune foundation models using LoRA, design effective prompts, and evaluate model performance using various metrics.

I also developed hands-on expertise with the Hugging Face ecosystem, GPU-based training and inference, performance optimization techniques, and deployment of AI solutions using Streamlit. This project enhanced my understanding of the complete machine learning lifecycle, from data preparation

and model training to evaluation and deployment

Details of Papers/patents : No research papers or patents were published/filed as part of the Practice School–II internship. However, the work involved extensive experimentation and development in the areas of Large Language Models (LLMs), Generative AI, and catalog attribute normal

Brief Description of working environment, expectations from the company : The working environment at Walmart Global Tech was professional, collaborative, and learning-oriented. It provided exposure to real-world business problems, modern technologies, and industry best practices. Team members were supportive and encouraged knowledge sharing and innovation.
I expected to gain practical experience in Artificial Intelligence and enterprise software systems while applying concepts learned during my academic program. The internship successfully met these expectations by providing hands-on experience with Large Language Models, Machine Learning, and real-world AI applications.

Academic courses relevant to the project : 1. Machine Learning
2. Artificial Intelligence
3. Natural Language Processing
4. Data Mining and Data Warehousing
5. Software Engineering
6. Advanced Operating Systems
7. Distributed Systems

Name: AMAN RANJAN .(2022A7PS0141H)

Student Write-up

PS-II Project Title: Active Learning for Item Classification

Short Summary of work done during PS-II : During my PS-II I was involved with a project related to the implementation of Active Learning for Item Classification. It aimed at investigating strategies that can be applied in improving the performance of a large-scale item classification pipeline, depended on by many downstream use-cases. This was achieved through refined data sampling and

annotation strategies. By evaluating distributions of predicted labels from different data sources, I had to design an algorithm to identify classes that perform well and those that are not as well-represented. I also had to explore integration strategies to ultimately create a closed-loop system that would iteratively improve the main pipeline with time. This required quite a few EDA experiments which taught me a lot about approaching problems with a Data Science lens and the signals that can exist within plain data.

Tool used (Development tools - H/w, S/w) : Python, Git, Pandas, Numpy, Scikit-Learn, PyTorch

Objectives of the project : Create and design an end-to-end pipeline that focuses on iterative model training and refines the existing human-in-the-loop annotation process to strategically select the most informative and ambiguous items for labelling, maximizing model improvement while minimizing manual effort.

Major Learning Outcomes : - Thinking in terms of Data, efficiency: how to model real-world problems via Data Science
- Effective and efficient code
- Communication, presentation
- Effective documentation of work done.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment during my PS-II was pretty dynamic and collaborative, emphasizing practical learning and hands-on experience. As part of the team, I engaged in the weekly connects and worked on the tasks given, based on previous week's results/insights. Though I did not see the big picture much at the start, with time I was able to give a few insights/points to discuss on my own. The environment was very supportive towards continuous learning through experimentation and techniques.

Academic courses relevant to the project : Machine Learning, Deep Learning, Generative AI, Linear Algebra, Probability and Statistics, Data Structures and Algorithms, Design and Analysis of Algorithms.

Name: AJMERA MOKSH CHANDRESHBHAI(2024H1120185P)

Student Write-up

PS-II Project Title: Testing, Automation and Development of a Microservices-Based Scheduling Platform

Short Summary of work done during PS-II : During the internship, I worked on a distributed scheduling platform and contributed across backend development, software quality engineering, and automation initiatives. My work involved performing API testing and deployment validation to ensure service behavior aligned with business requirements before releases. I contributed to backend feature development using Java Spring Boot and Spring WebFlux, including integrating multiple services within an existing microservices ecosystem. A major part of the internship involved expanding functional automation coverage using Karate by automating critical API-driven workflows for a multi-tenant distributed platform. These automated validations were designed to improve regression detection and reduce reliance on manual pre-deployment verification. I also maintained and enhanced Cucumber-based automated API validation suites to align with evolving application behavior and service contracts. Additionally, I supported production rollouts through Grafana-based monitoring, log analysis, and root-cause investigation of issues identified during beta testing and cross-team validations. Towards the later phase of the internship, I developed a domain-specific AI skill for an internal engineering platform powered by Anthropic Claude, designing modular workflows and task-routing logic to support engineering activities across the software development lifecycle.

Tool used (Development tools - H/w, S/w) : Java Spring Boot Spring WebFlux Karate Cucumber Insomnia Git GitHub Grafana IntelliJ IDEA Maven

Objectives of the project : To contribute to the development, validation, and quality assurance of a distributed scheduling platform by implementing backend enhancements, automating critical API-driven workflows, supporting deployment validation activities, and improving release readiness through automated testing and monitoring.

Major Learning Outcomes : Gained hands-on experience with distributed microservice architectures and service integrations.
Learned enterprise software development practices using Java Spring Boot and Spring WebFlux.
Developed expertise in API validation, functional test automation, and regression testing.
Understood software deployment lifecycles, CI/CD workflows, and production monitoring using Grafana.

Improved debugging and root-cause analysis skills through issue investigation across multiple services.
Gained exposure to applied AI engineering by designing domain-specific workflows for an internal LLM-powered engineering platform.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The internship was conducted in a collaborative enterprise software development environment focused on large-scale distributed systems. The team followed agile development practices involving sprint planning, code reviews, testing, deployment validation, and production monitoring. Interns were expected to understand existing services, contribute to development and testing activities, maintain high engineering standards, and actively participate in issue investigation and debugging.
The work environment encouraged ownership, continuous learning, and collaboration with experienced engineers. Exposure was provided to multiple stages of the software development lifecycle, including requirement analysis, feature development, automated testing, deployment validation, release support, and observability practices. The organization emphasized software quality, operational reliability, and knowledge sharing while providing opportunities to work with modern backend technologies, microservices architectures, automation frameworks, and AI-powered engineering tools.

Academic courses relevant to the project : Java,
Distributed Computing/Systems
Object-Oriented Programming
Data Structures and Algorithms
Database Systems
Operating Systems
Computer Networks
Software Engineering
Design Patterns
Cloud Computing

Name: SAYAN SAHU(2024H1030058H)

Student Write-up

PS-II Project Title: MULTIMODAL DOCUMENT INTELLIGENCE AND SYNTHETIC DATA GENERATION FOR DOCUMENT UNDERSTANDING

Short Summary of work done during PS-II : During PS-II at Walmart, I worked on multiple Document AI and Vision Language Model benchmarking tasks. Initially, I onboarded to Walmart's Element LLM Gateway and explored synthetic document generation for immigration-related forms like I-94 and I-20. I implemented scripts for automated PDF filling and dataset creation, later fine-tuning LayoutLMv3 on custom annotated datasets using Label Studio and PaddleOCR. I benchmarked over 20 multimodal models across multiple tasks including signature detection, stamp localization, document classification, text extraction under overlays, and robustness against document rotations. These experiments involved thousands of API calls through Walmart's LLM Gateway and rigorous evaluation using IoU, F1-score, and CER. Additionally, I studied and implemented advanced inference optimization methods like Self-Refine and GEPA for prompt evolution. Comparative analysis revealed strengths and weaknesses of GPT, Gemini, Claude, and open-source models in document intelligence scenarios. The work contributed towards understanding practical deployment trade-offs between accuracy, latency, and robustness for enterprise-scale document processing systems.

Tool used (Development tools - H/w, S/w) : Hardware: NVIDIA A100-SXM4-80GB GPU, Local workstation for development Software: Python, Walmart Element LLM Gateway, LM Studio, Label Studio, PaddleOCR, PyTorch, Hugging Face Transformers, PIL/Pillow, scikit-learn, pandas, matplotlib, seaborn, pikepdf,

Objectives of the project : Benchmark and evaluate Vision Language Models (VLMs) for document intelligence tasks such as classification, extraction, localization, and overlay text recovery. Build synthetic document generation pipelines for immigration documents (I-94, I-20, passports, DLs). Explore lightweight document understanding models for production use. Investigate inference-time optimization techniques like Self-Refine and development-time optimization methods like GEPA for improving model performance. Analyze robustness of multimodal models under document distortions such as rotations, overlays, and signatures.

