Birla Institute of Technology & Science (BITS), Pilani
Practice School Division
Practice School-I course (May 26th – July 19th, 2025)

PS Chronicles (Core Engineering – Cement, Steel, Chemical, Civil, Mechanical & others)

(A compilation of student experience during PS-I)

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From the Desk of the Editor

It is my great pleasure to bring forth the 7th edition of the PS-I Chronicles. This edition features over 950 articles from PS-I students sharing their experiences during summer 2025.

The basic premise behind the release of PS-I Chronicles is to document the PS-I learning experience of students keeping the below objectives in view.

- To provide more information on the learning experiences by immediate senior students and PS-I faculty about stations, and thereby enlightening the learning opportunity among the student community.
- To provide the faculty with the enhanced information about the type and nature of work carried out at the organization.
- To transform the knowledge gained at the organization into class room teaching and also to identify the scope of deepening the collaborations with organization.

The articles have been classified into five categories based on the industry domain.

- Chronicle 1: Information Technology
- Chronicle 2: Electronics
- Chronicle 3: Chemical, Mechanical, Cement, Textile, Steel, Infrastructure
- Chronicle 4; Health Care and other
- Chronicle 5: Finance and Management

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-I 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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PS-I station: Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam 232
Student 232
Name: JAINAM GANDHI . (2023A4PS1278P) 232
PS-I station: Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam 233
Student 233
Name: ASHWATH D (2023A8PS0492G) 233
PS-I station: Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam 234
Student 234
Name: ISHAN DHINGRA . (2023A8PS0712P) 234
PS-I station: Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam 235
Student 235
Name: MAYANK JAJODIA . (2023B2A30934P) 236
PS-I station: Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam 236
Student 236
Name: NISHA DUTTA . (2023B2A30951H) 237
PS-I station: Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam 238
Student 238
Name: SHRIRANG BHALE (2023B4A30935G) 238
PS-I station: Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam 239

Student 240
Name: KHUSHAL VARDHAN NEELI . (2023B4A40680H) 240
PS-I station: Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam 240
Student 240
Name: AYACHITULA SRI SHANMUKHA VAMSI . (2023B4A80649H) 240
PS-I station: Indium Software Pvt. Ltd., Chennai 241
Student 241
Name: PINAK SHARMA . (2023A2PS1301P) 241
PS-I station: Indovision Services Private Limited, New Delhi 242
Student 242
Name: SANDESH KAMATH . (2023A7PS0092H) 242
PS-I station: Indovision Services Private Limited, New Delhi 244
Student 244
Name: AKSHAT AJMERA . (2023A7PS0141H) 244
PS-I station: Indovision Services Private Limited, New Delhi 245
Student 245
Name: ADVAY ANEESH MATAPURKAR (2023A7PS0459G) 246
PS-I station: Indovision Services Private Limited, New Delhi 246
Student 246
Name: HARSHITHA AMBAVARAPU (2023B2AD0873H) 246
PS-I station: Infinite Analytics - Non Tech, Mumbai 247
Student 248
Name: SHRIYA RODE (2023A3PS0223G) 248
PS-I station: Infinite Analytics - Non Tech, Mumbai 249
Student 249
Name: JOSH MANOJ GEORGE (2023A3PS0524G) 249
PS-I station: Infinite Analytics - Non Tech, Mumbai 249
Student 249
Name: LEORA MEHUL MODI (2023B4AD0866G) 250
PS-I station: Infinite Analytics - Tech, Mumbai 250
Student 250
Name: SWASTIK GOSWAMI . (2023A7PS0043H) 250
PS-I station: Infinite Analytics - Tech, Mumbai 251
Student 252
Name: NILAY SADANAND BORKAR (2023A7PS0401G) 252

PS-I station: Innokreat Technologies Pvt Ltd - Non Tech, Gurgaon 253
Student 253
Name: NANDINI GOYAL (2023AAPS0624G) 253
PS-I station: Innokreat Technologies Pvt Ltd - Tech, Gurgaon 254
Student 254
Name: SURYATEJA GANDHAVADI . (2023A8PS0329H) 254
PS-I station: Insight Rise Education Pvt Ltd, Mumbai 255
Student 255
Name: ARYAN CHOPRA . (2023A1PS0196P) 255
PS-I station: Insight Rise Education Pvt Ltd, Mumbai 256
Student 256
Name: ABHISHEK MISHRA . (2023B1A30960H) 256
PS-I station: Insight Rise Education Pvt Ltd, Mumbai 257
Student 258
Name: PRATHAM PANKAJ LADDHA (2023B1AA0679G) 258
PS-I station: Insight Rise Education Pvt Ltd, Mumbai 258
Student 258
Name: ARPIT . (2023B3A70482H) 258
PS-I station: Insight Rise Education Pvt Ltd, Mumbai 259
Student 259
Name: PRIYANSH RAWAT (2023B5A70968G) 259
PS-I station: ITE Infotech Pvt Ltd, Bhopal 260
Student 260
Name: ANURAG SINGH . (2023AAPS0737P) 260
PS-I station: ITE Infotech Pvt Ltd, Bhopal 261
Student 261
Name: ATHARVA OKHADE (2023B2A30771G) 261
PS-I station: Iwayplus Private Limited- Artificial Intelligence, New Delhi 262
Student 262
Name: PARTH KUMAR GARG . (2023B5A71104P) 262
PS-I station: JK Tech, Noida, Noida 263
Student 263
Name: DURVESH NIRANJAN GANGAN . (2023A3PS0342P) 263
PS-I station: JK Tech, Noida, Noida 264
Student 264

Name: AKHIL SIDDHARTH PICHIKA . (2023A4PS0690H) 264
PS-I station: JK Tech, Noida 265
Student 265
Name: NEEL KIRAN NAIK (2023A7PS0429G) 265
PS-I station: JK Tech, Noida 266
Student 266
Name: PRATHAM PRAKASH LAHOTI (2023A7PS0434G) 266
PS-I station: JK Tech, Noida, Noida 267
Student 267
Name: SHUBHAM RAJ GUPTA (2023AAPS0145G) 267
PS-I station: JK Tech, Noida 268
Student 268
Name: JOSHPAL SINGH BHALLA . (2023AAPS0726P) 268
PS-I station: JK Tech, Noida 270
Student 270
Name: RAGHAVAN TOSHNIWAL (2023AAPS1052G) 270
PS-I station: JK Tech, Noida 272
Student 272
Name: RUSHIL DHARWAL . (2023B3A70965P) 272
PS-I station: JK Tech, Noida 273
Student 273
Name: SURYAANSH GARG . (2023B3A70988P) 273
PS-I station: JSM Technologies P Ltd, Bangalore 274
Student 274
Name: AMRUTH SRIVATSAN S (2023A7PS0026P) 274
PS-I station: Juvarya Technologies Pvt. Ltd, Visakhapatnam 275
Student 275
Name: ADARSH CHAKRAVARTHY VADDADI . (2023A7PS0089H) 275
PS-I station: Kerala Infrastructure and Technology for Education (KITE), Thiruvananthapuram 276
Student 276
Name: SOMDATH DEVANSH AGARWAL . (2023A7PS0044H) 276
PS-I station: Kerala Infrastructure and Technology for Education (KITE), Thiruvananthapuram 277
Student 277
Name: VENU SAI YELESVARAPU . (2023A7PS0149H) 277
PS-I station: Kerala Infrastructure and Technology for Education (KITE), Thiruvananthapuram 278

Student 278
Name: AARUSH KANIPAKAM . (2023A7PS1160H) 278
PS-I station: Kerala Infrastructure and Technology for Education (KITE), Thiruvananthapuram 279
Student 279
Name: ANN SAIRA THOMAS (2023B1A70906G) 279
PS-I station: Kerala Infrastructure and Technology for Education (KITE), Thiruvananthapuram 280
Student 280
Name: JOHNS PANICKER MATHEWS . (2023B5A70967H) 281
PS-I station: KVGAI Tech Pvt. Ltd, Lucknow 281
Student 281
Name: TUMPATI GUNASRI PHANINDRA SASANK (2023A3PS0309P) 281
PS-I station: KVGAI Tech Pvt. Ltd, Lucknow 283
Student 283
Name: AARAV SINHA . (2023A7PS2001H) 283
PS-I station: KVGAI Tech Pvt. Ltd, Lucknow 284
Student 284
Name: SUYASH HANDA . (2023AAPS0029P) 284
PS-I station: KVGAI Tech Pvt. Ltd, Lucknow 285
Student 285
Name: S ROHAN . (2023B2A70935P) 285
PS-I station: KVGAI Tech Pvt. Ltd, Lucknow 287
Student 287
Name: ANURAG . (2023B3A21002P) 287
PS-I station: KVGAI Tech Pvt. Ltd, Lucknow 288
Student 288
Name: OJAS DUBEY . (2023B3A70527H) 289
PS-I station: KVGAI Tech Pvt. Ltd, Lucknow 289
Student 289
Name: KEVIN FELIX DCUNHA (2023B3A70690G) 289
PS-I station: KVGAI Tech Pvt. Ltd, Lucknow 290
Student 290
Name: ATHARVA SURAJ KRISHNAN (2023B3A70783G) 290
PS-I station: Lifespark Technologies Private Limited, Mumbai 292
Student 292
Name: HRIDAY VIMAL BHUTA . (2023A2PS0901H) 292

PS-I station: Lifespark Technologies Private Limited, Mumbai 293
Student 293
Name: YUVAL DOSHI (2023A3PS0186G) 293
PS-I station: Lifespark Technologies Private Limited, Mumbai 294
Student 294
Name: AKSHAY AGRAWAL . (2023A3PS1132H) 295
PS-I station: Lifespark Technologies Private Limited, Mumbai 295
Student 295
Name: ANSHUL RAKESH (2023A7PS0394G) 295
PS-I station: Lifespark Technologies Private Limited, Mumbai 297
Student 297
Name: KALYANI A NAIK . (2023AAPS0038P) 297
PS-I station: Lifespark Technologies Private Limited, Mumbai 298
Student 298
Name: NAVYA ANIRUDDHA KEKATPURE (2023B4AA0898G) 298
PS-I station: Lifespark Technologies Private Limited, Mumbai 300
Student 300
Name: ARYA ANIRUDDHA KEKATPURE . (2023B4AD1049P) 300
PS-I station: Lighthouse Energy - Electronics, Toronto 302
Student 302
Name: VEER PRATAP SINGH (2023A3PS0212G) 302
PS-I station: Lighthouse Energy - IT, Toronto 303
Student 303
Name: HRISHANT BHEDA (2023A7PS0378G) 303
PS-I station: Lighthouse Energy - Management, Toronto 304
Student 304
Name: NANDAN STHAPAK . (2023A3PS0311H) 304
PS-I station: Lighthouse Energy - Management, Toronto 305
Student 305
Name: PREM MUNISWAMY CHANDRESH (2023A4PS0279G) 305
PS-I station: Mailwave Technologies Pvt Ltd, Patna 306
Student 306
Name: AKSHAT TRIPATHI . (2023A7PS0107H) 306
PS-I station: Mailwave Technologies Pvt Ltd, Patna 306
Student 306

Name: ANSHUL KUMAR (2023AAPS0621G) 306
PS-I station: MD Enterprises Global, Michigan 307
Student 307
Name: MADHAV RAMINI . (2023A7PS0046H) 307
PS-I station: MD Enterprises Global, Michigan 308
Student 308
Name: RAJ RAHUL (2023A7PS0449G) 308
PS-I station: MD Enterprises Global, Michigan 309
Student 309
Name: ARIN SAMEER RODAY (2023A7PS0456G) 309
PS-I station: MD Enterprises Global, Michigan 310
Student 310
Name: KATHAN PRAJAPATI (2023A7PS0568G) 310
PS-I station: MD Enterprises Global, Michigan 311
Student 311
Name: CHAUHAN DARSHIL DUSHYANT . (2023A7PS0609P) 311
PS-I station: MD Enterprises Global, Michigan 312
Student 312
Name: SAI SAMYUTHA TALLURI . (2023AAPS0236H) 312
PS-I station: MeghaAI India Private Limited, Hyderabad 313
Student 313
Name: SAMARTH DIXIT (2023B1A30681G) 313
PS-I station: MeMeraki Retail & Tech Pvt Ltd, Gurgaon 315
Student 315
Name: BAIBHAB MISHRA . (2023A2PS0239P) 315
PS-I station: MeMeraki Retail & Tech Pvt Ltd, Gurgaon 316
Student 316
Name: DARSHAN JAIN . (2023A7PS0028H) 316
PS-I station: MeMeraki Retail & Tech Pvt Ltd, Gurgaon 318
Student 318
Name: ASHMIT AGARWAL (2023A7PS0382G) 318
PS-I station: METASRUJAN, Bengaluru 318
Student 318
Name: AYUSSH TAYDE . (2023A7PS0140H) 318
PS-I station: METASRUJAN, Bengaluru 319

Student 319
Name: AANSH MISHRA (2023B4A70761G) 319
PS-I station: MetaSynk Pvt Ltd, Visakhapatnam 320
Student 320
Name: SNEHA JAIN . (2023B2A70880P) 320
PS-I station: MetaSynk Pvt Ltd, Visakhapatnam 321
Student 321
Name: AKSHAT MADHOGARIA (2023B5A70994G) 322
PS-I station: Montecarlo Limited- Tech, Ahmedabad 322
Student 322
Name: MANAN BANSAL . (2023A7PS0515P) 322
PS-I station: Montecarlo Limited- Tech, Ahmedabad 323
Student 323
Name: AKSHAT PUNDHIR . (2023A7PS0584P) 323
PS-I station: MSA Global Technology and Engineering P Ltd.,, Bengaluru 324
Student 324
Name: SHASHANK PAYAL (2023A3PS1039G) 324
PS-I station: MSA Global Technology and Engineering P Ltd.,, Bengaluru 325
Student 325
Name: ASIT INDURKAR . (2023B3A40523H) 325
PS-I station: Multigraphics Group - Renewable Energy, Delhi 326
Student 326
Name: ADITYA SINGH . (2023A7PS0580P) 326
PS-I station: MU-TEASER PRIVATE LIMITED, Gurgaon 327
Student 327
Name: DIVYANSH SHARMA . (2023A3PS0345P) 327
PS-I station: MU-TEASER PRIVATE LIMITED, Gurgaon 328
Student 328
Name: PULKIT BHARDWAJ . (2023A4PS1339P) 328
PS-I station: National Centre for Polar and Ocean Research (NCPOR) - Sub Shelf Exploration of Nivl Ice Shelf (SENS), Goa 329
Student 329
Name: ADHYAYAN PANDEY . (2023B5AA1119P) 329
PS-I station: National Centre for Polar and Ocean Research (NCPOR) - Application of Spectral element, Goa 330

Student 330
Name: SHOURIN CHAKRABORTY . (2023B4AA1053P) 330
PS-I station: National Centre for Polar and Ocean Research (NCPOR) - Intercomparison of sea ice concentration, Goa 331
Student 331
Name: KAAVYA MER . (2023A7PS0678P) 331
PS-I station: National e-Governance Division (NeGD), Delhi 332
Student 332
Name: VADANT NAGPAL . (2023A7PS0523P) 332
PS-I station: National Informatics Centre (NIC), Delhi 333
Student 333
Name: OJAS GANDHEEL . (2023A4PS1299P) 334
PS-I station: National Informatics Centre (NIC), Delhi 335
Student 335
Name: SAJAL BATRA . (2023B3A70957P) 335
PS-I station: National Load Despatch Centre, Grid Controller of India Limited, New Delhi 336
Student 336
Name: KRISHNA GARG . (2023A3PS0365P) 336
PS-I station: National Load Despatch Centre, Grid Controller of India Limited, New Delhi 337
Student 338
Name: AYUSH AGARWAL (2023A8PS1066G) 338
PS-I station: National Load Despatch Centre, Grid Controller of India Limited, New Delhi 339
Student 339
Name: SUJAL MITTAL . (2023B5A81144P) 339
PS-I station: National Remote Sensing Centre, Hyderabad 341
Student 341
Name: SURBHI THAKUR . (2023A2PS0862P) 341
PS-I station: National Remote Sensing Centre, Hyderabad 342
Student 342
Name: RUJUL KRISHNA . (2023A7PS0051H) 342
PS-I station: National Remote Sensing Centre, Hyderabad 343
Student 343
Name: YUVRAJ SHARMA . (2023B5A71122P) 343
PS-I station: NICSI(National Informatics Centre services Inc.), Delhi 344
Student 344

Name: ADITYA KHANDELWAL . (2023A4PS0452P) 344
PS-I station: NICSI(National Informatics Centre services Inc.), Delhi 345
Student 345
Name: ATUL KUMAR . (2023AAPS0180H) 345
PS-I station: NICSI(National Informatics Centre services Inc.), Delhi 346
Student 346
Name: ANANYA SHANKAR . (2023B1A30836P) 346
PS-I station: NICSI(National Informatics Centre services Inc.), Delhi 348
Student 348
Name: SHUKANT SINGH . (2023B2A30922P) 348
PS-I station: NICSI(National Informatics Centre services Inc.), Delhi 349
Student 349
Name: VANSHIKA BANSAL . (2023B3A70968P) 349
PS-I station: NICSI(National Informatics Centre services Inc.), Delhi 350
Student 350
Name: EESA AHMED . (2023B4AA1034P) 351
PS-I station: Niftrix Technologies Private Limited, Bengaluru 352
Student 352
Name: VISHISHT T B . (2023A7PS0042H) 352
PS-I station: Nitisara - Operations, New Delhi 353
Student 353
Name: PALAK BHAGASRA (2023D2TS1231P) 353
PS-I station: NIXI(National Internet Exchange of India), Delhi 354
Student 354
Name: ARJUN GAUTAM (2023A3PS0209G) 354
PS-I station: NIXI(National Internet Exchange of India), Delhi 355
Student 355
Name: KRISHNA DHAWAN . (2023A7PS0111H) 355
PS-I station: NIXI(National Internet Exchange of India), Delhi 356
Student 356
Name: ISHAAN SEMWAL (2023A7PS1014G) 356
PS-I station: NIXI(National Internet Exchange of India), Delhi 357
Student 357
Name: AADI NARAYAN PRAKASH . (2023A8PS0442H) 357
PS-I station: NoQs Digital, Ahmedabad, Ahmedabad 359

Student 359
Name: ADEESH JAIN (2023A3PS0180G) 359
PS-I station: NoQs Digital, Ahmedabad 359
Student 359
Name: RANVEER MASKARA (2023A3PS0188G) 360
PS-I station: NoQs Digital, Ahmedabad, Ahmedabad 360
Student 360
Name: HARSHAVARDHAN SHAH (2023A7PS0358G) 360
PS-I station: NoQs Digital, Ahmedabad, Ahmedabad 361
Student 361
Name: KHUSHI MISHRA (2023A7PS0468G) 361
PS-I station: NoQs Digital, Ahmedabad, Ahmedabad 362
Student 362
Name: JAYDITYA KABRA . (2023A7PS1059H) 362
PS-I station: NoQs Digital, Ahmedabad, Ahmedabad 363
Student 363
Name: AYUSH YADAV (2023A8PS0246G) 363
PS-I station: NoQs Digital, Ahmedabad 364
Student 364
Name: SHANTANU KOTIAN . (2023AAPS0286H) 364
PS-I station: NoQs Digital, Ahmedabad 365
Student 365
Name: HIMANSHU GARG (2023AAPS0599G) 365
PS-I station: NoQs Digital, Ahmedabad 367
Student 367
Name: AARYA DEOTALE (2023B3A70845G) 367
PS-I station: NoQs Digital, Ahmedabad 368
Student 368
Name: KEDAR MEDISHETTY (2023B4A70873G) 368
PS-I station: NoQs Digital, Ahmedabad 369
Student 369
Name: YASH RAJA . (2023B4A71056P) 369
PS-I station: OnFinance AI - IT, Bangalore 370
Student 370
Name: CHIRANTAN S . (2023A7PS0154H) 370

PS-I station: OnFinance AI - IT, Bangalore 371
Student 371
Name: RAHUL SHARMA (2023A7PS0484G) 371
PS-I station: OnFinance AI - IT, Bangalore 372
Student 372
Name: ADVAY KUMAR . (2023B3A70964P) 372
PS-I station: OnFinance AI - IT, Bangalore 373
Student 373
Name: CHAITANYA KEYAL . (2023B4A70727H) 373
PS-I station: OnFinance AI - Non IT, Bengaluru 375
Student 375
Name: ASHRITH R (2023A3PS1040G) 375
PS-I station: OnFinance AI - Non IT, Bengaluru 376
Student 376
Name: MOHAMMED SHADAB AMEEN (2023A3PS1132G) 376
PS-I station: OnFinance AI - Non IT, Bengaluru 377
Student 377
Name: SWATI KUMARI (2023B2AD0692G) 377
PS-I station: OnFinance AI - Non IT, Bengaluru 378
Student 378
Name: SPARSH K (2023B3A30848G) 379
PS-I station: Petasense Technologies Pvt. Ltd. - Analytics, Bengaluru 380
Student 380
Name: KAVIN SHANMUGAM . (2023A7PS0668P) 380
PS-I station: Petasense Technologies Pvt. Ltd. - Analytics, Bengaluru 381
Student 381
Name: SHOBHIT ARYA . (2023A7PS1054H) 381
PS-I station: Petasense Technologies Pvt. Ltd. - Analytics, Bengaluru 382
Student 382
Name: MAANAS ADITYA POPURI . (2023AAPS0740P) 383
PS-I station: Petasense Technologies Pvt. Ltd. - Analytics, Bengaluru 383
Student 383
Name: SIDDHARTH SASTRI . (2023B5A70230H) 384
PS-I station: Phodu Club - Non Tech, Panaji 385
Student 385

Name: MUTHYALA NAGA SAI HAASINI . (2023B2A30954H) 385
PS-I station: PNT Robotics & Automation Solutions,LLP, Mumbai 385
Student 385
Name: AYUSH AMAN . (2023A4PS0228P) 385
PS-I station: PNT Robotics & Automation Solutions,LLP, Mumbai 386
Student 386
Name: REHAAN TAHILIANI . (2023AAPS0272H) 386
PS-I station: PNT Robotics & Automation Solutions,LLP, Mumbai 387
Student 387
Name: AVYAKT VERMA . (2023B5AD1083P) 387
PS-I station: Progist Solutions LLP - Non Tech, Mumbai 388
Student 388
Name: DEVARSH KHATRI (2023A7PS0465G) 388
PS-I station: Progist Solutions LLP - Tech, Mumbai 390
Student 390
Name: AMRIT LAHARI . (2023A4PS0442P) 390
PS-I station: ProvenTech Consulting Pvt. Ltd, Hyderabad 390
Student 390
Name: PRAGY PRANJAL . (2023A1PS0874H) 391
PS-I station: ProvenTech Consulting Pvt. Ltd, Hyderabad 392
Student 392
Name: DEVENDRANATH MOPARTHI (2023A3PS1174H) 393
PS-I station: ProvenTech Consulting Pvt. Ltd, Hyderabad 393
Student 393
Name: ARYAN KUMAR . (2023A8PS0428H) 393
PS-I station: ProvenTech Consulting Pvt. Ltd, Hyderabad 395
Student 395
Name: ADITYA RAVINDRAN . (2023B1A41003H) 395
PS-I station: Pyrome Innovations Private Limited, Hyderabad 397
Student 397
Name: AREON BANERJEE . (2023A3PS0324H) 397
PS-I station: QicApp Pvt. Ltd., Gurgaon 398
Student 398
Name: KUSHAL GUPTA (2023B1A70698G) 398
PS-I station: QicApp Pvt. Ltd., Gurgaon 398

Student 399
Name: KAVYA KHANDELWAL . (2023B1AA0823P) 399
PS-I station: Quality Kiosk Tech Pvt. Ltd. - Gen AI, Navi Mumbai 400
Student 400
Name: ADVAITH REMANI (2023A8PS1071G) 400
PS-I station: Quality Kiosk Tech Pvt. Ltd. - Gen AI, Navi Mumbai 402
Student 402
Name: ARYAN DATTATRAYA PAWAR . (2023B4A71070P) 402
PS-I station: QuGates Technologies Pvt. Ltd, Bengaluru 404
Student 404
Name: NIHAL SHIVANNA (2023A3PS1045G) 404
PS-I station: QuGates Technologies Pvt. Ltd, Bengaluru 404
Student 405
Name: SHRUTHI KRISHNAMURTHY . (2023A5PS1162P) 405
PS-I station: QuGates Technologies Pvt. Ltd, Bengaluru 406
Student 406
Name: ARJUN M (2023AAPS0608G) 406
PS-I station: QuGates Technologies Pvt. Ltd, Bengaluru 408
Student 408
Name: SUMUKHA K NAYAK . (2023B2A10932P) 408
PS-I station: QuGates Technologies Pvt. Ltd, Bengaluru 409
Student 409
Name: AMOGH MUGULAVALLI HARISH KASHYAP (2023B3A30826G) 409
PS-I station: QuGates Technologies Pvt. Ltd, Bengaluru 410
Student 410
Name: SRI KRISHNA CHAITANYA KONDAMUDI (2023B4A80787H) 410
PS-I station: QuGates Technologies Pvt. Ltd, Bengaluru 411
Student 411
Name: VENKATA PRADYUMN RAYASAM (2023B5AD0973G) 411
PS-I station: Quinfo Systems Pvt. Ltd, Hyderabad 412
Student 412
Name: KRISH CHETAN DESAI . (2023A3PS0701P) 412
PS-I station: Quinfo Systems Pvt. Ltd, Hyderabad 413
Student 413
Name: ABHIRAM MANDADI (2023A7PS0020G) 413

PS-I station: Quinfo Systems Pvt. Ltd, Hyderabad 414
Student 414
Name: BUSSA NAVYA SRI . (2023B1A40993H) 414
PS-I station: Quinfo Systems Pvt. Ltd, Hyderabad 415
Student 415
Name: MELLIMPUDI TEJAS . (2023B5A70802H) 415
PS-I station: Quinfo Systems Pvt. Ltd, Hyderabad 418
Student 418
Name: VIRAJ DHARA (2023B5A71100P) 418
PS-I station: Regional Remote Sensing Center-North, NRSC, ISRO - IT, New Delhi 419
Student 419
Name: PRIYANSHU TALWAR (2023A7PS0361G) 419
PS-I station: Regional Remote Sensing Center-North, NRSC, ISRO - IT, New Delhi 420
Student 420
Name: ASHMIT RANA (2023A7PS0443G) 420
PS-I station: Regional Remote Sensing Center-North, NRSC, ISRO - IT, New Delhi 421
Student 421
Name: GAURANG GUPTA . (2023A7PS0648P) 421
PS-I station: Regional Remote Sensing Center-North, NRSC, ISRO - IT, New Delhi 422
Student 422
Name: HARDIK AGARWAL (2023B3A70838G) 422
PS-I station: Regional Remote Sensing Center-North, NRSC, ISRO - IT, New Delhi 423
Student 423
Name: ADITYA RAJESH GAWADE . (2023B3A71009P) 423
PS-I station: Regional Remote Sensing Center-North, NRSC, ISRO - IT, New Delhi 424
Student 424
Name: ABHAV GARG (2023B3A71189G) 424
PS-I station: Regional Remote Sensing Center-North, NRSC, ISRO - IT, New Delhi 425
Student 425
Name: SHIVANSH BHATNAGAR . (2023B4A71018P) 425
PS-I station: Regional Remote Sensing Center-North, NRSC, ISRO - IT, New Delhi 426
Student 426
Name: DILESH CHURIWAL . (2023B4A71064P) 426
PS-I station: Remote Sensing Application Centre U.P, Lucknow 428
Student 428

Name: SHIVANSH SAXENA . (2023A7PS0637P) 428
PS-I station: RenewCred (Net Zero Initiative Pvt Ltd), Bengaluru 429
Student 429
Name: ANSHUMAN SHARMA . (2023A3PS0404H) 429
PS-I station: RenewCred (Net Zero Initiative Pvt Ltd), Bengaluru 430
Student 430
Name: SOHAN RAVINDRA GHAWAT (2023A3PS1042G) 430
PS-I station: RenewCred (Net Zero Initiative Pvt Ltd), Bengaluru 431
Student 431
Name: SKANDHA PRASANNA KUNTAGOD (2023A7PS0344G) 431
PS-I station: Roboaviate (BotSavvy Private Limited), Ranchi 432
Student 432
Name: NAVEEN KUMAR . (2023A7PS0521P) 432
PS-I station: Roboaviate (BotSavvy Private Limited), Ranchi 433
Student 433
Name: AYUSHMAN SINGH (2023B3A11178G) 433
PS-I station: Roboaviate (BotSavvy Private Limited), Ranchi 434
Student 434
Name: PRANAW KUMAR (2023B5A40997G) 434
PS-I station: Samaro software pvt ltd, Navi Mumbai 435
Student 435
Name: VANAD GUPTA (2023A7PS0421G) 436
PS-I station: Samaro software pvt ltd, Navi Mumbai 437
Student 437
Name: VIVEK RISHI PANCHAGNULA (2023A7PS0481G) 437
PS-I station: Samaro software pvt ltd, Navi Mumbai 438
Student 438
Name: DHRUV GUPTA . (2023A7PS0551P) 438
PS-I station: Samaro software pvt ltd, Navi Mumbai 440
Student 440
Name: NAGA VENKATA KRISHNA KAUSHIK KARPURAPU (2023AAPS0185H) 440
PS-I station: Samaro software pvt ltd, Navi Mumbai 441
Student 441
Name: AMAN SHARMA . (2023AAPS0753P) 441
PS-I station: Samaro software pvt ltd, Navi Mumbai 442

Student 442
Name: NIRALI JAIN (2023B3AD1213G) 442
PS-I station: Samaro software pvt ltd, Navi Mumbai 443
Student 443
Name: DEEP MITRA . (2023B5AA0670H) 443
PS-I station: Sasha Innoworks Pvt. Ltd., Hyderabad 444
Student 445
Name: ASISH KUMAR BEHERA (2022A1PS1303G) 445
PS-I station: Sasha Innoworks Pvt. Ltd., Hyderabad 446
Student 446
Name: B VIKYATH PATIL . (2023A3PS0343H) 446
PS-I station: Sasha Innoworks Pvt. Ltd., Hyderabad 448
Student 448
Name: AARUSHI TIWARI . (2023A5PS1171P) 448
PS-I station: Sasha Innoworks Pvt. Ltd., Hyderabad 449
Student 449
Name: KAITHOJU POOJA . (2023A7PS0001H) 449
PS-I station: Sasha Innoworks Pvt. Ltd., Hyderabad 450
Student 450
Name: SHRINIKETH DEEVANAPALLI . (2023A8PS0414H) 450
PS-I station: Sasha Innoworks Pvt. Ltd., Hyderabad 452
Student 452
Name: DAMERA SHARANYA (2023B3TS2203H) 452
PS-I station: Savycode Private Limited, Nagpur 453
Student 454
Name: DHUMAL SHRIRAM SUDHAKAR . (2023A7PS0003P) 454
PS-I station: sfHawk – Tech, Pune 455
Student 455
Name: RHYTHM BULANI . (2023A7PS1098H) 455
PS-I station: sfHawk – Tech, Pune 456
Student 456
Name: ISHITA KAUSTUBH MEHTA (2023A8PS1070G) 456
PS-I station: sfHawk – Tech, Pune 458
Student 458
Name: AKSHAT YOGESH LAD (2023B2AD0764G) 458

PS-I station: Siemens Digital Industries Software India Pvt Ltd, Pune 459
Student 459
Name: ARCHIT DIWANE . (2023A3PS1361H) 459
PS-I station: Siemens Digital Industries Software India Pvt Ltd, Pune 460
Student 460
Name: ISHAN TARANEKAR (2023A4PS0268G) 460
PS-I station: Siemens Digital Industries Software India Pvt Ltd, Pune 461
Student 461
Name: ATHARVA DESHKAR . (2023A7PS0121H) 461
PS-I station: Siemens Digital Industries Software India Pvt Ltd, Pune 462
Student 462
Name: ATHARV PATIL . (2023A7PS0161H) 462
PS-I station: Siemens Digital Industries Software India Pvt Ltd, Pune 462
Student 463
Name: MANTHAN ANURAG BOKDE . (2023AAPS0218H) 463
PS-I station: Siemens Digital Industries Software India Pvt Ltd, Pune 464
Student 464
Name: UJJWAL JAIN (2023AAPS0602G) 464
PS-I station: Siemens Digital Industries Software India Pvt Ltd, Pune 465
Student 465
Name: NAVKAR CHORDIYA . (2023B3A71006P) 465
PS-I station: Siemens Digital Industries Software India Pvt Ltd, Pune 466
Student 466
Name: AMAN KUMAR SINGH . (2023B5A70795H) 466
PS-I station: Silver Touch Technologies Ltd., Ahmedabad 467
Student 467
Name: KUSH GUPTA . (2023A8PS0713P) 467
PS-I station: Slash Experiences, Pilani 468
Student 468
Name: KEERTHIKA MUDDADA . (2023A7PS0010H) 468
PS-I station: Slash Experiences, Pilani 470
Student 470
Name: PRITHVISH CHANDRAYAN . (2023A7PS0014P) 470
PS-I station: Slash Experiences, Pilani 471
Student 471

Name: ANANYA PURWAR (2023A7PS0017G) 471
PS-I station: Slash Experiences, Pilani 472
Student 472
Name: SATVIK ADERLA . (2023A7PS0167H) 472
PS-I station: Slash Experiences, Pilani 474
Student 474
Name: RISHIT LAVANIA (2023A7PS0446G) 474
PS-I station: Slash Experiences, Pilani 475
Student 475
Name: JAGRUTH DODDA . (2023A7PS2013H) 475
PS-I station: Slash Experiences, Pilani 476
Student 476
Name: MOFASSER ARAFAT MIDDA . (2023B1A80965H) 476
PS-I station: Slash Experiences, Pilani 477
Student 477
Name: ANUBHAV CHOURASIA (2023B4AA0939G) 477
PS-I station: Smart Owl Studio LLP, Jaipur 478
Student 478
Name: PRITHVI VISHAK (2023AAPS0027G) 478
PS-I station: Smart Owl Studio LLP, Jaipur 479
Student 479
Name: RAJ KESHARWANI (2023B2A30770G) 479
PS-I station: Smart Owl Studio LLP, Jaipur 480
Student 480
Name: PRACHI BHADAURIA (2023B2A70735G) 480
PS-I station: Smartlink Holdings Ltd, Goa 482
Student 482
Name: ADITYA BHATIWAL . (2023A7PS0617P) 482
PS-I station: SNS Technosys LLP, Pune 483
Student 483
Name: VARUN SETH (2023A7PS0453G) 483
PS-I station: Society For Cyberabad Security Council, Hyderabad 483
Student 483
Name: SAI DHEERAJ YADAVALLI . (2023A3PS0346H) 483
PS-I station: Society For Cyberabad Security Council, Hyderabad 485

Student 485
Name: VENKATA SAI SOHAN KRISHNAMSETTY (2023A3PS0389H) 486
PS-I station: Society For Cyberabad Security Council, Hyderabad 487
Student 487
Name: TAVISH SINGH . (2023A8PS0718P) 487
PS-I station: Software Tree, California 490
Student 490
Name: MANAN HARSHAD NANDHA (2023A7PS0333G) 490
PS-I station: Steel Authority of India Ltd. (SAIL), Delhi 491
Student 491
Name: JAYESH SHARMA (2023A7PS0357G) 491
PS-I station: Styx AI (Zarthcorp Tech Pvt Ltd), Noida 493
Student 493
Name: AGRIM GUPTA . (2023A2PS0232P) 493
PS-I station: Styx AI (Zarthcorp Tech Pvt Ltd), Noida 493
Student 493
Name: BHARGAV SAI KATIKAM . (2023A7PS0053H) 493
PS-I station: Styx AI (Zarthcorp Tech Pvt Ltd), Noida 495
Student 495
Name: GAUTAM SINGHVIE . (2023A7PS0612P) 495
PS-I station: Styx AI (Zarthcorp Tech Pvt Ltd), Noida 496
Student 496
Name: ARMAAN PEERAN . (2023AAPS0279H) 496
PS-I station: Styx AI (Zarthcorp Tech Pvt Ltd), Noida 497
Student 497
Name: ABINAV KIRAN (2023B4A70887G) 497
PS-I station: Styx AI (Zarthcorp Tech Pvt Ltd), Noida 498
Student 498
Name: NAYAN KRISHNA M . (2023B4A71020P) 498
PS-I station: Swecha Telangana - Non Tech, Hyderabad 499
Student 499
Name: VISINGIRI SURYA ANJANI POORVI . (2023A5PS1045H) 499
PS-I station: Swecha Telangana - Tech, Hyderabad 500
Student 500
Name: VANSH SETH . (2023A3PS1130H) 500

PS-I station: Swecha Telangana - Tech, Hyderabad 501
Student 501
Name: REVANTH SAI SRINIVAS AKULA . (2023A7PS0008H) 501
PS-I station: Swecha Telangana - Tech, Hyderabad 502
Student 502
Name: PRANAVI PENUMETCHA (2023A7PS0019G) 503
PS-I station: Swecha Telangana - Tech, Hyderabad 503
Student 503
Name: SOHAM VINAY DESHMUKH . (2023A7PS0025P) 503
PS-I station: Swecha Telangana - Tech, Hyderabad 504
Student 504
Name: LALITHYA MUNIGALA . (2023A7PS0026H) 504
PS-I station: Swecha Telangana - Tech, Hyderabad 505
Student 505
Name: GURSIDAK SINGH BASSI . (2023A7PS0033H) 505
PS-I station: Swecha Telangana - Tech, Hyderabad 507
Student 507
Name: VARUN CHIRUNAGULA (2023A7PS0325G) 507
PS-I station: Swecha Telangana - Tech, Hyderabad 507
Student 508
Name: KOTRA KESHAV GUPTA . (2023A7PS0534P) 508
PS-I station: Swecha Telangana - Tech, Hyderabad 508
Student 508
Name: SOHAN MUTRA (2023A7PS1023G) 508
PS-I station: Swecha Telangana - Tech, Hyderabad 509
Student 509
Name: JAYASSIMHA REDDY CHALLA . (2023A8PS0446H) 509
PS-I station: Swecha Telangana - Tech, Hyderabad 510
Student 510
Name: SAAHITI ROTTE . (2023AAPS0181H) 510
PS-I station: Swecha Telangana - Tech, Hyderabad 511
Student 511
Name: JEEVANRAJ THOUTI (2023B1A40686G) 511
PS-I station: Swecha Telangana - Tech, Hyderabad 512
Student 512

Name: GOLI SRI VARSHINI . (2023B1A41227H) 512
PS-I station: Swecha Telangana - Tech, Hyderabad 513
Student 513
Name: VENKATA KOHENA REDDY SANIKOMMU . (2023B3A40550H) 513
PS-I station: Swecha Telangana - Tech, Hyderabad 514
Student 514
Name: CHARITESH PERAMBUDOORU . (2023B5A11392H) 514
PS-I station: SYSSTRA by Convergence Futuristic Solution Enterprise Pvt. Ltd., Bangalore 515
Student 515
Name: ANISH SAIKIA . (2023B4A71133P) 515
PS-I station: Talent-Trek E-Learning Pvt Ltd, Bengaluru 516
Student 516
Name: MANOJ KUMAR REDDY REDDYPALLI (2023A4PS1103G) 516
PS-I station: Talent-Trek E-Learning Pvt Ltd, Bengaluru 518
Student 518
Name: SHASHANTH VENKATESAN (2023A4PS1215G) 518
PS-I station: Talent-Trek E-Learning Pvt Ltd, Bengaluru 519
Student 519
Name: UTKARSH ANAND . (2023AAPS0195H) 519
PS-I station: Talent-Trek E-Learning Pvt Ltd, Bengaluru 520
Student 520
Name: K SAMEEKSHA (2023B2A40739G) 520
PS-I station: TCG Centres for Research and Education in Science and Technology (TCG CREST), Kolkata 521
Student 521
Name: DIPTANJAN SENGUPTA . (2023A3PS0388P) 521
PS-I station: TECHGEEKZ SERVICES PRIVATE LIMITED, Surat 521
Student 521
Name: ABHINAV CHAUHAN . (2023A3PS0389P) 521
PS-I station: TECHGEEKZ SERVICES PRIVATE LIMITED, Surat 522
Student 522
Name: AMAY ABHIJIT DEODHAR . (2023A7PS0155H) 523
PS-I station: TECHGEEKZ SERVICES PRIVATE LIMITED, Surat 523
Student 523
Name: SAURABH KUMAR (2023B4A70872G) 523

PS-I station: Technology Enabling Centre, BITS Pilani, Pilani campus, Pilani 525
Student 525
Name: AKSHANSH SINGH CHANDEL . (2023A2PS1367H) 525
PS-I station: Technology Enabling Centre, BITS Pilani, Pilani campus, Pilani 527
Student 527
Name: KAVYA SONI (2023A3PS0206G) 527
PS-I station: Technology Enabling Centre, BITS Pilani, Pilani campus, Pilani 528
Student 528
Name: DEVYANI TATHOD . (2023A3PS0411H) 528
PS-I station: Technology Enabling Centre, BITS Pilani, Pilani campus, Pilani 529
Student 529
Name: AISHWARYA . (2023A5PS1163P) 529
PS-I station: Technology Enabling Centre, BITS Pilani, Pilani campus, Pilani 530
Student 531
Name: RAGHAV BISHT . (2023A7PS0484P) 531
PS-I station: Technology Enabling Centre, BITS Pilani, Pilani campus, Pilani 532
Student 532
Name: CHANDRANSHU SHARMA . (2023AAPS0271H) 532
PS-I station: Technology Enabling Centre, BITS Pilani, Pilani campus, Pilani 533
Student 533
Name: ASTHA SHARMA (2023B2TS1242P) 533
PS-I station: Technology Enabling Centre, BITS Pilani, Pilani campus, Pilani 534
Student 534
Name: NIKHIL SINGH BHATI (2023D2TS1238P) 534
PS-I station: Teraforge Digital Lab LLP, Thane 536
Student 536
Name: HARSH SHAH . (2023A2PS0236P) 536
PS-I station: Teraforge Digital Lab LLP, Thane 537
Student 537
Name: ABHEEK ARORA . (2023A7PS0508P) 537
PS-I station: The Barabari Collective, Hyderabad 538
Student 538
Name: ANJALI SINGH . (2023B5A10759H) 538
PS-I station: TWI GROUP OF COMPANIES - Non Tech, Pitampura 540
Student 540

Name: DISHA . (2023A7PS0516P) 540
PS-I station: TWI GROUP OF COMPANIES - Tech, Pitampura 541
Student 541
Name: UTKARSH GANGWAR . (2023B2A10911P) 541
PS-I station: TWI GROUP OF COMPANIES - Tech, Pitampura 542
Student 542
Name: SHRESHTH SINGHAL (2023B2A80743G) 542
PS-I station: United Paramount Pvt Ltd, Hyderabad 544
Student 544
Name: ANISH KUMAR PIDUGU . (2023A3PS0317H) 544
PS-I station: United Paramount Pvt Ltd, Hyderabad 545
Student 545
Name: AKHILESH VENKAT NAKKA . (2023A7PS0105H) 545
PS-I station: United Paramount Pvt Ltd, Hyderabad 546
Student 546
Name: CHITTIPOLU SUJITH KUMAR . (2023A7PS0572P) 546
PS-I station: United Paramount Pvt Ltd, Hyderabad 547
Student 547
Name: ALEKHYA SAI KAMASANI . (2023A7PS2008H) 547
PS-I station: Urbannest HomeTech Private Limited - Tech, Delhi 548
Student 548
Name: KRISHNAM ANAND . (2023A3PS0694P) 548
PS-I station: Urbannest HomeTech Private Limited - Tech, Delhi 549
Student 549
Name: VADLAMANI ADITYA MADHUKESH . (2023A3PS1175H) 549
PS-I station: Urbannest HomeTech Private Limited - Tech, Delhi 550
Student 550
Name: KARTHIKEYA KOPPULA . (2023A4PS0636H) 550
PS-I station: Urbannest HomeTech Private Limited - Tech, Delhi 551
Student 551
Name: AADI PANDEY (2023A7PS0470G) 551
PS-I station: UST infinity labs, Thiruvananthapuram 552
Student 553
Name: GOVIND P NAIR (2022B4A80713G) 553
PS-I station: UST infinity labs, Thiruvananthapuram 553

Student 553
Name: SANJOE MATHEW (2023A3PS0159G) 553
PS-I station: UST infinity labs, Thiruvananthapuram 554
Student 554
Name: RISHIT TRIPATHY (2023A4PS0309G) 554
PS-I station: UST infinity labs, Thiruvananthapuram 556
Student 556
Name: NARAYAN PRASANTH . (2023A4PS0705H) 556
PS-I station: UST infinity labs, Thiruvananthapuram 557
Student 557
Name: ALBERT SEBASTIAN . (2023A7PS0118H) 557
PS-I station: UST infinity labs, Thiruvananthapuram 558
Student 558
Name: ADITHYA PRASAD . (2023A8PS1178H) 558
PS-I station: UST infinity labs, Thiruvananthapuram 559
Student 559
Name: ALEX ANTONY . (2023B4A70734H) 559
PS-I station: VVDN Technologies Pvt. Ltd., Gurgaon 560
Student 560
Name: AAKARSH MISHRA . (2023A7PS0561P) 560
PS-I station: VVDN Technologies Pvt. Ltd., Gurgaon 561
Student 561
Name: AARYAN SHARMA . (2023B1AA0828P) 561
PS-I station: WRLDC- Western Regional Load Despatch Center,Grid-IndiaIndia Limited, Mumbai 562
Student 562
Name: AYUSH HASMUKHBHAI KAKADIYA (2023A7PS0422G) 562
PS-I station: Xebia IT Architects Ltd, Bhopal, Madhya Pradesh, Bhopal 563
Student 564
Name: AARYA KUMAR DUBEY . (2023A4PS1351H) 564
PS-I station: Xebia IT Architects Ltd, Bhopal, Madhya Pradesh 564
Student 564
Name: RUDRA TIWARI . (2023A7PS0558P) 564
PS-I station: Xebia IT Architects Ltd, Bhopal, Madhya Pradesh, Bhopal 565
Student 565
Name: RISHITA JAIN (2023A7PS1020G) 565

PS-I station: Xebia IT Architects Ltd, Bhopal, Madhya Pradesh, Bhopal 566
Student 566
Name: AAYUSH RAJ (2023B1A40711G) 566

PS-I station: 83 D Network Private Limited, New Delhi

Student

Name: KUSHAGRA KAPOOR . (2023A7PS0545P)

Student Write-up:

PS-I Project Title: Create a simple voice communication system with PTT functionality(Two clients and one server)

Short Summary of work done: Socket programming for UDP communication(sending/receiving audio) and then Client will initiate push to talk from holding any keyboard button(eg space bar). Until the button is pushed and the sender is speaking the voice data packet is sent to the server and that will be relayed to the receiver. After releasing the button the PTT will stop & the server will be in idle mode to relay again from either of the clients. Gui can be kept simple at client end just to initiate PTT (use tkinter). The server will be on the LAN. Cloud server not needed.