Major Learning Outcomes : Developed expertise in benchmarking multimodal models across document understanding tasks. Learned prompt engineering strategies for extraction, localization, and classification. Understood the limitations of general-purpose VLMs in spatial grounding tasks. Fine-tuned lightweight models like LayoutLMv3 for structured document extraction. Gained practical knowledge of OCR pipelines and post-processing workflows. Implemented iterative self-refinement

frameworks and evolutionary prompt optimization. Learned evaluation methodologies including IoU, F1-score, CER, and Exact Match.

Details of Papers/patents : Papers studied during PS-II:
Document Intelligence related papers, Self-Refine (Madaan et al., 2023), GEPA, LayoutLMv3 research paper, CommonForms paper

Brief Description of working environment, expectations from the company : The working environment at Walmart was highly collaborative, research-driven, and focused on practical engineering impact. The team encouraged experimentation with state-of-the-art AI models and provided access to internal platforms such as the Element LLM Gateway for large-scale benchmarking. Regular discussions, technical paper presentations, and code reviews created a strong learning environment. Expectations included maintaining high-quality experimentation, documenting findings rigorously, and presenting insights clearly to the team. The environment promoted ownership, innovation, and continuous learning.

Academic courses relevant to the project : Machine Learning, Deep Learning, Artificial Intelligence, Natural Language Processing, Computer Vision, Data Structures and Algorithms, Probability and Statistics

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Name: PRANJAY MALHOTRA(2024H1030072P)

Student Write-up

PS-II Project Title: Backend Development, Observability, and Data engineering

Short Summary of work done during PS-II : During PS, I continued working with the Data Engineering and supply chain teams at Walmart Global Tech. Work included setting up observability infrastructure (OpenObserve, alerting), developing usage analytics dashboards, building an LLM-assisted log analysis system, enhancing backend APIs, and conducting performance and end-to-end testing to ensure release readiness.

Tool used (Development tools - H/w, S/w) : Java, Python, Apache Airflow, Apache Spark/Databricks, Delta Lake, GCP, OpenObserve, Git/GitHub, Karte

Objectives of the project : add observability, develop dashboards, implement LLM-assisted log analysis, enhance backend REST APIs, add performance/E2E tests and Data pipeline.

Major Learning Outcomes : Production-grade backend API development, observability and alerting design, LLM, performance/E2E testing practices, cross-team collaboration in a large engineering org.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Walmart follows a collaborative engineering culture with regular standups, code reviews, and cross-team coordination. Expectations include writing production-quality code, thorough testing before deployment, and clear documentation. The environment encourages ownership and learning.

Academic courses relevant to the project : Cloud Computing, intro to LLM, AOS

Name: MALAVIKA RAMESH(2022A7PS0033P)

Student Write-up

PS-II Project Title: Improving Advertising Recommendation Relevancy using GenAI-Based LLM Systems

Short Summary of work done during PS-II : The project involved building a GenAI-based recommendation quality improvement system for an advertising technology platform. Automated recommendation systems generate large volumes of candidate keywords, product-type categories, and audience segments for targeting, not all of which are equally relevant. The objective was to build a scalable LLM-based filtering layer to evaluate and improve recommendation quality across three systems. Three end-to-end Python pipelines were built for Keyword Targeting (KT), Contextual Targeting (CT), and Audience/Behavioral Targeting (AT/BT). Each pipeline ingested campaign and product data, generated candidate recommendations, and evaluated each candidate using prompt-engineered LLMs with campaign-type-aware evaluation logic for different types of campaigns. Engineering improvements including parallel processing, and batch optimisation were incorporated across all three systems. A recommendation quality evaluation framework was developed using a

keyword partitioning methodology based on K-Means clustering and cosine similarity. Recommendations were ranked and evaluated using Graded NDCG at multiple cutoffs (@5 through @50), with statistical validation via the Wilcoxon Signed-Rank Test. A strong majority of line items showed statistically significant improvement after LLM filtering, consistent across all NDCG cutoffs and campaign types. Initial architecture design and exploratory analysis for a recommendation explanations system were also completed. All systems were documented and formally handed over to the engineering team.

Tool used (Development tools - H/w, S/w) : Python, PySpark (Apache Spark Python API), Google Cloud Dataproc, Streamlit, scikit-learn, LLM inference APIs, JSON schema validation libraries

Objectives of the project : To build an automated, scalable GenAI-based filtering layer using Large Language Models (LLMs) that evaluates and improves the quality of advertising recommendations across three targeting systems: Keyword Targeting (KT), Contextual Targeting (CT), and Audience/Behavioral Targeting (AT/BT). The system accepts or rejects candidate recommendations in a structured, explainable manner grounded in campaign context and product data. A secondary objective was to develop a rigorous, automated recommendation quality evaluation framework to empirically measure whether the LLM filtering layer improved recommendation quality in a statistically defensible way.

Major Learning Outcomes : - Prompt engineering at production scale — designing deterministic, cost-efficient, and robust prompts across thousands of diverse inputs
- LLM evaluation methodology — Graded NDCG metric family, graded relevance schemes, and statistical testing using the Wilcoxon Signed-Rank Test applied to a real recommendation evaluation problem
- Distributed data processing with PySpark for large-scale data extraction and pipeline development
- Production ML system design — engineering for reliability, cost-awareness and auditability
- Advertising technology domain knowledge — keyword-based search advertising, contextual placement, audience targeting, campaign structure, recommendation systems, and the business constraints governing advertising platform decisions

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The internship was conducted at Walmart Global Tech's Bengaluru engineering centre. The working environment was collaborative and engineering-focused, with regular team standups, sprint reviews, and product demo sessions that provided ongoing context on how advertising campaigns are structured and managed

in practice.

The team followed agile practices with iterative review cycles. Expectations included independent ownership of workstreams, production-oriented design decisions, and delivery of documented, handover-ready systems. Design choices required consideration of real operational constraints — inference latency, token cost, pipeline reliability, and downstream schema compatibility — rather than prototype-level solutions.

The environment strongly encouraged ambitious scope. The internship grew well beyond its original definition across six months, spanning five distinct workstreams. This expansion, supported by constructive feedback at every stage, was among the most valuable aspects of the experience. Engaging with downstream engineering requirements early — understanding what format the team needs, what constraints apply, and what the system must support beyond the immediate use case — was a discipline emphasised throughout and one that shaped the approach to all subsequent design work.

Academic courses relevant to the project : Machine Learning, Natural Language Processing, Large Language Models, Data Mining, Probability and Statistics, Algorithm Design, Database Systems, Object-Oriented Programming

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Name: CHANDRIKA SINGH JADON(2021B1A72939G)

Student Write-up

PS-II Project Title: Development and Enhancement of Enterprise Software Applications

Short Summary of work done during PS-II : During my six-month PS-II internship at Walmart Global Tech, I worked on enterprise software applications supporting internal business operations. My responsibilities included developing new features, enhancing existing functionalities, debugging issues, improving system performance, and ensuring code quality through testing and reviews. I collaborated closely with software engineers, product managers, and quality assurance teams to deliver reliable and scalable solutions. I participated in various stages of the software development lifecycle, including requirement analysis, design discussions, implementation, testing, deployment, and documentation. The work involved understanding large-scale enterprise systems, writing maintainable code, resolving technical issues, and contributing to continuous improvements within the application ecosystem. The internship provided valuable exposure to real-world software

engineering practices, modern development tools, Agile workflows, and collaborative team environments. It significantly enhanced my technical knowledge, professional communication skills, and understanding of how large-scale technology solutions are developed and maintained in a global organization.

Tool used (Development tools - H/w, S/w) : Python, Java, Git, GitHub, REST APIs, SQL, Postman, Docker, Agentic AI Frameworks, V CI/CD Pipelines, Agile Development Tools.

Objectives of the project : To contribute to the design, development, testing, and enhancement of enterprise-scale software applications at Walmart Global Tech. The project aimed to improve application functionality, performance, reliability, and maintainability while following industry-standard software engineering practices and Agile methodologies.

Major Learning Outcomes : Gained hands-on experience in enterprise software development and large-scale application development. Learned Agile software development methodologies and industry best practices. Improved problem-solving, debugging, and code optimization skills. Developed a strong understanding of scalable software systems and collaborative engineering workflows. Enhanced communication, teamwork, and project management skills while working in a professional corporate environment.

Details of Papers/patents : No papers or patents were published as part of the project.

Brief Description of working environment, expectations from the company : The working environment at Walmart Global Tech was highly professional, collaborative, and innovation-driven. Team members were supportive and encouraged knowledge sharing, continuous learning, and active participation in technical discussions. The organization followed Agile development practices, enabling efficient collaboration among engineers, product managers, and other stakeholders.
The company provided access to modern development tools, technical resources, mentorship, and opportunities to work on real-world projects with significant business impact. Expectations from interns included taking ownership of assigned tasks, maintaining high coding standards, meeting project deadlines, communicating effectively with team members, and continuously learning new technologies and processes.
The experience helped bridge the gap between academic learning and industry practices while providing exposure to large-scale software systems and professional engineering workflows.

Academic courses relevant to the project : Object Oriented Programming, Data Structures and Algorithms, Operating Systems, Computer Networks, DBMS

Name: KARINGATTIL SAGAR THOMAS .(2022A7PS0156H)

Student Write-up

PS-II Project Title: Mcp server with audit service addition

Short Summary of work done during PS-II : During my PS-II, I worked on developing an AI-powered Seller Onboarding Platform with a focus on the MCP Server and Backend Audit Service. My primary responsibility was to implement backend services using Spring Boot and integrate them with GraphQL APIs and Cassandra for efficient audit data storage. I contributed to developing MCP tools that enabled AI-assisted seller onboarding workflows and seamless communication between the frontend and backend. I implemented audit logging to capture seller actions, backend events, and errors, improving system observability and debugging capabilities. I also worked on event tracking, feature-flag-based integrations, and shared error-reporting utilities to ensure reliable monitoring across services. Throughout the project, I collaborated with team members using Git, participated in code reviews, resolved merge conflicts, and followed industry-standard software development practices. Additionally, I gained practical experience in building scalable microservices, integrating AI with backend systems, working with distributed databases,

Tool used (Development tools - H/w, S/w) : Java Spring Boot GraphQL Cassandra IntelliJ IDEA Git & GitHub Maven Docker Postman VS Code Terminal/Command Line MCP Server Framework

Objectives of the project : To build an AI-powered seller onboarding platform using an MCP server and a backend audit service that automates onboarding tasks, improves observability, and provides reliable audit logging for all seller actions and errors.

Major Learning Outcomes : Built scalable backend services using Spring Boot.
Implemented GraphQL APIs and REST integrations.
Worked with Cassandra for audit data storage.
Developed AI integration using MCP Server.
Improved observability through audit logging and event tracking.
Gained experience with Git, code reviews, and collaborative development.

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : The working environment was collaborative, professional, and focused on continuous learning. I worked as part of a backend development team using Agile practices, where tasks were managed through regular discussions, code reviews, and team meetings. Team members were supportive and encouraged knowledge sharing, making it easier to understand enterprise-level software development processes. The company provided opportunities to work on real-world projects involving AI integration, microservices, backend development, and distributed databases. I was expected to write clean, maintainable code, follow coding standards, test my changes thoroughly, and collaborate effectively with team members through Git and pull requests. I also learned the importance of documentation, debugging, and delivering features within project timelines.
Overall, the internship provided valuable industry exposure and helped me improve both my technical and professional skills while working on production-level applications.

Academic courses relevant to the project : Academic courses relevant to the project
Object Oriented Programming (OOP)
Data Structures and Algorithms
Database Systems
Operating Systems
Computer Networks
Software Engineering
Distributed Systems
Artificial Intelligence (Basics)

Name: GURUMURTHY VENKATAKUPPUSWAMY .(2022A7PS0226H)

Student Write-up

PS-II Project Title: Requisition automation

Short Summary of work done during PS-II : Interesting work, but basic dev stuff sometimes

Tool used (Development tools - H/w, S/w) : Software and internal tools, kubernetes

Objectives of the project : Speed up requisitions

Major Learning Outcomes : Enterprise tech

Details of Papers/patents : N.A

Brief Description of working environment, expectations from the company : Serious but can be fun

Academic courses relevant to the project : None

PS-II Station : Warner Bros - AI-ML Infrastructure Analyst, Hyderabad

Faculty

Name: Garima Jindal

Student

Name: ADI MUKHERJEE(2021B5A70776P)

Student Write-up

PS-II Project Title: Optimization and Automations in IT Ops

Short Summary of work done during PS-II : Classical Automation, ML Automation, AI optimizations, SharePoint site management, PowerAutomate workflows, Business Case Reviews, Advisory to Consulting Meetings.

Tool used (Development tools - H/w, S/w) : Confidential

Objectives of the project : Confidential.

Major Learning Outcomes : All rounded development in technical and soft skills.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Excellent environment, beautiful office. As long as you finish your work, no fixed work timings. Free movie ticket once a quarter. In-office cafeteria.

Academic courses relevant to the project : Machine Learning, AI, LLM, Technical Report Writing

PS-II Station : WCB Robotics India Pvt. Ltd. - Electronics, Hyderabad

Faculty

Name: Sanjay Vidhyadharan .

Student

Name: NILAY KIRAN WANI(2022AAPS0444G)

Student Write-up

PS-II Project Title: Robot Controller design

Short Summary of work done during PS-II : Worked on KiCad, STM32IDE, CCS to build a working Robot Controller.

Tool used (Development tools - H/w, S/w) : KiCad, STM32IDE, CCS, XDS110, TI Launch XL2, Eagle

Objectives of the project : Make a controller for the industrial robot

Major Learning Outcomes : PCB Design, CodeComposer Studio

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The working environment is very good every one is helpful. Work is of the utmost importance. It must be done on time and within the given timeline.

Academic courses relevant to the project : Digital Electronics, CompArch, FPGA based Design Laboratory, OOPS, Embedded System Design

PS-II Station : Wealthy Nivesh, Mumbai

Faculty

Name: Sidharth Mishra .

Student

Name: ARYAN THAKUR(2021B2A22164P)

Student Write-up

PS-II Project Title: Business Analyst

Short Summary of work done during PS-II : During my PS-II internship at Wealthy Nivesh, I worked as a Business Analyst across product, operations, marketing, analytics and process improvement initiatives. My work included creating and tracking dashboards such as the Client Persona Dashboard, Net Sales Dashboard and RM reporting dashboard to improve business visibility. I also worked on product expansion research such as GIFT City FD, Bank FD, Corporate FD, SIP by UPI, ViewTrade API, LAS comparison, instant redemption and Account Aggregator onboarding. Along with this, I supported CRM and Zoho workflow improvements, SOP creation, onboarding communication, email templates, escalation processes and TAT tracking. I also contributed to marketing and growth projects

including Mailchimp planning, performance marketing analysis, audience refresh, monthly content planning, YouTube analytics and campaign tracking. The internship helped me understand how a growing wealth-management company operates across RMs, operations, technology, marketing and external partners. It gave me practical exposure to planning, execution, vendor coordination, stakeholder communication and converting business requirements into structured deliverables.

Tool used (Development tools - H/w, S/w) : Excel, Google Sheets, Power BI, Zoho, Notion, Claude, ChatGPT, Presentation.ai, Google Workspace, CRM/LMS tools, Mailchimp and basic dashboarding/analytics tools.

Objectives of the project : To support the planning, execution and tracking of cross-functional business initiatives at Wealthy Nivesh, including product expansion, CRM/dashboard development, automation workflows, marketing analytics, process documentation, vendor coordination and operational improvement.

Major Learning Outcomes : Stakeholder management, people handling, task allocation, team coordination, inter-department communication, third-party vendor coordination, AMC coordination, dashboard thinking, process documentation, product research, business requirement understanding and execution ownership.