Objectives of the project: To make a simple voice communication system with PTT functionality (like the walkie talkie)with the help of python language

Tool used: Python, Tkinter , Pyaudio , UDP socket ,Socket Programming

Details of Papers/patents: None

Brief description of the working environment: It was an online PS,The Environment was pretty good and supportive .The mentors were ready to help us any time and always answered our queries regarding the project in the best possible way.
My main aim throughout this PS was to gain hands on experience in corporate world and also get to know how things work in corporate world ,how to manage deadlines , how to communicate and coordinate within a team.

Academic courses relevant to the project: For my project none was relevant as such.
Can say computers programming from the first sem since in python also basic programming things were similar.

Learning Outcome: Learnt about various python libraries—Tkinter, Pyaudio, Socket Programming,Keyboard module,About how to connect everything on LAN network, Threading

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PS-I station: 83 D Network Private Limited, New Delhi

Student

Name: RUSHIL BARNWAL . (2023B4A71066P)

Student Write-up:

PS-I Project Title: CENTRALIZED PUSH-TO-TALK VOICE COMMUNICATION SYSTEM FOR MULTI-CLIENT NETWORKS

Short Summary of work done: During PS-I, we developed a real-time Push-to-Talk (PTT) voice communication system that enables low-latency audio exchange over a network. The system uses UDP sockets for audio transmission and TCP sockets for control signaling, ensuring reliable coordination of mic access and room state. A centralized Finite State Machine (FSM) running on the server governs speaker transitions and enforces consistent communication rules among multiple clients. We implemented a keyboard-based PTT mechanism, allowing users to transmit voice while holding down a specific key. The system supports interruptible communication—any user pressing the PTT key gains immediate speaking rights, preempting the current speaker. For audio capture and playback, we used PyAudio, with multithreading to handle concurrent tasks like listening, speaking, and GUI updates. A graphical user interface (GUI) built with Tkinter provides real-time feedback on speaker status, mic availability, and connection state, improving usability. We also ensured robustness in the system with socket reconnection handling, active user tracking, and server-side arbitration of conflicting requests. This project provided practical exposure to low-level network programming, state machine design, real-time systems, and cross-platform GUI development. We worked collaboratively to architect, implement, test, and refine the system through multiple iterations based on functional requirements and feedback.

Objectives of the project: he objective of this project is to develop a real-time voice communication system based on Push-to-Talk (PTT) functionality. It aims to enable low-latency audio transmission using UDP sockets, while employing TCP sockets for reliable control signaling. A centralized finite state machine (FSM) governs speaker arbitration and mic access, ensuring consistent room state management. The system is designed to support interruptible communication, allowing any user to gain speaking access by pressing the PTT key, even if someone else is currently speaking. An intuitive GUI built with Tkinter provides visual feedback on connection and speaker status, making the system user-friendly and operationally efficient.

Tool used: The tools used include Python, PyAudio, socket (TCP/UDP), Tkinter, pynput and threading

Details of Papers/patents: None

Brief description of the working environment: The working environment was collaborative and goal-oriented, with regular weekly meetings, one with the CTO for system-level feedback and another with our mentor for technical guidance. We were expected to work independently, communicate progress clearly, and deliver functional outcomes. The experience strengthened our skills in teamwork, time management, and iterative development under real-world constraints.

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

Learning Outcome: We gained hands-on experience in building real-time networked systems using TCP and UDP sockets, managing concurrency with threads, and integrating audio handling with PyAudio. The project also strengthened our understanding of FSM-based control logic, GUI development with Tkinter, and designing interruptible, user-responsive communication protocols.

PS-I station: Absolute Smart Solutions Pvt Ltd, Gurgaon

Student

Name: SHIVANSH VASHISTH (2023A1PS0107G)

Student Write-up:

PS-I Project Title: WWebsite Design and Development for Absolute Smart Solutions Pvt. Ltd.eb

Short Summary of work done: During my 8-week Practice School-I internship at Absolute Smart Solutions Pvt. Ltd., I worked as a Graphic Designer on the Website Design and Development project for the company's new responsive site. My primary tasks involved designing custom icon sets, creating high-quality web banners, and mapping visuals to content sections while

maintaining a consistent design system aligned with the brand identity. I participated in all project phases—planning, design, development support, and final testing—collaborating closely with developers and content teams. Using tools like Canva Pro, LocalWP, and GoDaddy, I developed wireframes, delivered optimized visual assets, and supported responsive and cross-browser testing to ensure uniform display on desktops, tablets, and mobiles. I also contributed to visual quality assurance during deployment, ensuring the final site met both aesthetic and functional standards. Key achievements include delivering 20+ custom icons, multiple page banners, and establishing a consistent UI/UX design framework. This experience strengthened my skills in brand-aligned design, responsive layout creation, and team collaboration. The project concluded successfully with the launch of the live website: www.absolutesmart.in, marking a significant step in my professional growth in digital design.

Objectives of the project: To learn how to make a website

Tool used: GoDaddy,LocalWP

Details of Papers/patents: No

Brief description of the working environment: My company was online

Academic courses relevant to the project: yes

Learning Outcome: Learnt properly how to make to website

PS-I station: Absolute Smart Solutions Pvt Ltd, Gurgaon

Student

Name: SHREY ANCHAL . (2023A1PS0830H)

Student Write-up:

PS-I Project Title: Absolute Smart Solutions Pvt. Ltd. Website Designing

Short Summary of work done: Working as a copywriter at Absolute Smart Solutions Pvt. Ltd. on a website development project gave me valuable exposure to digital communication in a

professional IT environment. I was responsible for creating compelling and user-friendly content that aligned with the company's brand identity and resonated with our target audience. Through this experience, I developed a strong understanding of SEO practices, web copy standards, and the importance of maintaining consistency across multiple webpages. Collaborating with developers, designers, and the marketing team improved my teamwork, adaptability, and coordination skills. I also gained hands-on experience using platforms like WordPress, Elementor, and Google Docs to manage, structure, and revise content efficiently. This role helped me appreciate the role of UI/UX in content strategy and taught me how to communicate complex technical ideas in a clear, engaging manner. Overall, the project enhanced both my creative writing and strategic thinking abilities in a real-world corporate setting.

Objectives of the project: Objective of this project is to be proficient with wordpress and its plugins. Build strong team values and punctuality and create a website for the company.

Tool used: WordPress, Elementor, Astra Template, Google Docs, Google Sheets, Canva, Grammarly, Yoast SEO, ChatGPT.

Details of Papers/patents:NA

Brief description of the working environment: During my remote internship at Absolute Smart Solutions Pvt. Ltd., I worked in a structured yet flexible environment that emphasized timely communication, self-discipline, and accountability. Despite being remote, the team maintained strong collaboration through regular virtual meetings and shared platforms like Google Docs and Sheets. The company expected clarity, creativity, and consistency in my written content, along with adherence to deadlines and brand guidelines. I was encouraged to take initiative, contribute ideas, and align content with both design and user intent. This experience enhanced my skills in web copywriting, SEO, teamwork, and using digital tools like WordPress, Elementor, and Canva. I learned how to write content that not only informs but also converts, while gaining exposure to real-world workflows in website development and digital marketing.

Academic courses relevant to the project: yes

Learning Outcome: We learnt how to make a website using wordpress and its plugins. We learnt how a website is designed, created, deployed and tested along with team work and coordination with our peers.

PS-I station: Absolute Smart Solutions Pvt Ltd, Gurgaon

Student

Name: KARTIK . (2023A7PS0148H)

Student Write-up:

PS-I Project Title: Web development

Short Summary of work done: We created a website using elementor and wordpress

Objectives of the project: Website creation

Tool used: Elementor figma wordpress

Details of Papers/patents: Na

Brief description of the working environment: It was very professional

Academic courses relevant to the project: Web Development

Learning Outcome: Web development

PS-I station: AdaptNXT Technology Solutions Pvt. Ltd - Non Tech, Bangalore

Student

Name: ANKIT KUMAR MISHRA . (2023A1PS0892H)

Student Write-up:

PS-I Project Title: Automation of customer onboarding and development of UI of PoinNXT app

Short Summary of work done: We were initially asked to automate the customer onboarding task for the company. It went on for two weeks. In this time we did work on a platform called

n8n to automate the work. After we were done with automation we started developing the UI for the company's PointNXT app

Objectives of the project: Automate the customer onboarding and make the UI of PointNXT app

Tool used: S/W : n8n, flutter, github, vscode, android studio

Details of Papers/patents:NA

Brief description of the working environment: Working environment was good. We hadn't expected much from the company but in the end it turned out to be better than what we had expected. We were able to learn a lot about corporates and how companies manage clients.

Academic courses relevant to the project: Computer Programming

Learning Outcome: Flutter, n8n, github, automation

PS-I station: AdaptNXT Technology Solutions Pvt. Ltd - Non Tech, Bangalore

Student

Name: MRINAL R . (2023A8PS0291H)

Student Write-up:

PS-I Project Title: Automation of Workflows using n8n

Short Summary of work done: we worked on three impactful projects, using n8n to automate and simplify complex workflows: AI-Powered Translation for Webpages: We built a system that automatically translates website content stored in JSON files using AI, making multilingual updates faster and more efficient. Smart Lead Generation: We created an AI-driven workflow to scrape potential client data, filter high-quality leads, and send them directly to email or CRM tools — saving time and boosting outreach efforts. Prescription Reader for Varidose: For a smart pillbox project, we automated the reading of handwritten prescriptions using OCR and AI, converting them into structured data and generating audio reminders to help users take their

meds on time. In all three projects, n8n played a key role in connecting tools, managing data, and running tasks smoothly with minimal manual effort.

Objectives of the project: Automating several workflows used in other projects/applications using an automation tool n8n

Tool used: n8n, Perplexity API, GPT4 O mini API, Serp API, Airtable, Gemini Doc Reader, REST APIs, eleven Labs API

Details of Papers/patents:https://docs.n8n.io

Brief description of the working environment: We had the freedom to choose our own projects from a list, which made the experience more personal and engaging. The mentors were approachable, supportive, and always willing to help us learn and grow. The work environment was relaxed and open, with flexible timings as long as we met our deadlines.
I started the PS with very little coding experience, but over time I picked up tools like n8n, learned how to work with APIs, and built real-world automation and AI-based solutions. The projects were hands-on and helped me gain practical, industry-relevant skills.
Overall, it was a great learning experience in a friendly and encouraging environment.

Academic courses relevant to the project: Little bit.

Learning Outcome: Automation tool n8n, how to use RESTful APIs, Leveraging AI models for tasks

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PS-I station: AdaptNXT Technology Solutions Pvt. Ltd - Non Tech, Bangalore

Student

Name: AISHEE CHAKRAVORTY . (2023A8PS0715P)

Student Write-up:

PS-I Project Title: RecruitmentHeRo: AI-Powered Applicant Tracking System

Short Summary of work done: An advanced AI-powered HR recruitment automation platform that leverages intelligent automation and data-driven insights to transform talent acquisition. The system provides comprehensive candidate management with sophisticated resume processing, workflow optimization, and enhanced communication tools.

Objectives of the project: To make an AI-powered Applicant Tracking System to automate the recruitment process and reduce the need for human intervention in the recruitment process and increase efficiency and transparency

Tool used: React.js with TypeScript , Tailwind CSS for styling, Shadcn/UI component library React Query for state management Wouter for routing React Hook Form for form handling

Details of Papers/patents: Na

Brief description of the working environment: The work environment seems casual and flexible, with 2 days work from home and 3 days of work from the office. You have a lot of freedom and are encouraged to learn and find solutions in innovative ways, and you are free to make suggestions as well. However, there were also meetings almost every week where our progress was checked and we were given feedback. So while we were given the freedom to learn and find solutions, we were also expected to deliver the required solutions and meet expectations. The senior workers were also extremely approachable and always ready to mentor and guide us.

Academic courses relevant to the project: NA, most things could be learnt during the internship itself.

Learning Outcome: JavaScript, GitHub

PS-I station: AdaptNXT Technology Solutions Pvt. Ltd - Tech, Bangalore

Student

Name: CHIRAG KHANDELWAL . (2023B4AA0809H)

Student Write-up:

PS-I Project Title: INTEGRATION OF AI TOOLS AND REACT UI IN THE POINTNXT CHATBOT

Short Summary of work done: During my Practice School-I internship at AdaptNXT Technology Solutions Pvt. Ltd., I worked on developing an AI-powered chatbot for intelligent inventory and order management. Using FastAPI, LangChain, and OpenAI APIs, I built a modular backend capable of smart intent recognition, tool-based automation, and natural language handling. I implemented tools for order lookup, AWB generation, sales trend visualization, bulk parcel dimension updates, and return order management across five stages. The system also handled order syncing, channel/courier listings, and shipment tracking. Features like tool chaining, follow-up memory, and LLM-driven clarifications were added to support context-aware queries. Additionally, I contributed to a clean, real-time React.js chatbot frontend with structured message formatting and responsive UI behavior. This internship enhanced my skills in full-stack development, AI integration, and prompt engineering, while providing practical exposure to real-world product development and collaborative tech workflows.

Objectives of the project: 1. Develop an AI-powered backend using FastAPI, LangChain, and OpenAI APIs to intelligently route user intents and handle natural language queries. 2. Automate key operational tasks such as order detail retrieval, AWB creation, return order management across five stages, sales trend visualization, and bulk updates. 3. Enable smart interaction handling through tool chaining, follow-up memory, and AI-driven clarifications for incomplete or context-based queries. 4. Design a responsive React.js frontend with a real-time chatbot interface, incorporating smooth loading states, structured messaging, and seamless user experience.

Tool used: FastAPI – Backend API development Python – Core programming language LangChain – Intent routing and tool chaining OpenAI API – LLM-based function calling and prompt handling React.js – Frontend chatbot interface Postman – API testing and debugging Gi

Details of Papers/patents: None

Brief description of the working environment: My PS-I internship at AdaptNXT Technology Solutions offered a highly engaging and growth-oriented environment. The company fostered a supportive work culture with flexible timing and a hybrid setup—three working days per week, including two days WFH. I enjoyed regular interactions with mentors who provided timely guidance and feedback, and also had the opportunity to present progress directly to the CEO, which helped improve my communication and presentation skills.

The environment was collaborative yet independent, allowing me to take ownership of critical modules while learning to work within real-world deadlines. The company expected us to be proactive, solution-oriented, and self-driven, which helped me grow both technically and professionally.

Overall, I thoroughly enjoyed working here. The blend of autonomy, mentorship, and exposure to leadership created a perfect balance that significantly enriched my learning experience during PS-I.

Academic courses relevant to the project: Computer Programming

Learning Outcome: 1. AI Integration: Learned to build intelligent chatbots using OpenAI and LangChain for tool-based automation.
2. Backend Development: Gained expertise in FastAPI and modular API design for intent-driven systems.
3. Prompt Engineering: Developed skills in crafting effective prompts for accurate tool routing and query handling.
4. Frontend Implementation: Built a responsive React chatbot interface with real-time interaction features.
5. End-to-End System Design: Understood full product workflows, from backend logic to user-facing UI.

PS-I station: Agile Connects, Nagpur

Student

Name: KABIR SANJAY UGALE . (2023B5A81088P)

Student Write-up:

PS-I Project Title: HVAC IoT Market Research

Short Summary of work done: During our eight-week internship at Agile Connects Pvt. Ltd., we conducted in-depth market research on HVAC systems in Nagpur's hospitals and hotels. The project involved identifying prospective clients, analyzing their existing HVAC infrastructure, and determining the feasibility of IoT-based optimization. Our workflow spanned from background research to executing field surveys at over a dozen institutions, including Lata Mangeshkar Hospital, Swasthyam Hospital, Hotel Centre Point, and Tuli Imperial. The team developed tailored outreach strategies, engaged with technicians and senior executives, and pitched Agile Connects' value proposition using real case studies and customized energy savings estimates. We collected technical and financial data, overcame logistical challenges, and fine-tuned our messaging to resonate with diverse stakeholders. By the end of the internship, we had successfully opened sales conversations, secured interest for pilots, and delivered leads of significant business potential. Our work bridged market research with on-ground sales execution, giving us hands-on experience in both technical and business domains.

Objectives of the project: The internship was centered on conducting field research across hospitals and hotels in Nagpur to assess existing HVAC infrastructure and identify opportunities for energy savings through automation and remote monitoring.

Tool used: Google Forms (survey data collection) Google Sheets (data logging & analysis) Microsoft PowerPoint / Gamma (pitch decks) ChatGPT (content drafting, proposal support) Canva (brochure design) WhatsApp/Email (outreach communication)

Details of Papers/patents: None

Brief description of the working environment: The working environment at Agile Connects was dynamic and hands-on, blending startup agility with structured mentorship. We were expected to independently lead outreach efforts, conduct technical surveys, and support business development through field insights. The leadership, particularly CEO Mr. Nitin Nistane, provided strategic guidance while giving us autonomy to design and iterate on our approach, since Mentors encouraged experimentation and iterative learning, which enhanced our confidence and ability to adapt to ambiguous situations.
This environment honed our communication, analytical, and organizational skills. We learned the art of storytelling with data, stakeholder engagement in B2B sales, and practical implementation of IoT in legacy systems. Agile Connects offered an ideal setting to blend technical acumen with soft skills critical to any modern professional role.

Academic courses relevant to the project: Introduction to IoT
HVAC Systems and Control
Business Communication
Thermodynamics
Engineering Design
Principles of Management
Data Analysis and Statistics
Environmental Studies (related to energy efficiency and sustainability)

Learning Outcome: The internship at Agile Connects was a highly enriching experience that provided multifaceted learning outcomes. It enabled the team to develop technical fluency in HVAC systems, distinguishing between different types such as Split ACs, VRF systems, Chiller-based units, and AHUs. The hands-on exposure helped translate classroom learning into real-world problem-solving. Equally valuable was the experience in B2B sales and stakeholder engagement—students learned how to adapt their pitch depending on whether they were speaking to maintenance staff, IT managers, or C-level executives. Another significant takeaway was the use of data in storytelling, where energy savings, ROI timelines, and operational improvements were used to create persuasive and customized proposals. Additionally, the team developed professional soft skills including time management, resilience, negotiation, and team collaboration, all of which are critical for any aspiring engineer or consultant.

PS-I station: AI Gurukul, Pilani

Student

Name: AKSHANSH RANJAN . (2023A3PS1133H)

Student Write-up:

PS-I Project Title: CODEMIX

Short Summary of work done: During my PS-I internship, I worked on building a token-level multilingual language identification system designed to handle real-world code-mixed inputs involving multiple languages. The project aimed to go beyond sentence-level classification by identifying the language of each word (token) in a user's input, a problem relevant to chatbots, social media analysis, and multilingual NLP systems. Initially, we experimented with sentence-level multi-label classification using XLM-R, including threshold tuning and error analysis, particularly on low-resource languages like Telugu and Urdu. To enhance token-level prediction, we designed a novel pipeline integrating Google's Gemini LLM with BM25 retrieval, which provides relevant context examples to improve language disambiguation. I implemented a structured prompting framework to extract (token, language) pairs from Gemini's outputs and built fallback logic to handle response inconsistencies. A full Streamlit-based chatbot interface was developed to interactively demonstrate the system's capabilities, including markdown-formatted outputs and multilingual summaries. Our final model successfully identifies 3–5 languages in a single sentence with high accuracy, supported by curated test cases and qualitative benchmarking against transformer baselines. The system architecture is modular, scalable, and ready for future extension to audio inputs or public deployment. This project allowed me to apply LLM prompting, retrieval-augmented generation, streamlit UI design, and evaluation pipelines in a practical setting, strengthening both my technical and research-driven development skills.

Objectives of the project: A model that can detect all the languages present in the user input.

Tool used: Python – Core development language Google Gemini API – LLM for token-level language inference HuggingFace Transformers – XLM-R model for baseline evaluation

LlamaIndex – For BM25 retrieval and document indexing Streamlit – Frontend UI framework for ch

Details of Papers/patents: None

Brief description of the working environment: The PS-I environment was research-focused, self-driven, and collaborative. We worked in weekly sprints, developing a multilingual language detection system using Gemini LLM and BM25 retrieval. The setup encouraged independent exploration while receiving timely feedback from mentors. Expectations included functional prototypes, clean code, and clear presentations. I learned to integrate APIs, design prompt-based LLM workflows, handle code-mixed language data, and build Streamlit-based UIs. Challenges like inconsistent outputs and API management provided practical debugging experience. Overall, PS-I strengthened my skills in NLP, LLMs, and real-world system building, closely simulating an industry-like workflow in a supportive academic setting.

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

Learning Outcome: LLM and rag

PS-I station: AI Gurukul, Pilani

Student

Name: PRAKHAR BHANDARI (2023A7PS0458G)

Student Write-up:

PS-I Project Title: Gen AI Ops

Short Summary of work done: .

Objectives of the project: Perform a bunch of tasks on implementing a lot of agent related tasks

Tool used: Crew AI, Python, LLMs

Details of Papers/patents: None (we were offered to write a paper on our XPIA attack task, we'll maybe work on it during 3-1)

Brief description of the working environment: learned new tools, work processes, and how to handle challenges calmly.

Academic courses relevant to the project: yes

Learning Outcome: Crew AI agent framework, CI/CD pipelines, github actions

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PS-I station: AI Gurukul, Pilani

Student

Name: HARSHIT AGRAWAL . (2023B3A30480H)

Student Write-up:

PS-I Project Title: Know Your Audience

Short Summary of work done: Worked on making chatbots that allowed users to chat with LLM on course related queries. Based on the conversations, the user level was determined along with various other parameters. They were then fetched by a quiz portal that allowed users to practice questions based on their level.

Objectives of the project: Tailoring answers based on learner's qualification and age.

Tool used: Gemini, Supabase, LlamaIndex

Details of Papers/patents:NA

Brief description of the working environment: NA

Academic courses relevant to the project: yes

Learning Outcome: Generative AI

PS-I station: AlgoBulls Technologies Pvt. Ltd, Mumbai

Student

Name: CHINMAY MANDAVE . (2023A7PS0143H)

Student Write-up:

PS-I Project Title: Development And Back Testing of Systematic Options Trading Strategies

Short Summary of work done: During my PS-1 at AlgoBulls, I designed and built an end-to-end NIFTY 50 options strategy backtesting framework in Python. The system incorporated both long-only and credit spread strategies, dynamic position sizing, and regime filters based on volatility indicators like India VIX and IV Rank. I collected, cleaned, and structured large volumes of minute-level options and spot data and implemented execution logic that accounted for slippage and brokerage. I also discovered and resolved a critical bug related to capital allocation between buy and sell sides, which had inflated previous PnL results. The final strategy was tested on out-of-sample data (Dec 2024–May 2025) and achieved over 34% return on ₹20 lakhs capital with robust risk-adjusted metrics. The system also included a Monte Carlo simulation to assess distributional risk. Throughout the internship, I contributed to both research (volatility modeling, trade logic design) and engineering (code modularization, debugging, visualization), producing a highly realistic trading simulation tool.

Objectives of the project: The primary objective of the project was to conceptualize, build, and optimize algorithmic trading strategies in the Indian derivatives market, with a focus on the NIFTY 50 index. The goal was to develop a full-fledged backtesting and signal-generation system that could evaluate both buy-side and sell-side options strategies under realistic execution constraints. The project also aimed to explore market volatility prediction models and regime filters such as India VIX and IV Rank to enhance strategy robustness. A major deliverable was to simulate live-like performance using historical minute-level data and to quantify performance through rigorous statistical and financial metrics.

Tool used: Languages: Python Libraries/Frameworks: Pandas, NumPy, Matplotlib, Seaborn, SciPy Backtesting/Strategy Logic: Custom-built Python classes and functions Data Tools: CSV parsing, data cleaning using Pandas Visualization: Matplotlib, Plotly Version Cont

Details of Papers/patents: No papers or patents were filed during the internship. However, the complete backtesting framework and methodology can be adapted into a research paper or case study on realistic options trading strategy simulation in Indian markets.

Brief description of the working environment: The working environment at AlgoBulls was intellectually stimulating and fast-paced. We operated in a remote format with regular progress reviews and idea discussions led by the founder, Suraj Bathija. Expectations were high in terms of initiative, independent learning, and technical depth. The team encouraged us to explore multiple strategies and think from both a trader's and an engineer's perspective. Regular feedback helped refine our models and understanding. I learned how to deal with noisy real-world data, how to interpret market dynamics quantitatively, and how to implement robust trading rules under realistic assumptions. One of the most valuable aspects was learning to navigate ambiguity—switching between problem statements, testing hypotheses, and integrating theoretical models with practical constraints. Overall, the internship fostered a culture of hands-on learning, problem-solving, and systems thinking—essential for any aspiring quant or financial engineer.

Academic courses relevant to the project: Probability and Statistics, Financial Management, Derivatives and Risk Management, Machine Learning.

Learning Outcome: This internship provided deep insights into the world of quantitative finance and systematic trading. I gained hands-on experience in Python-based backtesting, options strategy design, and financial data engineering. Key learning outcomes included understanding Greeks (delta, theta, gamma), IV Rank, ATR-based risk management, and volatility regimes. I also improved my ability to debug, structure, and optimize large-scale trading systems. Additionally, I learned how to simulate real-market frictions like slippage, liquidity constraints, and brokerage to create realistic and reliable backtests.

PS-I station: AlgoBulls Technologies Pvt. Ltd, Mumbai

Student

Name: HARSHIT JHAWAR . (2023B3A70971P)

Student Write-up:

PS-I Project Title: Volatility Prediction in Financial Markets

Short Summary of work done: During my PS-1 at AlgoBulls, Mumbai, I worked on time series forecasting models for the Indian stock market, specifically focusing on the NIFTY 50 index. My primary objective was to implement, evaluate, and compare various deep learning-based models including basic LSTM, multi-step LSTM, and stacked LSTM architectures for predicting daily closing prices. I developed multiple LSTM models and experimented with key hyperparameters and evaluated model performance using metrics and visualized predictions. Additionally, I explored traditional volatility models such as ARCH, GARCH ti analyze market volatility clustering and compare them with deep learning forecasts.

Objectives of the project: Build Machine Learning models to model and predict volatility in Indian Financial Markets

Tool used: Software Tools - Google Colab, Jupyter Notebook, TradingView

Details of Papers/patents:-

Brief description of the working environment: Mode of PS-1 was online. We had about 3 online meetings every week to discuss about our progress, challenges faced and models implemented. Our mentor guided us about our next task.

Academic courses relevant to the project: Econometrics, Probability and Statistics

Learning Outcome: Learnt basics about options theory, financial markets, volatility, time series prediction analysis using GARCH and LSTM.
This internship enhanced my skills in Python, TensorFlow, statistical analysis, and financial modeling.

PS-I station: Altie Reality Private Limited, Jaipur

Student

Name: AAYONIJA SHANKAR (2023B1A10712G)

Student Write-up:

PS-I Project Title: Market analysis and prediction model for time and cost of large infrastructure projects

Short Summary of work done: Creating AI assistants for learn XR an initiative by altie reality, workflow automation with n8n

Objectives of the project: Data analysis, market analysis

Tool used: open AI assistants, n8n, blockade labs, meshy AI

Details of Papers/patents:none

Brief description of the working environment: onsite,

Academic courses relevant to the project: yes

Learning Outcome: regression analysis

PS-I station: Altie Reality Private Limited, Jaipur

Student

Name: SHISHIR SANJEEV CHATURVEDI (2023B5A40983G)

Student Write-up:

PS-I Project Title: Marketing of xr world

Short Summary of work done: Marketing and consulting for the xr market worldwide

Objectives of the project: To find the global market size and players of xr world and market our products

Tool used: N8N workflow , Canva

Details of Papers/patents: No

Brief description of the working environment: It was good , the work was structured and divided into weekly tasks.

Academic courses relevant to the project: Pom

Learning Outcome: Became a better marketer

PS-I station: Amazon, Bengaluru

Student

Name: ARYAN DALMIA . (2023A7PS0124H)

Student Write-up:

PS-I Project Title: Design of a Whatsapp-Based Review Collection Service

Short Summary of work done: This project involved designing a comprehensive WhatsApp-based review collection system, addressing the challenge of improving user engagement in the review submission process. The system architecture employs a microservices approach, integrating multiple components including data ingestion, eligibility assessment through a priority scoring engine, and conversational interface management using the WhatsApp Business API. The design emphasizes scalability to handle high-volume daily interactions through intelligent queuing mechanisms, caching strategies, and stateless service architecture. A sophisticated state machine manages asynchronous chat conversations, ensuring proper handling of delayed or out-of-order user responses. The system incorporates a multi-stage content moderation pipeline to validate user submissions. Key technical challenges addressed include API rate limiting, real-time processing requirements, and preventing notification fatigue through an intelligent priority scoring system. The architecture prioritizes security and privacy through encrypted communication channels and comprehensive data protection measures. The project demonstrates practical application of distributed systems principles, real-time communication protocols, and modern software architecture patterns. Major learning outcomes include hands-on experience with microservices design, third-party API integration,

asynchronous state management, and building fault-tolerant systems that balance user experience with operational efficiency while maintaining robust security and privacy standards throughout the system design.

Objectives of the project: Design a scalable, user-friendly WhatsApp-based system architecture for collecting Amazon product reviews, enhancing user engagement and review submission rates.

Tool used: Express.js, Supabase, Twilio, BullMQ, Redis, NGrok, HuggingFace, LLMs, Python, Django, Docker, Github

Details of Papers/patents:NA

Brief description of the working environment: The Practice School-I experience at Amazon provided a highly professional working environment with structured mentorship and clear project expectations. The company fostered active interaction with assigned mentors, enabling continuous guidance and feedback throughout the project duration.
Amazon expected delivery of a comprehensive working proof of concept accompanied by detailed technical presentations, emphasizing both theoretical understanding and practical implementation capabilities. The company maintained high standards for documentation and system design clarity.
Key learning experiences included mastering high-level system architecture diagrams and understanding the complete lifecycle of feature development from conceptualization to deployment. The project provided deep insights into the extensive thought processes required when building scalable systems, including identifying and addressing various design considerations and edge cases that might impact system performance.
Significant technical knowledge was gained in integrating workflow orchestration tools into complex systems, demonstrating how such tools reduce operational complexity while enhancing pipeline smoothness and reliability. Additionally, comprehensive research into various content moderation tools and techniques provided valuable understanding of automated content filtering, policy enforcement mechanisms, and hybrid moderation approaches.
The experience emphasized the importance of thorough planning, iterative design processes, and considering scalability, security, and user experience simultaneously when developing enterprise-level systems.

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

Learning Outcome: Gaining hands-on experience in designing scalable microservices architecture, implementing real-time communication systems using WhatsApp Business API and Twilio, and developing robust state management solutions for asynchronous chat environments. Additionally, the project provided valuable insights into system design principles including fault tolerance, load balancing, content moderation pipelines, and integrating third-party services while maintaining data security and user privacy standards.

PS-I station: Amazon, Bengaluru

Student

Name: SHIVEN SHARMA . (2023A7PS0493P)

Student Write-up:

PS-I Project Title: Cataloguing Framework Optimization for Time Efficiency

Short Summary of work done: During my PS-I, I worked on optimizing the restaurant cataloging workflow for a D2C platform that enables businesses to create online stores. The existing process relied heavily on manual data entry, making it time-consuming and error-prone. My work involved analyzing the current workflow, identifying bottlenecks, and proposing automation-based solutions to improve efficiency and scalability. I implemented OCR in order to optimize a task involving reading and manually entering data and used some open source repositories to explore solutions. I also developed Python scripts for cleaning data and used RapidFuzz for more accurate searches. Finally, I developed a simple web application to automate the entire process.

Objectives of the project: To evaluate and improve the current cataloguing process with the goal of reducing the time spent on catalog creation—targeting a maximum of 0.5 hour per captive store catalog—while ensuring scalability and efficiency.

Tool used: Python, Pandas and NumPy, Tesseract OCR, Python Flask, HTML+CSS+JS, VS Code, Jupyter Notebook

Details of Papers/patents:N/A

Brief description of the working environment: The working environment was very comfortable and open. We were given sufficient time to understand the problem statement. We each received a roadmap which we could follow to align our goals. We had regular productive meetings to update our progress and received suitable feedback. We were also given the freedom to explore alternative solutions which could impact the project. Since our work was on a live project, we also gained significant real life exposure.

Academic courses relevant to the project: Discrete Structures in Computer Science, Object Oriented Programming, Technical Report Writing

Learning Outcome: I learnt about process optimization, OCR and layout parsing technologies as well as data cleaning techniques. I also learnt to analyze real-world workflows, identify bottlenecks and apply automation to reduce manual effort. I used tools like Python, Pandas, Tesseract and Flask.

PS-I station: Amazon, Bengaluru

Student

Name: DESAI SNEH PIYUSH . (2023A7PS0498P)

Student Write-up:

PS-I Project Title: WhatsApp Review Service

Short Summary of work done: I developed a modular backend system in Django that tracks delivery status and triggers review requests using webhooks. The system supports storing customer responses, maintaining relational data through Supabase(PostgreSQL), and ensuring task reliability with Redis. Additionally, I built admin tools to monitor review statuses, linked the system to product data from the existing Amazon-style backend, and handled various edge cases like delivery delays or unresponsive users. I also participated in architectural planning sessions and documented key components like API specs and data models. Through this project, I gained hands-on experience in full-stack development, asynchronous systems, third-party API integration, and scalable backend architecture.

Objectives of the project: Automate product review collection post-delivery. Integrate WhatsApp as a channel for user engagement. Improve customer feedback rates and review quality. Seamlessly connect with the existing Amazon-style backend.

Tool used: Python, Django, PostgreSQL, Supabase, Twilio API, Redis, Git

Details of Papers/patents:none

Brief description of the working environment: The working environment was collaborative, flexible, and intellectually stimulating. Although remote, I maintained daily coordination with my mentor through regular sync-ups and documentation reviews. The company encouraged independent problem-solving while also providing timely support whenever needed.

Academic courses relevant to the project: DSA, DBS, OOPS, CP

Learning Outcome: End-to-end backend development using Django and PostgreSQL. WhatsApp API integration via Twilio and webhook management. Exposure to scalable architecture using Supabase and Redis. Understood real-world system design and deployment practices.

PS-I station: Amazon, Bengaluru

Student

Name: JAIRAM SURESH AYYAR . (2023B3A70983P)

Student Write-up:

PS-I Project Title: Whatsapp Based Review Collection Service

Short Summary of work done: Actively collaborated with teammates on the development of the review collection system. Primarily worked on the backend logic for notification scheduling and the content moderation pipeline. The solution was designed as an event-driven, microservices-based architecture. The final working demo was presented to a team from the station.

Objectives of the project: To design and develop a scalable, user-friendly system that enables customers to submit product reviews via WhatsApp after order delivery. The goal was to improve review collection rates by using a familiar conversational interface and introducing intelligent scheduling and automated moderation pipelines.

Tool used: Python, Django, JS, PostgreSQL, Redis, Version Control Tools, Whatsapp Business API, NLP and Computer Vision techniques.

Details of Papers/patents:N.A.

Brief description of the working environment: Since our PS-1 was completely online, we had regular meet-ups 3-4 times a week within our project team and met at least 1-2 times week (more frequent meets towards the end) with our industry mentor for reviews and guidance. The company provided a high level of autonomy - we were given complete freedom to design and implement a project based on an initial problem statement. Throughout the process, our mentor shared valuable feedback and best practices, helping us align our design choices with indsutry standards.
The station expected us to collaboratively deliver a fully functional prototype or proof-of-concept that was both technically robust and user centric. In addition to implementation, we were also expected to produce comprehensive documentation detailing our design process, architectural decisions and development workflow.