Details of Papers/patents : My work at Wealthy Nivesh was focused on internal business analysis, product research, dashboarding, process documentation, vendor coordination, marketing analytics, CRM/Zoho workflow improvement, and operational execution.
Any reports, dashboards, SOPs,

Brief Description of working environment, expectations from the company : The working environment at Wealthy Nivesh was fast-paced, execution-focused and highly cross-functional. As a Business Analyst, I was expected to take ownership of tasks, coordinate with multiple departments, follow up with internal and external stakeholders and complete deliverables within defined timelines. The company expected proactive communication, accuracy in data handling, clear documentation, timely reporting and accountability for assigned work.
The role required working with leadership, RMs, operations, technology, marketing teams and third-party vendors. Since the company is growing across wealth management, product expansion and digital processes, the work environment encouraged practical problem-solving, quick learning and structured execution.

Academic courses relevant to the project : Principle of Management

PS-II Station : WILP - CSIS Projects, Bengaluru

Faculty

Name: Lucy J. Gudino

Student

Name: MADALA SRIRAM .(2022AAPS0394H)

Student Write-up

PS-II Project Title: AI-Powered Document Retrieval Chatbot using RAG, FAISS & Python

Short Summary of work done during PS-II : During the Practice School-II (PS-II) internship, I worked on the development of a Retrieval-Augmented Generation (RAG) based chatbot using Python. The project focused on building an intelligent document-based question answering system capable of retrieving relevant information from PDF and Word documents and generating meaningful responses using Artificial Intelligence techniques. The work involved studying and implementing key concepts related to Natural Language Processing (NLP), vector embeddings, semantic similarity, and information retrieval systems. Text extraction and preprocessing techniques were used to process input documents, followed by vectorization methods for converting textual data into numerical embeddings. FAISS was utilized for efficient similarity search and retrieval of relevant document content. The project also included integrating Large Language Models (LLMs) and OpenAI APIs to generate accurate and context-aware responses based on retrieved information. Multiple Python libraries and tools were explored for document processing, vector search, and chatbot implementation. Through this project, practical exposure was gained in Artificial Intelligence, Generative AI, backend development, and Python programming. The internship helped in understanding the real-world applications of AI-powered retrieval systems and improved technical, analytical, and problem-solving skills related to intelligent document processing systems.

Tool used (Development tools - H/w, S/w) : Python Visual Studio Code (VS Code) Jupyter Notebook / Google Colab OpenAI API FAISS (Facebook AI Similarity Search) PyPDF2 Sentence Transformers Scikit-learn NumPy PostgreSQL (Basics) Git & GitHub; Laptop/Desktop Computer Internet Connectivity Processor

Objectives of the project : To develop a Retrieval-Augmented Generation (RAG) based chatbot using Python. To extract and process text from PDF and Word documents automatically. To convert document data into vector embeddings for efficient retrieval. To perform similarity-based search using FAISS and embedding techniques. To generate accurate and context-aware responses using AI language models. To improve document-based question answering using Natural Language Processing (NLP) techniques. To understand the practical implementation of Artificial Intelligence and Generative AI systems.

Major Learning Outcomes : Gained understanding of Retrieval-Augmented Generation (RAG) architecture and workflow.
Learned document processing techniques for PDF and Word files using Python.
Understood vector embeddings and semantic similarity concepts for information retrieval.
Acquired practical knowledge of FAISS for efficient vector search and indexing.
Developed skills in Natural Language Processing (NLP) and AI-based chatbot development.
Learned integration of Large Language Models (LLMs) and OpenAI APIs for response generation.
Improved problem-solving and backend development skills using Python libraries and tools.
Understood the practical applications of Artificial Intelligence and Generative AI systems in real-world document-based question answering.

Details of Papers/patents : No papers or patents were published as part of the PS-II project.
The work was carried out for academic learning and implementation purposes under the Practice School-II program.

Brief Description of working environment, expectations from the company : The working environment during the PS-II internship was highly learning-oriented and collaborative, providing exposure to real-world software development and Artificial Intelligence applications. The organization encouraged self-learning, technical exploration, and practical implementation of concepts related to AI, Natural Language Processing (NLP), and backend development.
The work culture involved regular interaction with mentors and faculty guides, who provided technical guidance, feedback, and support throughout the project duration. The environment promoted independent problem-solving, experimentation with new technologies, and continuous skill improvement. Various tools and libraries related to Python programming, vector databases, document

processing, and AI model integration were explored during the internship.

The expectations from the company included understanding project requirements, learning emerging technologies, completing assigned tasks within deadlines, and actively contributing to the project development process. Emphasis was placed on improving programming skills, analytical thinking, documentation, and technical communication.

The internship also provided practical exposure to industry-oriented workflows, collaborative development practices, and AI-driven application development. Overall, the PS-II experience helped in strengthening technical knowledge, professional work ethics, teamwork abilities, and confidence in working on real-world Artificial Intelligence and software development projects.

Academic courses relevant to the project : Artificial Intelligence
Natural Language Processing (NLP)
Machine Learning
Data Structures & Algorithms
Python Programming
Database Management Systems (DBMS)
Object-Oriented Programming (OOP)
Probability & Statistics
Information Retrieval Systems
Software

PS-II Station : WILP- Autocyber security, Hyderabad

Faculty

Name: Ramya K

Student

Name: ADITYA BANSAL(2024H1410100P)

Student Write-up

PS-II Project Title: Cyber Resilient AI Thermal Management for Lithium-Ion Batteries: Hardware Implementation and Adversarial Attack Analysis

Short Summary of work done during PS-II : High-nickel lithium-ion batteries used in electric vehicles (EVs) require strict thermal regulation, as sustained operation beyond safe temperature limits accelerates Solid Electrolyte Interphase (SEI) degradation, Loss of Lithium Inventory (LLI), and particle micro-cracking. Conventional Battery Thermal Management Systems (BTMS) predominantly rely on reactive Proportional-Integral-Derivative (PID) controllers, which respond only after thermal deviations occur and therefore struggle under dynamic load conditions such as hill climbs. To address this limitation, this work develops a cyber-physical predictive BTMS integrating a Soft Actor-Critic (SAC) Deep Reinforcement Learning (DRL) agent with a Hardware-in-the-Loop (HIL) platform and Python-based digital twin. The DRL controller utilizes receding-horizon GPS preview information to perform anticipatory pre-cooling, which limits the peak temperature to 31.2°C and entirely eliminates the thermal safety violations observed in the reactive PID baseline (which reached 38.3°C). However, adversarial GPS spoofing executed via a HackRF One software-defined radio successfully blinds the DRL controller, resulting in a catastrophic thermal excursion reaching 41.8°C. To mitigate this critical cyber-physical vulnerability, a Hybrid Defense Mask (HDM) anomaly detection framework is introduced. The HDM enables deterministic isolation of compromised AI outputs and activates safe fallback cooling control. Under identical adversarial attack conditions, the HDM successfully restricts the peak temperature to ~33.5°C without any safety breaches. These findings establish a practical and resilient framework for the secure thermal management of advanced energy storage materials.

Tool used (Development tools - H/w, S/w) : H/w - Arduino , Mosfet , Resistor , HackRF , S/w - VS CODE , Anaconda, Arduino IDE

Objectives of the project : Build a cyber resilient physical battery thermal management system.

Major Learning Outcomes : ML , CyberSecurity, Python

Details of Papers/patents : Abstract accepted in NIT GOA and ASM BHARAT FORGE , paper submitted

Brief Description of working environment, expectations from the company : It was good

Academic courses relevant to the project : None

PS-II Station : WILP- Communication network lab, Hyderabad

Faculty

Name: Suparna Chakraborty .

Student

Name: ADITYA SRIVASTAVA(2024H1230154H)

Student Write-up

PS-II Project Title: To design a heterogeneous network for smart precision agriculture using wireless system networks.

Short Summary of work done during PS-II : We have designed a basic prototype with Arduino Uno, Arduino IDE, Arduino MKR WiFi 1010 module, different sensors like DHT 11/DHT 22, RS485 Modbus,etc. We are collecting real time environmental data through these sensors than through wifi module uploading those data to the cloud like platforms ThingSpeak IoT so that the data can be seen remotely.

Tool used (Development tools - H/w, S/w) : Hardware tools - Arduino Uno, Arduino MKR WiFi 1010 module, DHT11, Soil moisture sensor, jumper wires, relay module. Software tools - Arduino IDE, ThingSpeak IoT, AI tools.