Academic courses relevant to the project: yes

Learning Outcome: 1. Gained hands-on experience in designing and documenting real-world backend systems.
2. Learned to build modular components with a focus on scalability, fault tolerance and user experience.
3. Developed an understanding of asynchronous workflows, scheduling and content moderation techniques.
4. Improved skills in system design, architecture diagramming and collaborative development in a professional tech environment.

PS-I station: Amukha Technologies Private Limited, Mumbai

Student

Name: PRIYANSHU GUPTA (2023B1AD0669G)

Student Write-up:

PS-I Project Title: Loan Pricing Indexing Model

Short Summary of work done: We did team based projects. Our task was to create a loan pricing indexing model which can tell interest rates based on the applicants profile.

Objectives of the project: To create a functioning loan pricing model based on ML models

Tool used: Python, Kaggle

Details of Papers/patents: Nil

Brief description of the working environment: Our industry incharge was also quite supportive...our meets used to happen once every week...just to discuss the updates on the project

Academic courses relevant to the project: Nil

Learning Outcome: I learnt a lot about Machine learning models

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PS-I station: Amukha Technologies Private Limited, Mumbai

Student

Name: PRAKET ACHARYA . (2023B4A11071P)

Student Write-up:

PS-I Project Title: Data Driven Industry Analysis Using Government Datasets - Risk Analytics of ASI Data

Short Summary of work done: In-depth research of the ASI (Annual Survey of Industries) datasets : Understanding the work of MoSPI (Ministry of Statistics and Program Implementation) and the overall development and current positioning of the manufacturing sector of India, across dimensions of Industry-Type (sector of organizations), Regions (Zones & States), and Time-Series analysis. Developed an interactive Power BI dashboard visualizing 40+ years of industry data across 30+ variables, identified key metrics for evaluation of growth & risks involved in the industry, enabling dynamic analysis of trends, correlations, and the performance metrics. Derived inferences based on the evidence gathered from the Dashboard.

Authored a comprehensive data analytics report highlighting key insights for future growth & risks - and strategic recommendations, for stakeholders, researchers and policy makers.

Objectives of the project: Creating a Power BI Dashboard for Data Visualization & Efficient Analyzation based on Industrial, Regional & Time-Series Data (1981-2023). Deriving Conclusions & Inferences from the Dashboards after indentification of the key metrics to be used for analysis. Evaluating the Risks in the manufacturing industry of India for stakeholders, researchers, investors and collaborators.

Tool used: Power BI Advanced, MS Excel, LaTeX Overleaf, Nesstar Explorer, Amukha EWS System, Basic Python for Time-Series (Intro to Prophet Model).

Details of Papers/patents:-

Brief description of the working environment: The working environment was very flexible, positive and cooperative. Learnt fundamentals of risks and importance of research analysis, we got the freedom to explore and work on our projects as in-depth as possible, learnt how to magnify our approach and skills with the help of this intensive research strategy.

Academic courses relevant to the project: Probability & Statistics, Principles Of Economics, Technical Report Writing, Operations Research (OR for Modelling) & Cross Cultural Skills.

Learning Outcome: Technical Skills Learnt:
1) Power BI
2) ML Statistical Modelling used in Risk Analytics and its Fundamentals
3) Literature Review of Research & Journal Papers
4) LaTeX & Importance of Documented Research
5) Various other forms of Data Visualization Techniques using Nesstar Explorer & Tableau.

Personality & Overall Developmental Skills:
1) Teamwork & Collaboration via the Group Project Framework
2) Efficient Communication & Cross Cultural Skills
3) Presentation Skills & Design Aptitude.

PS-I station: Amukha Technologies Private Limited, Mumbai

Student

Name: VISHESH AGARWAL . (2023B4A70611H)

Student Write-up:

PS-I Project Title: Predictive Model for Loan Default Analysis

Short Summary of work done: There were 2 major tasks that we accomplished during our PS-1. We had done an extensive literature review of research papers available online about this topic and to build the model itself. Our tasks mainly involved learning about some financial parameters and then clean and format the data that is relevant to us to run an ML algorithm.

Objectives of the project: The objective of the project was to create an ML model that predicts if a company is likely to default on its loan or not using publicly available company data.

Tool used: excel, Jupyter, chatgpt

Details of Papers/patents:none

Brief description of the working environment: Had a positive experience and felt valued as a learner.

Academic courses relevant to the project: FOFA

Learning Outcome: Python, ML, Excel, Presentation skills, Collaborative tools etc

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PS-I station: Anitum, Chennai

Student

Name: TANMAYI BIJJALA . (2023B3A70534H)

Student Write-up:

PS-I Project Title: webdev and working on pipelines

Short Summary of work done: During my internship at Anitum Chennai, I contributed to the development of a real-time restaurant analytics system focused on table occupancy and foot traffic monitoring using CCTV data. My primary task was to build a file monitoring and processing pipeline that automatically detects new or updated table occupancy CSV files and generates cleaned, processed outputs. I implemented logic to ensure only newly appended data is processed, preventing duplication while maintaining time-aligned, rounded occupancy records. I also worked on integrating this pipeline with a Streamlit dashboard to visualize live table usage in different restaurant areas (e.g., customer, kitchen, outside). In addition, I collaborated on a multi-page dashboard for detailed analytics, including people count by area, time-based trends, and traffic smoothing features. This system allowed simulation of live data updates using a playback script, giving flexibility in speed control and mimicking real-time behavior without altering core production code. Key challenges I tackled included ensuring accuracy in time-based data appends, managing multiple file updates simultaneously, and coordinating the interaction between raw detection label files and the analytics layer. The internship significantly enhanced my skills in Python, pandas, automation, and Streamlit, while giving me exposure to real-world data workflows, especially within the restaurant tech domain. This experience laid a strong foundation for further work in real-time analytics, data processing automation, and dashboard development.

Objectives of the project: building a production ready dashboard for the company -table occupancy and headcount as well as working on the pipelines

Tool used: 1. Python – Core programming language 2. Pandas – Data manipulation and cleaning 3. NumPy – Numerical operations 4. Streamlit – Dashboard creation and data visualization 5. TQDM – Progress bar for long-running loops 6. Shapely – Geometric operations

Details of Papers/patents:none

Brief description of the working environment: the working environment was friendly guided us through the whole work gave clear explanation of what they wanted us to do and the weekly presentations helped to know each others work and the progress within the company too.

Academic courses relevant to the project: python dsa oops

Learning Outcome: got to know about how to built dashboard using streamlit library as well as a little on computer vision using rtmlib and got experience working on the current pipeline and testing of the companies codes

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PS-I station: Aphrelle, Lucknow

Student

Name: DAKSH JANGRA (2023A7PS0330G)

Student Write-up:

PS-I Project Title: Search Engine Optimisation

Short Summary of work done: Search Engine Optimisation

Objectives of the project: Search Engine Optimisation

Tool used: c,c++

Details of Papers/patents: Search Engine Optimisation

Brief description of the working environment: very good working environment

Academic courses relevant to the project: c,c++,java

Learning Outcome: Search Engine Optimisation

PS-I station: Aphrelle, Lucknow

Student

Name: GOUTHAM MAHESH . (2023A7PS0674P)

Student Write-up:

PS-I Project Title: SHOPIFY WEBSITE REPLACEMENT AND ADVANCED WEB DEVELOPMENT

Short Summary of work done: created the frontend for the website using html/css and partial backend using javascript

Objectives of the project: To create company website frontend

Tool used: HTML, CSS, Javascript, Fastapi library (python)

Details of Papers/patents: None

Brief description of the working environment: Online ps- No specific expectations

Academic courses relevant to the project: Data Structures and Algorithms

Learning Outcome: HTML, CSS, Javascript, Fastapi library

PS-I station: Aphrelle, Lucknow

Student

Name: SUBHRANSHU MITRA (2023B2A70701G)

Student Write-up:

PS-I Project Title: Social Media Growth and Campaign Development

Short Summary of work done: My progress at Aphrelle throughout this internship marks a meaningful blend of creativity, marketing strategy, and tech-driven execution. From launching AR try-on filters to initiating Gen Z podcast collaborations, the campaigns executed so far have laid a robust foundation for deeper brand engagement. The coming month will be dedicated to refining strategies using automation tools, influencer tracking systems, and personalized outreach models. Overall, this internship is fostering a real-world understanding of how brands adapt and grow through digital media.

Objectives of the project: Social Media Growth and Campaign Development

Tool used: N8n

Details of Papers/patents: No

Brief description of the working environment: Nice

Academic courses relevant to the project: yes

Learning Outcome: Learned many things.

PS-I station: Aphrelle, Lucknow

Student

Name: SAUMYA SRIVASTAVA (2023B2AA0699G)

Student Write-up:

PS-I Project Title: WORKFLOW TITLE

Short Summary of work done: During my PS-I, I worked on workflow and automation using Python, focusing on simplifying repetitive processes and improving efficiency. The primary objective was to identify tasks that could be automated and design Python scripts to execute them with minimal manual intervention. I developed scripts for data extraction, cleaning, and formatting, which reduced the time required for handling large datasets. Automation was also applied to file management tasks such as renaming, organizing, and generating structured reports. Additionally, I explored the use of Python libraries like pandas, openpyxl, and os to handle data processing and system-level operations effectively.

Objectives of the project: PYTHON + AI

Tool used: SOFTWARE AUTOMATION TOOLS ZAPIER

Details of Papers/patents:NONE

Brief description of the working environment: During my PS-I, I experienced a professional and supportive working environment that encouraged both learning and collaboration. The workplace fostered discipline, punctuality, and responsibility, while also providing opportunities to interact with peers, mentors, and supervisors in a constructive manner. This helped me adapt quickly to organizational culture and develop confidence in handling tasks.

Academic courses relevant to the project: COMPUTER PROGRAMMING

Learning Outcome: PYTHON

PS-I station: Areete Business Solutions - Data Science, Pune

Student

Name: ABHINAV SARAF (2023B4A70880G)

Student Write-up:

PS-I Project Title: Feature Engineering using LLMs

Short Summary of work done: The aim of the project was to create features using a given dataset which would help predict estrus and sickness in cows better. Initially, I had to read a few research papers to find the best way of identifying if a cow was sick or in estrus. After that, I had to figure out which model to use to get the best possible features. Finally, I was able to retrieve various multi modal and temporal features using Gemini Flash, providing it with the dataset and the prompt. It was also able to detect anomalies. Just for comparison, I also performed the same task using a python library called tsfresh for time series data. Using both of these methods, I was able to create accurate features that were very helpful in determining if the cow was sick or in estrus.

Objectives of the project: To perform feature engineering on a given dataset using a Large language model.

Tool used: Gemini API, Hugging Face, Langchain

Details of Papers/patents:-

Brief description of the working environment: The PS mode was online, we had google meets every week to review what work had been done. The workload was not very high and my mentor was quite helpful. The company wanted us to research and learn something which I quite liked. I learned a lot about how to interact with an LLM and use it to perform complex tasks.

Academic courses relevant to the project: CS F111

Learning Outcome: I successfully learnt how to interact with various large language models using Hugging Face, Langchain and Gemini.

PS-I station: ArnoAI Pvt. Ltd.- Tech, Nagpur

Student

Name: AARYA JAIN . (2023A7PS0618P)

Student Write-up:

PS-I Project Title: Legal Chatbot using RAG Pipeline

Short Summary of work done: Worked on building a voice-enabled legal chatbot that can answer queries by either giving definitions for legal terms or identifying terms from given definitions.

Objectives of the project: To build a voice-enabled legal chatbot capable of handling both term-to-definition and definition-to-term queries using a Retrieval Augmented Generation (RAG) pipeline.

Tool used: Python, Hugging Face Transformers, FAISS, SentenceTransformers, Speech-to-Text APIs

Details of Papers/patents:N/A

Brief description of the working environment: The founder is a BITS Pilani senior, who was extremely helpful and understanding. In addition to the ps project, students who were interested in different fields were given the freedom to explore how they could use their interest to make something meaningful related to what the company was doing.

Academic courses relevant to the project: Foundations of Data Science helped. Other than that, fundamental maths like linear algebra helped in understanding.

Learning Outcome: Understanding of Retrieval Augmented Generation pipelines.
Integrating NLP models from Hugging Face for question-answering and semantic search.
Working with speech-to-text APIs.

PS-I station: ArnoAI Pvt. Ltd.- Tech, Nagpur

Student

Name: MEHUL TIWARI (2023B1A80700G)

Student Write-up:

PS-I Project Title: Knowledge Graph Construction of Indian Legal Professionals

Short Summary of work done: This project built a knowledge graph of Indian legal professionals from unstructured web data. After an initial rule-based parsing approach failed due to website inconsistencies , the project pivoted to a modular pipeline using a Large Language Model (LLM) for semantic data extraction. Data was scraped using Selenium with selenium-stealth to bypass bot detection , and the LLM structured the information guided by precise prompt engineering. The resulting data was loaded into a Neo4j graph database using atomic transactions to ensure data integrity , creating a fault-tolerant system and a queryable, normalized knowledge graph.

Objectives of the project: The project's core objective was to structure the fragmented data of Indian legal professionals. It aimed to engineer an intelligent, automated pipeline to transform this raw data into a high-value, interconnected knowledge asset. By applying modern AI, NLP, and graph database technologies, the goal was to create a scalable platform for complex

analysis and future applications. This involved designing a system to model a professional network based on entities and their relationships, rather than just collecting data.

Tool used: Programming Language: Python Web Scraping & Automation: Selenium WebDriver , webdriver-manager , and selenium-stealth Data Structuring: Large Language Models (LLM), specifically gpt-4.1 mini API Gateway: OpenRouter Database: Neo4j AuraD

Details of Papers/patents: None

Brief description of the working environment: The Practice School-I at ArnoAI Pvt. Ltd. was a remote, online experience defined by invaluable industry mentorship that successfully bridged academic theory with real-world application.
Key learning involved architecting a complete data pipeline and understanding the need for flexibility by pivoting from a failed rule-based system to a robust, LLM-powered solution. This provided practical skills in advanced web scraping to evade bot detection , precise prompt engineering for data extraction , and Neo4j graph database modeling. A crucial takeaway was ensuring system fault tolerance and data integrity by implementing atomic database transactions.

Academic courses relevant to the project: Computer programming

Learning Outcome: Key learnings involved understanding architectural flexibility by pivoting from a brittle, rule-based parser to a successful LLM-powered approach. Hands-on experience was gained in building a complete data pipeline, mastering advanced web scraping techniques to evade bot detection , and using precise prompt engineering for data extraction. Significant skills were developed in Neo4j graph database modeling, including schema normalization for enhanced query capabilities and using atomic transactions to ensure fault-tolerant, integral data loading.

PS-I station: ArnoAI Pvt. Ltd.- Tech, Nagpur

Student

Name: V VEDHANANDAN . (2023B5A81313P)

Student Write-up:

PS-I Project Title: Simulating Legal Argumentation using AI Bots

Short Summary of work done: -

Objectives of the project: Develop modular AI Bots for turn-based courtroom debates with configurable legal roles, a reasoning Judge Bot, detailed scoring, and legal precedent checks. Deploy via a user-friendly Streamlit interface for interactive simulation, performance analysis, and scalable deployment.

Tool used: Python, Streamlit

Details of Papers/patents:-

Brief description of the working environment: -

Academic courses relevant to the project: - yes

Learning Outcome: Learnt to develop modular AI agent design and chain-of-thought reasoning to simulate realistic courtroom debates with transparent judging and evaluation metrics. Gained practical skills in scalable coding architecture, creating user-focused UI/UX, and deploying explainable AI systems for assisting lawyers.

PS-I station: Ashish Enterprises, Neemrana

Student

Name: UDITA MAHENDRAPAL SINGH . (2023A5PS1196P)

Student Write-up:

PS-I Project Title: Basic Website Development: Developing a Personal Portfolio and a Car Rental Prototype

Short Summary of work done: For building a personal portfolio website i used HTML to structure the content, CSS for styling, and a bit of JavaScript. Including Multi-section layout: Intro, Skills, Projects, and Contact. Also deployed it using GitHub Pages. For the group task, did the HTML and CSS for the Footer of Car Rental Website and later on added a integrated basic Backend to the website.

Objectives of the project: To develop websites majorly by frontend web dev and a basic backend integrated to it.

Tool used: VS Code, HTML, CSS, JS(Basics), Node.js(Basics), MySQL(Basics), Web Browser, Figma, GitHub, GitHub Pages.

Details of Papers/patents:N/A

Brief description of the working environment: overall it was good.

Academic courses relevant to the project: yes

Learning Outcome: Both these Projects helped me build structured web pages, better understanding for working with CSS and Figma designs, and learning basic backend integration. The experience also helped me understand how to collaborate as a group and work in a professional setup.

PS-I station: Ashish Enterprises, Neemrana

Student

Name: TANMAY MANGLIK (2023A8PS0514G)

Student Write-up:

PS-I Project Title: Inventory management UI for NEKOME-clothing brand

Short Summary of work done: During my PS-I at Ashish Enterprises, I developed the Inventory Management UI for NEKOME, a clothing brand. My work involved designing responsive, user-friendly pages for product listing, cart, and payment workflows using HTML, CSS, and JavaScript.

I focused on creating intuitive navigation, ensuring brand consistency, and optimizing performance. I was involved in requirement gathering, version control using Git, and iterative testing to meet functionality and design expectations. This project strengthened my front-end development skills, improved problem-solving, and provided valuable exposure to real-world software design and deployment.

Objectives of the project: Develop a e-commerce website for a clothing brand NEKOME.

Tool used: HTML, CSS, JavaScript, Git and GitHub

Details of Papers/patents:NA

Brief description of the working environment: NA

Academic courses relevant to the project: Object Oriented Programming

Learning Outcome: Improved front-end development skills and gained experience in responsive UI design and performance optimization.

PS-I station: ASPIC Innovations Private Limited, Kolkata

Student

Name: ANSHUL GUPTA . (2023A7PS0587P)

Student Write-up:

PS-I Project Title: Integration of lead sources with CRM software

Short Summary of work done: This project delivers a fully automated lead-management pipeline that turns scattered prospect data into actionable CRM records—without relying on Odoo Enterprise or third-party automation suites. Incoming leads arrive from CSV exports, web forms and social-media campaigns. A lightweight Python ETL script (updated_transfer_6.py) ingests each file, detects the correct text encoding, normalises multilingual column headers, and uses Google Gemini 2.5 Flash to fix misspelled product names so every record matches the live catalogue. Cleaned rows are batched (100 per call) and pushed into Odoo over a custom

odoo_rpc.py JSON-RPC wrapper, while four audit artefacts—CSV_mapped, accepted.xlsx, rejected.xlsx, and CSV_imported—provide a tamper-proof trail. A cron-driven workflow engine (automation.py) runs every five minutes. It scans newly created, unassigned leads, applies rule-based routing that maps UTM tags or product lines to the proper salesperson, and fires personalised welcome or clarification emails through Gmail's OAuth-secured SMTP channel. The script also schedules follow-up activities and escalates idle opportunities after 48 hours, guaranteeing consistent engagement. Median first-touch time is 3 minutes 17 seconds, comfortably beating the 10-minute SLA; owner-assignment accuracy stands at 92 percent, with every valid lead receiving an acknowledgement email. By combining open-source tools, minimalist code, and cloud AI, the system achieves enterprise-grade speed and data hygiene on a zero-licence budget. Future extensions—real-time webhooks, Redis-backed job queues, AI lead-scoring, and nightly Closed-Won exports—are already mapped, ensuring the platform can scale as lead volume and business complexity grow.

Objectives of the project: To capture the lead analyze the data and push them into a CRM software and automate the further process.

Tool used: ODOO (CRM SOFTWARE) , Linux operating system.

Details of Papers/patents:NA

Brief description of the working environment: The PS-I stint placed me in a lean, founder-led environment where openness and rapid feedback set the tone. Because the company has a flat hierarchy, I interacted daily with the two founders, receiving real-time direction on architecture choices and product priorities. Their strategic lens—focusing on customer value first and automation second—nudged me to look beyond code and examine how each feature would shorten the sales cycle or sharpen analytics. Expectations were clear yet empowering: own an end-to-end slice of the CRM pipeline, demo progress every week, and document decisions for future interns. That trust pushed me to explore technologies I'd only skimmed in class—OAuth flows, AI-assisted data cleansing, and queue-based design—while still meeting aggressive turnaround times. Collaboration felt collegiate rather than corporate; errors were dissected, not blamed, and each fix became a learning vignette for the whole team. The experience deepened my ability to translate high-level business goals into technical sprints, strengthened my communication skills through founder-level presentations, and ingrained a bias toward measurable outcomes.

Academic courses relevant to the project: Database Management Systems– concepts of schema design, transactions, and ACID properties informed the use of Odoo's PostgreSQL back-end and the design of audit artefacts for data integrity.

Learning Outcome: About CRM softwares, different libraries of python, lead management.

PS-I station: ASPIC Innovations Private Limited, Kolkata

Student

Name: ARIANA RAHMAN . (2023A7PS0633P)

Student Write-up:

PS-I Project Title: Social Media Automation

Short Summary of work done: I built an AI-driven automation workflow in Python to generate social-media images, captions, videos and text posts; publish them through platform APIs. I evaluated multiple AI models for speed, visual quality, prompt adherence, and multimodal reliability, then finalized the most suitable model for integration. The pipeline included structured prompt engineering, user approval of generated options, and automated posting via platform-specific endpoints with token handling and error fallbacks. Outcomes showed clear efficiency gains: 90% faster idea generation, 85% overall reduction in end-to-end post creation time; API publishing completed in ~12 seconds per post during testing. The system maintained brand consistency, logged outputs for reuse, and demonstrated real-time feasibility for contextual, event-aligned content. Overall, the work validated that combining AI generation with API automation can meaningfully streamline social media workflows while preserving quality and control.

Objectives of the project: To develop a fully automated system that generates and publishes social media content using Python and GenAI.

Tool used: Python, Jupyter Notebook, VS Code, Postman, Meta Graph API, LinkedIn REST API

Details of Papers/patents:-

Brief description of the working environment: At ASPIC Innovations Pvt. Ltd., the environment was supportive with weekly updates ensuring progress. I was encouraged to research on my own, explore new technologies, write modular, reusable code, and learn industry practices from experienced professionals. This enhanced my technical expertise, problem-solving ability, and understanding of professional project workflows.

Academic courses relevant to the project: DSA

Learning Outcome: Gained expertise in Python-based automation, API integration (Graph/REST), OAuth 2.0 handling, Generative AI prompt engineering, multimodal model evaluation, and designing scalable pipelines for automated, brand-consistent social media content publishing.

PS-I station: Astratmutual-Tech, Mumbai

Student

Name: DUVVURI SRAVAN . (2023A8PS0438H)

Student Write-up:

PS-I Project Title: Building Internal Tools & Automation for Enhancing Team Efficiency and Insights

Short Summary of work done: During my Practice School-I at Astratmutual, I contributed to two major projects: hiring workflow automation and mutual fund calculator development. In the first phase, I built a complete automation system using Google Apps Script integrated with Sheets, Gmail, and Drive. It streamlined applicant intake, assignment dispatch, rejection workflows, and deadline tracking via a button driven interface. I implemented features like threaded email replies, template-based messaging, and dynamic dashboards—significantly reducing manual work for the HR team. From Week 3 onward, I transitioned to the frontend calculator team. After a focused learning phase on HTML, CSS, JavaScript, and React, I began working on real calculators for SIP, STP, and SIP+STP combinations. My work involved implementing step-up logic, fixed/percentage-based transfers, reverse goal calculators, and hybrid investment planning tools. I collaborated closely with designers to build clean UIs using Figma designs and ensured accurate backend logic using modular TypeScript files. I also implemented form validations, graphical output rendering, and component-level modularity across the codebase. Overall, I gained frontend development experience, using financial tools while working in a production grade codebase that directly impacted users.

Objectives of the project: 1. Automating the hiring process of adding mails of applicants, reviewing them, accepting/rejecting them at multiple stages 2.Implementation of multiple calculators and their staging in the company's website

Tool used: VS Code, React.js

Details of Papers/patents:NA

Brief description of the working environment: The working environment at Astratmutual was collaborative and growth focused. The mentors were approachable, supportive, and gave me the flexibility to learn. I was given a full week to ramp up on HTML, CSS, JavaScript, and React before diving into development. They also provided regular feedback and granted extensions when needed, which helped me manage my tasks better as a beginner.
That said, the workload was intense. As I was still learning, I often had to work during weekends to meet deadlines. Despite this, the team was friendly and patient, creating a positive atmosphere for learning and experimentation.
Through this experience, I gained practical skills in both hiring automation and frontend development. I learned how to write production ready code, follow UI/UX designs, implement complex financial logic, and automate real world workflows. I also developed soft skills like time management, debugging under pressure, and adapting to a professional product team. Overall, the internship helped me bridge academic knowledge with industry practices and boosted my confidence as a developer.

Academic courses relevant to the project: yes

Learning Outcome: Hiring Automation Dashboard (Project 1):
Gained hands on knowledge of Google Apps Script for automating workflows across Google Sheets and Gmail.
Understood how to structure automated processes for hiring pipelines, including triggering actions based on sheet changes.
Learned how to reply to email threads programmatically, maintaining continuity and avoiding mail clutter.
Investment Calculator Module (Project 2):
React + TypeScript Development:
Strengthened React development skills with TypeScript, particularly in form handling, component structure, and state management.
Understood SIP, Lumpsum, STP, and goal-based investment principles and translated them into accurate backend calculations.
Implemented field validation, dynamic inputs (e.g. amount vs percent), and conditional rendering for user friendly experiences.

PS-I station: AudioPod, Inc - Non Tech, Bengaluru

Student

Name: ARYAN KHURANA . (2023A3PS0380P)

Student Write-up:

PS-I Project Title: Competition Benchmarking for Audiopod

Short Summary of work done: During my PS-I at Audiopod AI, I worked at the intersection of market research, user feedback, and internal benchmarking. The project was divided into two main phases. In Phase 1, I conducted a competitive benchmarking analysis comparing Audiopod with over ten leading audio AI companies. The analysis covered parameters such as pricing strategies, feature sets, website UI/UX, SEO performance, discoverability, and marketing channels. I compiled findings in a detailed table to help the team understand market gaps and unique selling points of competing tools. In Phase 2, I focused on user outreach. I designed and circulated a Google Form targeting content creators to understand their workflows, awareness of tools like Audiopod, and pain points. Despite limited responses, a follow-up campaign via direct messages was planned. Additionally, I started integrating new data into the benchmarking table based on internal updates, adding new evaluation parameters such as company funding, visibility, and update cycles. My work aimed to inform product and marketing strategy through actionable insights and better user alignment.

Objectives of the project: 1 - Compare Audiopod AI with other competitors in the audio AI space and prepare a comprehensive sheet comparing them. 2 - User feedback from creators via outreach

Tool used: Google sheets, mail merge, google forms, google slides

Details of Papers/patents:NA

Brief description of the working environment: Audiopod AI offered a dynamic startup-like environment with an open communication culture and fast-paced decision-making. I was expected to take ownership of my tasks, deliver insights with minimal supervision, and proactively contribute ideas to ongoing discussions. While mentorship was available, independent problem-solving was encouraged.
The company valued data-backed strategies and encouraged experimentation—this was evident in their iterative approach to benchmarking and outreach. My mentor emphasized clarity, relevance, and user-centric thinking in both research and communication.

Throughout the internship, I improved my skills in competitive analysis, user research design, data handling, and strategic thinking. I also learned how to extract meaningful insights from fragmented and noisy market data, and how to communicate findings effectively for product impact.

Academic courses relevant to the project: general problem-solving and analytical thinking from core courses helped contribute effectively.

Learning Outcome: Conducted competitive benchmarking across features, pricing, and marketing.
Designed and deployed user surveys for feedback collection.
Gained experience in data integration and market analysis.
Learned how strategic insights drive product and marketing decisions.
Improved communication and independent problem-solving skills.

PS-I station: AudioPod, Inc - Non Tech, Bengaluru

Student

Name: ATHARV SINGHAL . (2023A7PS0082H)

Student Write-up:

PS-I Project Title: Digital Growth Strategies and Web Development for AI Audio Processing Platform

Short Summary of work done: Studying user data and patterns to come up with strategies and suggestions for increasing user retention and acquisiton. Developing cookie consent banner and working on onboarding page of website with React and Next.js.

Objectives of the project: Developing strategies for User Acquisition and User Retention for the company. Creation of the onboarding page for the company website including tutorials for using website features. Implementation of cookie consent banner using React, Next.js (Vercel based).

Tool used: Vercel - React and Next.js

Details of Papers/patents:NA

Brief description of the working environment: Very supportive and helpful environment where everyone is ready to listen, help and encourage in whatever ways possible. Company expects serious commitment towards work and our fresh inputs and perspective which may be of use to them. I got the experience of a work environment, how all the various different aspects work together to attain the goal of the organisation and the communication between them apart from technical stuff.

Academic courses relevant to the project: - yes

Learning Outcome: Web development - React libraries and Next.js frameworks.
Analysing and working with user data to maximise reach of the product or services.

PS-I station: AudioPod, Inc - Tech, Bengaluru

Student

Name: ADITHYADEV RAJESH . (2023A7PS1099H)

Student Write-up:

PS-I Project Title: Building Audio Processing Web Apps

Short Summary of work done: I had to develop a Backend and Frontend for a web app that lets users submit an audio link (or provide a youtube video link), specify the output format, and a time range to which the audio will be clipped to.The backend was developed using FastAPI in Python using FFMPEG and yt-dlp programs to do audio processing and youtube downloads; the frontend was developed using NextJS and React using a few components from ShadCN, as well as wavesurfer.js library for providing a interactive waveform visualization of the audio in which users can play the audio and select the trim range.

Objectives of the project: To build an audio format conversion and trimming web app, which lets users provide audio, by uploading a file or by providing a youtube link, and returns them the processed audio file in their preferred format, clipped to the selected time range.

Tool used: ReactJS, NextJS, Python, FastAPI, ffmpeg, yt-dlp

Details of Papers/patents: No academic literature was reviewed to create the project

Brief description of the working environment: The mentors were quite hands off and didn't ask for updates frequently, I was allowed to work at my own pace and at my own timings to complete the project within the timeframe. I was also the only one working on my project so I had the liberty to work at my leisure.

Academic courses relevant to the project: Object Oriented Programming, Computer Programming.

Learning Outcome: I was already familiar with Backend Development before starting this project, but was mostly unfamiliar with Frontend Development and using React+NextJS in the project helped me tremendously in getting started with it. It also provided me an opportunity to hone my backend development skill using Python and FastAPI.

PS-I station: AudioPod, Inc - Tech, Bengaluru

Student

Name: KUSHHAGRA GUPTA (2023AAPS0614G)

Student Write-up:

PS-I Project Title: Text-to-Music Generation and Audio preprocessing for model training

Short Summary of work done: My first task was to deploy a Generative AI model which can convert user text prompts to downloadable music files. I built the logic of this app in Python and explored and implemented frameworks like FastAPI to build API logic and Gradio for the frontend. I explored and chose the MusicGen model (META) for the task. Integration was done by cloning the publicly available GitHub repository of the model and utilising its libraries. Multiple dependency conflicts which transpired in the process, were resolved. The next task focussed on collecting over 150 hours of speech content, cleaning the data and transcribing it to form a diverse and detailed dataset for the training phase of the organisation's Voice Cloning

model. This was done by exploring websites like Librivox and Internet Archive and using tools like pydub, ffmpeg and Whisper AI .

Objectives of the project: 1) To build a web-app in Python which integrates an open-sourced AI model to convert text to music. 2) To prepare a dataset for the training of the organisation's Voice Training model.

Tool used: Python frameworks like FastAPI, Gradio, PyTorch, and Transformers were extensively used. AI models like MusicGen and Whisper AI were integrated. Public Spaces like Kaggle, GitHub and Google Drive were instrumental for project completion.

Details of Papers/patents: N/A

Brief description of the working environment: Company mentors were quite helpful and assisted us at every step for the project completion. Our faculty in charge, Prof.Samata Satish Mujumdar, ensured that we experience a comfortable working environment and was dedicated to solving any issues we might face. I chose Audiopod as I wanted some working experience in the domain of Artificial Intelligence. As Audiopod is an AI-based startup, the projects that were given to us had direct impact on the company's work. Overall, the learning experience was valuable as I worked in domains like Full stack development, AI model deployment and Audio preprocessing for model training-something which I expected during my PS-1.

Academic courses relevant to the project: C Programming

Learning Outcome: 1) Basic concepts of Python as a programming language
2) Experience in working with Python libraries and frameworks like os, pytorch, numpy, torchaudio, mutagen and more
3) Experience in building logic of the APIs using FastAPI framework
4) Deploying an AI model through a web-application whose frontend was built using Gradio.
5) End to end dataset preparation for the training of an AI model. Work included collection, cleaning and transcribing hours of speech content.
6)Exploring utilities like Kaggle and open sourced ecosystems like Librivox and Internet Archive.

PS-I station: Avidia Labs - Tech, Bangalore

Student

Name: ISHAN KAUSTUBH MEHTA (2023A7PS0379G)

Student Write-up:

PS-I Project Title: AI-assisted Video Generation

Short Summary of work done: First 2 weeks, we made AI generated reel on some random historic/scientific topic, using random online AI tools. Literally prompt engineering.

Objectives of the project: Making 45-60 secs reel/shorts using random gen AI sites

Tool used: Huggingface.co, Civit.ai, voiface.xyz, Canva, VM, ComfyUI(for exploring)

Details of Papers/patents:NA

Brief description of the working environment: It was good.
Academic courses relevant to the project: yes

Learning Outcome: prompt enginnering

PS-I station: Avidia Labs - Tech, Bangalore

Student

Name: AASHMAN ANAND PATWARDHAN (2023A7PS0442G)

Student Write-up:

PS-I Project Title: Game Development and 3D Simulation

Short Summary of work done: It was an exciting internship where I got to learn a lot about game development, thumbnail designing using Canva and the various tools used to build 2D and 3D Games. We made several prototypes and kept refining it till the final product which was a 3D Game with Interactive UI, support for touchscreens as well as PC's .

Objectives of the project: Design games which will be integrated into QwikXR

Tool used: Three.js, HTML,Canva

Details of Papers/patents: Created Report using LaTeX

Brief description of the working environment: My Mentor who is a BITS Alumni and the CoFounder as well was very flexible and gave me valuable constructive feedback on my work.

Academic courses relevant to the project: yes

Learning Outcome: Game Development

PS-I station: Avidia Labs - Tech, Bangalore

Student

Name: RIA ARORA (2023A7PS1153G)

Student Write-up:

PS-I Project Title: Game Development and 3D Simulation

Short Summary of work done: During the course of the eight-week internship at Avidia Labs, I worked on a project focused on 3D simulation and game development for educational platforms. In the initial weeks, I focused on understanding the requirements and evaluating a wide range of open-source and royalty-free 3D games that could potentially be integrated into Avidia's platform. I conducted detailed comparisons of several game engines such as Phaser, Unity, PlayCanvas, and Three.js. Once the engine was chosen, I shortlisted and tested existing games, assessing their technical feasibility, responsiveness, and visual appeal. I also used Canva to design thumbnails that align with the company's branding. Following this, I began developing a custom web-based 3D obstacle-dodging game using Three.js, HTML5, and JavaScript. This involved building the core game architecture, implementing player controls, and creating dynamic obstacle logic along with collision detection using bounding boxes. In subsequent weeks, I added gameplay mechanics such as a third-person camera system, scoring with

persistent high scores via localStorage, and cross-platform input handling including keyboard, mouse, and touch gestures.

Objectives of the project: Researching and Developing 3D Games

Tool used: ChatGPT said: Tools used: Three.js, HTML5, CSS3, JavaScript, VS Code, GitHub, Canva, and Cursor (AI IDE) on a personal laptop.

Details of Papers/patents:NA

Brief description of the working environment: The working environment at Avidia Labs was mostly remote. Overall it was great.
Academic courses relevant to the project: NA

Learning Outcome: Understanding of web-based 3D game development using Three.js, hands-on experience with HTML5 and JavaScript, familiarity with browser compatibility and optimization techniques, exposure to EdTech application design, and improved skills in requirement analysis and platform evaluation.

PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatics,Gandhinagar, Gandhinagar

Student

Name: HARSHVARDHAN THAKKAR . (2023AAPS1250H)

Student Write-up:

PS-I Project Title: Head-Gesture-based Accessible Map Navigation

Short Summary of work done: The project focuses on developing a hands-free map navigation system driven by head gestures using computer vision and real-time web communication. Initially, the team explored foundational AI concepts, including search algorithms, machine learning, and LLMs. As the project pivoted toward accessibility applications, efforts were channelled into building a facial gesture-based control system. OpenCV and Haar cascades were first used for eye and face detection. Later, the pipeline shifted to MediaPipe's face

landmarking due to better accuracy. A 3D nose-line-based pose estimation was implemented using cv2.solvePnP for head orientation. This information was processed in real time and sent via WebSockets to a custom OpenLayers-based map frontend (map.html), allowing users to pan and zoom based on detected gestures. The backend (orientation_server.py) orchestrates facial tracking, maps gestures to map commands, and handles multi-client WebSocket communication across orientation, video stream, and control signals. Threading and asyncio were used to bypass GIL restrictions, and shutdown logic was integrated into both frontend and backend. To improve UI/UX, a Tkinter overlay was developed, and a video stream window was embedded into the frontend. Efforts were also made to locally host OpenStreetMap tiles and reduce latency. A blink-triggered toggle system was introduced to switch between interaction modes (pan, zoom, both, none). This hands-free system enables real-time, gesture-based navigation of maps, catering especially to users with motor impairments, and stands as a working prototype ready for further enhancements.

Objectives of the project: To enable intuitive, non-traditional navigation of digital maps for users with motor impairments or limited interaction capabilities. My primary focus was on implementing the head gesture-based control modality which involved utilizing head tilting and blinking for hands-free navigation.

Tool used: MediaPipe, OpenCV, Tkinter, threading, asyncio, Python websockets, http.server, queue.Queue, OpenLayers (JS)

Details of Papers/patents: No Patents. No paper published as such but the station does compulsorily have a project report submission which is a great learning experience on writing academic papers.

Brief description of the working environment:
Despite the organizational challenges, significant technical and collaborative learning did occurred, primarily through peer interaction and self-initiative. We explored computer vision, asynchronous server design, MediaPipe, OpenLayers, and WebSocket-based communication, developing a real-time facial gesture-driven navigation web application with a dedicated client-server architecture and WebSocket-based bidirectional communication. The experience taught us adaptability, peer collaboration, and problem-solving under limited guidance.

Academic courses relevant to the project: BITS F311: Image Processing, BITS F364: Human - Computer Interaction, CS F407: Artificial Intelligence

Learning Outcome: Through this project, I learned to build a real-time head gesture interface by using MediaPipe for 3D facial landmark detection and OpenCV's solvePnP to estimate head pose and classify gestures based on Euler angles.
I implemented asynchronous, thread-safe WebSocket communication to control interactive web maps using OpenLayers, enabling hands-free navigation with real-time video overlays and textual feedback in the browser.

I also designed a modular, multithreaded architecture with data smoothing techniques to ensure system responsiveness, stability, and future extensibility across all functional components.

PS-I station: Bhaskaracharya Institute For Space Applications And Geoinformatics,Gandhinagar, Gandhinagar

Student

Name: SHAURYA MUKUL AWASTHI (2023B5A80993G)

Student Write-up:

PS-I Project Title: Hands Free Map Navigation

Short Summary of work done: The objective was to design and develop a gesture-controlled map navigation system that enables users to interact with digital maps without the need for traditional input devices such as a mouse, keyboard, or touchscreen. The goal is to provide a more inclusive, hands-free solution that can benefit persons with disabilities, such as those with speech impairments or difficulties in reading, ensuring seamless access to geospatial interfaces in both offline and constrained environments.

Objectives of the project: To enable intuitive, non-traditional navigation of digital maps for users with motor impairments or limited interaction capabilities.

Tool used: Computer Vision: OpenCV for image processing, Pose Estimation: MediaPipe for hand landmark detection, Machine Learning: Scikit-learn for gesture classification / model training, Web Mapping: OpenLayers (offline version) for rendering and map controls, Bac

Details of Papers/patents:none

Brief description of the working environment:
Despite the organizational challenges, significant technical and collaborative learning did occurred, primarily through peer interaction and self-initiative. We explored computer vision, asynchronous server design, MediaPipe, OpenLayers, and WebSocket-based communication, developing a real-time facial gesture-driven navigation web application with a dedicated client-

server architecture and WebSocket-based bidirectional communication. The experience taught us adaptability, peer collaboration, and problem-solving under limited guidance.

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

Learning Outcome: - Real-time computer vision systems
- Offline-first web architecture
- Multi-modal HCI (Human-Computer Interaction)
- Full-stack system integration with open-source geospatial tools

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PS-I station: BigLook - Non Tech, Waterford, Ireland

Student

Name: ANIKET SHUKLA . (2023A7PS0134H)

Student Write-up:

PS-I Project Title: DeciArt: Decision Tree-Based Interpretation, Scoring, and Curation of Artistic Property Definitions

Short Summary of work done: I was part of a cross-functional intern cohort at BigLook, working on "DeciArt," an AI-first initiative exploring the formal qualities of visual art. My primary responsibilities involved building robust scrapers for public domain artwork across six global museums, standardizing metadata formats, and structuring data pipelines for downstream machine learning tasks. I integrated taxonomic classifications (e.g., line presence, abstraction) into labeling pipelines, evaluated decision trees for interpretability, and researched colorization models for grey-scale images. Additionally, I studied art collectors' behaviors and created user personas based on real-world interviews to inform BigLook's product-market alignment. This work directly supports BigLook's vision to train models like CLIP/BLIP on highly structured, semantically rich art data.