Objectives of the project : To make traditional farming autonomous results in reducing human efforts, better optimization of resources, helps in better cultivation and irrigation.

Major Learning Outcomes : Designing of basic prototype helps me better understanding of working of Arduino Uno, Arduino IDE, Arduino MKR WiFi 1010 module, different sensors like DHT 11/DHT 22, RS485 Modbus,etc.

Details of Papers/patents : Referred several IEEE transactions paper for our project.

Brief Description of working environment, expectations from the company : We were working

in EEE lab of Wilp, there were several systems for B.E. and M.E. courses. We were having system of communication network lab. Where we were doing our project.

Academic courses relevant to the project : Nil

PS-II Station : WILP- Electric and hybrid vehicle, Hyderabad

Faculty

Name: Madhuri Bayya .

Student

Name: K RICHA(2024H1400130G)

Student Write-up

PS-II Project Title: Electric and Hybrid Vehicle Lab Development

Short Summary of work done during PS-II : Contributed to Electric and Hybrid Vehicle Lab development, learned Battery Building, BMS and ECU simulations and conducted workshop.

Tool used (Development tools - H/w, S/w) : Matlab Simulink, S32 Design Studio, TSMaster

Objectives of the project : To contribute towards Electric and Hybrid Vehicle Lab development and understanding the BMS and ECU

Major Learning Outcomes : Understood how a battery pack is made from cell level to final pack, components of BMS, CAN communication, ECU simulation. Used tools like Simulink, S32 Design Studio and TSMaster.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : It was good and everyone was helpful during the entire duration of internship.

Academic courses relevant to the project : Power Electronics, Embedded Systems Basics, Matlab tool Basics, BMS pre-requisites

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Name: PENTA JAYAVARDHAN(2024H1060152P)

Student Write-up

PS-II Project Title: E-Mobility | Power Electronics & Drives Lab Development

Short Summary of work done during PS-II : During PS-II, I contributed to the development of laboratory setups and assisted in conducting and demonstrating experiments during workshops. I actively supported hands-on training activities by explaining experimental procedures and helping participants understand key concepts. Additionally, I assisted in the procurement process by identifying required laboratory components, coordinating purchases, and ensuring the availability of materials needed for lab development and workshop activities. These responsibilities enhanced my technical knowledge, communication skills, and understanding of laboratory management and operations.

Tool used (Development tools - H/w, S/w) : Simulink, TS Master, S32 Design Studio, Ti Board EVB, Power Sources

Objectives of the project : E-Mobility | Power Electronics & Drives Lab Development

Major Learning Outcomes : The major learning outcomes of my PS-II experience included gaining hands-on exposure to laboratory development, experiment setup, and workshop demonstrations. I developed a better understanding of electrical engineering concepts despite coming from a mechanical engineering background, which enhanced my ability to learn and work across disciplines. The internship also improved my technical problem-solving skills, communication abilities, teamwork, and adaptability. Additionally, I gained practical experience in laboratory management, procurement processes, and professional work practices, contributing significantly to my overall technical and personal growth.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment was supportive, collaborative, and highly conducive to learning. My mentors, professors, and colleagues were approachable and provided continuous guidance throughout the internship. Although I come from a Mechanical Engineering background, I was assigned to work in an Electrical Engineering laboratory, and the team's support helped me quickly adapt to new concepts and complete my responsibilities effectively. I was also encouraged to contribute to activities in other laboratories, which broadened my technical exposure and interdisciplinary understanding. Overall, the organization expected professionalism, active participation, and a willingness to learn, making the experience highly enriching for both my technical and personal development.

Academic courses relevant to the project : None

PS-II Station : WILP- Smart Manufacturing Competency, Bengaluru

Faculty

Name: Prakruthi Hareesh .

Student

Name: VIGNESH A(2024H1410060G)

Student Write-up

PS-II Project Title: High-Frequency Energy Data Logging System for MSME Sector

Short Summary of work done during PS-II : We developed a high-speed, 10 Hz industrial energy data logging system utilizing a Raspberry Pi 5 and a Selec EM4M meter. To ensure stability, we configured a TTL-to-RS485 converter and integrated a DS3231 Real-Time Clock to guarantee precise offline timestamps during power losses. System-level configurations were applied to resolve

UART/Bluetooth conflicts. A custom Python engine was deployed using pymodbus to actively poll and decode 50 distinct electrical parameters continuously. To manage the resulting massive datasets, we built automated pandas and xlsxwriter scripts that segment the CSV data into optimized daily Excel workbooks. The completed system was successfully deployed on MSME factory floor equipment, including wave soldering machines and CNC lathes, to monitor true machine downtime and cycle counts.

Tool used (Development tools - H/w, S/w) : Hardware: Raspberry Pi 5 , Selec EM4M 3-phase Energy Meter , TTL-to-RS485 Converter , DS3231 Hardware Real-Time Clock . Software: Raspberry Pi OS (Debian Bookworm) , Python 3 , pymodbus , pandas , xlsxwriter , adafruit-circuitpython-ads1x15 , systemd ,

Objectives of the project : The objective of this project is to design a highly reliable Raspberry Pi 5 data logging system capable of extracting continuous electrical metrics to bridge industrial Modbus RTU communication with Python-based processing , ultimately transforming raw data into actionable production intelligence for the MSME sector to accurately interpret machine health, true downtime, and production output.

Major Learning Outcomes : Hardware Integration: TTL-to-RS485 serial communication, safe 3.3V/5V logic interfacing, and resolved TX/RX crossover requirements for industrial sensors.
High-Speed Data Acquisition: Developed optimized Python scripts utilizing the pymodbus library to poll Modbus RTU registers at a continuous rate of 10 Hz.
Big Data Handling: Built fault-tolerant Pandas pipelines to clean, parse, and segment massive CSV datasets into compressed Excel workbooks

Details of Papers/patents : No papers or patents explicitly referenced in the current project documentation.

Brief Description of working environment, expectations from the company : The working environment is exceptionally friendly and actively encourages students to explore new options and innovative problem-solving methods. In return for this supportive and open atmosphere, the primary expectations from the company are absolute dedication to the work and a strong sense of personal responsibility in managing and executing the project.

Academic courses relevant to the project : Industrial Communication Protocols, Data Acquisition and Signal Processing, Data Structures and Software Engineering

Name: SREELAKSHMI SASI(2024H1240105G)

Student Write-up

PS-II Project Title: Smart manufacturing and robotics

Short Summary of work done during PS-II : Started with Epson robotics and continued for two months.robotic technology hands on experience and software specifically used(spel+ of Epson rc).then several sensor Integration projects were done .game hub using stm32 microcontroller was developed.real time monitoring of environment using this stm32 much was done.then conveyer belt sensor Integration was done for safety purpose.indoor localisation project using esp32 where gps won't be available.then a camera vision project was also done using IFM 02I500 camera which can detect barcodes and detect the defect barcodes for smart manufacturing

Tool used (Development tools - H/w, S/w) : Stm32 cube ide,stmcube mx, thingspeak,blynk,Arduino ide, processing ide,node red,rc+,Epson robot,stmiot board

Objectives of the project : Indoor localisation project,smart barcode detection for smart manufacturing

Major Learning Outcomes : Sensor Integration,spel+ language,stm32 programming,gaming hub generation using processing ide,real time monitoring of environment,indoor localisation using ble.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Very good working environment

Academic courses relevant to the project : Embedded system design

PS-II Station : WILP_Epson Robotics, Bengaluru

Faculty

Name: Prakruthi Hareesh .

Student

Name: HRADESH SINGH(2024H1060079G)

Student Write-up

PS-II Project Title: EDGE AI INTEGRATION, VISION-BASED SORTING, AND DIGITAL TWIN SIMULATION FOR EPSON VT6L INDUSTRIAL ROBOTS

Short Summary of work done during PS-II : This internship at Epson Robotics (Smart Manufacturing division of Epson India Pvt. Ltd.) focused on the design, integration, and validation of an intelligent manufacturing cell incorporating Edge AI, computer vision, and Digital Twin frameworks. The core platform centers on the Epson VT6L 6-axis articulated robot and the BeagleBone AI-64 edge processor. The project involved establishing TCP/IP communication, SPEL+ optimization, OpenCV HSV segmentation, and a Digital Twin in NVIDIA Isaac Sim controlled via an HTC Vive Pro 2 VR headset.

Tool used (Development tools - H/w, S/w) : Industrial Robotics, Epson VT6L, Edge AI, BeagleBone AI-64, SPEL+, TCP/IP Sockets, OpenCV, HSV Thresholding, URDF, Digital Twin, NVIDIA Isaac Sim, HTC Vive Pro 2.

Objectives of the project : EDGE AI INTEGRATION, VISION-BASED SORTING, AND DIGITAL TWIN SIMULATION FOR EPSON VT6L INDUSTRIAL ROBOTS

Major Learning Outcomes : This internship at Epson Robotics (Smart Manufacturing division of Epson India Pvt. Ltd.)
focused on the design, integration, and validation of an intelligent manufacturing cell incorporating Edge AI, computer vision, and Digital Twin frameworks. The core platform centers on the Epson VT6L 6-axis articulated robot and the BeagleBone AI-64 edge processor. The project involved establishing TCP/IP communication, SPEL+ optimization, OpenCV HSV segmentation, and a Digital Twin in NVIDIA Isaac Sim controlled via an HTC Vive Pro 2 VR headset.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The internship at Epson Robotics provided a professional and innovation-driven working environment focused on industrial automation and smart manufacturing. The team encouraged hands-on learning, collaboration, and problem-solving while working with advanced robotic systems and Edge AI technologies. Interns were given opportunities to interact with industry professionals, understand real-world automation challenges, and contribute to practical solutions.

The company expected interns to demonstrate technical competence, curiosity, and a willingness to learn new technologies. Regular communication, teamwork, and adherence to project timelines were emphasized. The internship involved working with Epson VT6L industrial robots, integrating AI-based solutions, and understanding manufacturing workflows. Mentors provided continuous guidance while encouraging independent thinking and initiative.

Overall, the experience helped bridge the gap between academic knowledge and industrial applications, enhancing skills in robotics, embedded systems, automation, and project execution in a professional engineering environment.

Academic courses relevant to the project : Robotcs, Mechanical Engineering, Embedded Systems

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Name: DIBYA GAURI(2024H1400065P)

Student Write-up

PS-II Project Title: BLE Indoor Human Localization System; Smart Conveyor Collision Avoidance System; Edge Data Logging with Teensy 4.1 and ESP32; IoT Distance Monitoring with Cloud Dashboard

Short Summary of work done during PS-II : During my Practice School-II (PS-II) at WILP, SMCC, I gained practical exposure to Embedded Systems, Industrial IoT (IIoT), Industrial Automation, and Industry 4.0 technologies. The first month of the internship was dedicated to training on Epson Industrial Robots. During this period, I learned robot operation, safety procedures, coordinate systems, motion control, pick-and-place operations, and SPEL+ programming. This training provided valuable insight into industrial robotics and manufacturing automation. Following the training, I worked

on multiple projects involving embedded systems and IoT applications. These included a BLE Indoor Human Localization System using ESP32, BLE, MQTT, and Node-RED for personnel tracking and presence detection; a Smart Conveyor Collision Avoidance System for industrial safety; an Edge Data Logging System using Teensy 4.1 and ESP32 for real-time data acquisition and processing; and an IoT-based Distance Monitoring System with cloud dashboard visualization. Through these projects, I gained hands-on experience in sensor interfacing, embedded programming, wireless communication, MQTT-based data transfer, BLE technology, Node-RED dashboard development, data acquisition, and system integration. The internship enhanced my technical skills and provided practical understanding of Industry 4.0 concepts, smart monitoring systems, and industrial automation applications in real-world environments.

Tool used (Development tools - H/w, S/w) : Hardware Tools : ESP32 DevKit V1, Teensy 4.1 Development Board, Epson Industrial Robots, Ultrasonic Distance Sensors, BLE Wearable Device (ESP32-based), Laptop/PC for Development and Monitoring, ; SoftwareTools: Arduino IDE, Node-RED, Mosquitto MQTT Brok

Objectives of the project : To develop a low-cost indoor human localization system using BLE-enabled ESP32 devices that can detect, monitor, and estimate the position of personnel in indoor environments where GPS is unavailable.; To develop an intelligent conveyor monitoring system capable of detecting potential collisions and improving operational safety in industrial environments.; To design an edge-computing-based data acquisition and logging system capable of collecting, processing, and storing sensor data locally before cloud transmission.

Major Learning Outcomes : Embedded Systems Development;
Industrial IoT (IIoT) Implementation;
BLE Communication and Localization;
MQTT and Node-RED Integration;
Edge Computing and Data Logging;
Industrial Automation and Safety Systems;
Sensor Interfacing and Data Acquisition;
Industry 4.0 Technologies;
Real-Time Monitoring and Analytics;
End-to-End System Integration.

Details of Papers/patents : No research paper or patent was formally submitted during the PS-II period. However, the work carried out on BLE-Based Indoor Human Localization, Industrial IoT Systems applications has the potential to be extended into research publications.

Brief Description of working environment, expectations from the company : The working environment at WILP, SMCC, was highly professional, collaborative, and conducive to learning. The organization provided exposure to industrial practices, advanced automation technologies, and real-world engineering applications. Mentors were approachable and supportive, encouraging discussions, problem-solving, and independent learning.

During the initial phase of the internship, I received structured training on Epson Industrial Robots, including robot operation, safety procedures, motion control, and SPEL+ programming. This training helped me understand industrial automation workflows and manufacturing processes. Subsequently, I worked on projects related to Embedded Systems, Industrial IoT (IIoT), Edge Computing, and Industrial Automation, where I was able to apply theoretical knowledge to practical engineering problems.

The organization expected interns to be proactive, self-motivated, and willing to learn new technologies. Emphasis was placed on understanding project requirements, developing reliable solutions, documenting work, and presenting results effectively. Interns were encouraged to demonstrate technical competence, analytical thinking, teamwork, and professional conduct while adhering to organizational standards and safety practices.

Overall, the internship provided valuable industry exposure and enhanced my technical, communication, and problem-solving skills. It also helped me gain a deeper understanding of Industry 4.0 concepts, industrial robotics, IoT-based monitoring systems, and embedded system development in a real-world industrial environment.

Academic courses relevant to the project : Embedded Systems;
Microprocessors and Microcontrollers;
Wireless Communication;
Internet of Things (IoT);
Real-Time Systems;
Industrial Automation;

PS-II Station : XcelCrowd Technologies Pvt. Ltd., Hyderabad

Faculty

Name: Chennupati Rakesh Prasanna .

Student

Name: PRANAV MAREDDY .(2022AAPS2029H)

Student Write-up

PS-II Project Title: CampusConnect

Short Summary of work done during PS-II : Worked on the full stack development for campusconnect. Helped completing it for live deployment

Tool used (Development tools - H/w, S/w) : JavaScript, MySQL

Objectives of the project : Full stack development

Major Learning Outcomes : Full stack development

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working environment was really nice

Academic courses relevant to the project : NA

PS-II Station : Yugabyte Software Pvt. Ltd., , Bengaluru

Faculty

Name: Raja Vadhana Prabhakar .

Student

Name: SATVIK NARULA(2021B3A72482G)

Student Write-up

PS-II Project Title: Integration of OCI KMS

Short Summary of work done during PS-II : A major part of the work involved integrating OCI KMS into the aggregation stage of the encryption pipeline, allowing key creation and management to be handled similarly to other supported KMS providers. This ensured seamless compatibility with existing universe creation and key rotation processes. As a result, users could create, manage, and rotate encryption keys through OCI KMS without requiring additional manual setup. I implemented logic to extract, structure, and standardize OCI configuration details for use throughout the encryption workflow. I also worked on added frontend user interface for the same. The project was developed using Java and OCI SDKs, with supporting tools such as VS Code, GitHub, Jira, Phabricator, Phorge, and Gemini.