Objectives of the project: DTo build foundational datasets and classification logic for training a multimodal large language model (LLM) tailored to the art world, with a focus on CC0 artwork scraping, property-based annotation, and consumer behavior modeling.

Tool used: Python, Selenium, BeautifulSoup, Google Colab, Gemini (Google AI), Canva, Pandas, Jupyter Notebooks

Details of Papers/patents:N/A

Brief description of the working environment: BigLook provided an intellectually stimulating, self-driven work environment that encouraged initiative and creativity. Though remote, our team maintained a strong feedback loop through async documentation and check-ins. The learning curve was steep due to the interdisciplinary nature of the work—blending software engineering, data analytics, and art history. Expectations were high: we were trusted to own tasks end-to-end, from scraping data to evaluating AI prompts. Weekly feedback helped us refine both our technical and communication skills. The experience not only expanded my coding proficiency but also deepened my appreciation of how AI can engage with cultural and humanistic disciplines.

Academic courses relevant to the project: Object-Oriented Programming
Database Systems
Probability & Statistics
Foundations of Finance

Learning Outcome: End-to-end web scraping (Selenium, BeautifulSoup)
Designing metadata schemas for AI/ML pipelines
Understanding and applying art-theoretical taxonomies
Exposure to prompt engineering and generative AI workflows

PS-I station: BigLook - Tech, Waterford, Ireland

Student

Name: PARTH KULKARNI . (2023A7PS1109H)

Student Write-up:

PS-I Project Title: Art Intelligence Pipeline: From Data Collection to Semantic Scoring and Annotation

Short Summary of work done: This project automated artwork analysis by combining web scraping, image processing, and decision tree modeling. It began with identifying visual features like line presence, contrast, and composition, followed by scraping high-quality CC0 artworks and metadata from museum websites using Python scripts. These datasets supported the development of decision trees for evaluating artworks. Next, additional sources were scraped, and research into art collectors' preferences—including Gen Z—led to the creation of synthetic collector profiles and artwork assignments. Finally, detailed decision tree guides were developed, and AI agents like ChatGPT, Gemini, and Perplexity were compared for their effectiveness in artwork classification.

Objectives of the project: Dataset Curation, Supervised Learning, Web Scraping, Prompt Engineering.

Tool used: GitHub - to collaborate with and manage projects. Python (and related libraries) - to develop scraping scripts. Slack - for quick communication with the team. Google Sheets - for compiling reports Canva - for creation of collector profiles. ChatGPT & Gem

Details of Papers/patents:-

Brief description of the working environment: The work environment at BigLook was professional, analytical, and supportive. Daily meetings kept the team aligned, with a strong focus on data analysis and report generation. Colleagues were helpful and collaborative, creating a positive workspace. Fintan Sir (CEO) and Santosh Sir (CTO) provided clear direction and valuable guidance throughout the project.

Academic courses relevant to the project: Object Oriented Programming (CS F211)

Learning Outcome: Image Scraping, Web Automation, Metadata Extraction, Python Scripting, Decision Trees, Understanding Art Collector Market, Prompt Engineering.

PS-I station: BigLook - Tech, Waterford, Ireland

Student

Name: GARVIT BUDANIA . (2023B4A71063P)

Student Write-up:

PS-I Project Title: Art Intelligence Pipeline: From Data Collection to Semantic Scoring and Annotation

Short Summary of work done: Curated Large Artwork Dataset using Web Scrapinf.

Objectives of the project: Dataset Curation

Tool used: S/w, Selenium, Playwright, Python

Details of Papers/patents: None

Brief description of the working environment: Great loved the work and mentorship

Academic courses relevant to the project: Optimization, Machine Learning

Learning Outcome: Soft Skills, Technical Skills

PS-I station: Breathe ESG Private Limited - Nontech, Bengaluru

Student

Name: VAMSI KRISHNA RAPARTHI . (2023A8PS0396H)

Student Write-up:

PS-I Project Title: Data management

Short Summary of work done: It all about data entry where we involved directly with clients about the data entry.

Objectives of the project: Data entry

Tool used: Excel , canva , pptx , dev , stagging , prod backend django.

Details of Papers/patents: Nil

Brief description of the working environment: It's good.

Academic courses relevant to the project: yes

Learning Outcome: Nil

PS-I station: Breathe ESG Private Limited - Nontech, Bengaluru

Student

Name: VIGHNESH RANJIT PAURA (2023B5A80944G)

Student Write-up:

PS-I Project Title: ESG Research, Data Operations, and Sustainability Strategy Implementation at Breathe ESG

Short Summary of work done: During PS-I at Breathe ESG, I worked on ESG data management, peer benchmarking, and client-facing documentation. I handled platform-level tasks such as metric testing, GRI mapping, and bulk data uploads for clients like RMZ and MakeMyTrip. I created presentation decks, co-developed a User Manual, and supported the XBRL report for client Dhanuka. I also benchmarked ESG platforms and sector disclosures, updated the company's GRI standards, and collaborated closely with the ESG and product teams.

Objectives of the project: To support ESG platform development and client services at Breathe ESG by contributing to data management, framework alignment, and sustainability reporting tools.

Tool used: Software tools included Canva, Google Sheets, Excel, Google Docs, Django Admin Panel, and the Breathe ESG development platform.

Details of Papers/patents: None

Brief description of the working environment: The working environment at Breathe ESG was dynamic, collaborative, and growth-focused. I worked closely with ESG analysts and product teams, receiving regular feedback and guidance. Expectations included accuracy, initiative, and cross-functional collaboration. I learned how ESG tools are designed, tested, and used in real-world scenarios, and developed a strong foundation in sustainability frameworks, platform validation, and client communication.

Academic courses relevant to the project: Environmental Studies

Learning Outcome: Gained hands-on experience with ESG frameworks, peer benchmarking, data workflows, and backend testing. Also improved skills in communication, critical thinking, and platform documentation.

PS-I station: Breathe ESG Private Limited - Tech, Bengaluru

Student

Name: VADLA AISHWARYA . (2023A7PS0012H)

Student Write-up:

PS-I Project Title: Onboarding client

Short Summary of work done: Tech dev

Objectives of the project: Full stack

Tool used: Django

Details of Papers/patents: Certificate

Brief description of the working environment: Very good friendly

Academic courses relevant to the project: yes

Learning Outcome: Full stack web dec

PS-I station: Breathe ESG Private Limited - Tech, Bengaluru

Student

Name: ADVAIT ANIL KUMAR (2023A7PS0029G)

Student Write-up:

PS-I Project Title: Dynamic Role-Based Permissions Management System

Short Summary of work done: I developed a dynamic permissions management interface in React with real-time updates, eliminating the need for a "Save" button, and refactored code to resolve thunk misuse for improved maintainability. On the backend, I designed RESTful APIs supporting granular role- and section-based access control, implemented a caching middleware to optimize Django .filter() queries, and integrated JWT authentication, CRUD operations, edit history, and real-time frontend syncing. I also connected Django with an HTML-based notes system through dynamic views and mock data parsing. In machine learning and NLP systems, I built a natural language–to–SQL query generator that guided users with clarification prompts, automated PDF ingestion pipelines with pdfplumber to prepare data for semantic search, and integrated embedding generation using Google Gemini followed by Stanford's SRR-BERT. I further optimized Pinecone for vector storage and fast semantic retrieval. Beyond core development, I researched Django and React internals to make architectural decisions, mapped company-wide data dependencies to support emission metric analysis and ESG-related features, and wrote extensive test cases for tag-based content rendering and backend data verification. I also resolved challenging integration bugs across multiple libraries and SDKs, ensuring smooth interoperability across systems

Objectives of the project: This project develops a Dynamic Role-Based Permissions Management System using React, TypeScript, and Ant Design with an innovative matrix-style interface that dynamically adapts to organizational roles. The system integrates with Django REST Framework, implements role-specific logic (AUDITOR restrictions, SUPER_ADMIN protection), and provides company-based permission isolation.

Tool used: * React * Redux (with Thunk – later refactored) * Django * Django REST Framework (DRF) * JWT Authentication * Caching Middleware (custom for .filter() optimization) * pdfplumber (PDF ingestion) * Google Gemini (embeddings) * Stanford SRR-BERT (embeddings)

Details of Papers/patents:NA

Brief description of the working environment: It was a very close knit environment where the mentors and other employees of the company were more than willing to help us and answer any questions we may have had. The work i did there has sparked a love for comp sci and i am very grateful to the company.

Academic courses relevant to the project: DBMS

Learning Outcome: Learnt front end, backend, implementation of data extraction systems, using llm models and bert models in projects, conversion of natural language to sql queries, current industry environment at the forefront and how to work with figma. Also learnt how to interact with my fellow colleagues and balance work life and my normal life.

PS-I station: Breathe ESG Private Limited - Tech, Bengaluru

Student

Name: MOHD AMMAR SHEIKH (2023A7PS0369G)

Student Write-up:

PS-I Project Title: Semantic Search and Dynamic Role Permissions

Short Summary of work done: Key Projects Completed Client Onboarding System Development Designed and implemented a sophisticated multi-step onboarding module using React and Ant Design. The system accommodated three distinct user roles - Super Admin, ESG Consultant, and Company users - with dynamic form validation, progress tracking, and role-based access controls. AI-Powered Semantic Search Engine Built an intelligent document search system leveraging vector embeddings and machine learning algorithms. This automated solution enabled users to perform semantic queries on Business Responsibility and Sustainability Reporting (BRSR) documents, significantly improving information retrieval efficiency. Document

Processing Enhancement Developed advanced document handling capabilities with CSV metadata integration and intelligent company matching algorithms. This improved data organization, reduced manual processing time, and enhanced overall system reliability. Frontend Interface Development Created responsive, user-friendly interfaces with proper state management and seamless backend integration. Focused on delivering intuitive user experiences while maintaining robust form validation and error handling.

Objectives of the project: Breathe ESG Platform Projects Client Onboarding Module: Develop a multi-step React-based onboarding system for ESG platform users including Super Admin, ESG Consultant, and Company roles with dynamic form validation and progress tracking. Semantic Search Engine: Build an automated PDF document search system using vector embeddings and AI to enable intelligent querying of Business Responsibility and Sustainability Reporting (BRSR) documents

Tool used: React and Django

Details of Papers/patents: No

Brief description of the working environment: The vibe was super flexible with that startup hustle energy, everyone's motivated but not stressed out. The team was really cool and didn't put much pressure on us interns. It felt like a proper learning space where you could mess up, figure things out, and still contribute to real projects. Definitely the kind of place where work doesn't feel like work.

Academic courses relevant to the project: Major CDCs

Learning Outcome: Django and React

PS-I station: Caarya Innovative Pvt. Ltd, Visakhapatnam

Student

Name: ISHAAN GUPTA (2023A7PS0339G)

Student Write-up:

PS-I Project Title: making an anonymous mental health platform

Short Summary of work done: I was tasked with building an AI chatbot which will give kind and empathetic responses. also an AI moderation pipeline which will flag any toxic comments or posts on the community section of the website.

Objectives of the project: build a full fledged website along with a ventspace chatbot

Tool used: VS Code, Java script, Supabase, Gemini API

Details of Papers/patents:NA

Brief description of the working environment: It was fine and good environment.
Academic courses relevant to the project: yes

Learning Outcome: How to use huggingface, LLM APIs

PS-I station: Caarya Innovative Pvt. Ltd, Visakhapatnam

Student

Name: JASHAN GUPTA (2023A7PS0376G)

Student Write-up:

PS-I Project Title: VibeDump

Short Summary of work done: Just used AI to get the website made in the last week.

Objectives of the project: Develop a privacy-first digital platform—VibeDump—that enables emotionally intelligent AI venting, anonymous peer support, and mental health resources through secure, empathetic, real-time conversations.

Tool used: Python, Hugging Face NLP models, secure web frameworks, encrypted communications, automated moderation tools, and cloud-based deployment platforms

Details of Papers/patents: None

Brief description of the working environment: It was fine environment.
Academic courses relevant to the project: Generative AI

Learning Outcome: Learned to use AI to build websites.

PS-I station: Caarya Innovative Pvt. Ltd, Visakhapatnam

Student

Name: SUSHANT SUBRAMANIAN . (2023A8PS0295H)

Student Write-up:

PS-I Project Title: VibeNews - News in your mood

Short Summary of work done: As a member of the AI/ML team, I started by reading about various applied ML concepts such as Large Language Models, Retrieval Augmented Generation and Vector Databases and Vector Search. I used LangChain along with the Gemini Generative AI API as the large language model to perform operations such as news aggregation, bias identification and tone adjustment. News was taken from news-api and later newsdata.io and passed through LLM to add discrete topic, bias and mood tags. The results along with entire articles are uploaded to an online MongoDB cluster. News can now be accessed according to the user's preferences using the tags for easy search. This is used to curate a home page according to the user's preferences. Used MongoDB Semantic/Vector search to look for news when a user uses the search bar, and to find news articles on the same topic with different biases for the multi-perspective view. All the AI/ML work was done in python and later integrated to the backend/frontend.

Objectives of the project: To make a personalized, bias-aware news companion that delivers trending and niche updates tailored to your interests, attention span, and emotional bandwidth.

Tool used: Python with Visual Studio Code

Details of Papers/patents:NA

Brief description of the working environment: The PS was online. Company gave us the project and expected us to work 4-5 hours every day. Meetings were twice or thrice a week, mostly to get updates about progress and solve queries if any. Biweekly all teams meet with mentors to present progress, sometimes with a PPT. Ample time was given to learn the chosen tech stack/role and do the work.

Academic courses relevant to the project: yes

Learning Outcome: Working with the following tech stack:
1. Frontend: Next.js + Tailwind CSS
2. Backend: FastAPI
3. Database: MongoDB
4. AI/ML: LangChain + Cloudflare Workers + Mongo Vector Search + Gemini API
5. News Aggregation: AssemblyAI, Gemini, Puppeteer/Selenium
6. Version Control: GitHub

PS-I station: Caarya Innovative Pvt. Ltd, Visakhapatnam

Student

Name: ARPIT KUMAR KHATRI . (2023A8PS0709P)

Student Write-up:

PS-I Project Title: Alethia

Short Summary of work done: A personalised news website which shows news according to user preference The frontend was built using Next.js and Tailwind CSS.The backend used FastAPI and MongoDB to manage data efficiently.News content was scraped from sources like The Times of India using BeautifulSoup, then processed and enriched with topic, mood, and bias tags using the Gemini API through LangChain. User authentication was implemented with Google OAuth, with secure access and refresh token handling on the backend.

Objectives of the project: Create a AI News website which shows news according to user preference and reading pattern.

Tool used: FastAPI, MongoDB , Atlas Vector Search , NextJS, Gemini API , Langchain

Details of Papers/patents:none

Brief description of the working environment: Work wnvironment was very relaxed, there was no fixed timings and we were just asked to set targets at the start of the week in notion board and work on those. Weekly meetings were conducted to keep the mentors informed of the work

Academic courses relevant to the project: yes

Learning Outcome: Learnt about working in as a part of team , Improved presentation and communication skills.

PS-I station: Caarya Innovative Pvt. Ltd, Visakhapatnam

Student

Name: YOHANN MIGLANI . (2023A8PS1146H)

Student Write-up:

PS-I Project Title: Goal Digger - The AI Finance Coach for Dreamers

Short Summary of work done: I worked as a backend developer for an AI-powered web application where users can track their personal finances, along with insights and smart suggestions. FastAPI in Python was employed to create various endpoints for communicating with the frontend. A MongoDB database was connected using PyMongo, to store user data in a JSON format that was pre-defined using Python schemas. Various 3rd party APIs and libraries were connected to add functionality to our app, Gemini API and FinGPT for AI computation, JWT for user authentication and Stripe to log user transactions. Finally, all changes were tracked using Git and the final code was deployed on GitHub. There were regular presentations and update meetings on our team's progress.

Objectives of the project: To create a full-stack web application that uses AI to help Gen-Z users understand budgeting and make smarter financial moves.

Tool used: Python, FastAPI, MongoDB, PyMongo, Gemini API, JWT Auth, GitHub

Details of Papers/patents:N/A

Brief description of the working environment: Caarya Innovative provided a collaborative and flexible virtual environment. Since it was an online PS-1 station, all meetings and evaluations were conducted on Google Meet. Announcements and instructions were given to us on Slack. We could choose from a list of projects along with our technical role in the project, from frontend to backend to AI/ML computation. The projects were interesting and extensive with real-world demand, giving us practical experience on how web applications are made. Working on these full-scale projects not only enabled us to hone our skills and learn new frameworks, but think like real product managers when coming up with features and designs for the app. We were assigned multiple company mentors who assisted us by answering our technical queries as well as giving regular feedback on the overall progress of our project. Overall, this PS-1 internship gave us an insight into how web apps are made and made us feel like actual software developers.

Academic courses relevant to the project: Computer Programming, Machine Learning, Object Oriented Programming, Database Systems

Learning Outcome: • Understanding user needs to create UI/UX designs and app components.
• Translating website operations into backend endpoints using FastAPI in Python.
• Designing a format to store data related to users, accounts and transactions in MongoDB.
• Integrating 3rd-party APIs to communicate with our app.
• Tracking and pushing changes using Git.

PS-I station: Caarya Innovative Pvt. Ltd, Visakhapatnam

Student

Name: ISHAAN UTTAM (2023B1A71158G)

Student Write-up:

PS-I Project Title: VibeNews - News in your mood

Short Summary of work done: I helped in making personalized news aggregator which gives you news as per your need, I was involved in the ai/ml aspects of the projectand using LangChain, MongoDB,gemini,SerpApi and other news api's we made a mode in which you can select the mood(positive,negitive,neutral) and tone you want the news in, select the topic about which you want to read the news about and also get multi-perspective news (left-wing,right-wing, centrist views) about any articles you are reading.

Objectives of the project: To build a personalized an AI-powered news aggregator that provides personalized, bias-aware, and emotionally intelligent news experiences.

Tool used: Langchain, mongo db and connect several api

Details of Papers/patents: None

Brief description of the working environment: The working environment is very friendly and you are given ample time to finish the projects and read and learn news skills about the project and everyone is very helping and you can approach them freely if there is any problem you facing with regards to the project.

Academic courses relevant to the project: Basic programming course (C or any other language) and DBMS

Learning Outcome: Learnt how to use Langchain, mongo db and connect several api.

PS-I station: Center for Development of Advanced Computing(C-DAC), Pune

Student

Name: CHINMAY BHAVE (2023AAPS0596G)

Student Write-up:

PS-I Project Title: Quantum Edtech Kit

Short Summary of work done: During my Practice School – 1 at CDAC, under the guidance of my mentor, I designed the electronics part of the project – "Quantum EdTech Kit". It is an indigenous, embedded systems-based simulator. The aim was to provide a hands-on, hardware-based tool which will simulate basic quantum computing concepts. It involved the integration of three modules – input, microcontroller and output. The input module consisted of input qubits, and input quantum gates which were modelled with the help of switches and resistors. The microcontroller module consisted of an STM32 microcontroller for the time being. However, this microcontroller will be later replaced with Thejas-64, a RISC-V based microcontroller developed by CDAC itself. It will make the project truly indigenous, thus fulfilling the goals of Atma Nirbhar Bharat. The output module consisted of two parts – magnitude and phase. Magnitude was displayed with the help of 7 segment displays interfaced through SPI protocol. The phase was displayed with the help of stepper motor rotation. I wrote the entire embedded C code to simulate gate behaviour, process state vectors, and interface with all hardware components. This Practice School gave me deep hands-on experience in embedded systems, circuit design and low-level hardware-software integration. Also helped in designing the physical structure of the kit (mechanical part).

Objectives of the project: To provide a hands-on, embedded systems-based tool for simulating basic quantum computing concepts, in alignment with the objectives of India's National Quantum Mission and Atma Nirbhar Bharat.

Tool used: STM32CubeIDE, STM32 microcontroller, Fusion 360

Details of Papers/patents: To be published.

Brief description of the working environment: The mentors here were absolutely helpful. On the first day, we were asked about our preferences, and what projects we had done earlier. They wanted us to do something that will enhance our pre-existing work. If we did not have any pre-existing projects, then they provided us with multiple options. We were asked about all the skills that we had and were assigned tasks accordingly. After working for a few days, we confirmed with the mentors that we will like to work on that project. Along with the project, my mentor also helped a lot in my SI preparation. He helped me build my resume and also he gave me resources that I should study for my SI interviews. Overall, my mentor was very supportive and always had our back :).

Academic courses relevant to the project: Quantum Information and Computing, Embedded Systems Design, Digital Design, Computer Programming, Mathematics-2, Microprocessors And Interfacing

Learning Outcome: Gained experience in design of an embedded system. Learnt about the different protocols (SPI, I2C, etc.) used in embedded systems. Developed a complete circuit diagram for proper working of a simulator, that mimics quantum gates. Also learnt about

STM32 microcontrollers, and simulated it using STM32CubeIDE software. Wrote the entire code in embedded C, that interfaced all the input and output modules.

PS-I station: Center for Development of Advanced Computing(C-DAC), Pune

Student

Name: AADITYA NARENDRA THAKKAR . (2023B5AD1128P)

Student Write-up:

PS-I Project Title: Physics-Informed Hamiltonian Simulations of Quantum Systems using Variational Algorithms

Short Summary of work done: Simulated the Hamiltonians of a many-body quantum system using quantum computers. Developed algorithms to simulate this using variational and algebraic principles.

Objectives of the project: Simulate the Bose-Hubbard and Fermi-Hubbard models using quantum algorithms to see how they evolve in time and how they can be used to make quantum computers.

Tool used: Qiskit (Python)

Details of Papers/patents: In process of writing a research paper after execution on IBM quantum machinery.

Brief description of the working environment: Very supportive and relaxed working environment. Mentors were very helpful and made sure tasks were helpful for the students degree and interests. Mentors also extended the internship period to finish publication.

Academic courses relevant to the project: Quantum mechanics, Quantum Information and Computing, Object Oriented Programming

Learning Outcome: Quantum computing, Quantum physics, QISKIT, Numerical Linear Algebra

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PS-I station: Centre for Development of Advanced Computing (CDAC), Kolkata

Student

Name: AYESHA UMAR KHAN . (2023B3A70854P)

Student Write-up:

PS-I Project Title: Computer vision based aaffron identificationand walnut size determination

Short Summary of work done: The objective was to develop ai ml indigenous based solution to problems faced in saffron and walnut cultivation. First qork aas done on object detection of saffron for a flower plucker for saffron then size determination of walnut was done to dwvelop ways to substitute manual grading. Depth camera intel real sense d435 was used to determine size using 3 approaches and and final approach using numpy array was the best

Objectives of the project: Identify saffron flower for agribot Determine size of walnut kernel to substitute manual grading

Tool used: Yolo, intel real sense camera D435, python

Details of Papers/patents: Nil

Brief description of the working environment: It is a totally R and D based institute, projects given are totally research based. Working environment is good extra equipment required is given by the organization, conducive environment is present. Learning was wholesome during ps1. Organisation was supportive.

Academic courses relevant to the project: yes
Learning Outcome: Yolo, instance segmentation, python , numpy, object detection, deth mapping, intel real sense camera.

PS-I station: Centre for Development of Advanced Computing (CDAC), Kolkata

Student

Name: SHREYA BAID (2023B3A70876G)

Student Write-up:

PS-I Project Title: Vision Based saffron harvesting

Short Summary of work done: 3d construction in opengl

Objectives of the project: detection of cutting point

Tool used: opengl, yolo

Details of Papers/patents:N.A

Brief description of the working environment: -

Academic courses relevant to the project: N.A

Learning Outcome: 3d reconstruction

PS-I station: Centre for Development of Advanced Computing (CDAC), Kolkata

Student

Name: SOUMYA AGARWAL . (2023B3A71194H)

Student Write-up:

PS-I Project Title: Cutting Point Detection for Flowers and Offline Deployment of LLM

Short Summary of work done: My project focused on object detection with two classes: the saffron flower and its corresponding cutting point. The core challenge was to establish accurate linkages between each flower and its associated cutting point. To address this, I implemented a post-processing logic using OpenCV that associated objects based on their spatial proximity. On the pre-processing and training side, I customized the machine learning script by introducing a penalty mechanism for detecting cutting points that were too far from the flower—encouraging the model to learn and prioritize correct pairings naturally. In parallel, I also deployed an offline Large Language Model (LLM) on my laptop, designed to function as a saffron agriculture assistant bot, ensuring usability in low-connectivity farming environments.

Objectives of the project: My project was a pure research and development initiative in the agricultural domain. The primary objectives were twofold: (1) to detect saffron flowers in real-world field images and accurately localize the saffron threads (cutting points), and (2) to deploy an offline Large Language Model (LLM) that could serve as a virtual assistant for farmers, ensuring accessibility even in low or no internet connectivity conditions.

Tool used: YOLOv8, OpenCV, LLaMa, Collab

Details of Papers/patents:N/A

Brief description of the working environment: The official working hours were from 9:30 AM to 6:00 PM. Since my workstation was initially offline, we were later asked to follow a hybrid model—working from the office three days a week and remotely for the remaining two days. The mentors were extremely friendly, approachable, and supportive throughout the project.

Academic courses relevant to the project: N/A

Learning Outcome: I learned how to fine-tune my object detection machine learning model—not just by training it on custom data, but also by modifying and customizing the underlying logic within the training script to better suit my specific use case.

PS-I station: Centre for Development of Advanced Computing (CDAC)-Hyderabad, Hyderabad

Student

Name: KSHITIJ GUPTA . (2023B4A70964H)

Student Write-up:

PS-I Project Title: Ransomware Dataset Curation and Feature Engineering for Machine Learning–Based Malware Analysis

Short Summary of work done: During my PS-I at CDAC Hyderabad, I collected and curated a large ransomware dataset to support ML-based detection. From over 10 million Windows PE samples, I identified ~42,000 candidates (filenames containing "ransom", "Win32", "NSIS", etc.) and verified them via VirusTotal and MalwareBazaar APIs, confirming ~18,000 true ransomware binaries. All processing was performed in a secure Windows 11 Pro FLARE VM environment. Using Python automation, I processed each sample: unzipped archives, computed cryptographic hashes, and extracted static features with tools like Detect It Easy and HashMyFiles. Extracted features included PE header fields (machine type, section count, subsystem, etc.), section statistics (size, entropy), byte-level entropy histograms, import DLL/API counts, and string indicators (URLs, domains, email counts). All steps were scripted to ensure reproducibility. The final high-dimensional feature dataset is ready for machine learning. (Dynamic behavior analysis was deferred due to resource constraints.)

Objectives of the project: To curate a labeled ransomware dataset and extract static features to support machine learning–based malware classification.

Tool used: Hardware: Software: FireEye FLARE VM, Python 3 (with libraries such as pefile and Capstone), Detect It Easy (PE analyzer), HashMyFiles, VMware/VirtualBox

Details of Papers/patents: None

Brief description of the working environment: I worked entirely remotely (online mode) with a flexible schedule. I coordinated regularly with my industry mentors and faculty via email, whatsapp and video calls, receiving guidance on technical tasks and malware-safety protocols. Mentors expected me to be self-driven, meet project milestones, and follow cybersecurity guidelines; CDAC provided with information on all necessary tools (FLARE VM, analysis software, API access) and data resources. This experience taught me both professional and technical skills. I improved my time-management and self-discipline by working under minimal supervision. Communicating effectively in a virtual setting and documenting progress for remote review became crucial. The project deepened my understanding of cybersecurity practices and reinforced the importance of reproducibility and careful data handling. Overall, the flexible online environment fostered initiative and organization, preparing me to manage real-world research projects independently.

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

Learning Outcome: Automated development of a large-scale malware data processing and feature-extraction pipeline.
Proficiency with malware analysis tools (FLARE VM, Detect It Easy, HashMyFiles) and Python scripting (pefile, Capstone libraries).
Deepened understanding of ransomware characteristics and static analysis techniques.
Experience with threat intelligence APIs (VirusTotal, MalwareBazaar) and handling big datasets securely.
Improved time management, documentation, and remote collaboration skills in a professional R&D setting.

PS-I station: Centre for Railway Information Systems - OLD PASSENGER RESERVATION SYSTEM - Chennai, Chennai

Student

Name: GAURAVKUMAR S (2023B5A80995G)

Student Write-up:

PS-I Project Title: Loco Link Optimization software

Short Summary of work done: Developed a software system to optimize locomotive linkages across train routes, aiming to minimize idle times, improve utilization, and reduce operational costs for Indian Railways. The solution was built using FastAPI for backend services, PostgreSQL for efficient data management, and Vue.js for an intuitive frontend interface. Key Features & Outcomes: • Automated allocation and linking of locomotives to train schedules. • Reduced manual intervention by providing optimized suggestions based on availability, turnaround time, and maintenance requirements. • Implemented real-time data handling with PostgreSQL, ensuring scalability for large railway datasets. • Designed a user-friendly web interface with Vue.js for railway operators to visualize and manage loco links. • Improved efficiency in loco utilization and provided a foundation for future AI-driven predictive allocation.

Objectives of the project: To build a software that can make it easier for the people at railways to optimise operation like train routing and rerouting.

Tool used: MacBook Air, VS Code, Dbeaver, Docker

Details of Papers/patents:NA

Brief description of the working environment: It was a small office with about 50 employees.

Academic courses relevant to the project: yes

Learning Outcome: Full stack development , Vue Js, PostgreSQL, python, docker

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PS-I station: Centre for Railway Information Systems - OLD PASSENGER RESERVATION SYSTEM - Hyderabad, Hyderabad

Student

Name: SAI PREETHAM REDDY PYATA . (2023A7PS0114H)

Student Write-up:

PS-I Project Title: DEVELOPMENT OF AN APP FOR A WEB APPLICATION (DIVYANGJAN CARD APPLICATION WEBSITE)

Short Summary of work done: During PS-I, I worked on developing a mobile application for the Indian Railways Divyangjan concession portal. The goal was to replicate essential features of the web portal, including user registration, application submission, and concession renewal. I designed the app interface using Flutter, implemented back-end database tables in MySQL, and created API endpoints for communication. I collaborated with the Station Incharge to gather requirements and refined the app based on practical feedback. I also integrated a document upload system and introduced draft-saving functionality for long forms.

Objectives of the project: To develop a prototype Android application that digitizes the Divyangjan railway concession process. To replicate key features of the Divyangjan Concession Portal for ease of use. To reduce manual processing at railway stations and improve the passenger experience for specially-abled individuals.

Tool used: Flutter & Dart (Front-end Development) MySQL (Database) VS Code (IDE) Git & GitHub (Version Control) Postman (API testing)

Details of Papers/patents:NA

Brief description of the working environment: The working environment was formal and project-focused, with guidance provided by the Station Incharge and regional general manager. Expectations were clear: to build a mobile app prototype that addresses the specific needs of Divyangjan users applying for railway concessions. Daily supervision, regular check-ins and milestones helped drive progress. The freedom to take technical decisions encouraged self-learning and ownership. I learned how to gather functional requirements, design databases, and create intuitive mobile interfaces. Interacting with end-users gave me insight into the importance of accessibility and simplification in public service software. This experience has enhanced my practical knowledge in app development, teamwork, and software lifecycle management.

Academic courses relevant to the project: DBMS,OOPS

Learning Outcome: Gained hands-on experience in Android app development using Flutter and Dart.Learned how to integrate front-end and back-end systems using APIs and MySQL.Practiced version control and collaboration using Git and GitHub.

PS-I station: Centre for Railway Information Systems - E-Procurement System, New Delhi

Student

Name: ARJUN RANA . (2023A7PS0541P)

Student Write-up:

PS-I Project Title: EPS/Flutter mobile development

Short Summary of work done: Learnt about dart programming language and flutter and then used it to create many demo screens till I was confident enough to create screens for CRIS, created 3 screens: IREQMS screen with many widgets and functionalites, used many apis in this project, pnr status screen page, where user entered pnr and if the pnr was valid he would get

his or her personal and train details, used 2 apis here too and finally made a login page for the users which had features like get otp and captcha regeneration

Objectives of the project: Working on 2/3 screens that would become an app in the near future

Tool used: Flutter, vscode, dart, git

Details of Papers/patents: -

Brief description of the working environment: working environment was good, i had 2 incharges who helped me during the whole internship, as it was mostly offline had some issues in seating when it was busy.

Academic courses relevant to the project: Computer programming, object oriented programming, data structure and algorithms

Learning Outcome: Flutter development, ui/ux development,learning about api's

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PS-I station: Centre for Railway Information Systems - Infrastructure, New Delhi

Student

Name: SAMARTH KOTHARI . (2023A7PS0646P)

Student Write-up:

PS-I Project Title: Login/Signup Portal For User Authentication

Short Summary of work done: The main goal was to create a working app that not only allows new users to register and verify their identity through email but also lets verified users log in and access the system securely. What started as a simple idea gradually evolved into a full-stack development experience, bridging both web and mobile platforms.We used Spring Boot for the backend to handle server logic and APIs, MySQL to manage data efficiently, Angular for the web frontend, and Flutter to build the mobile version. Email verification was included to mimic professional authentication flows.From designing database tables and writing API logic to testing different screens on various devices, each step provided insight into how modern apps

are built and deployed. We also explored app publishing requirements, like those from the Google Play Store and Apple App Store.

Objectives of the project: The goal of this project was to develop a secure, functional login/signup portal for app aswell as for the website that simulates real-world authentication workflows. The application needed to allow users to register using their email and password, verify their email via a confirmation link, and gain access only after successful verification. The portal was also expected to provide users with clear feedback through proper validations and error handling during the registration and login processes. An intuitive and responsive frontend interface was a key requirement, designed to make the user experience both seamless and visually appealing. The project followed a modular, phase-wise implementation process starting with backend development using Spring Boot, followed by database design using MySQL, frontend integration with Flutter, Angular, and finally, testing and deployment to achieve a cohesive full-stack product.

Tool used: Java, Spring Boot, Flutter, MySQL, Gmail's SMTP protocol, Visual Studio Code, Github, Xcode(for ios), Angular Framework.

Details of Papers/patents:-

Brief description of the working environment: The working environment was very collaborative and our mentors helped us everytime we needed. Overall the PS station's workload was not much, also our station got converted to online mode after around 20 days so WFH was pretty well utilised. We weren't expected to come to office everyday or have meetings everyday, rather our mentor assigned us work and gave us a few days deadline in which we were supposed to submit our work.

Academic courses relevant to the project: OOPS, DBMS

Learning Outcome: This project offered valuable hands-on experience in full-stack web development, providing exposure to real-world application architecture and problem-solving. It deepened my understanding of how frontend interfaces communicate with backend services through RESTful APIs and how data is structured, validated, and secured across systems. Working with Angular taught me the principles of modular design, reactive forms, and component-
based UI development. I learned how to implement form validation and error handling in ways that improve usability and prevent misuse.

On the backend, I gained strong foundational knowledge in Java Spring Boot especially in designing REST APIs, managing dependencies with Maven, integrating security layers, and sending transactional emails. The process of hashing passwords, implementing verification tokens, and restricting access to verified users showed me how critical security practices are in modern software. Database design and integration with JPA improved my understanding of relational schemas and ORM principles.

PS-I station: Centre for Railway Information Systems - Infrastructure, New Delhi

Student

Name: CHANDAN GUPTA . (2023AAPS0744P)

Student Write-up:

PS-I Project Title: Development of GIS tools and Edit tool in message centre

Short Summary of work done: During my PS-I internship, I worked on a real-time message center module aimed at enhancing internal communication efficiency. My role involved both frontend and backend development using modern web technologies such as HTML, CSS, JavaScript, and React for UI, and Node.js with Express for server-side operations. I integrated RESTful APIs and implemented CRUD functionalities to manage conversations, notifications, and user responses. I contributed to debugging legacy issues, optimizing UI responsiveness, and adding enhancements such as message categorization, filters, and user activity logs. I also handled database management using MongoDB and ensured data consistency and performance. Alongside this, I collaborated with my mentor and team through code reviews and regular sync-ups to ensure alignment with project goals. The experience helped me understand the lifecycle of a software project, agile methodologies, and industry-level version control using Git. I also gained hands-on experience in resolving production-level issues, improving system reliability, and participating in end-to-end deployment cycles. This internship significantly improved my technical proficiency, problem-solving approach, and collaborative skills in a professional work environment.

Objectives of the project: leaning full stack web development

Tool used: Frontend: HTML, CSS, JavaScript, React.js Backend: Node.js, Express.js Database: MongoDB Version Control: Git, GitHub API Testing: Postman Development Environment: Visual Studio Code Deployment & Hosting: Vercel / Heroku (if used) Communication & C

Details of Papers/patents:no

Brief description of the working environment: The working environment during my PS-I was highly collaborative, goal-oriented, and conducive to learning. I was given the opportunity to work on live projects that closely mirrored real-world industry practices. My interactions with mentors and team members were frequent, professional, and constructive. Regular sync-ups, code reviews, and feedback sessions helped ensure that learning was continuous and aligned with project goals.

From the company, I expected a hands-on experience that would bridge the gap between academic knowledge and industrial application. I was looking forward to understanding the software development lifecycle, version control, deployment strategies, and collaborative development practices—and the internship delivered on all fronts.

Throughout PS-I, I enhanced my technical competencies in full-stack web development, particularly in using technologies like React.js, Node.js, Express, and MongoDB. I also gained practical exposure to writing clean, maintainable code and troubleshooting issues in real-time environments.

Apart from technical skills, I significantly improved my soft skills, such as communication, time management, and adaptability in a professional setting. Exposure to agile practices, task prioritization, and deadline-driven development also helped prepare me for future industrial roles.

Overall, the PS-I experience proved to be an excellent platform for holistic development—technically, professionally, and personally.

Academic courses relevant to the project: Object-Oriented Programming (OOP) – Helped in understanding modular code design, reusability, and abstraction during backend development.
Data Structures and Algorithms – Applied in optimizing data handling, sorting/filtering messages, and efficient quer

Learning Outcome: java, restful APIs, javascript , html ,css

PS-I station: Centre for Railway Information Systems - Infrastructure, New Delhi

Student

Name: AADI NAMDEO . (2023AAPS0755P)

Student Write-up:

PS-I Project Title: IR-NIYANTRAC

Short Summary of work done: IR-NIYANTRAC: Automated railway pump and lighting systems using sensor data analytics, Python tools, and anomaly detection techniques, ensuring reduced manpower, improved efficiency, and predictive maintenance capabilities.

Objectives of the project: Data analysis of automated pumps to predict machine failure.

Tool used: Jupyter notebook

Details of Papers/patents:NA

Brief description of the working environment: Technical Capability & Hands-On Learning
CRIS emphasizes applied technical development, evident from intern feedback about working on real-time applications such as Flutter-based mobile systems.
Glassdoor
Openness to Continuous Learning
The organization appears to value adaptability—those who can quickly learn new technologies and work under practical, project-based mentorship tend to thrive.

Academic courses relevant to the project: CS

Learning Outcome: Python, Pandas, ML model

PS-I station: Centre for Railway Information Systems - Infrastructure, New Delhi

Student

Name: PARTH VERMA . (2023ABPS0271P)

Student Write-up:

PS-I Project Title: Traction Distribution Management System

Short Summary of work done: During my PS-I internship at the Centre for Railway Information Systems (CRIS) – Infrastructure Division, New Delhi, I worked on tasks related to data analysis, system monitoring, and reporting. My primary focus was on using Microsoft Excel and Power BI to handle and visualize data collected from various IT infrastructure components. I created dashboards and reports that helped represent key performance indicators such as system uptime, server load, and energy consumption across different railway zones. I also gained exposure to the functioning of large-scale government IT systems, including how CRIS manages its data centers, networking equipment, and critical digital infrastructure for Indian Railways. This involved understanding real-time monitoring systems and learning how digital tools support operational efficiency and infrastructure planning. In addition to technical work, I contributed to the documentation of system reports and assisted in preparing presentations for internal review. This enhanced my ability to present technical data in a clear and concise format. I faced challenges in working with large datasets and understanding complex system layouts but overcame them through guidance from mentors and self-learning. Overall, the internship offered a practical learning environment where I could apply my academic knowledge, improve my technical and analytical skills, and gain insight into real-world IT infrastructure operations. The experience has given me a strong foundation for future work in data analytics, system administration, or public sector technology projects.

Objectives of the project: To analyse data related to tripping of circuit breakers in Indian Railways electrical network and draw conclusions to improve the effeciency of Railways.

Tool used: Microsoft Excel, Power Query, Power BI

Details of Papers/patents: None

Brief description of the working environment: The working environment at the Centre for Railway Information Systems (CRIS) – Infrastructure Division – was professional, structured, and conducive to learning. The team maintained a collaborative atmosphere, where interns were guided by experienced professionals and encouraged to ask questions and seek clarity. Expectations from the company included punctuality, a willingness to learn, the ability to follow instructions carefully, and active participation in assigned tasks. Interns were expected to handle data responsibly, maintain confidentiality, and contribute meaningfully to ongoing work. During the PS-I internship, I was exposed to real-time IT infrastructure operations, including system performance monitoring, server management, and data reporting processes. I learned how government-level digital systems are planned, maintained, and optimized for reliability and efficiency. My work primarily involved using Microsoft Excel for data analysis and Power BI for creating visual dashboards that reflected key performance indicators. I also improved my understanding of data center operations and network infrastructure through observation and internal documentation.

This internship enhanced both my technical and soft skills. I gained practical experience in data handling, visualization, and documentation, while also developing better communication, time management, and problem-solving abilities. Overall, the PS-I experience at CRIS provided a

solid foundation for working in IT infrastructure or data analytics roles, especially within large-scale public sector projects.

Academic courses relevant to the project: Data Science and Analytics

Learning Outcome: I gained hands-on experience in IT infrastructure, networking, and system management, deepening my understanding of how large-scale digital systems operate in the public sector. I significantly improved my Excel skills by working with large datasets for reporting and analysis, using functions, pivot tables, and data visualization tools. I also learned to use Power BI to create interactive dashboards and reports, enhancing my ability to present data insights clearly and effectively. Additionally, I strengthened my problem-solving, communication, and teamwork skills through collaborative tasks and real-world challenges, while also gaining practical experience in project coordination and documentation.

PS-I station: Centre for Railway Information Systems - Infrastructure, New Delhi

Student

Name: LAVANYA GARG . (2023B2A40884P)

Student Write-up:

PS-I Project Title: Civil Engineering Project(CEP)

Short Summary of work done: In my two-month internship at Centre for Railway Information Systems (CRIS) under the PS-I program, I worked on a real-time, full-stack web application that dealt with secure user authentication. The task was to implement and develop a login/signup system integrated with email verification, mimicking enterprise-level security workflows that are essential for today's web platforms. The backend application was built with Spring Boot, where I designed RESTful APIs to manage user registration, login, and authenticated access via JWT (JSON Web Tokens). I used SMTP-based email verification through JavaMailSender to make sure that only authentic, verifiable users had access to the system. This ensured the removal of spurious accounts and enhanced the overall security and integrity of the platform. On the front-end, I employed Angular to develop a responsive and user-friendly user interface with support for real-time validations, informative error messages, and a smooth user experience. I made sure the application adhered to best practices in security, responsiveness, and

accessibility. It was integrated with a MySQL database for secure data storage and token handling. I utilized Postman for testing APIs, Git for version control, Visual Studio Code for coding, and MySQL Workbench for database management. This project provided me with a thorough insight into full-stack development, authentication processes, and secure coding practices. It also enhanced my planning, execution, and delivery skills for a complete software solution in a collaborative, time-constrained setup. Overall, the internship experience was extremely rewarding and career-defining.

Objectives of the project: The goal of this project is to create a safe and user-friendly login/signup system with real-world authentication capabilities. It features email verification to authenticate only legitimate users on the platform. The system seeks to improve security, give good user feedback, and implement a responsive frontend developed using Angular and Flutter, with a Spring Boot server and MySQL database.

Tool used: Angular – Web frontend framework for building responsive UI , Flutter (mobile) – For mobile UI development, Visual Studio Code (VS Code) – Code editor for frontend development, Spring Boot – Java-based backend framework for building RESTful APIs, MySQL –

Details of Papers/patents: No papers or patents were published or filed during this project.

Brief description of the working environment: While working at CRIS (Centre for Railway Information Systems) for two months as an intern, I got the chance to work in an organized, goal-oriented setting that closely replicated professional software development procedures. The working environment at CRIS was both professionally collaborative and technically stimulating. I worked closely with my team members, mature developers and mentors who guided me and promoted independent thinking.

The core task given to me was to create a secure login and signup application with email verification, emulating the actual authentication process. I was supposed to provide a complete full-stack solution with Angular as the frontend technology, Spring Boot as the backend technology, and MySQL as the database. The assignment had to follow modern-day development standards such as form validations, user feedback system, secure data storage through JWT tokens, and SMTP-based email verification integration.

The requirements from the organization were to write clean, modular code, implement secure authentication techniques, and deliver an operational prototype within the internship duration. Emphasis was placed on code versioning, testing, and UI responsiveness throughout the project.

This project greatly enhanced my knowledge of full-stack development and learned me the significance of backend–frontend integration, RESTful API planning, and secure management of data. I also gained experience in collaborating with developer tools such as Postman, GitHub, VS Code, and MySQL Workbench to debug and enhance code performance.

Overall, the CRIS internship gave me a practical grasp of enterprise-level software development, enhanced my technical skills, and provided me with exposure to professional working in an IT environment.

Academic courses relevant to the project: 1. Database Management Systems (DBMS)
2. Object-Oriented Programming (OOP)
3. Data Structures and Algorithms (for backend logic and performance)
4. Mobile Application Development (for Flutter integration)

Learning Outcome: This project offered practical experience in creating a full-stack secure authentication system with Angular, Spring Boot, and MySQL. It also improved comprehension of real-world email verification pipelines, RESTful API integration, database schema, and frontend-backend integration with an emphasis on security and user experience.

PS-I station: Centre for Railway Information Systems - NEW PASSENGER RESERVATION SYSTEM, New Delhi

Student

Name: DIVIT SETIA . (2023B3A80477H)

Student Write-up:

PS-I Project Title: Data Integration and Comparison of Coach Layouts and Route Information between PRS and NPRS

Short Summary of work done: During my PS-II, I worked on the backend of Indian Railways' upcoming New Passenger Reservation System (NPRS). The objective was to compare and validate data across three decentralized services—PRS (legacy reservation system), MDMS (coach layout database), and SATSANG (route, station, and timing data)—to ensure consistency and integrity as part of a nationwide digital transformation. I was part of Team 1, which focused on detecting discrepancies in coach layout data between MDMS and PRS. We developed the backend using Node.js with a clean modular structure, separating routes, controllers, services, and database logic. PostgreSQL was used for structured storage. I implemented a discrepancy engine that identifies mismatches in coach configuration, such as seat layout differences or missing coaches. To maintain data quality, I also built a duplicate detection system to catch repeated or conflicting entries. One of the major enhancements I introduced was a smart seeder, which automatically detects any changes in the source Excel files and updates the database accordingly each time the program runs. This made the system dynamic and significantly reduced manual overhead in testing and data syncing. We also

generated detailed discrepancy reports in Excel format using ExcelJS. Throughout the project, we maintained professional collaboration workflows using GitHub, with protected branches, pull requests, and clear branch structures for different modules. This experience taught me a lot about scalable backend systems, real-world data handling, and working on projects that contribute to national infrastructure.

Objectives of the project: Build a backend system to compare and validate coach layout data between PRS and MDMS, ensure clean data flow, and deliver a production-ready solution with weekly updates.

Tool used: Node.js for backend development, Express.js for building APIs, PostgreSQL as the database, Exce;JS for reading/writing excel files, Git & Github for version control and collaboration, Javascript (ES6+) as the primary language, npm for managing packages an

Details of Papers/patents:NA

Brief description of the working environment: My PS-I was a remote project with Indian Railways, under the Centre for Railway Information Systems (CRIS). After an initial in-person meeting where I was introduced to the team and allotted the NPRS project, I worked entirely from home for the rest of the duration. There were no fixed working hours or daily supervision; instead, I was expected to deliver weekly progress updates to my mentor via email or calls.
This flexible setup gave me the freedom to plan my work independently, while still being accountable for progress. In the final week, I visited the office to give a detailed project presentation, during which I was asked to make some final tweaks based on feedback. A few days later, I returned one last time to set up the final working version of the system on my mentor's machine, so it could be reviewed and passed on to the production team at CRIS.
The environment was collaborative but largely self-driven, with expectations focused on clean code, modular structure, and accurate data validation. My mentor emphasized quality over speed, encouraged initiative, and guided me toward following industry best practices.
From this experience, I learned how to work independently on a real-world software project, maintain proper version control, and communicate effectively in a professional setting. It also improved my backend development skills, database handling, and problem-solving ability while exposing me to the practical challenges of government-scale digital transformation.

Academic courses relevant to the project: NA

Learning Outcome: Gained hands-on experience in backend development, version control, data consistency checks, and working independently in a real-world, large-scale government tech environment.

PS-I station: Centre for Railway Information Systems - OLD PASSENGER RESERVATION SYSTEM - Kolkata

Student

Name: ARJUN SHARMA . (2023A2PS0243P)

Student Write-up:

PS-I Project Title: Developing a dynamic pricing ticketing system for PRS

Short Summary of work done: During my internship at CRIS Kolkata, I led the design and development of a next-generation railway booking platform that delivered measurable performance improvements: user engagement increased by 40%, conversion rates rose by 22%, and we achieved an exceptional 95+ Lighthouse performance score. By implementing optimized animations, lazy loading techniques, and a mobile-first responsive design, we successfully reduced page load times by 50% while maintaining WCAG 2.1 AA accessibility standards across all devices.

Objectives of the project: 1) Analyzing Passenger Demand Pattern through developing a model and passing available demand data through it. 2) To optimize revenue during high demand periods, and seat occupancy during lean periods. 3) To evaluate performance of the system, i.e, compare the efficacy of dynamic pricing versus static pre-existing prices.

Tool used: HTML5,CSS

Details of Papers/patents: None

Brief description of the working environment: A relaxed, collaborative space with a good work-life balance, where creativity and productivity thrive without excessive pressure. Guidance from mentors, exposure to real-world projects, and a supportive culture that values learning over perfection. Flexibility and open communication are key. Gaining hands-on experience, improving technical and soft skills, and understanding industry workflows—all at a comfortable pace. Focus on absorbing knowledge without stress, while contributing meaningfully.
In short, a flexible yet enriching practice school station where growth happens naturally in a positive environment.

Academic courses relevant to the project: HTML5; CSS3;ES6

Learning Outcome: 1) Prototype of a Dynamic Pricing Algorithm, based on the model's data.

2) Designing a framework, and developing a web portal (frontend) to act as the interface for the algorithm running in the backend.

PS-I station: Centre for Railway Information Systems - OLD PASSENGER RESERVATION SYSTEM - Kolkata, Kolkata

Student

Name: DEBANSHU GHOSH . (2023A3PS0332H)

Student Write-up:

PS-I Project Title: Dynamic Pricing Model

Short Summary of work done: Project was different from what they initially stated. we developed a machine learning based dynamic pricing system. 2 of us developed the model, 1 handeles the backend integration and 1 built the website. the railways wouldnt share any confidential info we needed to train our model ao we used a webscraped data from 2023's ticket prices webscraped from irctc website, thati found on kaggle. I walked a few more steps and even deployed the model on my own and integrated it into an API.

Objectives of the project: development of a dynamic pricing software system aimed at optimizing ticket pricing for Indian Railways. The objective is to enhance both revenue and seat occupancy by leveraging machine learning models that adapt to demand patterns, route popularity, and booking timelines.

Tool used: Scikitlearn, Docker, FastAPI, Python

Details of Papers/patents:none

Brief description of the working environment: Had a great learning experience in the company and understood how real projects work.

Academic courses relevant to the project: ML, DBMS maybe

Learning Outcome: Machine Learning, Data analysis, Backend development

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PS-I station: Centre for Railway Information Systems - OLD PASSENGER RESERVATION SYSTEM - Kolkata, Kolkata

Student

Name: SANKHA SUVRA SAHA . (2023A3PS0351P)

Student Write-up:

PS-I Project Title: Developing a Dynamic Pricing Ticketing System for PRS (Passenger Reservation System)

Short Summary of work done: During my Practice School 1 (PS-1) at CRIS Kolkata, I developed a prototype demand-sensitive railway pricing engine designed to simulate dynamic fare computation for the Indian Railways Passenger Reservation System (PRS). PRS currently relies on static or semi-static pricing, which often leads to revenue loss during peak seasons and underutilization during lean periods. My project aimed to explore data-driven dynamic pricing that adjusts fares according to lead time, seasonal demand, and class multipliers, laying the groundwork for scalable integration into real-world ticketing systems. To achieve this, I generated synthetic station-to-station datasets covering 100 stations (~4,950 pairs) with distances, base prices, and annual demand curves modeled using sinusoidal profiles with noise. A Dynamic Multiplier, combining 0.4× time and 0.6× demand factors, scaled fares from 0.4X to 1.8X of the base price. Simulation pipelines validated how prices evolved for both immediate and advance bookings, capturing effects of seasonal peaks and early-bird discounts. This framework also established a basis for integrating forecasting models (ARIMA, Prophet, XGBoost) and future elasticity analysis using real PRS data.

Objectives of the project: 1) Analyzing Passenger Demand Pattern through developing a model and passing available demand data through it. 2) To optimize revenue during high demand periods, and seat occupancy during lean periods. 3) To evaluate performance of the system, i.e, compare the efficacy of dynamic pricing versus static pre-existing prices.

Tool used: Python, NumPy, Pandas, XGBoost, ARIMA, Prophet, and PyTorch. Work referenced public datasets (Kaggle).

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

Brief description of the working environment: During my PS-I at CRIS Kolkata, I experienced a professional and research-oriented environment that balanced independent problem-solving with structured mentorship. The organization expected interns to quickly understand domain-specific challenges, design self-contained simulations, and document work systematically for potential real-world integration. Periodic interactions with mentors ensured alignment with project goals, while day-to-day tasks encouraged initiative, debugging complex pipelines, and validating results with logical reasoning.

The working environment emphasized:

Autonomy in experimentation with tools and models.

Regular review cycles for code and methodology.

Exposure to realistic public-sector problem statements, requiring a blend of technical rigor and practical feasibility.

From this experience, I gained substantial learning in applied data science and system-level thinking. Specifically:

Designing synthetic data generation pipelines and dynamic pricing models.

Understanding demand forecasting using ARIMA, Prophet, and XGBoost.

Translating academic machine learning knowledge into operational logic suitable for large-scale public systems.

Appreciating the importance of documentation, reproducibility, and testing in professional projects.

Beyond technical growth, PS-I reinforced soft skills such as independent time management, professional communication, and aligning research prototypes with stakeholder expectations. Overall, the experience provided a realistic preview of data-driven decision-making in the public sector, while deepening my academic concepts in probability, statistics, and machine learning through their practical application.

Academic courses relevant to the project: None, but knowledge of Probability and Statistics (MATH F113) and Computer Programming (CS F111) is appreciated.

Learning Outcome: 1) Prototype of a Dynamic Pricing Algorithm, based on the model's data.
2) Designing a framework, and developing a web portal (frontend) to act as the interface for the algorithm running in the backend.

PS-I station: Centre for Railway Information Systems - Parcel Management System, New Delhi

Student

Name: ARCHIT SAPRA (2023A7PS0348G)

Student Write-up:

PS-I Project Title: PARCEL MANAGEMENT SYSTEM

Short Summary of work done: WE were given the task of creating a Parcel Management System portal. We used React for Frontend Development, Node.js for Backend Development, MySQL for managing Databases. In this we could get know about where our parcel is and built a website where people of different station can send and receive messages and if the parcel get destroyed or theft then the user can also talk to Railway representatives to get real time updates. We made an OTP authentication website where OTP will be sent to mail and then after user can login to the portal and also made a seperate thing for image uploadation.

Objectives of the project: The Railway Parcel Management System aims to digitize parcel operations, enhance real-time tracking, improve station communication, ensure security, and streamline management with user-friendly interfaces, OTP authentication, and image-based verification.

Tool used: React.js, Node.js, MySQL,NodeMailer, Docker, Github,HTML and CSS

Details of Papers/patents:no

Brief description of the working environment: The company representatives were good.

Academic courses relevant to the project: DBMS, SOFTWARE DEVELOPMENT

Learning Outcome: Learnt about new technologies used, built network with people there, improved communication skills.

PS-I station: Centre for Railway Information Systems - Parcel Management System, New Delhi

Student

Name: VEDANSH SHARMA (2023A7PS0441G)

Student Write-up:

PS-I Project Title: Parcel Management System

Short Summary of work done: During my 8 week internship at CRIS, I worked as part of the web development team for the Parcel Management System, a comprehensive digital platform to manage parcel operations across Indian Railways. My contributions focused on building and integrating User Management features, including registration, login with OTP, role-based access control, and profile management. I implemented backend logic using Spring Boot and RESTful APIs, while also developing responsive frontend modules with Angular. Additionally, I worked on Oracle SQL queries to fetch and update user data efficiently. I actively collaborated with other developers using Git and regularly tested features using Postman. The project offered a complete exposure to a live production codebase, internal deployment processes, and agile team dynamics.

Objectives of the project: The primary objective was to modernize the Indian Railways' Parcel Logistics operations by contributing to the development of a full-stack Parcel Management System (PMS). The goal was to enhance operational efficiency, enable real-time parcel tracking, and streamline internal workflows such as user management and data operations across stations.

Tool used: Spring Boot, Angular, Oracle SQL, Node.js, Postman, Git, Eclipse IDE, Angular CLI, Maven

Details of Papers/patents:NA

Brief description of the working environment: The working environment at CRIS was collaborative and professional, promoting self-learning and consistent progress tracking. As interns, we were expected to grasp the functional aspects of large-scale public systems and contribute meaningfully to active codebases. Despite the complexity, mentors provided clear technical guidance and design documents. The atmosphere encouraged learning through documentation, peer support, and regular sync-ups. I learned not just technical skills, but also how software integrates with logistical operations and the scale at which government-backed digital infrastructure operates. It helped me appreciate the importance of clean code, modular development, and scalable database design.

Academic courses relevant to the project: Object-Oriented Programming, DBMS

Learning Outcome: Gained hands-on experience with Spring Boot, Angular, and Oracle Database in a live, production-grade application.

PS-I station: Cilans System, Ahmedabad

Student

Name: YASH VIJAY (2023B4A70897G)

Student Write-up:

PS-I Project Title: Prof Jay Kamlesh

Short Summary of work done: Trained a software to recognise characters, detect a certain object, and classify it

Objectives of the project: Create a computer vision software capable of object detection, character recognition and classification

Tool used: hugging face, pycharm, python libraries

Details of Papers/patents:N.A

Brief description of the working environment: Was amazing, loved working

Academic courses relevant to the project: N.A

Learning Outcome: Worked and finished my POC. Learnt data cleaning and model training with benchmarking.

PS-I station: Clappia, Bengaluru

Student

Name: AMAN TOMY (2023A4PS1174G)

Student Write-up:

PS-I Project Title: Building and Deploying end to end REST APIs

Short Summary of work done: -

Objectives of the project: Learning how to create and deploy public apis

Tool used: Typescript, AWS CLI

Details of Papers/patents: -

Brief description of the working environment: The mentors guided me throughout and helped me even though I had zero idea of u w backend and my API creation worked.

Academic courses relevant to the project: Computer Programming

Learning Outcome: Increased my understanding in backend development. Learnt AWS software and some cloud computing.

PS-I station: Clappia, Bengaluru

Student

Name: MEERA HARSHAD BARVE . (2023B4AA0793H)

Student Write-up:

PS-I Project Title: Multi-Lingual Support

Short Summary of work done: understanding how hardcoded strings in a website codebase can be translated and made available in various languages using Angular.

Objectives of the project: Making their website available in different languages to teh users

Tool used: Angular (v15) – For frontend development of the ClappiaUIAuth dashboard,TypeScript & SCSS – For building component logic and styling, ngx-translate – For managing internationalization (i18n) and dynamic language switching, npm – For managing Angular and b

Details of Papers/patents:-

Brief description of the working environment: My PS-I at Clappia has been a good corporate experience with a strict no work-from-home policy, ensuring a disciplined and professional environment. Each student was assigned a proper individual project. Mentors and seniors were excellent—very approachable, supportive, and always ready to guide us through any challenges.

Academic courses relevant to the project: any course which helps with frontend.

Learning Outcome: Angular Translation system setup, GIT

PS-I station: Clevup Technologies Pvt Ltd, Noida

Student

Name: SIDDHARTH RAJAGOPALAN (2023B1A71246G)

Student Write-up:

PS-I Project Title: Order Management & Lifecycle Automation workflows for Baat.ai

Short Summary of work done: he implementation includes real-time webhook processing for automatic order updates, asynchronous data fetching with proper error handling and loading states, and dynamic URL construction for flexible API parameter handling. The system supports

multiple e-commerce platforms and provides merchants with a centralized interface for tracking and managing orders across various sales channels.

Objectives of the project: Comprehensive development of an Order Management system for Baat.ai, a customer communication SaaS platform that enables businesses to connect with customers via WhatsApp

Tool used: Java, Springboot, REST APIs, Postman

Details of Papers/patents:na

Brief description of the working environment: Online, 6 days a week, 10am to 6pm , daily standups conducted twice a day to check in on progress.

Academic courses relevant to the project: CS F111

Learning Outcome: Team working dynamics, Backend development, system design overview

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PS-I station: Climetaverse - IT, Coimbatore

Student

Name: ARSHKHAN PATHAN (2023A7PS0364G)

Student Write-up:

PS-I Project Title: Remote Chat Bot Development

Short Summary of work done: Built a python function, integrated it with OpenAi api. To generate the description of the image

Objectives of the project: Develop a python function to generate image description

Tool used: Python, PyMuPDF, OpenAI API, GPT-4o

Details of Papers/patents: None

Brief description of the working environment: Online environment, expectations were just a python function.

Academic courses relevant to the project: Ai/Ml

Learning Outcome: Learnt about API, Deepseek and python

PS-I station: Climetaverse - IT, Coimbatore

Student

Name: K SUJITH (2023B1A70713G)

Student Write-up:

PS-I Project Title: Interactive Browser-Based Augmented Reality Modules for Core Engineering Education Using Open-Source Technologies

Short Summary of work done: We first started to learn Blender from a Youtube video that the industry mentor sent us,then made some Blender models that were to be implemented in AR.js and used in an AR website,then we learnt about AR.js and then made a small website where we tried to implement our models.

Objectives of the project: Create a series of web-based AR modules that:- Visually demonstrate core engineering principles and industrial processes- Use free, open-source technologies for maximum accessibility- Can be viewed using smartphones, tablets, or webcams via browsers- Are reusable for training, classroom demonstrations, and online education

Tool used: Blender,AR.js

Details of Papers/patents:NA

Brief description of the working environment: As far as I know,the working environment during our online PS was lax and we had plemty of time to finish our required work before the

next scheduled meet,although the meets could have been more frequent on the industry mentor's side.
I didnt expect much from the company at first,but the work that was alloted was engaging and I learnt a lot about Blender and AR.js.

Academic courses relevant to the project: Engineering Graphics

Learning Outcome: Learnt about the basics of Blender and AR.js while doing this project

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PS-I station: CloudDefense.AI, California

Student

Name: BHUVAN ARORA . (2023A7PS0246P)

Student Write-up:

PS-I Project Title: AI buddies- multi agent system

Short Summary of work done: During our PS-I, we began by researching AI-driven developer tools such as Cursor, Replit, and Windsurf, focusing on how they utilize real-time context awareness and generative AI to enhance user productivity. This phase helped us understand system monitoring patterns, AI-powered code assistance, and agent-triggering mechanisms. Building on this foundation, we designed and developed the AI Buddies Multi-Agent System—a platform where multiple generative AI agents (buddies) collaborate to assist users based on their current activity. We implemented a background monitoring module that captures system-level context such as active window names, typing behavior, and screenshots. This data is then analyzed to classify the user's activity (e.g., coding, reading, idle), which triggers the appropriate AI buddies to provide intelligent, context-aware support. Our work involved integrating real-time monitoring with backend AI models, orchestrating multi-agent communication, and building dynamic interfaces for user interaction. Through this, we gained hands-on experience with large language models, system integration, and the design of AI-driven productivity tools.

Objectives of the project: To build intelligent, activity-aware personal assistants that monitor user behavior and proactively assist based on real-time context.

Tool used: The AI Buddies project utilized a range of tools to build an intelligent, context-aware assistant system. Python served as the core programming language for backend logic and system monitoring. OpenCV and Tesseract OCR were used to capture and extract tex

Details of Papers/patents:NA

Brief description of the working environment: During PS-I, we worked in a supportive and collaborative environment that encouraged independent learning and innovation. The company expected us to explore relevant technologies, contribute to ongoing projects, and build a working prototype. We began with research on tools like Cursor, Replit, and Windsurf to understand AI-assisted developer workflows. This led to the development of the AI Buddies Multi-Agent System, where we implemented real-time system monitoring and integrated large language models like Gemini and OpenAI using LangChain. We gained hands-on experience in Python development, agent-based system design, and version control using Git and GitHub, while also enhancing our teamwork and problem-solving skills. Overall, the internship provided a strong blend of technical learning and practical application.

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

Learning Outcome: Gained hands-on experience in building context-aware AI systems by integrating system monitoring, activity recognition, and intelligent agent design using LLMs for real-world automation.

PS-I station: CloudDefense.AI, California

Student

Name: JAYANT CHANDWANI (2023A7PS0356G)

Student Write-up:

PS-I Project Title: Automating the B2B sales funn

Short Summary of work done: Created a basic web extension which can extract profile details from various websites like apollo and linkedin using web scrapping. Also learned what ICPs are and how we can generate them using python scripts and gen AI

Objectives of the project: Our team was tasked to create a web extension to import profiles into a native database and to generate ICPs of the companies with the website link and linkedin profile of the company

Tool used: python, JS, HTML, CSS

Details of Papers/patents:N/A

Brief description of the working environment: The mentor was friendly and responsive. The company mentor was also supportive.

Academic courses relevant to the project: DBMS, OOPS, Computer Programming

Learning Outcome: Learned how to make web extensions and how web scraping works. Also learned how to integrate python scripts into web extensions

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PS-I station: CloudDefense.AI, California

Student

Name: JAYANT KAPOOR . (2023A7PS1099P)

Student Write-up:

PS-I Project Title: AI BUDDIES MULTI AGENT SYSTEM

Short Summary of work done: During my PS-I at CloudDefense.AI, I developed 'AI-Buddy,' a multifaceted personal assistant designed to enhance user productivity using cutting-edge AI. The system's core is an intelligent chatbot built with the Google Gemini API and LangChain, capable of understanding and executing complex commands. My work involved engineering three key modules. First, a focus automation tool that enforces productivity by blocking distracting websites and managing work sessions. Second, an innovative activity analyzer that

uses OpenCV and Tesseract OCR to monitor on-screen content, providing users with AI-driven insights into their work patterns. Finally, I developed a custom VS Code extension to perform in-editor OCR. All modules were integrated into a cohesive desktop application with a user-friendly GUI built using PyQt5. This project was a deep dive into system architecture, requiring the seamless integration of AI, computer vision, and UI development to create a practical and powerful productivity tool compatible with Windows, macOS, and Linux.

Objectives of the project: The project aimed to build 'AI-Buddy,' an intelligent desktop assistant using the Gemini API to improve user productivity. The system integrated focus automation tools with computer vision for activity analysis, all delivered through a responsive and user-friendly PyQt5 interface.

Tool used: Languages: Python 3.12, TypeScript; AI/ML Frameworks: LangChain; APIs & Libraries: Google Gemini API, OpenCV, Tesseract OCR, Pillow, NumPy; GUI Framework: PyQt5; Development Tools: Visual Studio Code, Git, pip, npm; Platforms: Windows, macOS, Linux

Details of Papers/patents: None

Brief description of the working environment: The work culture at CloudDefense.AI was dynamic and fostered innovation. Operating in a remote setup, the environment promoted significant autonomy and project ownership. The primary expectation was to deliver a fully functional, end-to-end AI system that demonstrated a practical fusion of machine learning, computer vision, and user-centric design.
This independent structure was highly formative, teaching me the importance of meticulous project planning and proactive problem-solving. A key learning was navigating the complexities of integrating disparate technologies; ensuring that the AI engine, vision module, and GUI communicated flawlessly sharpened my system architecture skills. The experience provided invaluable insights into the entire product lifecycle, from conceptualization and architectural design to cross-platform deployment, profoundly deepening my understanding of building real-world AI applications.

Academic courses relevant to the project: CS F111: Computer Programming
CS F213: Object-Oriented Programming
CS F211: Data Structures and Algorithms
BITS F471: Intro to LLM

Learning Outcome: AI & NLP Integration: Proficient in using the Google Gemini API and LangChain framework to build context-aware AI applications.
Computer Vision Application: Mastered OpenCV and Tesseract OCR for real-time screen analysis and data extraction.
GUI Development: Expertise in building robust, cross-platform desktop applications with the PyQt5 framework.
IDE Extension Development: Experience developing and deploying VS Code extensions using TypeScript and the VS Code API.

PS-I station: CloudDefense.AI, California

Student

Name: RUPESH KUMAR PRUSTY . (2023B3A70459H)

Student Write-up:

PS-I Project Title: AI BUDDIES MULTI AGENT SYSTEM

Short Summary of work done: During the eight-week internship at CloudDefense.AI, our team developed the AI Buddies Multi-Agent System, a local desktop-based AI assistant designed for intelligent, context-aware support. The system captured user activity by tracking the active window, extracting clipboard content, OCR of desktop screenshots, and integrating with Visual Studio Code via a custom extension. This data was analyzed using on-device language models to classify activities such as coding, researching, messaging, or browsing. Based on this classification, the appropriate buddy—either the Software Engineering Buddy or the Personal Assistant Buddy—was activated to assist the user. The Personal Assistant Buddy helped with productivity tasks, summarized activities, and initiated focus modes and break reminders based on user intensity levels. The entire system was implemented with a modular architecture and a PyQt-based user interface that supported interactive chat, activity analytics, and scheduling. By the end of the project, we had built a fully functioning prototype that demonstrated the feasibility of privacy-centric, always-on AI assistance for desktop environments.

Objectives of the project: The objective of the project was to design and implement a fully local, privacy-first multi-agent AI system that assists users in real time based on their desktop activity. The goal was to create an intelligent, always-on digital companion that continuously senses user context such as window titles, clipboard data, and OCR-processed screen text and then activates specialized agents. These include a software engineering buddy for live coding assistance and a personal assistant buddy for productivity and well-being, all operating without transmitting any data to the cloud.

Tool used: The system was developed using Python along with several libraries and frameworks including PyQt5 for the user interface, OpenCV and Tesseract for OCR, and PyAutoGUI, pynput, psutil, pyperclip, and PyGetWindow for system-level integrations. We used Google

Details of Papers/patents:n/a

Brief description of the working environment: The working environment at CloudDefense.AI was genuinely enjoyable—relaxed, collaborative, and supportive. We had the freedom to manage our own schedules thanks to flexible timelines, which made balancing work and learning much easier. Our mentor was chill and approachable, always open to discussions and giving us the space to explore our own ideas while still guiding us in the right direction. Expectations were clear but never overwhelming; we were trusted to take ownership of the project and think creatively. Throughout the internship, we learned not just technical skills, but also how to work independently, communicate effectively, and build something meaningful as a team. Overall, I would recommend this PS station to my juniors.

Academic courses relevant to the project: yes

Learning Outcome: This project provided an in-depth understanding of real-time system monitoring, optical character recognition, and large language model-based activity classification. It offered hands-on experience in building multi-agent architectures, designing modular cross-platform applications in Python, and integrating AI models for offline use. The team gained practical exposure to asynchronous UI development using PyQt and implemented intelligent automation techniques to enhance productivity. Additionally, the project emphasized privacy-respecting software design and revealed the challenges of running advanced AI inference on local devices, enriching the team's knowledge in both technical and ethical domains.

PS-I station: CloudDefense.AI, California

Student

Name: BHARGHAVARAM BODDAPATI . (2023B3A70696H)

Student Write-up:

PS-I Project Title: AI-POWERED DISC PERSONALITY MODELING FOR LEAD GENERATION

Short Summary of work done: Our work was the ending part of a major project "Sales funnel automation". We using the outputs of other teams in the same project generate personalized content for pitching a B2B product to certain people in the company. We have used the LinkedIn data of these certain people and performed DISC personality assessment to find out there personality and other information that would be useful to generate content. Using all this information we have generated the content using prompt engineering and other method.

Objectives of the project: The objective is to generate personalized content for a cold mail or a cold call to pitch a B2B product to a person based on his personality. The persons personality was assessed using the DISC personality assessment.

Tool used: VSCODE, Google Colab, Python, Langchain, Google Gemini models, Perplexity API.

Details of Papers/patents:NONE

Brief description of the working environment: We had minimal contact with the company and could hardly learn about the company and from the company. We received our project information in the first week and then presented our progress a few times.

Academic courses relevant to the project: ML, NLP

Learning Outcome: LLM applications, Langchain, prompt engineering.

PS-I station: CloudDefense.AI, California

Student

Name: HIMANGI AGRAWAL . (2023B3A70761H)

Student Write-up:

PS-I Project Title: ML Model to infer Company's ICP

Short Summary of work done: In this project, we developed an automated pipeline to generate Ideal Customer Profiles (ICPs) using publicly available data. We implemented web scraping using Trafilatura for company websites and Playwright for LinkedIn profiles to collect relevant

organizational information. The extracted unstructured text was processed using lightweight LLMs like Phi-4 and DeepSeek, which refined the data into structured fields such as industry, size, revenue, tech stack, and key decision-maker roles. A hybrid approach combining rule-based parsing with LLM-based inference was used to ensure accuracy and scalability. We also incorporated a memory mechanism to aggregate information from multiple sources for a unified ICP. Multiple LLMs were evaluated, and the best-performing models were integrated into the final pipeline.

Objectives of the project: The objective of this project is to automate the creation of Ideal Customer Profiles (ICPs) by extracting and structuring key organizational information from publicly available sources such as company websites and LinkedIn profiles. The goal is to identify critical attributes—like industry, company size, revenue, technology stack, cloud infrastructure, and key decision-maker roles—using a hybrid approach that combines web scraping with lightweight Large Language Models (LLMs). By integrating rule-based methods and LLM-powered inference, the system aims to generate accurate, scalable, and comprehensive ICPs with minimal manual effort.

Tool used: The project utilized Playwright and Trafilatura for web and LinkedIn scraping, with BeautifulSoup for HTML parsing. Lightweight LLMs like Phi-4 and DeepSeek were used for text refinement and structured data extraction. Development was done in Python on Go

Details of Papers/patents:-

Brief description of the working environment: Overall it was good.

Academic courses relevant to the project: Basic coding

Learning Outcome: This project provided hands-on experience in building an end-to-end data processing pipeline by combining web scraping, natural language processing, and machine learning techniques. Key learning outcomes include proficiency in tools like Playwright and Trafilatura for automated data extraction from web and LinkedIn sources, understanding the capabilities and limitations of lightweight LLMs such as Phi-4 and DeepSeek, and designing hybrid systems that combine rule-based logic with LLM inference. Additionally, the project enhanced skills in structuring unstructured data, evaluating model performance, and implementing memory mechanisms for aggregating multi-source information. Overall, it deepened practical knowledge in scalable AI-powered data systems and real-world automation for B2B intelligence.

PS-I station: Conenct Signal, Jaipur

Student

Name: ARYAN AGARWAL . (2023A5PS1039H)

Student Write-up:

PS-I Project Title: Web development

Short Summary of work done: During my PS-I internship at Connect Signal, the project focused on strengthening the brand's digital presence by improving the website and expanding product visibility on online marketplaces. The work was carried out in two phases—before and after the mid-semester review. In the initial phase, we focused on making the website more engaging and aligned with the brand's story by redesigning important sections. We also listed the first artisan product on Amazon, ensuring the content was well-optimized with detailed descriptions and visuals, supported by market research. Post midsem, our efforts shifted towards building on that foundation. We added more products to Amazon with improved listings and introduced new features on the website, including Add-to-Cart functionality and clear pricing details. We also created dedicated pages to showcase the artisans and facilities, aiming to build transparency and deepen customer connection. A thorough UI revamp ensured smoother navigation and better responsiveness across devices. Throughout the internship, regular discussions with our industry mentor and guidance from our faculty mentor helped us stay focused and improve continuously. This experience gave me practical exposure to website development, e-commerce operations, and user experience design, while also contributing to a purpose-driven brand working with local artisans.

Objectives of the project: Developing the website of the ngo and also listing the products on the different marketplaces

Tool used: Vs code

Details of Papers/patents: Nothing

Brief description of the working environment: The working environment at Connect Signal was collaborative, focused, and purpose-driven. Despite being a remote setup, communication remained smooth through regular virtual meetings and timely updates from our industry mentor. The team was approachable, and our suggestions were welcomed, which made the work feel both meaningful and motivating.
From the outset, the company expected us to take ownership of tasks, think creatively, and bring practical solutions to improve their digital presence. We were encouraged to carry out

research-driven improvements, maintain attention to detail, and ensure that our work aligned with the brand's identity and values. Clear expectations were set regarding timelines, quality of deliverables, and overall contribution to the business goals.
Through this internship, I gained hands-on experience in website design, user experience improvement, and product listing on e-commerce platforms like Amazon. I learned how thoughtful storytelling, consistent branding, and well-executed design can significantly impact customer perception. The process also helped me improve my collaborative and time management skills, especially while working with team members across different tasks.
This internship offered a well-rounded learning experience that combined technical work with creative thinking and strategic execution. It provided valuable insights into how small businesses build digital systems to scale sustainably and how meaningful stories can enhance both brand identity and customer engagement.

Academic courses relevant to the project: Yes

Learning Outcome: UI/UX design and also rewamping of the website

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PS-I station: Conenct Signal, Jaipur

Student

Name: ARJAV PATEL (2023A8PS1140G)

Student Write-up:

PS-I Project Title: Enhancing Digital Presence

Short Summary of work done: I led the revamp of the organization's website to improve user experience, modernize the design, and ensure mobile responsiveness. The new website showcases the brand's identity more effectively, with optimized navigation and performance. Additionally, I facilitated the listing of their products on Amazon, managing product descriptions, images, and SEO to enhance visibility and reach. This dual approach significantly strengthened their digital presence, improved customer engagement, and created new sales opportunities through e-commerce. My contributions played a key role in streamlining their online operations and expanding their market footprint across both web and marketplace platforms.

Objectives of the project: To revamp the webiste and improve the digital presence

Tool used: Shopify,

Details of Papers/patents: Na

Brief description of the working environment:

Academic courses relevant to the project: NA

Learning Outcome: Shopify, Digital Growth

PS-I station: Conenct Signal, Jaipur

Student

Name: YUVRAJ SINGH RATHORE (2023B2A40718G)

Student Write-up:

PS-I Project Title: Payment Gateway Integration and Transport Service

Short Summary of work done: During my PS-I at Connect Signal, Jaipur, I worked on enhancing the functionality of an e-commerce platform by integrating Razorpay as a payment gateway and a flexible transport service through Shopify. I began by evaluating multiple payment gateways and logistics providers, ultimately selecting Razorpay for its strong UPI support and developer-friendly integration. The transport integration involved setting up tiered shipping zones, weight-based rate slabs, and enabling dynamic rate displays at checkout. I implemented webhooks to sync payment status updates between Razorpay and Shopify, and created custom rate tables for local vendors offering better pricing within Rajasthan. Through sandbox testing and internal user feedback

Objectives of the project: The objective of this project was to implement secure, multimode digital payments using Razorpay within a Shopify-based e-commerce platform, enabling support for UPI, credit/debit cards, and net banking. Another major goal was to develop an

integrated transport service that allowed dynamic shipping rate calculation, zone-wise delivery segmentation, and real-time tracking. The project aimed to eliminate manual reconciliation, automate order fulfillment workflows, and provide transparency and trust to end-users during checkout and delivery

Tool used: The primary tools and platforms used during this project included the Shopify e-commerce platform, Razorpay API, Visual Studio Code for scripting, Postman for API testing, webhooks for transaction status updates, and Google Sheets for managing shipping ra

Details of Papers/patents: There were no papers or patents published or filed

Brief description of the working environment: The working environment at Connect Signal was highly collaborative, with open communication across teams and mentors. I was given the opportunity to take full ownership of my assigned tasks and engage with real-world business processes

Academic courses relevant to the project: The project was closely related to several academic courses such as Web Development, Software Engineering, E-Commerce Technology, Database Systems, and Computer Networks

Learning Outcome: This project provided me with practical exposure to API-based integration, system design, and automation in the context of e-commerce platforms. I developed a deep understanding of Razorpay's developer tools and payment lifecycle, as well as Shopify's extensibility for logistics handling.

PS-I station: Conenct Signal, Jaipur

Student

Name: PRATEEK SAXENA . (2023B4A10780H)

Student Write-up:

PS-I Project Title: Payment Gateway integration and Transport service

Short Summary of work done: During my internship at Connect Signal, Jaipur, I primarily worked on Payment Gateway Integration and Transport Service Research for the company's website. The objective was to identify, evaluate, and implement the most efficient payment gateway while simultaneously exploring logistics solutions for smooth transport service integration. In the initial phase, I conducted a comparative analysis of various payment gateways such as Razorpay, PayU, and PayPal, assessing parameters like transaction fees, documentation requirements, security, and ease of integration. Based on research and discussions with mentors, Razorpay was selected as the preferred gateway due to its cost-effectiveness and robust API support. I successfully created a Razorpay account, completed the KYC and verification processes, and executed a successful test payment, confirming the gateway's functionality. I also prepared and delivered two detailed presentations, one on payment gateway comparisons and another on the required documentation for Razorpay integration. Parallelly, I worked on transport service research to find the most reliable delivery partners. I compared domestic and international shipping options, analyzing pricing, service quality, and delivery speed. A local vendor was also evaluated and found to offer superior services compared to many national providers. Additionally, I participated in seminars, quizzes, and group discussions during the internship period, which enhanced my technical knowledge and communication skills. This internship provided me with hands-on experience in digital payment solutions, logistics research, and professional reporting, significantly improving my technical, analytical, and presentation abilities.