Tool used (Development tools - H/w, S/w) : Java, VS code, git, arc, phorge,gemini

Objectives of the project : Integrate oracle key management service using envelope encryption to the platform

Major Learning Outcomes : Developed an understanding of envelope encryption and cryptographic key lifecycle management. Learned Cloud Infrastructure concepts, especially OCI , including compartments, vaults, and key management workflows.Worked with OCI SDKs and Java to implement cloud service integrations.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The company expected developers to take ownership of assigned tasks, learn new technologies and deliver solutions that integrate seamlessly with existing infrastructure. The work environment was flexible helpful and approachable. Particular emphasis was placed on writing reliable code, maintaining compatibility across cloud providers, and ensuring security best practices when handling encryption and credential management. The environment provided valuable exposure to real-world cloud

infrastructure, distributed systems, and large-scale software development practices.

Academic courses relevant to the project : OOP,DAA,DBMS

Name: VANKA VINAY NAIDU(2021B3A71026H)

Student Write-up

PS-II Project Title: Billing Plan Management, Call-Home Enhancements, and AWS PRM Support

Short Summary of work done during PS-II : Developed an in-house Billing Plan Management system by building pricing plan APIs, database changes, and billing workflow integrations. Enhanced the YBA Call Home telemetry framework and BigQuery ingestion pipeline to support richer analytics and reporting. Worked on AWS compliance and integration improvements across cloud infrastructure components.

Tool used (Development tools - H/w, S/w) : Java, PostgreSQL, BigQuery, AWS, GCP, Flask, Git, REST APIs, Swagger

Objectives of the project : Developing an in-house Billing Plan Management system to replace the legacy ORB-based billing solution. Enhancing the YBA Call Home telemetry framework to collect richer analytics data and improve reporting capabilities. Supporting AWS PRM compliance through required AWS integration and attribution mechanisms.

Major Learning Outcomes : -Gained hands-on experience in cloud databases, API development, billing systems, telemetry pipelines, and AWS integrations.
-Strengthened collaboration skills by working with multiple teams on cross-functional projects

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The expectations are realistic, and the work environment is highly supportive and encouraging. Senior team members are approachable and always willing to help with doubts, creating a culture that promotes continuous learning.

Academic courses relevant to the project : OOPS, DBMS

Name: PRAHARSH VITTA .(2022A7PS0015H)

Student Write-up

PS-II Project Title: Voyager Improvements

Short Summary of work done during PS-II : YugabyteDB Voyager is a data migration tool that simplifies the entire user journey of migrating to YugabyteDB from PostgreSQL, MySQL, Oracle, etc., from AI-powered assessment to schema modernisation to even live data migration. Making the assessment phase smarter with relevant SQL fixes for issues will make the schema change process easier for users. Alongside this, a number of correctness and usability fixes were contributed across the control-plane reporting and data-import paths.

Tool used (Development tools - H/w, S/w) : Golang, Jenkins, Cursor, Claude

Objectives of the project : To improve assessment and data migration capabilities of voyager migrations to ensure smoother and bug free experience and correctness.

Major Learning Outcomes : Learnt best practices in software development, Golang, PostgreSQL, Database Internals, Testing or CI/CD, Agentic Development

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The workspace is pretty helpful and encouraging to interns. We are expected to contribute regularly to products in production, making you see the impact of your work. The company is mostly remote so they are flexible in that regard. They also expect quality and pace from the work you do.

Academic courses relevant to the project : DBMS, OOPS

PS-II Station : Zeo - Product Content, Delaware

Faculty

Name: Uma Nagarajan .

Student

Name: K SAI VINEETH(2021B1A12435H)

Student Write-up

PS-II Project Title: Integrated Product Content Strategy and Feature Validation Framework for Zeo Route Planner

Short Summary of work done during PS-II : Worked as a Product Content Intern at Zeo Auto, contributing to product content creation, feature validation, competitive research, and product operations for Zeo Route Planner, a SaaS route optimization platform. Created feature documentation, FAQs, LinkedIn content, and AI-assisted promotional materials. Conducted end-to-end testing of features such as OCR Image Scanning, Route Overview, Break Time Scheduling, Global Search AI, Customizable SMS Notifications, and Invoice Number Integration. Identified and documented issues, collaborated with developers, and validated fixes through structured testing cycles. Performed competitive analysis of logistics SaaS platforms including OptimoRoute and Onfleet to benchmark features and industry practices. Conducted website audits and platform-wide validation to improve content accuracy, workflows, navigation, and user experience. Also gained exposure to Product Requirement Documents (PRDs), requirements analysis, stakeholder collaboration, and product planning activities.

Tool used (Development tools - H/w, S/w) : Canva, ChatGPT, Gemini, Vercel, Google Workspace, Microsoft Excel, Zeo Route Planner Web Platform, Zeo Route Planner Mobile Application

Objectives of the project : To contribute to product content development, feature validation, competitive analysis, website auditing, and requirements analysis for Zeo Route Planner while improving product quality, user experience, and documentation accuracy.

Major Learning Outcomes : Gained practical exposure to SaaS product development, feature testing, bug reporting, stakeholder collaboration, competitive benchmarking, documentation, and Product Requirement Document (PRD) analysis. Developed an understanding of how cross-functional teams collaborate to build, validate, and improve software products.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Zeo operates in a remote (online) collaborative SaaS product development environment involving product managers, developers, testers, and content teams. The internship required independent ownership of assigned tasks while maintaining regular communication with stakeholders. Expectations included conducting thorough feature validation, documenting findings clearly, creating accurate product content, performing competitive research, and contributing to product improvement initiatives. Emphasis was placed on attention to detail, problem-solving, effective communication, and understanding user requirements. The work environment encouraged continuous learning and provided exposure to multiple aspects of product development, including testing, documentation, requirements analysis, and product strategy.

Academic courses relevant to the project : N/A

PS-II Station : Zeo Auto - Product Growth, Delaware

Faculty

Name: Uma Nagarajan .

Student

Name: DIVYA ARORA(2021B1A12999G)

Student Write-up

PS-II Project Title: Enhancing Feature Adoption and User Onboarding for Route Planner at Zeo Auto

Short Summary of work done during PS-II : Product Growth, SaaS, Route Optimization, Fleet Management, User Education, Product Marketing, Product Testing, Customer Onboarding, Technical Documentation, Video Tutorials, Localization, UX Testing

Tool used (Development tools - H/w, S/w) : .Zeo Route Planner (Fleet & Driver Platforms) Synthesia Loom ChatGPT Microsoft Excel Google Workspace YouTube Studio Canva

Objectives of the project : Improve product adoption by creating user education content. Develop tutorial videos explaining product features and workflows. Enhance customer onboarding and reduce support dependency. Test newly released product features and identify usability improvements. Support product launches through documentation, translations, and marketing assets

Major Learning Outcomes : Understood the complete workflow of a SaaS product from feature development to customer adoption.
Learned product growth strategies through educational content and feature promotion.
Gained hands-on experience in product testing, usability evaluation, and feature validation.
Developed technical documentation and multilingual tutorial content.
Improved communication, stakeholder coordination, and project management skills.
Learned how user education contributes to product adoption and customer retention.

Details of Papers/patents : NIL

Brief Description of working environment, expectations from the company : Zeo Auto provided a collaborative, fast-paced startup environment where employees worked closely across product, engineering, growth, and customer success teams. Interns were encouraged to take ownership of projects and contribute directly to customer-facing initiatives. The organization emphasized continuous learning, innovation, and rapid execution while maintaining high-quality deliverables.
As a Product Growth Intern, I was expected to understand product features independently, communicate effectively with cross-functional teams, create accurate educational content, and meet project deadlines. The company also encouraged experimentation with AI-powered tools and welcomed suggestions for improving documentation and user experience. Regular feedback sessions and mentor guidance helped me enhance both my technical and professional skills

Academic courses relevant to the project : N/A

PS-II Station : ZIPPEE, Gurgaon

Faculty

Name: Neha Vinayak .