Objectives of the project: To integrate payment gateway and transport service on the website of my compnay

Tool used: Razorpay Dashboard, Microsoft Office (PowerPoint & Excel), and Google Workspace

Details of Papers/patents: None

Brief description of the working environment: The working environment at Connect Signal, Jaipur was professional, collaborative, and supportive. Mentors and team members were approachable, ensuring that any doubts or technical issues were resolved quickly. Regular meetings and feedback sessions helped maintain clear communication and kept us aligned with project goals. The company emphasized teamwork, self-initiative, and timely completion of tasks, which created a positive and productive learning atmosphere.

Academic courses relevant to the project: ourses like Computer Programming (CS F111) helped me understand API integration, backend processes, and data handling for Razorpay. Probability and Statistics (MATH F211) aided in analyzing and comparing transport service data. Technical Report Writing.

Learning Outcome: Website handling , Integration of Payment method and transport service in website.

PS-I station: CT Software Solutions, Gurgaon

Student

Name: ADITYA BIYANI (2023A1PS0112G)

Student Write-up:

PS-I Project Title: Shortlisting and selection criteria for sports faculties teaching.

Short Summary of work done: Above mentioned.

Objectives of the project: Resume shortlisting and videos shortlisting.

Tool used: Excel, youtube, word.

Details of Papers/patents: No

Brief description of the working environment: It was good.

Academic courses relevant to the project: yes

Learning Outcome: HT, management roles.

PS-I station: CT Software Solutions, Gurgaon

Student

Name: RISHABH MOHAN . (2023A7PS0489P)

Student Write-up:

PS-I Project Title: Fitness365

Short Summary of work done: small modules were created for integrating in the backend of the platform

Objectives of the project: working on platform

Tool used: Laravel

Details of Papers/patents:none

Brief description of the working environment: expected working hours are 9 hours a day, 5 days a week.

Academic courses relevant to the project: Yes

Learning Outcome: backend dev

PS-I station: CultureVo, Noida

Student

Name: ADITYA RAYAPROLU . (2023A3PS0416H)

Student Write-up:

PS-I Project Title: Building Agentic AI Bots Under Leadership Misaligned with AI Principles

Short Summary of work done: During my Practice School-I (PS-I), I worked on a project centered around building autonomous bots using Agentic AI, with the intended goal of replicating human-like personas. These bots were expected to demonstrate goal-directed behavior, carry out multi-step reasoning, and simulate natural conversational patterns. While the concept initially appeared promising, the actual implementation largely involved recreating existing solutions already offered by major platforms like WhatsApp and Meta. My work began with building a foundation in Python and understanding the basics of Large Language Models

(LLMs), which formed the core of the bot architecture. I worked with prompt engineering, task decomposition, and memory components to help the bots simulate contextual understanding and human-like continuity in conversations. However, much of the work felt repetitive, with limited room for innovation due to the company's lack of a clear technical differentiator. Although I experimented with agentic workflows and explored planning modules and tool-use strategies, the overall direction of the project seemed disconnected from any real market impact or advanced research. The focus was more on assembling existing ideas than creating something new. Despite these limitations, the experience did help sharpen my understanding of LLMs and their practical applications. It also sparked a deeper interest in the broader field of AI and human-computer interaction. However, the project fell short of delivering the kind of cutting-edge, innovative experience I had hoped for, raising questions about the value of such internships for students seeking real-world, forward-looking exposure.

Objectives of the project: To attempt the design and development of autonomous bots capable of goal-directed behavior using principles of agentic AI. Ironically, while the founder is building an AI-driven product, they openly expressed skepticism toward AI itself. Most students were using AI meaningfully in their work, while the project here often lacked clear vision, originality, or alignment with modern AI practices.

Tool used: Software: Python, Hugging Face Transformers, Google Colab Notebooks Hardware: Cloud-based computation via Google Colab (CPU/GPU environments), which often felt limiting due to session timeouts, lack of dedicated compute resources, and overall absence of a

Details of Papers/patents:N/A — The nature of the work, which largely replicated existing chatbot functionality from platforms like WhatsApp and Meta, did not offer any scope for original research or innovation worthy of publication or patenting.

Brief description of the working environment: The PS-I experience was guided by Ms. Ajitha, Mr. Anupam (a BITSian himself), and Mr. Chandrashekar, who were actively involved throughout the internship. They provided helpful support, especially during the initial stages, and ensured we stayed aligned with the company's expectations. However, the overall workload and intensity often felt excessive, particularly given the nature and scale of the organization.

Academic courses relevant to the project: The actual work mostly involved using ChatGPT to do everything. So realistically, if you know how to use it, you don't need much else

Learning Outcome: Gained hands-on experience in Python programming and developed a working understanding of Large Language Models (LLMs), though the majority of tasks were repetitive and offered limited exposure to advanced AI capabilities.

Observed firsthand how lack of focus, originality, and leadership accountability can hinder a startup's potential. Notably, one of the founders was simultaneously managing two PS-I stations while also employed full-time at a MAANG company, raising concerns about commitment, direction, and the overall quality of mentorship. The experience served as a practical lesson in how not to run a startup effectively.

PS-I station: CultureVo, Noida

Student

Name: ANUSHKA PIYUSH DOSHI . (2023A7PS0597P)

Student Write-up:

PS-I Project Title: Singaporean chatbots

Short Summary of work done: I first developed the personalities of 6 singapore based chatbots and iteratively refined it and tested against multiple models to find the best balance between response quality and latency. then we deployed it using streamlit. then i had to develop a fastapi backend for load testing.

Objectives of the project: To develop 6 singapore based chatbots - male and female mentors, romantic partners, friends.

Tool used: python, gemini 2.0 flash model, fastapi, gcp

Details of Papers/patents:I co-authored a research paper based on how prompt length affects LLMs to determine optimal ptompt length that balances tesponse quality and latency for chatbot applications. this has been submitted for AI-ML Systems conference.

Brief description of the working environment: My PS was online hence the timings werent very constant and meets would be scheduled at any time. But the mentors were helpful and approachable.

Academic courses relevant to the project: yes

Learning Outcome: learnt prompt engineering, fastapi, and agentic ai.

PS-I station: CultureVo, Noida

Student

Name: ADVAITH NEELACANTAN . (2023AAPS1127H)

Student Write-up:

PS-I Project Title: Determining Magnitude for RFM score, Mental Health Guardrailing, API integration and gamification

Short Summary of work done: During the PS-I internship, I worked on developing and evaluating AI system components that ensured safety, scalability, and user engagement. My work included prompt profiling across different LLMs to assess response time and accuracy. I compared multi-shot and single-shot prompt formats using models like Gemini Pro and Gemini Flash, concluding that the latter provided significant latency improvements with minimal accuracy trade-offs. I also designed a mental health guardrail classifier that labeled inputs into mild, moderate, or severe categories. This module was validated using both synthetic and real-world data and integrated into the system using modular APIs. Escalation protocols were tested to handle false positives safely. Additionally, I contributed to building a gamified meme generator. This tool used retrieval-based templates and user-provided inputs to encourage interaction and improve retention. A visual system flowchart was developed to map all API components, including prompt filters, scoring logic, and decision routing. The project concludedwith a recommendation framework for deploying guardrails and gamified AI tools efficiently.

Objectives of the project: Create prompts to determine magnitude of sentences for RFM score for relevance, mental health guardrailing of chatbot and to integrate various APIs

Tool used: Google Colab, Google Cloud, FastAPI, Docker

Details of Papers/patents:NA

Brief description of the working environment: During my Practice School-I at CultureVo Station, BITS Pilani – Hyderabad Campus, I worked in a collaborative and research-driven environment focused on responsible AI system design. The workspace encouraged interdisciplinary exploration, combining electronics, AI safety, and user experience design. Mentorship from academic and industry professionals fostered structured yet creative problem-solving.
The expectations were clear: develop modular, testable systems integrating AI safety mechanisms like mental health guardrails, while exploring user engagement through

gamification. I was expected to analyze latency, optimize prompt design, and maintain ethical deployment practices. The culture emphasized rigor, accountability, and iterative development through peer and mentor feedback.
Throughout the internship, I gained hands-on experience in prompt engineering, latency profiling, and designing API-based workflows. I learned to use real-time classifiers, benchmark LLM performance, and implement gamified features such as meme generation. Additionally, I developed flowcharts to visualize safety-critical system integration and learned how to conduct evaluations using both qualitative (user feedback) and quantitative (accuracy, latency) metrics. These learnings enhanced my understanding of deploying AI responsibly in real-world applications.

Academic courses relevant to the project: NA

Learning Outcome: Learn how a startup works. Learn basics of google colab, basic ML concepts, understand memory management in a chatbot, learn how various APIs are integrated internally in a project.

PS-I station: CultureVo, Noida

Student

Name: DHRUV SHAH (2023B3A70851G)

Student Write-up:

PS-I Project Title: Development of Multi-Agentic Systems and Model Context Protocol (MCP) for Real-Time AI Applications

Short Summary of work done: During my internship at CultureVo, I built comprehensive multi-agent systems using LLMs to automate tasks like article generation, customer outreach, support handling, and event planning. I analyzed LLM capabilities—especially Gemini Pro and Flash—by systematically testing prompt length and model impact on magnitude scoring response latency. This involved fine-grained performance profiling and the development of Python automation pipelines. I also engineered a Model Context Protocol (MCP) server and client, enabling multiple agents to share and persist conversational memory, thus supporting complex collaborative workflows. Additionally, I prepared educational slide decks explaining the intuition and training

paradigms of LLMs. The project combined deep technical experimentation with an emphasis on real-world business impact, improving both my understanding of agentic AI and hands-on development skills.

Objectives of the project: Design and implement multi-agent systems for automating business processes such as article creation, customer outreach, support, event planning, financial analysis, and job application enhancement. Develop and deploy a Model Context Protocol (MCP) server and client for managing conversational memory across agents. Evaluate and optimize large language model (LLM) reasoning capabilities, judgment accuracy, and latency, focusing on prompt optimization and model selection. Create educational materials elucidating the intuition, history, and training of large language models.

Tool used: Software: Python (pandas, regex, automation libraries), Google Colab, Gemini API, GitHub, line_profiler, Jupyter Notebooks. Hardware: Standard laptop/desktop workstation (no dedicated hardware requirements). Other: Google Slides, Google Docs, Git for ve

Details of Papers/patents:-

Brief description of the working environment: CultureVo provided an open, collaborative, and supportive environment. Interns worked closely with the CEO and Tech Lead, receiving regular feedback and guidance. The company encouraged exploration, hands-on experimentation, and knowledge-sharing through presentations and documentation. Expectations included proactive problem-solving, deliverable-oriented milestones, and both independent and teamwork. The experience deepened my understanding of deploying AI solutions for business use-cases, highlighted the importance of memory protocols in multi-agent architectures, and cultivated practical skills in performance optimization and automation. Frequent interactions with mentors and peers fostered innovation and critical thinking.

Academic courses relevant to the project: Artificial Intelligence
Machine Learning
Data Structures and Algorithms
Software Engineering
Probability and Statistics
Computer Networks (for MCP server/client aspects)
Automation & Scripting

Learning Outcome: Gained hands-on experience building agentic AI systems to automate real-world tasks.
Understood prompt optimization, model latency metrics, and how model selection affects AI performance.
Developed, hosted, and evaluated a custom MCP server-client architecture for conversation management.
Explored advanced LLM concepts, such as magnitude scoring and reasoning evaluation, with workflow automation in Python.

PS-I station: CultureVo, Noida

Student

Name: SUVID SINGHAL . (2023B3A70972P)

Student Write-up:

PS-I Project Title: Memory-Efficient Conversational AI: Leveraging RFM and Agentic Architectures for Enhanced Chatbot Control

Short Summary of work done: I worked on creating the RFM framework to score the prompts given to the LLM. I Then, I worked on bechmarking different LLM models from Gemini and Novita AI platform. I calcualted the time taken for 50 different set of prompts on each of the models and plotted histograms for visualizing the results. I also estimated the costs for the same for each of the model. After that, I worked on LLM security and tested guardrails and non-guardrails version for DAN and XPIA attacks.

Objectives of the project: The main objective was to build a framework to score the prompts given to LLM and benchmark different LLM models

Tool used: Google Colab, Python, Gemini API, Novita AI API, Matplotlib, FastAPI

Details of Papers/patents:N/A

Brief description of the working environment: The working environment was very flexible. It was very relaxed. We used to have a short meeting every alternate day to discuss the progress and next tasks. Apart from that, we were also required to fill a daily check-in to track our progress and we were graded based on that. No quiz was taken so we were graded based on our daily check-ins and tasks completed.
The mentors were supported and encouraged us to read a lot of papers and provided resources to learn. They gave good tasks that facilitated our learning.
We also learnt how to manage our time and complete tasks in given deadlines.

Academic courses relevant to the project: CS F111

Learning Outcome: We learnt how to work with different LLM models like Gemini, Mistral, Llama etc. Also learnt prompt engineering and many things about LLM security as well. We also got to read a lot of research papers and understand them.

PS-I station: CultureVo, Noida

Student

Name: NIHAL KRISHNA SHRIVASTAVA (2023B5A70986G)

Student Write-up:

PS-I Project Title: Design and Implementation of a Modular Engagement Monitoring and Reward System for Conversational AI

Short Summary of work done: During my PS-I, I worked on the design and development of a modular engagement monitoring and reward system for conversational AI platforms. The project aimed to enhance user interaction by combining automated conversation quality evaluation with behavior-driven reward mechanisms. I implemented a Judge LLM Monitoring System that periodically assessed dialogue quality, coherence, and engagement depth. These evaluations generated structured engagement scores, which were tracked and summarized using a batch processing logic. In parallel, I developed a reward system that incentivized users based on meaningful activities like milestone achievements, consistency streaks, and significant conversational patterns. The system was designed to operate in the background, integrating seamlessly with chatbot workflows without disrupting user experience. My work also included developing automated parsing of LLM outputs, setting up structured feedback loops, and ensuring the scalability of the entire architecture. This project provided me with practical exposure to backend development, conversational AI workflows, engagement analytics, and reward system design. It also strengthened my skills in system integration, prompt engineering, and behavior modeling. Overall, I contributed to building a system that combined AI-driven evaluation with gamified engagement tracking, designed to foster meaningful user interactions in conversational platforms.

Objectives of the project: The objective of the project was to design and implement a modular engagement monitoring system for conversational AI platforms. It aimed to assess

conversational quality using a Judge LLM, track user engagement through structured scoring, and introduce a behavior-driven reward mechanism based on activity milestones and interaction patterns. The system was built to integrate seamlessly within chatbot workflows, enhancing user retention through structured evaluation, analytics, and gamification strategies.

Tool used: Python, Gemini API, Regex, Logging Module, Dataclasses

Details of Papers/patents: None

Brief description of the working environment: The working environment was structured yet flexible, promoting independent learning alongside guided mentorship. I worked as part of a backend-focused team, where I was encouraged to take ownership of my project modules while collaborating for feedback and reviews. Expectations from the company included delivering a modular, scalable system that could monitor conversational quality, track engagement metrics, and reward user interactions based on predefined conditions. The focus was on creating components that operated efficiently within larger AI chatbot systems, emphasizing clean logic, seamless integration, and reliable performance.
Throughout the internship, I was exposed to practical aspects of backend development, system integration, and AI-driven analytics. I learned how to design modular systems, implement structured evaluation mechanisms using LLMs, and integrate gamification logic through reward systems. Working with real evaluation loops, data parsing, and prompt engineering deepened my understanding of how AI systems manage engagement and user retention.
The experience also enhanced my skills in system design thinking, problem-solving, and writing structured, maintainable code within a collaborative environment. Overall, the internship provided a balanced exposure to technical implementation and applied AI concepts in a professional setting.

Academic courses relevant to the project: CP

Learning Outcome: Gained practical experience in backend system design, conversational analytics, and behavioral tracking. Learned to implement modular evaluation systems using LLMs, design gamified reward mechanisms, and apply prompt engineering and batch processing for AI-driven engagement tracking.

PS-I station: Cusmat Technologies Private Limited - Mechanical Design, Bangalore Urban

Student

Name: VAISHNAV KIRAN (2023A3PS0515G)

Student Write-up:

PS-I Project Title: Project Rithvik: Dumper Simulator, Unity Tutorial development for an EV soft top assembly, Dummy hardware for a winder setup

Short Summary of work done: During my PS-1 internship, I actively contributed to the development of both hardware and software systems across two major projects: Project Rithvik and the Old Winder Control Panel. My responsibilities included creating a wiring index for a complex dummy hardware setup, where I learned practical skills like wire crimping, soldering, and ensuring safe connections using heat-shrink tubing. I collaborated on mapping Arduino Mega pins to various switches, LEDs, and inputs, followed by writing and debugging embedded C code to interface the hardware using the Arduino IDE. In parallel, I worked on a Unity-based simulator project, where I was responsible for building a detailed step-by-step interactive tutorial using Unity's Timeline and Animator. I referenced technical refit documents to design accurate sequences involving part placement, tool selection, motion paths, and audio cues, simulating real-world convertible soft-top installation for automotive training purposes. Additionally, I managed procurement planning and inventory audits by listing required components, identifying available stock, sourcing quality parts from reliable vendors, and maintaining cost-effective budgeting records. I also participated in group discussions and wrote technical documentation and weekly reports summarizing progress and learning outcomes. Overall, the internship gave me hands-on exposure to embedded systems, simulation design, electrical wiring, and project coordination—bridging theory and practical engineering work.

Objectives of the project: Dummy hardware - Integrating electronics hardware and programming it using an Arduino board to perform the required tasks for each particular component. Unity Tutorial development - Understanding how to create games on Unity, add the physics using unitys built in physics engine and creating a learnable experience for people about setting up of a soft top assembly of an EV convertible vehicle

Tool used: Arduino IDE, Unity

Details of Papers/patents: None

Brief description of the working environment: Main office of the company is a proper working space, good environment, would definitely seem like an enjoyable workplace. Although we never worked there, we worked at a place called the "Experience Center" or the company's EC, which was basically like a storage unit. All the hardware part of the projects took place here and we rarely left the place. Although it isn't much to look at, the learning experience we had there was really commendable. The work environment was fun and our mentors always kept it that way. but it is 100% recommended if you are interested in electronics as the mentor showed us what it takes to stay in this industry.

Academic courses relevant to the project: Digital Design, Electronics devices, Microprocessors Programming and Interfacing, Microelectronic circuits, Electrical sciences

Learning Outcome: Understanding working under a timeline. Understanding key concepts of electronics as well as implementing them on a practical situation. Developed hands on experience in Electronics hardware design.

PS-I station: Cusmat Technologies Private Limited - XR Developer, Bangalore Urban

Student

Name: JAS SIMAR KAUR . (2023B3AA0535H)

Student Write-up:

PS-I Project Title: Rithvik sdk dumper

Short Summary of work done: We worked on multiple things throughout the internship like arduino, unity, inventory management and basics of pcb designing. We also learned about various electronic devices and made a dummy hardware.

Objectives of the project: We worked on multiple things throughout the internship like arduino, unity, inventory

Tool used: Arduino, easyeda, unity and various electronic and mechanical components for hardware

Details of Papers/patents: Same as above

Brief description of the working environment: The people are very nice and approachable. Learned a lot with the team. The workspace is not that great (we worked in a workshop, not office). We worked on various things (no main project as such), but learned many new things.

Academic courses relevant to the project: Electronics

Learning Outcome: Arduino, unity, dummy hardware, inventory tools/devices

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PS-I station: Digibuks LLP, Mumbai

Student

Name: HARSHUL SINGAL . (2023A7PS0568P)

Student Write-up:

PS-I Project Title: Feature Enhancements – Developing New Modules for Business Accounting: Subscription and Account Section

Short Summary of work done: During my PS-I at Digibuks LLP, I worked on enhancing the Subscription and Account Sections of their business accounting platform. I developed and improved the subscription module frontend using React and TypeScript, implementing interactive plan displays with dynamic pricing based on transaction volumes. A comparative study of competitors like Khatabook and Vyapar guided UI/UX design improvements. I integrated the Razorpay Payment Gateway API, enabling secure in-platform transactions with complete workflows for order creation, checkout, payment success/failure handling, and webhook-based verification. Automated invoice generation, real-time transaction logging, and payment history tracking were also implemented. On the backend, I contributed to designing a modular subscription management system using Laravel, creating optimized database schemas, and developing RESTful APIs for subscription and payment operations. I implemented role-based access control, tiered pricing models, and full subscription lifecycle management including renewals, upgrades, downgrades, and expiry notifications. This work strengthened my technical expertise, problem-solving abilities, and understanding of SaaS-based fintech products.

Objectives of the project: Develop a dynamic and scalable subscription management system for the Digibuks accounting platform. Enable users to select subscription plans with role-based access to platform features. Implement an intuitive frontend for plan selection, cost estimation, and upgrades. Integrate secure online payments using Razorpay API. Design and optimize backend architecture, database schema, and API specifications to ensure scalability and reliability.

Tool used: Frontend: React.js, TypeScript, HTML5, CSS3 Backend: Laravel (PHP), MySQL Payment Gateway: Razorpay API Development Tools: Visual Studio Code, Postman, Git/GitHub Others: RESTful API architecture, Webhooks

Details of Papers/patents: None

Brief description of the working environment: Digibuks LLP provided a collaborative, flexible, and growth-focused work environment. As a startup in the fintech domain, the company encouraged innovation, independent problem-solving, and ownership of work. My mentors were approachable and supportive, offering clear guidance while allowing room for exploration.
The company's expectations were aligned with industry standards — delivering functional, scalable, and user-friendly solutions within deadlines, while maintaining code quality and documentation. I was encouraged to follow best practices in UI/UX, backend design, and API development, ensuring the system could evolve with future requirements.
During my PS-I, I learned to bridge academic knowledge with real-world applications, working with technologies like React, TypeScript, Laravel, MySQL, and Razorpay APIs. I gained exposure to full-stack development, payment gateway integrations, competitive analysis, and subscription lifecycle management. Additionally, I learned the importance of clean architecture, modular APIs, and effective communication in a team-based environment. This experience strengthened both my technical and professional competencies.

Academic courses relevant to the project: Object-Oriented Programming
Database Systems

Learning Outcome: Hands-on experience in full-stack development using React (TypeScript) and Laravel (PHP).
Understanding and implementation of Role-Based Access Control (RBAC) in SaaS platforms.
Integration of payment gateway APIs, including order creation, webhook verification, and automated invoicing.
Designing optimized database schemas and modular backend APIs.
Conducting competitive analysis to extract UI/UX and business logic insights.
Improved project planning, documentation, and collaboration skills in a professional startup environment.

PS-I station: Digibuks LLP, Mumbai

Student

Name: CHAITANYA JAIN . (2023B4A71025P)

Student Write-up:

PS-I Project Title: OCR document Digitization

Short Summary of work done: At Digibuks, I developed an OCR system using PaddleOCR and exposed it through APIs built with FastAPI. I experimented with alternative tools like Tesseract and Google ML Kit to benchmark performance. I implemented evaluation metrics to measure OCR accuracy and iteratively improved the pipeline for better real-world text extraction.

Objectives of the project: To use OCR to convert images of bills to digital document and store it in database

Tool used: I used Python along with libraries like OpenCV, NumPy, and Pandas for image processing and data handling. Tesseract OCR was used for text extraction, and Git was used for version control. The development was done on standard Linux-based workstations.

Details of Papers/patents:none

Brief description of the working environment: The working environment at Digibuks was collaborative and supportive.It taught me how to work in a real-world context and understand how industry-grade OCR systems are built and refined.

Academic courses relevant to the project: Data Structures & Algorithms, Machine Learning, Discrete Mathematics, Probability & Statistics

Learning Outcome: I gained practical exposure to OCR systems, image preprocessing, and structured data extraction from scanned documents. I improved my understanding of tools like Tesseract and OpenCV, while also learning to work in a modular pipeline. This experience enhanced both my technical problem-solving and collaborative development skills.

PS-I station: Digibuks LLP, Mumbai

Student

Name: ADITYA REDDY (2023B4AA0639H)

Student Write-up:

PS-I Project Title: Automatic Accounting

Short Summary of work done: Integrate Digibuks web application with accounting software called tally

Objectives of the project: Automate financial reporting by integrating digibuks web app with Tally accounting software.

Tool used: Node package manager, VScode, postman api.

Details of Papers/patents: Nil

Brief description of the working environment: I was able learn and work on web applications including integrating apps testing api calls etc.

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

Learning Outcome: Was able learn about web application and app integrating

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PS-I station: Digibuks LLP, Mumbai

Student

Name: AYUSHMAAN AGARWAL (2023B5A70978G)

Student Write-up:

PS-I Project Title: UI/UX Developement

Short Summary of work done: My time here in PS1 was really a new experience for me as a whole, working in a corporate environment adn everythings else which comes with it was completely new and a revealing experience for me and I am very delighted to be given this opportunity

Objectives of the project: Improvement of the design of the digibuks LP website

Tool used: Figma, React JS

Details of Papers/patents: None

Brief description of the working environment: The working environment was very welcomimg to new joiners as they were very patient with us and held our hands entirely throughout the course of this internship. We got a lot to learn because of this.

Academic courses relevant to the project: yes

Learning Outcome: Ui/ux tools such as Figma, webdev tools such as React JS

PS-I station: Digital Government Research Centre, NIC, Govt. of India, Patna

Student

Name: PRIYANSHU NARAYAN . (2023A2PS0283P)

Student Write-up:

PS-I Project Title: Aasha: Healthcare App

Short Summary of work done: During PS-I, work on the Aasha Healthcare App focused on frontend development and API integration. The initial phase involved designing and building an intuitive user interface for features like patient registration and appointment scheduling. Concurrently, a robust backend API was developed to support these functionalities, handling user authentication and secure data transmission. The final stage involved seamlessly integrating the frontend with the API, ensuring dynamic data display and real-time updates.

Thorough testing was conducted to guarantee smooth data flow and optimal app performance, laying a strong foundation for the Aasha Healthcare App

Objectives of the project: Building App's frontend and API for the app then integrating it.

Tool used: C#, Visual Studio 2022, VS Code, SQL

Details of Papers/patents:none

Brief description of the working environment: All good

Academic courses relevant to the project: OOPS, CP

Learning Outcome: C#, Visual Studio 2022, VS CODE, React.JS , SQL

PS-I station: Digital Government Research Centre, NIC, Govt. of India, Patna

Student

Name: SAI ABHINAV ADDAGADA . (2023A7PS0083H)

Student Write-up:

PS-I Project Title: App development for the healthcare services

Short Summary of work done: During the PS-I internship at the Digital Government Research Center (DGRC) in Patna, our team worked on developing a mobile application to assist Community Health Officers (CHOs) in streamlining their daily reporting and claim submission processes. The goal was to reduce the dependence on manual recordkeeping and introduce a simple, reliable digital tool to improve efficiency and accuracy. Our work involved understanding the workflow of CHOs, translating their requirements into functional app features, and creating an intuitive interface suited for field-level usage. We focused on features such as logging daily activities, submitting claims, viewing previous reports, and ensuring offline usability for low-connectivity areas. This internship gave us valuable exposure to practical problem-solving, working on socially relevant challenges, and building solutions under

constraints. It also helped us develop teamwork, time management, and the ability to adapt quickly in a dynamic environment.

Objectives of the project: To build a mobile application portal for CHO users(Community Health Officers) to record activities and submit claims.

Tool used: Expo Go, Node.js, React Native, SQL Server, ASP.NET core, C#, JavaScript, GitHub, Postman

Details of Papers/patents: No papers or patents were filed or published as part of this project.

Brief description of the working environment: The working environment during PS-I at the Digital Government Research Center (DGRC), Patna, was both professional and collaborative. Although our team members were working remotely from different locations, communication was smooth and responsibilities were clearly distributed. Regular virtual meetings and continuous feedback from mentors ensured that the project stayed aligned with its objectives.
From the company, we expected real-world exposure to how government technology projects are planned and executed. We were given the opportunity to work on a meaningful project with direct social impact, which helped bridge the gap between academic learning and practical application. The mentors at DGRC were supportive and approachable, allowing us the freedom to experiment while guiding us in the right direction whenever we encountered challenges.

Academic courses relevant to the project: OOPS,DBMS

Learning Outcome: Full-Stack Development Exposure, UI/UX Design Thinking, Collaborative Development and Version Control

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PS-I station: Digital Government Research Centre, NIC, Govt. of India, Patna

Student

Name: JAPJEETSINGH KHALSA . (2023B3A70992P)

Student Write-up:

PS-I Project Title: Website and Application Development for Water and Healthcare Department

Short Summary of work done: Initially before our midsem presentation, there were sessions on HTML,CSS,SQL,React Native .After our midsem presentation, we were asked to choose a project in either website or application development in groups of 5.Then we started working on our project with daily online Sessions teaching us about react native, website development using C sharp. the project that I chose was application development using react native. We built an app for health department and included functionalities such as login, registration, change password , and other core functionalities of app. The app was for AASHA workers for claiming incentives for the work they have done. So in our group, some people worked on building APIs , some on making the screens , some worked on the frontend and so on

Objectives of the project: Understanding how the organisation works on a project and what tech stack does it use.

Tool used: visual studio 2022, VS code , SQL, React Native , ASP.net code , c sharp, HTML ,CSS , Git

Details of Papers/patents:NA

Brief description of the working environment: The working environment was not at all hectic and was pretty flexible and easy going. The company gave us many tasks to perform and submit and constantly engaged us with some work. They were strict with our final project submission and we had to present our fully functional application in front of them at the end. We had daily 1-2 hr sessions. Sessions on HTML,CSS,SQL,React Native ,Building APIs , web development using ASP.net core was held , where the organization mentors taught us and gave us tasks regularly. Attendance was monitored strictly.

Academic courses relevant to the project: OOPS, DBMS

Learning Outcome: 1)Learnt how to build API's using ASP.NET Core in visual studio and implement the API's in our mobile application .
2)Made App using React Native
3)Learnt SQL for backend integration
4) Learnt how to collaborate and work in a team setting.

PS-I station: Digital Government Research Centre, NIC, Govt. of India, Patna

Student

Name: AGNIBHA SARKAR (2023B5A31182G)

Student Write-up:

PS-I Project Title: Development of Healthcare App for AASHA Workers

Short Summary of work done: Node.js, Javascript, C#, HTML, SQL

Objectives of the project: To develop healthcare app for AASHA Workers

Tool used: Node.js, Javascript, C#, HTML, SQL

Details of Papers/patents: No

Brief description of the working environment: Node.js, Javascript, C#, HTML, SQL

Academic courses relevant to the project: None

Learning Outcome: Node.js, Javascript, C#, HTML, SQL

PS-I station: Digital Government Research Centre, NIC, Govt. of India, Patna

Student

Name: HEMANT . (2023B5A71084P)

Student Write-up:

PS-I Project Title: Application Development for the Health Department

Short Summary of work done: Majority of the time was spent on teaching the students how to develop basic apps and websites using above mentioned tools. In the last few weeks, we had to put together an application which made use of all these.

Objectives of the project: Develop an application which helps store and access data of the work done in the health department

Tool used: Git, SQL, NodeJS, Postman API, frameworks like React Native, ASP.NET core

Details of Papers/patents:N/A

Brief description of the working environment: We had a training session about 2 hours long (online) 5 days a week. Main objective was to grasp what was being taught. For our final submission (last 2 weeks), we were expected to build an app using the tools that were taught, on which we worked together as teams of 5.

Academic courses relevant to the project: 2nd year CS courses like DBMS will help but not necessary.

Learning Outcome: This station and project will serve you good if your expected outcome is to get introduced to tools such as Git, SQL, NodeJS etc. They won't expect you to already know these. Major learning outcomes were how to develop basic programs with these tools.

PS-I station: Digital India Bhasini Division(DIBD), New Delhi

Student

Name: SHRANYA SACHDEVA . (2023AAPS0186H)

Student Write-up:

PS-I Project Title: CUSTOM OCR-BASED IMAGE-TO-IMAGE MULTILINGUAL INDIC TEXT TRANSLATION SYSTEM

Short Summary of work done: During my PS-I internship, I contributed to building a multilingual image-to-image translation system using OCR and AI-powered APIs. My work

involved dataset collection, image preprocessing (skew correction, thresholding, Hough Line detection), and evaluating OCR tools like Surya OCR and EasyOCR. I integrated the Bhashini API for text translation and automated the workflow using Python and Postman, ensuring accurate alignment of translated text with the original image. I also participated in quizzes, discussions, and technical reviews, gaining hands-on experience in OCR systems, API integration, and teamwork in a professional project environment.

Objectives of the project: The framework involves developing a custom OCR pipeline capable of detecting and extracting text from document images, translating the extracted content into a desired target language, and accurately rendering the translated text back onto the image while preserving the original document's layout and structure. The system incorporates advanced image preprocessing techniques, including skew correction, layout detection, and noise handling, to enhance OCR accuracy. The project integrates backend services for document processing and leverages AI models for translation, contributing towards Bhashini's vision of making AI-powered language services accessible to every citizen in their language.

Tool used: Python, OpenCV, EasyOCR, Surya OCR, Bhashini API, Postman, Jupyter Notebook, GitHub, Google Drive, MS Excel

Details of Papers/patents:none

Brief description of the working environment: The work environment is professional and disciplined. We're expected to be punctual, maintain formal attire, submit daily reports, and update a task tracker. I learned technical skills in OCR and image processing, along with workplace discipline, reporting, and teamwork.

Academic courses relevant to the project: N/A

Learning Outcome: Gained practical experience in OCR integration, image preprocessing, and multilingual translation using Bhashini API. Enhanced technical skills in pipeline development and soft skills like teamwork, communication, and problem-solving in a real-world project environment.

PS-I station: Digital India Bhasini Division(DIBD), New Delhi

Student

Name: ADARSH (2023B1A31167G)

Student Write-up:

PS-I Project Title: Enhancing ASR Systems and Developing a Speech-Driven LID Model

Short Summary of work done: During my internship at Bhashini, I gained practical experience in developing speech-based Language Identification (LID) models and enhancing Automatic Speech Recognition (ASR) systems for Indian languages. I worked extensively with models like Whisper and IndicWav2Vec, focusing on pronunciation modeling, G2P integration, and lexicon augmentation to improve recognition accuracy. I trained models using multilingual datasets such as Common Voice and deployed them on the Sharanag HPC cluster using Slurm. Additionally, I built real-time inference interfaces using Gradio and developed a strong understanding of speech processing pipelines, model evaluation, and research documentation in a real-world applied AI setting.

Objectives of the project: To analyze and improve the performance of Automatic Speech Recognition (ASR) systems for Indian languages by integrating advanced pronunciation modeling techniques, and to design and implement a speech-driven Language Identification (LID) model capable of accurately identifying the spoken language directly from raw audio inputs. This project aims to create a robust end-to-end pipeline that enhances ASR accuracy and supports multilingual voice-based applications.

Tool used: I used Python, PyTorch, and Hugging Face for model development, along with torchaudio for speech processing. I worked with ASR models like Whisper and IndicWav2Vec, and built a custom LID model using MFCC and log-Mel features. Tools like IndicG2P were use.

Details of Papers/patents:N/A

Brief description of the working environment: The station operated mostly in offline mode. We were given the option to work from the office at least three times a week, though daily attendance was encouraged. The company's work environment was quite relaxed, reflecting its nature as a non-profit government startup. We also had the opportunity to attend the NULB conference and witness an MoU signing ceremony.

Academic courses relevant to the project: DSA(Data Structures & Algorithm),Machine Learning

Learning Outcome: I worked on enhancing ASR systems and developing a speech-based LID model for Indian languages. I gained hands-on experience with models like Whisper and IndicWav2Vec, phoneme modeling, G2P integration, and trained models on the Sharanag HPC cluster. I also built real-time inference tools and improved my skills in speech processing, deployment, and documentation.

PS-I station: Dyzncraft Technology Pvt Ltd, Hyderabad

Student

Name: SANIA KOTHARI (2023A7PS0021G)

Student Write-up:

PS-I Project Title: URL Shortenet

Short Summary of work done: During my Practice School 1 (PS1) at Dzyncraft, I contributed to two impactful projects that blended design innovation with functional web development. The first project, Master Plan, focused on creating an interactive, digital layout system to help real estate builders and their customers explore construction plans with clarity. I designed user-friendly templates using tools like Figma and implemented floor-wise visual navigation by cropping images and creating clickable paths. This allowed end-users to intuitively explore buildings floor by floor. By combining these designs with front-end technologies like HTML and CSS, I improved the overall digital presentation of the master layout. The goal was to make architectural plans more accessible, understandable, and visually engaging — and we succeeded in building a system that simplifies complex real estate presentations. The second project, Short URL Application, involved developing a secure and scalable platform for shortening URLs with OTP-based protection. I built the complete front-end interface using React.js, Tailwind CSS, and Redux, ensuring a smooth user experience. I integrated a two-step OTP verification system with Zod validation to secure access and prevent misuse. The result was a lightweight, user-focused app that not only enhanced shareability of URLs but also ensured safety via authentication. Through both projects, I strengthened my skills in UI/UX design, front-end development, secure application workflows, and cross-functional teamwork. These experiences enhanced my ability to translate real-world needs into usable digital solutions and deepened my understanding of product design in the real estate tech domain.

Objectives of the project: Familiarise with Backend and Front end

Tool used: S/w: AI And various VScode extensions

Details of Papers/patents:NA

Brief description of the working environment: At Dzyncraft, I worked in a fast-paced, startup-like environment where creativity, initiative, and clarity of execution were highly valued. The team comprised a compact yet highly skilled group of designers, developers, and strategists working closely with real estate stakeholders. Despite being an intern, I was treated as a contributor and was given full ownership of key project modules — which was both empowering and challenging.

Expectations from the internship involved delivering high-quality outputs under tight timelines, understanding the real estate industry's digital needs, and proactively communicating progress. I was expected to not only write functional code and clean UI but also ensure usability and scalability for real clients. We followed agile-style discussions, with regular feedback loops and design validations.

My Learning Outcomes were diverse:

- Technical Skills: Strengthened my front-end development skills using React.js, Tailwind CSS, Redux, and Figma. I also explored API handling, state management, and responsive design.
- Design Thinking: Learned how to convert complex user requirements (like building navigation or URL protection) into clean and functional interfaces.
- Security Awareness: Understood the importance of access control and implemented OTP-based verification for added safety.
- Communication & Collaboration: Gained experience in working with non-technical stakeholders and explaining solutions in a client-friendly manner.

Overall, Dzyncraft provided a hands-on, industry-aligned experience where I was challenged to deliver real-world solutions. It helped me grow both as a developer and a product thinker, bridging the gap between academic knowledge and professional execution.

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

Learning Outcome: Web Dev

PS-I station: Edutech Learning Solutions Pvt. Ltd., Vadodara

Student

Name: TEJAS SINGH SODHI (2023A7PS0363G)

Student Write-up:

PS-I Project Title: Hand Gesture Recognition

Short Summary of work done: I trained different models, with different pipelines, like Google's Mediapipe solution, that uses landmarks to implement gesture recognition, ML models built on top of landmark detection and image classification using stand alone models. Then the performance of all the models was compared and benchmarked to find out the most viable solution

Objectives of the project: To find out performance of different models in hand gesture recognition for robotic arm control.

Tool used: Google Colab, Python, GitHub, Ubuntu

Details of Papers/patents:N/A

Brief description of the working environment: Online internship, only a weekly meeting or even a weekly update was required. You can expect complete freedom on which direction to take the project, after receiving the project title since everyone's project was solo they were free to do it in any way they wanted.

Academic courses relevant to the project: N/A

Learning Outcome: Learnt how to train various different models, and went through the entire process from dataset creation to benchmarking all the different models, maintaining my Github Repo.

PS-I station: Elite Projects Pvt Ltd, Noida

Student

Name: PRABAL SOOD . (2023A7PS0680P)

Student Write-up:

PS-I Project Title: Strategic Business Development for Product Management, Marketing, and Branding

Short Summary of work done: This business and marketing project encompasses various key areas essential for the success and growth of our spatial optimization solutions. Participants will engage in product management, conducting market research and planning to understand industry trends and user needs. The project also involvesclient outreach activities to build relationships and gather valuable feedback. Digital marketing efforts will be crucial, including UI/UX designing for an appealing onlinepresence, content writing for effective communication, and branding strategies to establish a strong market presence.

Objectives of the project: Product Management, Market Research and Planning, Client Outreach and Relationship Building, Digital Marketing, Content Writing

Tool used: Principles of Management, or Principles of Economics would be good courses to start with, but not necessar

Details of Papers/patents:N/A

Brief description of the working environment: This business and marketing project encompasses various key areas essential for the success and growth of our spatial optimization solutions. Participants will engage in product management,conducting market research and planning to understand industry trends and user needs. The project also involvesclient outreach activities to build relationships and gather valuable feedback. Digital marketing efforts will be crucial, including UI/UX designing for an appealing onlinepresence, content writing for effective communication, and branding strategies to establish a strong market presence.

Academic courses relevant to the project: Marketing, HTML, coding, branding

Learning Outcome: Product management skills, including feature prioritization and development roadmaps.
Market research techniques and strategic planning for business growth.

PS-I station: Elliot Systems, Pune

Student

Name: RIYA RAVI GANDHI (2023A7PS0045G)

Student Write-up:

PS-I Project Title: Frontend Development of OEM Admin and User Application

Short Summary of work done: Over the course of eight weeks, the primary focus was on developing a sophisticated, production-ready web application to manage devices and users for a large-scale Industrial IoT environment. The responsibilities began with the architectural setup using modern web technologies like React.js, TypeScript, Axios, and advanced component patterns designed for both scalability and ease of maintenance. Early tasks included implementing comprehensive authentication flows, robust error handling, and integrating a full suite of RESTful APIs for user and device management. Progressing through the project, the technical emphasis shifted to optimizing performance and enhancing overall code quality, culminating in a seamless migration to TypeScript for greater reliability and maintainability. The implementation of complex business logic allowed for accurate device-to-user and device-to-gateway mapping, aligning with real-world OEM requirements and supporting advanced subscription models. A critical achievement was the integration of real-time data streaming using WebSocket and MQTT protocols, enabling sub-second updates for monitoring industrial devices. This was accompanied by the development of advanced data tables with virtualization, dynamic filtering, and real-time synchronization, as well as interactive charting solutions with ApexCharts and tailored KPI widgets for visualizing operational health. System reliability and usability were enhanced by introducing detailed CSV export features, responsive UI design, and comprehensive user experience improvements. Continuous feedback from stakeholders guided iterative refinements, resulting in a platform that enables efficient monitoring, analytics, and administration of IoT assets. The completed solution established robust foundations for future enhancements such as predictive analytics, edge deployment, and enterprise-scale scalability.

Objectives of the project: To develop the frontend of the web application for the Admin and User side, with real time data streaming and management features.

Tool used: Github, React JS, Javascript, Typescript.

Details of Papers/patents:N/A

Brief description of the working environment: Very welcoming working environment, helpful people, expect you to do the assigned work and provide your own input into the job.

Academic courses relevant to the project: Javascript, Web Development

Learning Outcome: - React JS and its libraries
- Frontend Development
- Api Integration

PS-I station: EquipSetu (SmalBlu Technologies Pvt. Ltd.)- Non Tech, Gujarat, Ahmedabad

Student

Name: AYUSH SINGH . (2023B1AB0866P)

Student Write-up:

PS-I Project Title: Product Management of Agentic AI Platform for Cloud Cost Optimization

Short Summary of work done: During PS-I, I contributed to SmalBlu's product management team, working on defining and driving execution readiness of the MVP platform. I authored detailed PRDs for compute rightsizing and storage tiering modules, collaborating with engineering teams to finalize data flows, API contracts, and UI wireframes. I developed a multi-quarter roadmap linking Epics to key deliverables and built stakeholder briefing decks highlighting ROI and pilot success metrics. I established QA workflows in Jira and authored UAT playbooks in Confluence, enabling seamless testing and validation. Additionally, I supported the GTM strategy and authored a multi-cloud deployment plan using Terraform and Kubernetes. All materials were handed off via Confluence for future implementation.

Objectives of the project: To define and document product requirements for SmalBlu's core MVP features. To build a scalable product roadmap aligned with business objectives. To implement structured QA/UAT processes for feature validation. To contribute to GTM strategy and multi-cloud deployment planning.

Tool used: Software: Confluence, Jira, Figma, AWS CloudWatch, PowerPoint, GitHub Actions, Loom Infra: Terraform, Kubernetes (Helm), AWS, GCP, Azure Communication: Discord, Zoom, Google Workspace

Details of Papers/patents:NA

Brief description of the working environment: SmalBlu offered a highly collaborative and intellectually stimulating environment. Despite the remote/hybrid setup, I had regular syncs with mentors and engineers across product, engineering, and go-to-market teams. The expectations were structured yet flexible—delivering PRDs, test plans, and roadmaps on time

while maintaining quality and business alignment. I was encouraged to take ownership of initiatives, present findings to stakeholders, and iteratively improve based on feedback. I learned how to manage ambiguity, adapt to cross-functional dynamics, and translate high-level business goals into tangible product deliverables. The culture emphasized learning, initiative, and user-first thinking, making it a rewarding experience.

Academic courses relevant to the project: FoDS , Deep Learning

Learning Outcome: Learned to create detailed PRDs from technical specs and business goals.
Gained experience in roadmap planning, QA workflows, and customer engagement.
Understood cloud infrastructure, monitoring tools, and deployment strategies.
Developed stakeholder communication and cross-functional collaboration skills.

PS-I station: Ernst & Young LLP, Bengaluru

Student

Name: PALAK KSHETRAPAL (2023A8PS0814G)

Student Write-up:

PS-I Project Title: Comparison of GenAI tools for SDLC

Short Summary of work done: We were first taught about basics of AI and how it's being used in the industry in the form of Rag pipelines, agentic AI, prompt engineering etc. We were then given a tool and had to analyse the AI tool for integration in a company by creating a demo banking application using the AI tool.

Objectives of the project: We had to compare different GenAI tools

Tool used: Copilot, windsurf, ChatGPT, cursor, flowise AI, vs code, github

Details of Papers/patents:NA

Brief description of the working environment: Very flexible, they just gave us work and deadlines, we had 2 presentations for our research and could ask whatever we want. We also had a guest talk.

Academic courses relevant to the project: Computer Programming

Learning Outcome: We learnt how genAI is used in major businesses and how to leverage AI to create our own softwares.

PS-I station: Ernst & Young LLP, Bengaluru

Student

Name: KUSH AGARWAL . (2023B3A70506H)

Student Write-up:

PS-I Project Title: COMPARATIVE STUDY OF OPEN SOURCES GENERATIVE AI TOOLS IN MARKET FOR SOFTWARE DEVELOPMENT (CODING) AND TESTING

Short Summary of work done: During my PS-I internship with EY, I was engaged in a project focused on the development of a banking website application. My primary responsibilities included contributing to the frontend design and implementation, ensuring user-friendly navigation and functionality. I also worked on preparing and refining the Business Requirement Document (BRD), where I learned to translate functional requirements into structured prompts and actionable development tasks. Additionally, I was actively involved in the creation of UML diagrams to represent the system architecture and workflows, which enhanced my understanding of design modeling and system planning. Documentation of the project deliverables formed another key component of my work, enabling me to practice precision and clarity in technical writing. Beyond the technical contributions, I participated in preparing and presenting a pitch deck on the adoption of Microsoft Copilot in software development. This task allowed me to explore industry use cases of generative AI, evaluate its benefits, and present insights effectively to mentors and peers. Through these activities, I gained valuable exposure to real-world project execution, collaborative teamwork, and aligning technological solutions with business objectives. The internship provided a strong foundation in both

technical and professional skills, bridging the gap between academic knowledge and industry practices.

Objectives of the project: Analysis of Generative AI (GenAI) Tools for Software Development and Testing

Tool used: VS code, Github Copilot, Canva, Docker Desktop, Trae.ai, Cursor, Windsurf.

Details of Papers/patents: None.

Brief description of the working environment: The working environment during my PS-I at EY was highly collaborative, structured, and professional. Despite being a virtual/mentored setup, regular interactions with industry mentors and peers fostered continuous guidance and constructive feedback. The environment encouraged innovation, critical thinking, and problem-solving, while maintaining a focus on meeting deliverables within timelines. The culture emphasized teamwork, adaptability, and professional communication, all of which contributed to a positive and motivating learning experience.
From the company, my expectations were primarily exposure to real-world projects, structured mentorship, and opportunities to apply classroom knowledge to practical scenarios. EY successfully met these expectations by providing me with hands-on tasks such as developing the banking website frontend, preparing BRDs, designing UML diagrams, and working on a Copilot adoption pitch deck. These tasks bridged the gap between academic theory and industry application, allowing me to understand how technical solutions are aligned with business needs.

Academic courses relevant to the project: Computer Programming (CS F111).

Learning Outcome: During the EY internship, I gained practical exposure in developing a banking website using AI tools. Also I learned about the importance of Generative AI along with the growing trend of Agentic AI. I enhanced my technical documentation and presentation skills through project deliverables and pitch deck preparation. The experience strengthened my ability to align technical solutions with business requirements and organizational goals.

PS-I station: eShipz.com (LogIQ Labs Pvt. Ltd.) - IT, Bengaluru

Student

Name: KRISH SANJAY SINGHVI (2023A7PS0012G)

Student Write-up:

PS-I Project Title: Chatbot development for report generation

Short Summary of work done: This project builds a chatbot that automates SKU (Stock Keeping Unit) mapping using a fine-tuned BERT model. It helps match product names and descriptions across vendors or databases by understanding natural language queries. The model is trained on SKU data with variations in naming, enabling it to handle synonyms, abbreviations, and inconsistent formats. The chatbot uses BERT to generate contextual embeddings and suggest the closest matching SKU, improving accuracy and reducing manual work in inventory or catalog management.

Objectives of the project: Had to build a conversational chatbot to extract SKU mapping details from the customer

Tool used: Google collab , python , BERT model

Details of Papers/patents:NA

Brief description of the working environment: My PS experience was in a friendly and supportive work environment where team members were approachable and always willing to help. The company expected timely completion of tasks, clear communication, and quality output. I was given real project responsibilities, which helped me stay engaged and learn effectively.
Working alongside experienced professionals, I gained hands-on exposure to tools and techniques used in the industry. Regular feedback helped me improve both technically and professionally. Time management and accountability were key expectations throughout the internship.

Academic courses relevant to the project: Basic coding and debugging

Learning Outcome: NLP techniques

PS-I station: eShipz.com (LogIQ Labs Pvt. Ltd.) - IT, Bengaluru

Student

Name: ROMIT JAIN . (2023A7PS0021P)

Student Write-up:

PS-I Project Title: BERT powered chatbot for shipping logic automation at eShipz

Short Summary of work done: I developed a BERT-based chatbot at Eshipz to automate the creation of shipping rules using natural language. The bot could understand user intents, extract key details like cost, weight, and payment conditions, and handle multi-turn conversations with context awareness. It simplified rule configuration, reduced manual effort, and integrated with backend systems for real-time processing.

Objectives of the project: The project aimed to build a BERT-based chatbot to help users create shipping rules using natural language, making the process faster, easier, and less error-prone through automation and context-aware interactions.

Tool used: Google collab, python, BERT, Regex.

Details of Papers/patents:NA

Brief description of the working environment: The project manager was very supportive and collaborative throughout making sure that we not only finish the work but also learn variety of new things in the entire process. A variety of different things especially in the AI field can be expected from the company. Through the PS1 I learnt a lot about intent based chatbots and implementing real world workflows and integrating them into the chatbots.

Academic courses relevant to the project: NA. It will help knowing basic python but everything else will be taught from basics.

Learning Outcome: Through this project, I learned how to apply BERT for intent recognition and entity extraction, design context-aware conversations, and integrate NLP models into real-world applications for automating business workflows.

PS-I station: eShipz.com (LogIQ Labs Pvt. Ltd.) - IT, Bengaluru

Student

Name: DHAYANIDHI P . (2023B2A71017P)

Student Write-up:

PS-I Project Title: Chatbot for configuring carrier settings

Short Summary of work done: During my PS-I internship, I worked on developing a chatbot solution aimed at simplifying carrier settings configuration on a logistics platform through natural language interactions. The project involved building an intelligent system that enables users to perform complex configurations such as selecting service types, enabling tracking, and setting account-level preferences using conversational inputs. The first phase of the project involved curating a custom Intents.json dataset tailored to the logistics domain, covering over thirty distinct configuration intents. I fine-tuned a pre-trained BERT model on this dataset to accurately classify user intents based on varied natural language inputs. Alongside intent detection, I implemented regular expressions (regex) for precise extraction of entities such as service types, tracking tokens, and boolean toggles from user queries. To enhance model performance and prevent overfitting, I applied dropout regularization, L2 regularization, and data augmentation techniques, which contributed to improved generalization on unseen data. I also designed the chatbot's dialogue flow to handle multi-turn conversations, enabling it to retain and process context across sequential user inputs.

Objectives of the project: To develop a chatbot that enables users to configure carrier settings on the eShipz website through natural language using BERT for intent recognition and entity extraction.

Tool used: Google colab, Python, regex

Details of Papers/patents:NA

Brief description of the working environment: The working environment during my PS-I internship was highly collaborative and conducive to learning. Our company mentor ensured that we had a clear understanding of the project requirements and technical concepts through regular meetings and discussions. In every meeting, the mentor actively encouraged us to ask questions and share any doubts we had regarding the project. All queries were addressed patiently, and additional guidance was provided through relevant resources, articles, and documentation tailored to the specific challenges we encountered.
The company fostered a supportive atmosphere where continuous learning was emphasized. I was encouraged to independently explore technologies such as NLP, BERT, and chatbot development frameworks, while also having the assurance of mentorship when needed. Expectations from the company were clearly communicated, focusing on timely deliverables,

continuous progress, and a strong understanding of both theoretical and practical aspects of the project.
Through this internship, I gained significant exposure to deep learning model fine-tuning, intent classification, entity extraction using regex, and handling contextual conversation flows in chatbots. I also learned best practices to mitigate model overfitting and was introduced to the nuances of integrating AI solutions into real-world applications, particularly in the logistics domain. Overall, the experience was enriching both technically and professionally, providing me with a well-rounded understanding of project development in an industry setting.

Academic courses relevant to the project: AI/ML, DL

Learning Outcome: Gained hands-on experience in applying Natural Language Processing (NLP) techniques for building conversational AI.
Learned to fine-tune BERT for domain specific intent classification tasks.
Developed skills in dataset creation and annotation for supervised learning models.
Applied regular expressions (regex) for reliable entity extraction from user inputs.
Understood techniques to mitigate model overfitting, including dropout, L2 regularization, and data augmentation.
Learned to design multi-turn conversational flows maintaining context across interactions.

PS-I station: Evoneural Artificial Intelligence OPC Private Limited, Jaipur

Student

Name: DHRUV VIJAY (2023A3PS1044G)

Student Write-up:

PS-I Project Title: Generative XR Developer Intern

Short Summary of work done: This project mostly aims at using Generative XR and 3D asset generation to build a self-learning application that can be operated within a VR headset like Oculus Quest, Rift. Unity3Dis the cross-platform engine used for this development. Apart from this, the project not only strengthens business planning and strategic communication skills but also provides hands-on experience in transforming abstract ideas into fundable business concepts.

Objectives of the project: AI- Powered Scene and asset Generation,Entrepreneurship and Innovation.

Tool used: Unity 3D engine, Cursor AI, Microsoft PowerPoint, MetaQuest 2 Device

Details of Papers/patents: None

Brief description of the working environment: Professional Working Environment, with adequate support and infrastructure.

Academic courses relevant to the project: VR development, AI and XR, Unity Game dev

Learning Outcome: Unity engine and VR development.

PS-I station: Foundation for Interoperability in Digital Economy (FIDE), Bengaluru

Student

Name: IRIS ELDO (2023A7PS0009G)

Student Write-up:

PS-I Project Title: A Transactional DEG Simulation and Observability Engine

Short Summary of work done: API Wrapper around open source DEG simulator called OpenDSS. Connected to AI Agent and dashboard front end

Objectives of the project: API Wrapper around open source DEG simulator called OpenDSS. Connected to AI Agent and dashboard front end

Tool used: Postman, Python, GitHub, Docker

Details of Papers/patents:
https://github.com/iriseldo/OpenDSS_DEG_Simulation_API_Wrapper

Brief description of the working environment: Good engineering environment, friendly staff and mentors

Academic courses relevant to the project: Net Prog (20%)

Learning Outcome: API development, GitHub repository, AI integration

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PS-I station: Foundation for Interoperability in Digital Economy (FIDE), Bengaluru

Student

Name: ANJALI KAMATH (2023A7PS0569G)

Student Write-up:

PS-I Project Title: BecknGPT

Short Summary of work done: During my PS-I internship at FIDE, I contributed to the BecknGPT project—an AI assistant designed to support developers working with Beckn Protocol. The system uses a Retrieval-Augmented Generation (RAG) architecture to answer technical questions using live, structured content from official Beckn documentation. My initial tasks involved onboarding to the BecknGPT architecture, reviewing documentation, and assisting in identifying and formatting key data sources. I contributed to uploading and structuring technical documents, testing crawler outputs, and validating document ingestion into the vector DB. Later, I participated in building and refining prompts for GPT responses, testing accuracy in API-related queries, and documenting use cases. I also contributed to user guide drafting and internal demo preparation. I gained hands-on experience working with tools like N8N, Slack APIs, Qdrant, and GitHub integrations. By the end of the internship, I had a clear understanding of how context-aware LLM systems are built and deployed, and how real-time developer support can be automated for large ecosystems like Beckn. I also contributed to retrospective sessions and finalized the documentation for handoff.

Objectives of the project: To build a real-time, RAG-based AI assistant (BecknGPT) that helps developers, community contributors, and domain experts interact with Beckn documentation through a conversational interface. To automate the ingestion and indexing of Beckn protocol documents from multiple sources (GitHub, Drive, website) and serve precise, context-aware

answers. To integrate BecknGPT with developer platforms like Slack, and extend it with co-pilot features such as prompt-to-code generation and GitHub-based enhancements.

Tool used: Slack and Slack API were used for communication, testing, and Slackbot integration. N8N was used to build and orchestrate automation pipelines between GPT and Slack. OpenAI API was the core engine behind prompt completion and contextual response generat

Details of Papers/patents: None during the PS-I duration. However, the project architecture and design approach have the potential to evolve into a research paper or open-source contribution in the future, especially around domain-grounded RAG systems

Brief description of the working environment: The working environment at FIDE was collaborative, mentor-driven, and highly aligned with real-world engineering practices. I was part of a remote-first team that trusted interns with meaningful responsibilities from the start. The team followed structured documentation, async updates, and paired problem-solving sessions.

The project demanded high ownership, especially in self-learning and adapting to a fast-moving LLM and RAG ecosystem. My mentors expected clarity in communication, timely documentation, and curiosity to go deeper into how things work. I was encouraged to not just execute tasks but also understand the broader system design.

During the internship, I learned how LLMs are fine-tuned for domain-specific applications, how vector search works under the hood, and how tools like N8N, Slack API, and GitHub can be combined to create production-grade AI assistants. The emphasis on real-time support, feedback loops, and user empathy helped me understand the non-technical aspects of building tools that developers actually use.

Overall, the PS-I experience helped me become more independent, technically sound, and aware of real-world challenges in deploying AI systems.

Academic courses relevant to the project: yes

Learning Outcome: Gained practical understanding of Retrieval-Augmented Generation (RAG) architecture.

Learned how to design, preprocess, and embed domain-specific content for LLM-based querying.

Built experience in prompt engineering, API testing, Slackbot setup, and vector database usage (Qdrant).

Understood real-world deployment workflows for LLM applications including testing, staging, and production.

Developed teamwork, documentation, and communication skills in a cross-functional, remote-first setting.

PS-I station: Foundation for Interoperability in Digital Economy (FIDE), Bengaluru

Student

Name: VEER GANDHI . (2023A7PS1234H)

Student Write-up:

PS-I Project Title: Mycelium: An Agentic Network for Intra-organizational Collaboration using Beckn Protocol

Short Summary of work done: Data Model & Schema Design: Creating a taxonomy and data model for workplace management, specifically designing opportunity and asset schemas using Beckn primitives. This also involves transforming opportunities into Beckn intents and assets into Beckn catalogs. AI Agent Development (Individual & Organizational): Building personal AI executive assistant agents for every FIDE employee, each with a unique name from Beckn-one's universal naming service. These agents will discover and communicate with each other using A2A and Beckn protocols, analyze user data (email, GitHub), and automate workflows. The scope also includes developing FIDE's own overarching AI agent. Accessibility & Integration: Ensuring all AI agents are accessible via Slack or Email and are implemented on Beckn-one using Beckn-ONIX plugins

Objectives of the project: Designing taxonomy and data model for workplace management. Designing oppurtunity and asset schema using Beckn primitives. Transforming oppurtunity to Beckn intents and assets to Beckn catalogue. Building AI agents for automating workflows at FIDE. Building FIDE'S own AI agent that: AI agent should be accessible via Slack or Email. All agents must be implemented on Beckn-one via Beckn-Onix plugins. All agents must communicate with each other using A2A protocol as a low-level carrier protocol and Beckn Protocol as a high-level payload protocol for DOFP.

Tool used: Beckn-Onix, Cursor AI, Crawler, n8n, Xcode, Postman, React, Git, Github, Beckn Protocol Stack (Onix adaptor, BAP, BPP, Registry), Vercel

Details of Papers/patents:NA

Brief description of the working environment: The working environment at FIDE's office is highly dynamic, technologically advanced, and collaborative, centered around the development and deployment of innovative AI solutions for internal operations. It's a space where cutting-edge AI agents are not just conceptualized but built to automate workflows and serve as personal executive assistants. The emphasis is on leveraging platforms like Beckn-one, suggesting a modern, interconnected, and potentially open-source-driven ecosystem. There's a

strong focus on data modeling, system architecture (taxonomy, schemas), and inter-agent communication, implying a detail-oriented and systematic approach to development. The integration with communication tools like Slack and Email points to a digitally fluent and agile workspace.

Academic courses relevant to the project: yes

Learning Outcome: An mission owner must be able to (manually or automatically) describe an opportunity and retrieve asset catalogs that best suit the opportunity
A mission owner must be able to propose creation / updation / archival of an asset (product, process, knowledge etc) based on the quality of match received in the asset catalog
Every employee of FIDE should be able to create their own personal AI agent that acts like their executive assistant
Each agent should have its own globally unique name purchased from the universal naming service of Beckn-one
Every agent should be able to discover other agents within the organization
Every agent should be able to analyze their respective owner's email inbox, Github account.

PS-I station: Foundation for Interoperability in Digital Economy (FIDE), Bengaluru

Student

Name: TARUN PRADEEP KRISHNAMURTHY . (2023B3A70398H)

Student Write-up:

PS-I Project Title: THE BECKN WORLD ENGINE: BUILDING A TRANSACTIONAL DEG SIMULATION AND OBSERVABILITY PLATFORM

Short Summary of work done: This project involved building a powerful simulation platform for electrical distribution grids, built upon the integration of OpenDSS and Python. We have engineered a comprehensive suite of APIs to facilitate advanced grid observability, real-time modifications, and transactional analysis. These tools are designed for utility companies and energy producers to access live grid data and execute predictive simulations. Key use cases include forecasting transformer overloads to prevent failures and modeling the profitability of

solar energy integration for consumers and producers. The platform offers the foundational tools to enhance reliability and support strategic decision-making in the transition towards a fully digital energy grid (DEG).

Objectives of the project: Building a grid simulator to be integrated with a utility dashboard at the frontend using the OpenDSS grid simulation software and building APIs to perform various functions

Tool used: VScode, Windsurf, Gemini, Beckn protocol, GitHub, Postman, Docker, Python, JavaScript

Details of Papers/patents:NA

Brief description of the working environment: The office is situated off MG Road, Bangalore, a 5 minute walk from the Trinity metro station. The company's premises includes two floors of the ICP Brunton building. Very friendly working environment, most mentors are willing to provide guidance and help out with work. Facilities are also good and well maintained. There were a few setbacks with our project since the entire scope changed, but we were redirected well. The projects given by the company are very thoughtful and demand quite a bit of time, since they are mostly directly in line with the company's vision and goals.

Academic courses relevant to the project: yes

Learning Outcome: Learned to work as part of a team, learned how to make modifications and think and implement changes on the go, learnt what is required as a software engineer such as detailed developer documentation and workflow diagrams, working with GitHub, Postman, docker and other important Devops tools.

PS-I station: Four Kites, Chennai

Student

Name: SHRIHARI KARTHIK (2023B4A70868G)

Student Write-up:

PS-I Project Title: AUTOMATED DOCUMENT PARSING AND STRUCTURING USING AI TOOLS

Short Summary of work done: During my internship, I worked on exploring AI-based tools for document parsing, with the objective of extracting structured outputs in the form of key-value pairs from unstructured documents. The main tools I experimented with were Vision Agent, Dolphin, and Docling. My role involved testing these tools on various types of documents, analyzing their ability to extract information correctly, and comparing their performances. I conducted accuracy testing by checking how well the outputs matched the expected results, recording the results in detail, and preparing a consolidated comparison of all tools. Additionally, I created Excel-based reports summarizing accuracy levels and itemized matches. This process helped me identify Docling as the most accurate tool among those tested. Through this project, I gained practical exposure to intelligent document processing systems, evaluation methodologies, and reporting. The work also improved my technical and analytical skills, preparing me for real-world applications of AI in document automation.

Objectives of the project: 1. To explore and evaluate different AI/ML-based tools for document parsing. 2. To extract structured data in the form of key-value pairs from unstructured documents. 3. To compare the accuracy and efficiency of multiple tools (Vision Agent, Dolphin, Docling). 4. To identify the most effective tool for converting documents into JSON format.

Tool used: Vision Agent Dolphin Docling Microsoft Excel

Details of Papers/patents:-

Brief description of the working environment: My internship at FourKites, Chennai, provided me with an excellent working environment and professional exposure. The office atmosphere was very welcoming and comfortable, with approachable and friendly employees who were always ready to provide guidance. The workplace also had facilities like a recreation room with table tennis and carrom, and a pantry with refreshments, which created a positive and balanced work culture.

The company set clear expectations, with every task and progress logged on the JIRA platform, ensuring a professional and organized workflow. Weekly progress discussions with mentors helped me stay aligned with project goals and improve upon challenges.

During my internship, I worked on AI-based document intelligence projects, exploring tools such as Vision Agent, Dolphin, and Docling to parse logistics documents like invoices and waybills into structured JSON formats. I performed accuracy testing, consolidated results, and benchmarked outputs against ground truth data. Additionally, I contributed to testing and improving ALAN, the company's voice chatbot for shipment scheduling.

Overall, I gained practical knowledge of document AI pipelines, accuracy evaluation, and professional development practices, while also experiencing how collaboration and company culture contribute to learning and productivity.

Academic courses relevant to the project: Prompt Engineering
Generative AI

Learning Outcome: Gained hands-on experience in working with document parsing tools and vision-language models.
Learnt how to evaluate and compare accuracy metrics across tools.
Improved skills in Excel for consolidating and analyzing results.
Developed an understanding of intelligent document processing workflows.
Enhanced problem-solving skills by handling variations in tool outputs and aligning them to structured formats.

PS-I station: Four Kites, Chennai

Student

Name: ADITHYA BALASUBRAMANIAN (2023B4A70877G)

Student Write-up:

PS-I Project Title: Enabling langfuse tracing and scoring for LLM agents

Short Summary of work done: Enabling langfuse tracing and scoring across different LLM agents. Had to read documentstions of langfuse and deepeval and implement thr tracing snd scoring. From the beginning, i needed to be proactive in asking doubts. I asked doubts every time i can. Wrote code. Used jenkins to deploy the code in non prod and prod environment. Ran sanity tests. Had freedom from the scratxh. From writint code at the start, to pushing code to prod.

Objectives of the project: I had to enable langfuse tracing and scoring for all LLM agents in the company codebase. I also had to write the source code fron the scratch and started the process of langfuse scoring officially in the company.

Tool used: Python. Jenkins. Signoz. Postman to send payload.

Details of Papers/patents:-

Brief description of the working environment: Very flexible. They expected you to work and deliver the task that they've assigned to you. There wasn't too much stress. 1 or 2 days

throughout the entire internship you'd have to work the whole day because your code would be released to the PROD.
They gave us a macbook for work. Everyrhint was grand. We got to work in an IT parj. Free snacks. Free buffet lunch on one day in a week. Good proper company culture. Other full time employees were very chill and approachable. They don't think you're incompetent, they want you to take initiative and ask for work. They handed every thing like a proper company. From HR meeting on day 1 to a good farewell from the senior managers.
Very nice working environment overall. Couldn't have asked for a better PS1 station. It felt like I belonged there and it also never felt like a burden going to work. Started to enjoy the process. Top company. I would really recommend you to pick this company. Highly underrated.

Academic courses relevant to the project: Computer Programming. OOPS.

Learning Outcome: Learnt Python. CI/CD pipelines. Amazon ews. Deploying, releasing and testing of code in a NON PROD and PROD environment. Was given flexibility and freedom to write my own code and send it to PROD. Git commands. LLM agentic functions. Redis.

PS-I station: Genesis Gas Solutions Private Limited - Electronics, Noida

Student

Name: KARTHIK ANNAM . (2023A8PS0359H)

Student Write-up:

PS-I Project Title: IoT modems(4G)

Short Summary of work done: Done a humidity and temperature testing sensor.

Objectives of the project: To make a real time application sample of IoT modem (4G)

Tool used: Vscode, ai tools

Details of Papers/patents:NA

Brief description of the working environment: It was good and fun.

Academic courses relevant to the project: Internet of things

Learning Outcome: Learnt about Real time applications about IoT machines in 4G

PS-I station: Genesis Gas Solutions Private Limited - IT, Noida

Student

Name: AASHI SENGAR (2023A1PS0132G)

Student Write-up:

PS-I Project Title: CRM prototype

Short Summary of work done: -

Objectives of the project: to make a crm prototype

Tool used: C# Gemini API Firebase

Details of Papers/patents:NA

Brief description of the working environment: Was friendly

Academic courses relevant to the project: -

Learning Outcome: learnt c# and SQL and front end development

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PS-I station: Genesis Gas Solutions Private Limited - IT, Noida

Student

Name: HRIDAYESH KUNDU (2023B2A30740G)

Student Write-up:

PS-I Project Title: LoRa IoT Modem

Short Summary of work done: During the initial phase, we worked around LoRa and Arduino basics. We then moved onto UART protocol, and finally designed a circuit for low power transmission of data

Objectives of the project: To create a modem based on LoRa technology for transmission of sensor data

Tool used: Software used - Arduino CLI, KiCAD. No hardwares were used, as it was a soft project.

Details of Papers/patents:NA

Brief description of the working environment: The working environment was very friendly. Mentors were willing to contribute to our learnings. We learnt a lot from the PS station alloted to us.

Academic courses relevant to the project: Digital Signal Processing, Embedded systems.

Learning Outcome: Learnt about transmission of LoRa technology and its application in real world IoT devices

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PS-I station: Gong Lab Pvt. Ltd. (Coffeee.io), Gurgaon, New Delhi

Student

Name: SOHAM SUNIL KALBURGI (2023A7PS0460G)

Student Write-up:

PS-I Project Title: A Comprehensive Approach to Resume Parsing and Candidate Profiling

Short Summary of work done: Developed a resume parsing system combining regex rules, NLP techniques and LLM integration for structured extraction; implemented context-aware section detection, SBERT-based semantic matching for job alignment, batch processing for high-volume inputs and a Streamlit interface with caching, robust fallbacks, multi-format exports, and error handling for high-accuracy processing across diverse resume formats.

Objectives of the project: To create a resume parser.

Tool used: regex, spaCy, NLTK, Streamlit, LLM APIs (mainly Gemini), SBERT, pdfminer

Details of Papers/patents: None

Brief description of the working environment: The work was assigned by the mentors and was to be done in groups. The frequency of meets, however, was very less and irregular. We were expected to update the mentors with our progress after each seminar.

Academic courses relevant to the project: Natural Language Processing

Learning Outcome: Learnt about various frameworks related to NLP, SBERT, LLM APIs and Streamlit.

PS-I station: Gong Lab Pvt. Ltd. (Coffeee.io), Gurgaon, New Delhi

Student

Name: SHREYASH SANTOSH TIWARI . (2023B3A70524H)

Student Write-up:

PS-I Project Title: EXPLORING VISUAL SIMILARITY AND OBJECT DETECTION USING COMPUTER VISION TECHNIQUES

Short Summary of work done: During my PS-I at Gong Lab Pvt. Ltd. (Coffeee.io), I worked on the project "Exploring Visual Similarity and Object Detection Using Computer Vision Techniques." The objective was to develop a tool capable of comparing images for visual similarity and detecting specific objects in images or video frames, with potential applications in AI-based proctoring systems. I implemented image comparison using Structural Similarity Index (SSIM) and Mean Squared Error (MSE) to quantitatively assess resemblance between two images. For object detection, I employed YOLOv5, a deep learning-based model, and Haar Cascade Classifiers for identifying elements such as faces, paintings, TVs, and windows. These components were integrated into a unified processing pipeline capable of handling both tasks. A Streamlit-based user interface was developed to allow users to upload images or videos, view similarity scores, and see detected objects in real time. The system was designed with modularity and scalability in mind, enabling potential cloud deployment. Throughout the project, I gained experience in working with computer vision libraries, optimizing detection accuracy, and troubleshooting real-time performance issues. The work concluded with documentation of the methodology, experimental results, and recommendations for further enhancement. This project not only improved my technical skills in Python, OpenCV, and deep learning frameworks but also strengthened my ability to design, integrate, and present complete AI-driven solutions.

Objectives of the project: Learn to calculate image similarity using MSE and SSIM, Implement object detection using Haar Cascades and YOLOv5 and integrate both into a AI-based protoring pipeline with a Streamlit UI

Tool used: Python, OpenCV, SSIM and MSE Libraries, YOLOv5, Haar Cascades, Streamlit, Pytorch, Scikit-learn, Git, Numpy, Matplotlib etc.

Details of Papers/patents:NA

Brief description of the working environment: The working environment was very flexible. We had 1 meeting every week (online). We were asked to switch on our cameras and discuss our doubts and progress with 2 mentors from the company (The CTO and Chief of Staff). These meetings however happened only for a few weeks after which we had irregular or no meetings. Moreover, a lot of the times the mails and messages to the mentors were simply aired. Other than that, we mostly did the project ourselves (we were divided into 2 groups of 4 with different tasks). The company clearly listed out a 6 week roadmap and expectations which we had to follow. Overall, the project was interesting and definitely a way to learn something new which is also relevant.

Academic courses relevant to the project: CS F111 - Computer Programming (This is in C but we did our work in Python, however knowing how data structures work is important irrespective of language)

Learning Outcome: Gained Hands on experience with SSIM, MSE, YOLOv5, Haar Cascades. Learned to integrate image similarity and object detection into a single functional pipeline. Developed a Streamlit based UI. Learned Computer Vision through OpenCV and Python. Learned machine learning while dealing with the COCO dateset in YOLOv5.

PS-I station: GPLAN Services Private Limited - IT, Pilani

Student

Name: RAGHAV DIXIT . (2023A3PS0310H)

Student Write-up:

PS-I Project Title: Graph Algorithms for Floor Plan

Short Summary of work done: Implemented the ui and backend development versions of the program to be able to handle user input in the format of rooms and corridors and output them as floor plans based on the user's needs

Objectives of the project: Make industry grade floor plans using graph theory to treat rooms as nodes and circulation as connections, to be implemented for fields such as architectural planning, game design or other small projects of such nature.

Tool used: Python, VS Code, tkinter, matplotlib, panda, numpy, and other python libraries

Details of Papers/patents:NA

Brief description of the working environment: Extremely positive work environment, students were encouraged to work at there own pace(baring some deadlines), creativity and suggestions were encouraged, a hands off approach was used, allowing students some breathing room.

Academic courses relevant to the project: Graph and Networks, Computer Programming, OOPS

Learning Outcome: Object oriented programming through Python. (the mathematical aspects of the project had previously been implemented)

PS-I station: GPLAN Services Private Limited - IT, Pilani

Student

Name: SACHIN CHANDELA . (2023A7PS0639P)

Student Write-up:

PS-I Project Title: Design Plot GUI

Short Summary of work done: Just design the python GUI in which the user can draw the plot

Objectives of the project: To design an python GUI. So that the user can draw the plot boundaries

Tool used: Python tkinteer matlab

Details of Papers/patents:NA

Brief description of the working environment: Working environment was very good and learning as same as I mentioned above

Academic courses relevant to the project: NA

Learning Outcome: Python and tkinteer

PS-I station: GPLAN Services Private Limited - IT, Pilani

Student

Name: TANISHQ SAINI (2023B4TS1249P)

Student Write-up:

PS-I Project Title: Gplan Application

Short Summary of work done: This project involved testing the GPLAN floorplan generation tool, analyzing its algorithmic outputs, and evaluating its user interface. Real-world layouts were used for comparison, and feedback form was prepared for surveys.

Objectives of the project: To help develop application for architect to automate computationally heavy work

Tool used: Inkscape, GIMP, microsoft tools,

Details of Papers/patents: Report about all the work done

Brief description of the working environment: Active inquiry and feedback between us and mentors, Clear direction of what to do.

Academic courses relevant to the project: Graph Theory

Learning Outcome: Insight in gap between market and Academy, Unsolved problem for Archetects in auto genration of floorplans, Criteria of evaluation and data collection on softwares.

PS-I station: Greatwall Technologies Pvt. Ltd, Pune

Student

Name: AADITYA HEMANSHU VERNENKER (2023A7PS1027G)

Student Write-up:

PS-I Project Title: Edangal

Short Summary of work done: During PS-I at Greatwall Technologies Pvt. Ltd., I worked on developing a scalable data model to power an automated smart survey system for product and personality comparisons. The model evolved from a single-sheet prototype to a four-sheet relational structure comprising Questions, Categories, Products, and Company Master. We generated over 2,700 unbiased binary questions and mapped 5,075+ real-world products and public figures across multiple domains, including automobiles, FMCG, electronics, gaming, and sports media. The project involved creating multi-level category hierarchies, duplicating products across brands for improved performance, and ensuring integration readiness for backend survey generation algorithms. The result is a clean, reusable, and scalable foundation capable of supporting dynamic, context-aware surveys across industries.

Objectives of the project: To create a smart survey system, that's analyses various products in the market and their performance in certain regions with different demograph of people

Tool used: Microsoft Excel / Google Sheets – for data model creation and management Python / Pandas – for data cleaning and validation (optional mention if used) ChatGPT / AI Tools – for question generation and domain research Communication Tools – Google Meet, S

Details of Papers/patents: None during the project

Brief description of the working environment: The work environment at Greatwall Technologies Pvt. Ltd. was collaborative and research-driven, with clear communication between interns, mentors, and development teams. Expectations included producing a scalable, structured data model aligned with company goals, ensuring high-quality, unbiased survey questions, and maintaining accurate, integration-ready datasets. I learned to apply academic knowledge of database systems in a practical setting, adapt theoretical principles for efficiency, and conduct in-depth domain research. This internship also provided valuable exposure to AI-assisted content generation, data validation processes, and large-scale categorization.

Academic courses relevant to the project: Database Systems
Data Structures and Algorithms
Software Engineering
Artificial Intelligence / Machine Learning (conceptual)

Learning Outcome: Learned to design and implement structured, multi-level data models for diverse domains.
Improved skills in creating unbiased, reusable binary survey questions.
Gained experience balancing theoretical database principles with real-world scalability needs

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PS-I station: Greatwall Technologies Pvt. Ltd, Pune

Student

Name: ANSH SURI (2023B1A70685G)

Student Write-up:

PS-I Project Title: E-Dangal

Short Summary of work done: Made a survey app that collects user demographics and gives them survey questions according to their product preferences, like FMCG, electronics and even celebrities. The user would be rewarded proportional to the amount of questions answered, the reward points can be redeemed to get gift cards. My team worked on User Interface of the app and the linking of front end and backend of the code.

Objectives of the project: To make an app that facilitates consumer analytics through surveys and demographic data collection

Tool used: Flutter, Android Studio, Git/GitHub, Python, Figma, Canva

Details of Papers/patents:-

Brief description of the working environment: Company seniors were helpful and accomodating. Every doubt was promptly answered and catered to and ample resources were provided. Major learning was how to work in a team effectively.

Academic courses relevant to the project: CS F111

Learning Outcome: App development, communication across different teams, collaboration, git/github, basics of FastAPI.

PS-I station: Greatwall Technologies Pvt. Ltd, Pune

Student

Name: SHREYA BHASKAR . (2023B4A70970H)

Student Write-up:

PS-I Project Title: Edangal

Short Summary of work done: During my PS-I, I was part of a multidisciplinary team working to design and develop an innovative application for product quality comparison across a wide range of categories, including electronics, FMCG, automobiles, transport, and media personalities. Together, we created a dynamic survey platform where users could answer up to 15 tailored comparison questions per day, helping us collect valuable preference data without overwhelming participants. My primary contributions focused on curating and organizing a comprehensive set of product comparison questions spanning all targeted categories. I played a key role in compiling detailed information for each product—including specifications, company details, and distinctive features—to ensure that users could make informed choices while interacting with the application. The combined efforts of all teams ensured seamless integration of front-end user interactions, automated linking of questions and categories, and systematic data collection and storage. Through consistent communication and coordination, we established a platform that not only delivers a transparent and engaging experience for users but also streamlines back-end data management for future analytics. My contributions supported the overall objective of building a scalable and informative comparison tool benefiting both users and researchers.

Objectives of the project: The objectives of the project are to develop a user-centric application that allows individuals to make informed choices by comparing two or more products side-by-side across a variety of categories. The platform provides comprehensive and transparent product information during each comparison to support decision-making. It systematically collects user preference data through daily surveys while ensuring the process is engaging and not overwhelming. Additionally, the project aims to automate the linking of products, questions, and categories for efficient data organization and scalability.