Student

Name: OJAS YADAO NIMAJE(2022A5PS1454P)

Student Write-up

PS-II Project Title: Product Management & QA Intern: Quick Commerce Logistics

Short Summary of work done during PS-II : During my Practice School-II internship at Zippee, I worked across Product Management and Quality Assurance functions within a quick commerce logistics platform. My responsibilities included testing and validating critical workflows such as order creation, rider allocation, trip management, geofence-based status transitions, delivery attempted flows, and return processes across staging, pre-production, and production environments. I created test cases, performed regression and sanity testing, reported and validated bugs using JIRA, and conducted API testing using Postman. In addition to QA activities, I contributed to product development by identifying user pain points through interactions with riders, dark store captains, operations teams, and IVR teams. Based on these insights, I drafted Product Requirement Documents (PRDs), user stories, and process documentation for workflow improvements. I also conducted market and operational research and participated in stakeholder discussions for feature enhancements. Field visits to locations including Gurgaon Sector 28 Dark Store, Okhla Warehouse, Wazirpur Spoke, and Clinikally Dark Store provided practical exposure to logistics operations and helped bridge the gap between product workflows and ground execution. Furthermore, I worked on Python-based automation initiatives to improve test order generation efficiency and explored Appium-based mobile automation. I also conducted training sessions for ground operations teams on Blaze and Rider App workflows, contributing to smoother operational adoption and process standardization.

Tool used (Development tools - H/w, S/w) : Software Tools: JIRA, Postman, Blaze, Rider App, MapmyIndia API, Appium, Python, Whimsical, Google Sheets, Microsoft Excel, Confluence, Android Studio. Hardware/Devices: Laptop/Desktop, Android Mobile Devices for Rider App testing, GPS-

enabled smartphone

Objectives of the project : The project aimed to understand the end-to-end workflows of a quick commerce logistics platform and contribute to product and QA activities. It involved testing features, identifying user pain points through field visits and stakeholder interactions, drafting PRDs and documentation, and conducting operational research. Additionally, the project focused on improving testing efficiency through automation and supporting ground operations through training and process improvements.

Major Learning Outcomes : Developed a strong understanding of quick commerce logistics, product workflows, and large-scale operational systems. Gained hands-on experience in Quality Assurance, API testing, PRD drafting, stakeholder management, and automation. Improved problem-solving, analytical thinking, and cross-functional collaboration skills through interactions with product, engineering, operations, and ground teams.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment at Zippee was fast-paced, collaborative, and highly focused on solving real-world logistics challenges. I worked closely with Product, Engineering, QA, Operations, and IVR teams, which provided exposure to cross-functional collaboration and stakeholder management. The company encouraged ownership, problem-solving, and continuous learning through hands-on involvement in testing, product development, operational research, and field visits.
The expectations from the company included understanding product workflows, performing quality assurance activities, identifying operational pain points, contributing to product improvements through PRDs and documentation, supporting automation initiatives, and assisting in training ground operations teams. The internship provided significant learning opportunities while allowing me to contribute meaningfully to ongoing projects and operational improvements.

Academic courses relevant to the project : N/A

PS-II Station : Zomato - SDE, Gurgaon

Faculty

Name: Raghavendra Singh

Student

Name: PRAKHAR KUMAR GUPTA(2022A7PS1145G)

Student Write-up

PS-II Project Title: Software Engineering at District by Zomato — Events Platform

Short Summary of work done during PS-II : The internship was in the Events engineering team at District by Zomato, working across the full stack on multiple impactful projects. The first major deliverable was implementing selective feature rendering — a full-stack change that conditionally displayed UI components based on event type, requiring coordinated backend API changes and frontend (Next.js) rendering logic, backed by MongoDB schema analysis.Following this, a frontend deployment migration moved the District events web app from a fragmented setup to a centralized Static Gateway, involving CI/CD script refactoring and resolution of SPA routing conflicts. A targeted notification engine was then built from scratch, setting up a gRPC worker server that sent personalized Push and WhatsApp notifications to user segments supplied by the data team, with sanity checks and frequency capping built in.The second half focused heavily on legacy infrastructure cleanup: auditing and decommissioning 28 AWS Lambda functions, migrating the Delivery Shutdown cron to an ETL pipeline reading from data lakes, building a custom sync-cron framework, and migrating the critical refund processing pipeline into the unified worker-controller setup — achieving a 100% serverless-free backend for the project scope.Additional contributions included an Item Params system (tag-based dynamic question templates with RBAC), a centralized QR code library, an AWS IAM security hardening project eliminating static credentials, and architectural work on a new Comedy vertical using Server-Driven UI contracts across Search, Order, and Gateway services.

Tool used (Development tools - H/w, S/w) : Software:Languages/Frameworks: Go, Node.js, React.js, Next.js, TypeScriptDatabase: MongoDBProtocols: gRPC, Protocol Buffers (Protobuf)Cloud: AWS (ECS, Lambda, S3, IAM, Route53, SSM, CloudWatch), Docker, Static Gateway, CDNCI/CD: GitHub ActionsMonitoring:

Objectives of the project : Develop and ship full-stack features for the District events platform

(selective feature rendering, Item Params system, Comedy vertical). Build a targeted notification engine (Push + WhatsApp) using a gRPC-based worker-controller architecture. Migrate the frontend deployment to a centralized Static GatewayAudit and decommission 28 legacy AWS Lambda functions, replacing them with a unified worker-cron backend. Harden platform security by migrating from static AWS credentials to IAM Task Roles. Design and launch a new Comedy business vertical using Server-Driven UI patterns

Major Learning Outcomes : Full-stack engineering across Goand Node.js in a production environment.
Microservices architecture, gRPC, and Protocol Buffers for inter-service communication.
AWS cloud infrastructure: ECS, Lambda, IAM, S3, Route53, CloudWatch, and the credential-provider chain.
Production observability using Datadog and PagerDuty; on-call incident triage and root cause analysis.
ETL pipeline design and data lake integration for async background workflows
Server-Driven UI paradigms for decoupling layout from client releases
Technical debt elimination: legacy system reverse-engineering, RFC-driven cross-team deprecation
CI/CD pipelines (GitHub Actions), containerization (Docker), and Horizontal Pod Autoscaling

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The internship was with the District Events engineering team at Zomato, a high-scale consumer tech company. The work environment was fast-paced and product-driven, operating in an agile model with weekly sprint cycles, code reviews via pull requests, and regular syncs with product managers, designers, and senior engineers.
Zomato expected interns to be self-driven and capable of ramping up quickly on complex codebases. The onboarding included a unique "frontlining" experience — shadowing customer support agents and accompanying delivery partners — to build an operational understanding of the business before writing any code. This ground-level exposure was a deliberate part of the engineering culture, reinforcing customer-centric thinking.
Interns were expected to take full ownership of features end-to-end: from design and implementation to testing, deployment, and post-launch monitoring. The expectation was not just to complete assigned tasks but to proactively identify gaps, document findings, and communicate blockers clearly across teams. Cross-functional collaboration was routine — requiring coordination with DevOps/SRE, data platform, mobile (Android/iOS), and product teams throughout the internship.
The culture emphasized observability, documentation hygiene, and security best practices.

Production deployments were handled by interns directly, with real-time monitoring responsibility. Overall, the environment closely mirrored a full-time SDE role, with a high bar for code quality and system reliability.

Academic courses relevant to the project : Data Structures and Algorithms
Database Management Systems (DBMS)
Operating Systems
Computer Networks
Object-Oriented Programming
DSTN

PS-II Station : ZS Associates – Data Science, Pune

Faculty

Name: Chetana Anoop Gavankar .

Student

Name: AGASTYA SANYAL(2022A8PS0061G)

Student Write-up

PS-II Project Title: PID DETECTION WITH XGBOOST USING REAL-WORLD EHR DATA

Short Summary of work done during PS-II : The foundation of the diagnostic model was built exclusively on real-world Electronic Health Record (EHR) data. To ensure strict clinical validity and maintain the integrity of the predictive patterns, synthetic data generation was entirely avoided. The preprocessing pipeline was explicitly designed to handle the high degree of sparsity and missing values that characteristically plague clinical data in resource-constrained LMIC settings.

Tool used (Development tools - H/w, S/w) : Python, XGboost, Langchain, Gitlab

Objectives of the project : To build a product based on an XGBoost model to detect Primary Immunodeficiency Diseases

Major Learning Outcomes : AI/ML

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The Bangalore office is really good; flexible work hours + work from home
We're expected to come to office 12 days a month

Academic courses relevant to the project : -