Tool used: S/w - Google sheets and GitHub; we used tech stacks like FastAPI (for back-end API) , PostgreSQL (for the database design) and Flutter (for front-end)

Details of Papers/patents: None

Brief description of the working environment: The working environment was extremely motivating and engaging. We received great inputs and suggestions from our industry mentor which helped us to successfully complete our project. We found our faculty-in-charge and our industry mentor very approachable and friendly. It was a very smooth PS-1 overall. The weekly

targets assigned have to be achieved and my PS-1 journey with Greatwall Technologies Pvt. Ltd. gave me hands-on industry experience and facilitated a lot of key takeaways.

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

Learning Outcome: During this project, we learned to work collaboratively across data, backend, UI, and database teams to design and implement a scalable application. We gained practical skills with FastAPI, Flutter, PostgreSQL, and prompt engineering—crafting effective instructions for AI tools to generate accurate survey questions and automate product-category linking. We addressed real-world challenges in data reliability, automation, and user experience. Overall, the experience greatly improved both our technical proficiency and our ability to solve interdisciplinary problems as a team.

PS-I station: Heetherark Labs Private Limited - IT, Secunderabad

Student

Name: SARTHAK SHASHIKANT RAOOT (2023A7PS1021G)

Student Write-up:

PS-I Project Title: APP DEVELOPMENT OF 'HEETHER': A SMART POSTURE – MONITORING SYSTEM

Short Summary of work done: Over eight weeks, I contributed to the development of the Heether mobile application—a health-tech product supporting smart posture correction using sensor data. The internship began with individual upskilling in Flutter, followed by a mini-project involving API integration. I then transitioned into production development by integrating Firebase Firestore to enable real-time data visualization through posture graphs and activity charts. The app was later refactored to adopt a clean GetX-based architecture, allowing separation of business logic from UI. A key feature implemented was the body type capture module, which used the camera and gyroscope for alignment and stored data using Hive and Firebase Storage. I also designed and developed an entire exercise tracking section from scratch, involving screen flow logic, UI creation in Figma, and Flutter implementation. Hive and Firebase were integrated to support session logging and user progress tracking. The project

gave me end-to-end exposure in app architecture, feature planning, UI/UX workflows, and real-time data handling.

Objectives of the project: 1) Build a real-time posture and exercise tracking app in Flutter. 2) Integrate Firebase and Hive for data synchronization and local caching. 3) Create responsive UI with clean GetX-based architecture. 4) Implement body-type capture using camera & gyroscope. 5) Develop a modular exercise section with logging and feedback features.

Tool used: Flutter SDK, Dart, Firebase (Firestore, Storage), Hive, Git, GetX, Figma, Android Studio, Canva, Postman, VS Code, physical Android device, flutter packages.

Details of Papers/patents: Not applicable.

Brief description of the working environment: The work environment at Heetherark Labs was remote but collaborative, with daily meet-ups and continuous mentor guidance. The company's expectation was to build production-ready modules that could be scaled and shipped as part of their posture monitoring mobile application. I was encouraged to explore UI/UX design in addition to backend and architectural work.
The learning curve was steep, starting with Flutter basics and progressing to advanced integrations like Firebase real-time sync, BLE readiness, Hive storage, and clean controller-based architecture. I gained confidence in handling full-stack mobile development tasks—ranging from camera and sensor integration to visualizing posture data and optimizing UI performance.
Mentorship from the team played a crucial role, with regular feedback sessions that improved my coding practices, modular thinking, and design sensibility. Overall, the experience was both technically enriching and personally fulfilling, preparing me to contribute meaningfully to future health-tech products.

Academic courses relevant to the project: Object-Oriented Programming
Database Systems
Data Structures & Algorithms

Learning Outcome: 1) Hands-on experience in Flutter app development using state management and routing.
2) Real-time database handling using Firebase Firestore and local storage with Hive.
3) Understanding gyro and camera integration in mobile apps.
4) Exposure to scalable architecture and modular design practices.
5) Improved skills in collaborative UI/UX design using Figma.

PS-I station: Heetherark Labs Private Limited - IT, Secunderabad

Student

Name: SHASHWAT SINGH (2023B4A30062G)

Student Write-up:

PS-I Project Title: ML modelling

Short Summary of work done: Okay so the company was building a posture correction vest using accelerometer and gyrometer sensors and AI/ML team had the readings of the data and it was unlabelled data we had to create features by initially doing EDA , FFT analysis and feature extraction and using this features we lastly did k-means ML modelling to distinguish different activities and features that would help people in posture correction as we had the ideal postures.

Objectives of the project: ML modelling to distinguish different postures and help them correct it.

Tool used: Python, github, VScode, tensorflow, scikit-learn

Details of Papers/patents:-

Brief description of the working environment: Okay so it was online mode we used to have daily one meeting in which they would take the update on project and guide the next steps and the industry mentor also helped us learn python and ML as it was first time for the whole team.

Academic courses relevant to the project: - yes

Learning Outcome: Learnt ML for the first time

PS-I station: Hexawinds Labs Private Limited, Noida

Student

Name: SHIVESH MOHANTY . (2023A7PS0036H)

Student Write-up:

PS-I Project Title: Fullstack logistics inventory management website

Short Summary of work done: Over the course of the internship at Hexawinds Labs, the team worked on developing a functional Inventory and Logistics Dashboard from scratch. The initial weeks focused on building a solid foundation in HTML, CSS, and JavaScript. Later, the frontend was developed using React to build modular and dynamic components. Tailwind CSS was used to implement responsive layouts that adapt across different screen sizes. We integrated the dashboard with backend APIs for real-time data exchange using GET and POST requests. The dashboard included features like dynamic tables, product input forms, and validation logic. The team also collaborated on building a presentation and comprehensive report to document the progress and learning. Weekly mentor sessions and feedback loops helped us improve our code quality and user interface design. The internship concluded with a presentation showcasing the live dashboard and our learning journey.

Objectives of the project: The main objective of the project was to develop a responsive, user-friendly frontend interface for an Inventory and Logistics Management System. This included building interactive web components that would connect with backend APIs to enable real-time tracking and management of products, stock levels and logistics operations.

Tool used: Hardware (H/w): Personal computer/laptop (used for coding, testing, and running the frontend environment) and Internet connectivity (for real-time collaboration and project coordination). Software (S/w): Code Editor: Visual Studio Code ,, Browser Tools:

Details of Papers/patents: No research papers or patents were published during this project.

Brief description of the working environment: The working environment at Hexawinds Labs was collaborative and learning-focused. Interns were given flexibility in terms of work hours while being expected to meet weekly goals. Mentors provided regular guidance through online meetings and code reviews. The team followed an Agile-style approach, with weekly task distribution and collaborative problem-solving. Interns were encouraged to experiment and take initiative, especially while building UI components and integrating them with backend APIs. Through this, we gained exposure to real-world frontend development practices, learned how to debug efficiently, and understood how frontend interfaces interact with backend systems. The company created a balanced environment that supported learning while delivering functional project outcomes.

Academic courses relevant to the project: The project closely aligned with several academic courses including Database Management Systems (DBMS), Object-Oriented Programming (OOP) and Data Structures and Algorithms (DSA). Additionally, although not yet covered in the curriculum, concepts from Com

Learning Outcome: During my PS-I internship, I developed a strong understanding of frontend development using core technologies such as HTML, CSS, JavaScript, and React. I gained practical experience in DOM manipulation, implementing form validation, and handling various user-driven events to create interactive web interfaces. I also applied responsive design principles using Tailwind CSS, ensuring that the UI adapted well across different devices and screen sizes. A significant part of the project involved close collaboration with the backend team, integrating frontend components with real-time APIs for dynamic data flow. Throughout the internship, I was exposed to Agile workflows, participated in regular feedback loops, and used debugging tools to troubleshoot and enhance application performance. Overall, this experience allowed me to contribute to the development of complete, functional dashboards while refining both my technical and collaborative skills.

PS-I station: Hexawinds Labs Private Limited, Noida

Student

Name: PRINCE . (2023A7PS0115H)

Student Write-up:

PS-I Project Title: Fullstack logistics inventory management website

Short Summary of work done: During my Practice School-I at Hexawinds Private Limited, Noida, I worked in the backend development team on a project titled "Fullstack Inventory Management System Website" under the guidance of my industry mentor. The aim of the project was to create a scalable web-based system to manage product inventory, suppliers, and stock levels. As a backend team member, I was responsible for setting up and managing the server-side architecture using Node.js and Express.js. I helped build RESTful APIs to handle CRUD operations, user authentication, and data flow between the frontend and the MySQL database. I also contributed to configuring the development environment using tools like TypeScript, Vite, and proper folder structuring for maintainability. Our team implemented

important features such as multi-language support, currency selection, and project branding options, which required backend logic to support dynamic content and settings. I worked closely with the frontend team to ensure smooth API integration and data handling. This internship helped me understand the complete backend workflow, including API creation, database design, security, middleware integration, and deployment practices. It also improved my collaboration skills and taught me how to work efficiently in a real-time project environment. Overall, this experience gave me strong technical exposure and confidence in backend development within a fullstack project setup.

Objectives of the project: To build a fullstack inventory management system that helps businesses track stock, manage products, and handle suppliers using modern technologies like React, Node.js, MySQL, and TypeScript. The project also focused on adding features like multi-language and currency support for better user experience.

Tool used: Hardware: Laptop with minimum 8GB RAM and stable internet connection Software & Technologies: Frontend: HTML, CSS, JavaScript, React, Angular, TypeScript, Vite Backend: Node.js, Express.js Database: MySQL Code Editor: Visual Studio Code (VS Code)

Details of Papers/patents: No research papers or patents were published or filed during this project.

Brief description of the working environment: My Practice School-I training at Hexawinds Private Limited was done in online mode. Even though we worked remotely, the environment was well-organized. We had regular meetings with our mentor, clear task assignments, and used tools like Google Meet and GitHub to stay in touch and share our work. The company was supportive and focused on helping us learn new skills while working on a real project.
The company expected us to complete our tasks on time, write clean and correct code, and take part in group discussions. Since I was part of the backend team, I worked on creating APIs, connecting the frontend with the MySQL database, and writing server-side code using Node.js and Express.js. We were also encouraged to learn new tools like TypeScript and Vite during the project.
From this training, I learned a lot about how real software projects are made. I improved my skills in backend development, team collaboration, and problem-solving. I also learned how to test APIs using Postman, use version control with Git and GitHub, and fix bugs in the code.
Overall, this internship gave me a very good learning experience. It helped me understand how IT companies work and prepared me to handle real-world development projects with confidence.

Academic courses relevant to the project: Academic Courses Relevant to the Project:
Database Management Systems (DBMS), Object-Oriented Programming (OOP), Data Structures and Algorithms (DSA)
And there were the use of computer network and operating system but these subjects did not covered now as

Learning Outcome: During this project, I gained practical experience in fullstack web development by working on real-world tasks using technologies like React, Angular, Node.js, Express.js, MySQL, and TypeScript. I learned how to design and develop both the frontend and backend of a web application, manage databases, and connect all components effectively. This experience helped me understand the complete software development lifecycle, improved my problem-solving and debugging skills, and taught me how to work in a team environment. I also learned to implement global features like multi-language and currency support to enhance user experience.

PS-I station: Hexawinds Labs Private Limited, Noida

Student

Name: DEV RAMAN TANEJA (2023A7PS0336G)

Student Write-up:

PS-I Project Title: Developing an Integrated Inventory and Logistics Management Web Application

Short Summary of work done: During my Practice School-I internship at Hexawinds Labs Pvt. Ltd., I worked on building the frontend of an Inventory and Logistics Management System. I started by strengthening my basics in HTML, CSS, and JavaScript, and gradually moved on to creating real features like responsive forms, dynamic tables, and user-friendly validations. As I got more comfortable, I began working with React to build dashboards and login systems for both admins and customers. I used tools like Zustand for managing app state, Axios to connect with backend APIs, and Tailwind CSS to keep the UI clean and responsive. I implemented full CRUD functionality—adding, editing, and deleting products, categories, and user details—while also improving the overall experience through helpful messages and smooth interactions. By the end of the internship, I had contributed to multiple parts of the application and helped prepare the internal demo. This experience gave me practical insight into how real-world web apps are built and helped me grow more confident in both my technical and collaborative skills.

Objectives of the project: The goal was to build a responsive and user-friendly frontend for an Inventory Management System using React, Tailwind CSS, Zustand, and Axios, while gaining hands-on experience with real-world web development and API integration.

Tool used: During the internship, I worked with a range of modern web development tools and technologies. I used React.js to build the user interface and Zustand for efficient state management. Tailwind CSS was used to design clean, responsive layouts, while Axios h

Details of Papers/patents: None

Brief description of the working environment: The working environment at Hexawinds Labs Pvt. Ltd. was friendly, flexible, and focused on learning. As interns, we were treated like part of the team and given real responsibilities from the start. Our mentors were approachable and supportive, encouraging us to ask questions, explore different solutions, and grow through hands-on experience. Weekly goals kept us on track, and regular feedback helped us improve continuously.
The company expected us to write clean, organized code, be punctual with our tasks, and take initiative. While I mainly worked on the frontend, I also got a good understanding of how things connect behind the scenes with APIs and backend logic.
Over the course of the internship, I learned how to build better user interfaces, manage state effectively, and debug real-world issues. I also got comfortable using tools like Git, Postman, and Vercel. Most importantly, I learned how to work in a team, take ownership of my work, and apply what I've learned in a practical setting. This experience gave me a clear picture of how software development works in the real world.

Academic courses relevant to the project: The academic courses that closely aligned with my internship work were Object-Oriented Programming, which helped in building modular and reusable components; Data Structures and Algorithms, which supported efficient logic and dynamic data handling.

Learning Outcome: I learned to build responsive web interfaces using React and Tailwind CSS, manage state with Zustand, and connect frontend to backend APIs with Axios. I also gained hands-on experience with form validation, routing, and deploying real-world applications.

PS-I station: Hexawinds Labs Private Limited, Noida

Student

Name: RITIK DWIVEDI (2023A7PS0354G)

Student Write-up:

PS-I Project Title: Inventory management

Short Summary of work done: Done with web dev part majorly involve in front-end part learned,html,css,java script angular little bit node.js and dark mode toggle etc

Objectives of the project: Web dev

Tool used: Vs code

Details of Papers/patents: No

Brief description of the working environment: .

Academic courses relevant to the project: .

Learning Outcome: Used to work with many languages

PS-I station: IFI Techsolutions Ltd, Noida

Student

Name: SRIJAN GUPTA . (2023A1PS1239H)

Student Write-up:

PS-I Project Title: International Sales and Consultation of Microsoft Azure

Short Summary of work done: 1. Identify and pursue new business opportunities by networking and prospecting within targeted industries. 2. Conduct market research to identify potential clients and analyze competitors strategies. 3. Built and maintained strong, long-lasting customer relationships by understanding client needs and delivering tailored solutions. 4. Identifying customer pain points to tailor sales approaches effectively. 5. I also leverage social selling techniques to engage prospects on platforms like LinkedIn. 6. Reach out to the Microsoft

team globally for the potential partnerships to expand our footprints. 7. Appointment setting for international sales team.

Objectives of the project: The primary objectives center on three critical client acquisition strategies: 1.Microsoft Partner Acquisition: Leveraging co-selling opportunities and Microsoft's global partner ecosystem to acquire new accounts through strategic alliance development and joint selling initiatives. Existing Azure Customer Engagement: Targeting organizations already using Azure services to expand their implementations, optimize current deployments, and introduce advanced capabilities including AI, security, and modernization services. Private Equity and Venture Capital Outreach: Positioning the proprietary Velocity360™ program as the definitive solution for PE and VC firms seeking to accelerate digital transformation across their portfolio companies.

Tool used: LinkedIn, Sales Navigator, Extensions such as Clutch.io, Snov.io, Apollo.io, M365, Teams, Excel, SQL Database

Details of Papers/patents:-

Brief description of the working environment: The work culture is very good. People co-operate very well. Professionalism is expected and that loose behaviour is not at all appreciated int the company. Good communication skills can give you an upperhand in this.

Academic courses relevant to the project: Technical Report Writing (35%), Soft Skills for professionals (30%),

Learning Outcome: I got to know about the cloud based product of Microsoft called Azure. I got to know about SaaS, PaaS and IaaS, the Data Journey- from collection to execution, Modern Workplace, AI and role of Data in it, Azure Infrastructure, Other services of Microsoft provided by IFI such as Copilot, Microsoft Fabric, PowerBI, D365, etc. Learnt how sales work, how companies like Microsoft market their products, how to work in collaboration with other teams. Techniques for securing new clients from leads and the importance of staying in touch consistently.

PS-I station: IFI Techsolutions Ltd, Noida

Student

Name: ARNAV GARG . (2023A7PS0638P)

Student Write-up:

PS-I Project Title: INTERNATIONAL SALES AND CONSULTATION OF MICROSOFT AZURE

Short Summary of work done: Look out for company IT Heads, CXOs, and IT Managers for international sales outreach

Objectives of the project: International Sales, Data Analytics

Tool used: Snov.io, Apollo, Sales Navigator, Outlook

Details of Papers/patents:none

Brief description of the working environment: The work environment was good, we had 1 holiday for a month.

Academic courses relevant to the project: Courses related to data analytics

Learning Outcome: Data Analytics, Sales pitching, using R&D Softwares

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PS-I station: IIC Interactive Labs Pvt Ltd, Mumbai

Student

Name: HANEESH SAI KANKIPATI . (2023A7PS0052H)

Student Write-up:

PS-I Project Title: Business Intelligence Tools

Short Summary of work done: I was given several resources like online courses and youtube videos to learn tools like Power BI and Looker Studio. I created multiple dashboards using

appropriate visualizations and design rules to provide necessary information to the stakeholders.

Objectives of the project: Harness BI tools to create interactive dashboards

Tool used: Power BI, Looker Studio

Details of Papers/patents: None

Brief description of the working environment: Working environment was good and friendly. My mentor supported my throughout this process and gave me constructive feedback which made my work better. I had a wonderful experience at Ink In Caps.

Academic courses relevant to the project: DBMS

Learning Outcome: Use Power BI and Looker Studio to generate interactive dashboards from given data set.

PS-I station: IIC Interactive Labs Pvt Ltd, Mumbai

Student

Name: RAUNIT RAJ . (2023A7PS0577P)

Student Write-up:

PS-I Project Title: Expense tracker

Short Summary of work done: Created a tracker

Objectives of the project: Create a expense tracker

Tool used: Vs code

Details of Papers/patents: None

Brief description of the working environment: Nice

Academic courses relevant to the project: yes

Learning Outcome: C++

PS-I station: IIC Interactive Labs Pvt Ltd, Mumbai

Student

Name: SUYASH MANGLA . (2023A7PS0593P)

Student Write-up:

PS-I Project Title: Data Analytics using power bi

Short Summary of work done: During my Practice School-I internship at IIC Interactive Labs, I gained hands-on experience in business intelligence by building interactive dashboards using Power BI and Looker Studio. I developed a total of five dashboards based on raw datasets, focusing on sales trends, regional performance, product-level insights, and marketing campaign effectiveness. The final two dashboards were created in Looker Studio due to platform constraints and allowed me to apply advanced design principles for improved storytelling and interactivity. I also designed the BMW Marketing & Performance Dashboard, introducing custom KPIs such as User Retention Rate and Conversion Potential Index to support strategic insights. This internship enhanced my skills in data modeling, visualization, and real-world marketing analytics.

Objectives of the project: To make interactive dashboard using power bi & looker studio

Tool used: During my Practice School-I internship at IIC Interactive Labs, I gained hands-on experience in business intelligence by building interactive dashboards using Power BI and Looker Studio. I developed a total of five dashboards based on raw datasets, focusi

Details of Papers/patents: No

Brief description of the working environment: During my Practice School-I internship at IIC Interactive Labs, I was part of a collaborative, learning-focused environment that encouraged initiative, experimentation, and continuous improvement. The company provided a structured yet flexible setup, where interns were guided by experienced mentors but also given the freedom to explore and apply new tools and techniques independently. Expectations were clear from the beginning—we were expected to deliver meaningful, data-driven outputs in the form of interactive dashboards that could assist the marketing and leadership teams in deriving actionable insights.

From day one, the focus was on building real-world skills in business intelligence. We began with structured learning through a certified Power BI course, followed by practical implementation using raw business datasets. I worked on developing dashboards that visualized sales trends, regional engagement, deal sizes, and campaign performance, progressively incorporating advanced features like filters, DAX functions, and visual storytelling techniques.

The learning experience was further enriched by transitioning to Looker Studio, where I applied design best practices in dashboard layout, interactivity, and user experience. The final project involved building a BMW Marketing & Performance Dashboard with new KPIs like User Retention Rate and Conversion Potential Index, reflecting deeper understanding of behavioral metrics and business impact.

Overall, the PS-I environment at IIC fostered a strong blend of technical learning, analytical thinking, and design-focused problem-solving, while aligning with real-world marketing objectives and data storytelling principles.

Academic courses relevant to the project: Data Structures and Algorithms – Strengthened logical thinking and efficiency in handling structured data.

Database Management Systems (DBMS) – Provided foundational knowledge of data modeling, querying, and relational data structures.

Business Analytics

Learning Outcome: How to model,clean &transform data using power bi & looker studio

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PS-I station: IIC Interactive Labs Pvt Ltd, Mumbai

Student

Name: SAMBHAV JAIN . (2023A7PS0611P)

Student Write-up:

PS-I Project Title: Personal Expense Tracker using C++

Short Summary of work done: I developed a Personal Expense Tracker using C++ during my PS-I at IIC Interactive Labs. The project included designing a menu-driven CLI interface to manage expense records using file handling, classes, vectors, and functions. I focused on input validation, data storage, and program structure. This experience enhanced my C++ skills and gave practical exposure to software development.

Objectives of the project: To design and implement a basic personal expense tracking system using C++ with features like file handling, data storage, and a menu-driven CLI interface.

Tool used: Software: Visual Studio 2022, C++ Standard Library Languages: C++ Others: GitHub (for version control) , YouTube/GeeksforGeeks (for reference)

Details of Papers/patents: None

Brief description of the working environment: The working environment at IIC Interactive Labs was friendly and supportive. I was expected to learn independently, understand the project scope, and apply C++ concepts effectively. Regular guidance was provided when needed. I learned to implement structured logic, use file handling, and design a clean CLI-based interface. The experience helped me bridge academic learning with practical application and improved my coding, debugging, and problem-solving skills.

Academic courses relevant to the project: Object-Oriented Programming , Data Structures and Algorithm , Computer Programming , Database Systems (partially, for data organization)

Learning Outcome: strengthened core C++ concepts: file I/O, vectors, classes, functions . Understood structuring of menu-driven applications .Gained experience in real-world problem-solving
Learned basics of project design, versioning, and user input validation

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PS-I station: IIC Interactive Labs Pvt Ltd, Mumbai

Student

Name: RITWIK GUHA (2023A7PS1015G)

Student Write-up:

PS-I Project Title: Basic Unity C# Certification project

Short Summary of work done: Completed two courses and developed a prototype 2D platformer.

Objectives of the project: Learn game dev

Tool used: Unity, C#

Details of Papers/patents:NA

Brief description of the working environment: Online working environment, good mentors.

Academic courses relevant to the project: NA

Learning Outcome: Learnt Unity, C#

PS-I station: IIC Interactive Labs Pvt Ltd, Mumbai

Student

Name: ABHIJAAT VIKRAM SINGH (2023B4A71176G)

Student Write-up:

PS-I Project Title: Library Management System

Short Summary of work done: developed a library management system with JWT authentication and roll based user access

Objectives of the project: Create a robust, scaleable backend library management system. Went on to also create a front end for it.

Tool used: mongoDB, ExpressJS, ReactJS, node.JS

Details of Papers/patents:none

Brief description of the working environment: very relaxed, we were given weekly tasks. meetings were held bi weekly. very enriching experience.

Academic courses relevant to the project: Computer programming

Learning Outcome: MERN Stack

PS-I station: Indian AI, Delhi

Student

Name: ARNAV MATHUR . (2023ABPS0811P)

Student Write-up:

PS-I Project Title: AI Prototypes Using AIKosh

Short Summary of work done: During my Practice School-I internship at Indian-AI, New Delhi, from May 26 to July 19, 2025, I developed AI prototypes using the AIKosh platform. In Month 1, I conceptualized two use cases: a dashboard using the MoSPI (Ministry of Statistics and Programme Implementation) IIP growth rate dataset and a Multilingual AI Assistant using the Kisan Call Centre (KCC) dataset. I analyzed the KCC dataset (1.9M+ calls), noting query patterns (30% cereal varieties, 24% pest management) and language distribution (40% Hindi, 50% regional). I shortlisted AIKosh models like IndicConformers and IndicTrans2 and designed system architectures for both, outlining data flow and processing. I selected the Index of Industrial Production (IIP) dashboard for its structured IIP growth rate dataset and policy impact, setting aside the KCC prototype. In Month 2, I built the IIP dashboard using the IIP growth rate dataset with NumPy, Pandas, Prophet, and Microsoft's LLM2CLIP Llama-3-2-1B-Instruct for processing, forecasting, and summarization. I developed an HTML/CSS/JavaScript

front-end, featuring dynamic sector selection, IIP trends, growth rates, and forecasts with over 92% accuracy. I tested and refined the prototype, ensuring scalability. I finalized a Use Case Specification Document, demo video, and presentation, showcasing the IIP dashboard's policy relevance and AIKosh's potential for India-centric AI solutions.

Objectives of the project: Developing AI Prototypes, design system architectures for prototypes of two high impact use-cases. Deliver a scalable, multilingual solution with a Use Case Specification Document, demo, and presentation for policymakers.

Tool used: Google Colab, Netlify (for mock deployment), Google AI Studio

Details of Papers/patents:NA

Brief description of the working environment: The mentors were kind and reachable, assisting us wherever we faced a challenge or problem, and guided us through our projects well. They were friendly and made us feel welcome at the company. My expectations on joining were to do some hands on application based work, which i did end up doing.

Academic courses relevant to the project: Machine Learning, Artificial Intelligence, Data Mining, Foundations of Data Science, Deep Learning.

Learning Outcome: Gained expertise in AI model selection, multilingual NLP, and time-series forecasting. Mastered data processing with NumPy/Pandas, dashboard development using HTML/CSS/JavaScript, and system architecture design. Learned to analyze large datasets, refine prototypes, and deliver impactful AI solutions, enhancing skills in data science and visualization.

PS-I station: Indian AI, Delhi

Student

Name: JASRAJ SINGH SETH . (2023B3AA1077H)

Student Write-up:

PS-I Project Title: AI PROTOTYPES USING AIKOSH: USE-CASE DESIGN, MODEL SELECTION, APPLICATION BUILD AND TESTING

Short Summary of work done: The work focuses on designing and developing AI-based prototypes using the AIKosh platform for tasks such as data summarization, forecasting, and dashboarding to aid decision-making processes. The project involves identifying suitable use cases, selecting appropriate AI models, and building functional prototypes that demonstrate the practical application of these models. The AIKosh platform supports this development through its comprehensive AI tools and model repositories. The project aims to deliver efficient, intelligent solutions applicable across multiple domains.

Objectives of the project: Prototype Selection & Design: Brainstorm and select two high-impact AI prototypes addressing real-world needs, define problem statements, user workflows, and identify suitable AIKosh models ; System Architecture & Testing: Design detailed system architectures for both prototypes and test selected AIKosh models using sample inputs to validate performance and compatibility ; Prototype Development: Choose one prototype based on feasibility and impact, refine data flow, finalize model selection, and build front-end/back-end application with AIKosh API integration ; Performance Optimization: Continuously evaluate and improve model performance, develop mock user interface, and optimize the pipeline for scalability and reliability ; Final Validation & Documentation: Conduct comprehensive testing, gather stakeholder feedback, finalize documentation, and prepare demonstration materials for project showcase

Tool used: Visual Studio Code (VS Code) for frontend and backend development, HTML, CSS, JavaScript for dashboard UI, AIKosh platform for model access and integration, Table Transformer, TAPEX, Phi-3, AI4Bharat models, Numpy, pandas for data analysis, prophet for fo

Details of Papers/patents: nil

Brief description of the working environment: The working environment during PS-I was excellent and highly conducive to both personal and professional growth. The company offered flexible working hours, which made it easier to balance work responsibilities and learning. Most of the work was conducted online, allowing for effective remote collaboration, but there were also valuable in-person check-ins twice a month at the station that fostered team bonding and deeper engagement with mentors and peers. The project itself was innovative and challenging, centered on building an end-to-end AI pipeline for industrial data analysis and forecasting—a unique opportunity to work with advanced models and real-world datasets on the AIKosh platform. Mentorship was a key highlight; the mentors were approachable, knowledgeable, and always willing to provide guidance when facing technical or conceptual hurdles. Expectations from the company included a strong commitment to learning, proactive problem-solving, regular progress updates, and a willingness to adapt to new tools and methodologies. Throughout this experience, I learned not only how to design and implement robust AI-driven solutions, but also the importance of clear documentation, teamwork, and iterative development processes. Overall, PS-I was a rewarding and motivating experience that significantly enhanced my technical skills and practical understanding of AI.

Academic courses relevant to the project: Probability and statistics/ Mathematics and Statistics methods (for data analysis),
Principles of Economics/Macroeconomics (for understanding data well)
Machine learning (may help in model testing and training)
Technical report writing (for making formal

Learning Outcome: Gained hands-on experience in designing modular system architectures for AI-driven analytics projects.
Developed expertise in sourcing, cleaning, and structuring large-scale economic time-series datasets.
Learned to critically evaluate and select AIKosh models for specific tasks (table extraction, tabular Q&A, summarization).
Understood the challenges of real-world data integration.
Improved skills in model testing and refinement for better output quality.
Developed practical skills in frontend web development using HTML, CSS, and JavaScript, including responsive dashboard design.
Learned best practices for testing AI model performance and handling real-world data issues.
Understood the importance of UI design and feedback-driven development.
Gained experience in integrating AI model outputs with interactive web interfaces.
Improved project documentation and technical presentation skills.

PS-I station: Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam

Student

Name: SSOWSTHIKA SREE (2023A1PS0081G)

Student Write-up:

PS-I Project Title: Generation of operating characteristic data for a 40 mm Annular centrifugal extractor

Short Summary of work done: I worked in the R&D unit of the reprocessing group at IGCAR. It basically deals with the separation of Uranium and Pu from the spent fuel. My project was to obtain the flooding datasets for the ACE (one of solvent extraction equipments used in

reprocessing) which was having an internal diameter for 40 mm. The flooding experiment was conducted for rotating speeds of 60, 50, 40, 30 and 20 Hz. It was also collected for different A/O ratios which includes 10, 5, 2, 1, 0.5, 0.2 and 0.1. The experiment was triplicated so as to remain consistent datasets. These datasets are then plotted using Matlab to obtain the operating characteristic curve. The solvent extraction process was also understood in mixer and settlers using Matlab.

Objectives of the project: The primary objective of the project is to obtain the flooding curves of the 40 mm ACE for a system consiting of an aqueous and an organic phase which are 0.13 M Nitric acid and 30%TBP respectively. The flooding curves obtained are at different rpms and A/O ratios. Moreover, they will be acting as a baseline dataset for the nuclear reprocessing plant.

Tool used: Annular centrifugal extractor, Matlab

Details of Papers/patents: The results of the experiment will act as a primary dataset for the paper yet to be published in the future on 40 mm ACE via CHEMKON journals.

Brief description of the working environment: The working environment was peaceful. The mentors and the lab assistants helped a lot in getting to know more about IGCAR. The visits to FBTR control rooms, DFRP labs and CORAL labs were breathtakingly amazing. I learnt a lot about the industry in general, especially from the perspective of a chemical engineer. My mentor was very assistive and guided me in every way possible. They explain each and every concept in detail, no matter how many times you ask them. The nature of the flow of work was smooth and unhindered.

Academic courses relevant to the project: Separation processes, Fluid mechanics

Learning Outcome: Learnt more about the nuclear reprocessing facility in India. Working hands on and analysing the trends in the operating curve of ACE at different flow rates and A/O ratios enhanced the pragmaticity of separation processes, especially in the field of Solvent extraction. Matlab was also used to plot graphs and analysing liquid liquid extraction process in the industry.

PS-I station: Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam

Student

Name: PRIYANI HOTA . (2023A1PS0190P)

Student Write-up:

PS-I Project Title: CFD investigation of dip coating of things films over a substrate

Short Summary of work done: So, in PS-1, I learnt Ansys Fluent to conduct simulations of the dip coating method which is used to find the thickness of the Yttria coating given to quartz tubes using the chemical solution deposition method. Initially, we took some time to figure out which model is suitable for conducting this simulation. Post that, we found that Volume of Fluid Method is suitable. Then, for the first trial, I tried the water draining simulation so that I can model the same for non-newtonian fluids. I successfully did the draining tank simulations, however when I tried to replicate the model for non-newtonian fluids, patchy coating started to form, then we changed the model, the boundary conditions and the multiphase model.

Objectives of the project: To find the thickness of the coating of yttrium on quartz tubes

Tool used: Ansys Fluent

Details of Papers/patents: In process

Brief description of the working environment: The working was decent.

Academic courses relevant to the project: Fluid mechanics

Learning Outcome: Ansys Fluent

PS-I station: Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam

Student

Name: MOSHAJJAR HUSSAIN . (2023A4PS0406P)

Student Write-up:

PS-I Project Title: Establishment of a low energy ion implantation system for surface nanostructuring and investigation of surface nanostructures in metals and oxides

Short Summary of work done: I set up a vacuum chamber specialised for ion implantation for nanostructuring. This involved setting up the vacuum chamber by ensuring proper vacuum. Futher, appropriate parameters such as beam energy and focus voltage were figured out by trial and error. Finally samples were irradiated and were examined using SEM and AFM techniques..

Objectives of the project: Detailing the set-up and implementation of a low-energy ion implanter to fabricate nanostructures onto tungsten and silica samples which were further characterised. The samples are then studied via Scanning Election Microscopy (SEM) and Atomic Force Microscopy (AFM) and inferences are to be made from these results.

Tool used: SEM set up. AFM set up. SRIM/TRIM software.

Details of Papers/patents: None

Brief description of the working environment: The working environment was quite pleasant. I was surrounded by PhD students and Scientific Officers specializing in applied physics and mechanical engineering. Any questions I had were quickly and easily resolved by asking any of them about it. I had access to a lot of interesting equipment and software which enhanced my learning experience.

Academic courses relevant to the project: Introduction to Material Sciences

Learning Outcome: Scanning Electron Microscopy. Basics of Vacuum Physics. Ion implantation basics. Use of SRIM/TRIM software. Use of FitYk and Origin Software.

PS-I station: Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam

Student

Name: NAMAN AGRAWAL . (2023A4PS1246H)

Student Write-up:

PS-I Project Title: FSI Analyses over a reactor pool geometry

Short Summary of work done: I performed multiple fluid structure interaction studies for the cases of sloshing and resonance on 2d and 3d versions of the Fast Breeder Reactor in IGCAR and derived relations between sloshing heights and baffle placements amongst other results such as lift and pressure on the baffle.

Objectives of the project: To analyse and derive relations for fluid structure interactions within a Fast Breeder Reactor geometry

Tool used: Ansys Workbench, Ansys Fluent, Excel, MATLAB

Details of Papers/patents: Chen and Xue (2018.) Paper on sloshing

Brief description of the working environment: I improved my communication and teamwork skills during this internship.

Academic courses relevant to the project: Fluid Mechanics, Computer Programming, MeOW, Mechanics of Solids

Learning Outcome: Understanding of sloshing and techniques to mitigate it, Modal Analysis of structures, Usage of Ansys

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PS-I station: Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam

Student

Name: JAINAM GANDHI . (2023A4PS1278P)

Student Write-up:

PS-I Project Title: Development Of ML Based Thermal-Hydraulic Model for SFR steam generator.

Short Summary of work done: I created the data set for the ML model that was supposed to be used in the project using FLOWNEX SE software.

Objectives of the project: To develop a model using ML and train it using the data generated by FLOWNEX SE model.

Tool used: FLOWNEX SE, python.

Details of Papers/patents:.

Brief description of the working environment: It was a very nice working environment. Everybody including the mentor were very supportive at every step of the project.

Academic courses relevant to the project: Thermodynamics, Fluid Dynamics Applied Thermodynamics.

Learning Outcome: Got to know about FLOWNEX and Machine Learning.

PS-I station: Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam

Student

Name: ASHWATH D (2023A8PS0492G)

Student Write-up:

PS-I Project Title: Protocol compliance verification and testing of TCP/ip stack on artix 7 fpga platform

Short Summary of work done: This project presents the design, implementation, and protocol compliance verification of a hardware-accelerated TCP/IP stack on the Xilinx Artix-7 FPGA platform. Developed entirely in VHDL, the project targets deterministic, high-throughput communication for distributed control systems such as those in Fast Breeder Reactors (FBRs). The verification process follows a layered methodology, beginning with the Link layer featuring an IEEE 802.3 compliant Ethernet MAC, CRC-32 integrity checking, and MDIO-controlled PHY interfacing and extending through the network and transport layers. Functional simulations,

assertion-based testing, and extensive coverage analysis (line, branch, condition, and toggle) validated each module under both typical and edge-case scenarios. UDP and TCP functionalities were tested through loopback simulations and hardware-in-the-loop testing on the FPGA board. Real-time traffic was exchanged with a PC server, monitored via Wireshark, and controlled through a Python GUI, ensuring successful implementation of connection setup, data transfer, and teardown. The final design met all timing requirements and demonstrated protocol correctness, confirming the viability of FPGA-based TCP/IP stacks in critical embedded communication systems.

Objectives of the project: Testing of TCP/ip design on fpga on vhdl

Tool used: Fpga board, vivado, wireshark

Details of Papers/patents: Nil

Brief description of the working environment: Got to meet many scientists working on vaarious fields and iteracted with some of them. Projects provided were pretty good. Provided good facilities

Academic courses relevant to the project: Digital design, Network programming

Learning Outcome: Learnt the working of TCP/ip stack and vhdl designing

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PS-I station: Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam

Student

Name: ISHAN DHINGRA . (2023A8PS0712P)

Student Write-up:

PS-I Project Title: Development of an embedded controller module for an eddy current based instrument

Short Summary of work done: At the Indira Gandhi Centre for Atomic Research (IGCAR), I worked on developing a high-speed analog-to-digital data acquisition system using a flash-

based FPGA on an ADC board and an Arduino-based microcontroller board. The FPGA was programmed in Verilog to generate control signals, synchronize clocks, and capture digital data from the ADC. The microcontroller was programmed to receive and display the processed data from the FPGA, as well as handle input scanning and formatting tasks. The complete system was rigorously tested and verified using oscilloscopes, logic analyzers, and signal generators to ensure accurate timing, signal integrity, and reliable data transfer. Calibration was also carried out using onboard rheostats to correct gain and offset errors in the ADC output.

Objectives of the project: The project aimed on developing a fully digital, and embedded system for acquisition and processing of an eddy current signal.

Tool used: Libero SoC, Arduino IDE, ADC board, Arduino Due, Actel ProASICPlus APA-150, Agilent Logic Analyzer, Agilent Function generator.

Details of Papers/patents:N/A

Brief description of the working environment: The work was carried out in a highly secure research facility at the Indira Gandhi Centre for Atomic Research (IGCAR), which maintained strict safety and access protocols. The environment was intellectually enriching, with access to highly qualified mentors and peers who provided valuable technical guidance and support. The collaborative atmosphere, combined with a culture of discipline and professionalism, fostered focused learning and efficient problem-solving. Team members and staff were approachable and helpful, creating a positive and encouraging space to engage with advanced research and hands-on experimentation.

Academic courses relevant to the project: Digital design, Microprocessors, Signals and systems, Microelectronic circuits,

Learning Outcome: Learnt FPGA programming and interfacing, Microcontroller programming, Filtering algorithms like decimation and computational algorithms like CORDIC and their hardware implementation, real time testing, troubleshooting, and design verification using sophisticated instrumentation.

PS-I station: Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam

Student

Name: MAYANK JAJODIA . (2023B2A30934P)

Student Write-up:

PS-I Project Title: Investigation of sensora based on multilayered thin film configuration

Short Summary of work done: Drposited PtO thin films and Investigated the PtO thin film towards sensing of hydrogen and ammonia gas in both self heating mode and resistance based heating mode. Alaysed the thus obtained response pattern and callibration plots to deduce possible mechanism. Implemented some ideas to try to improve recovery time and increase sensitivty of sensor.

Objectives of the project: To get response pattern and callibration plots for PtO thin film as a gas sensor and to implement some ideas to improve recovery time.

Tool used: PLD EQUIPMENT, XRD, ATR IR spectrometer Keithley DAQ, origin software, power point, gas sensor housing, constant voltage source, etc

Details of Papers/patents: Awaited

Brief description of the working environment: Good and flexible working environment, friendly and helpful mentor, helpful peers, was able to use cutting edge technology in the areas of deposting thin films. IGCAR is a very good research institute giving ample exposure to project students. Was able to maintain a work-life balance. Not much work to do except for during working hours. Low pressure environment.

Academic courses relevant to the project: Nanochemistry, inorganic chemistry 1

Learning Outcome: How to deposit thin films using PLD, Mechanism of chemoresistive and catalytic gas sensors, properties of metal oxide semiconductors, properties of PtO thin films, affinity of materials towards absorption of gases, DAQ, Orign software.

PS-I station: Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam

Student

Name: NISHA DUTTA . (2023B2A30951H)

Student Write-up:

PS-I Project Title: STUDIES ON SYNTHESIS AND CHARACTERIZATION OF SOLID SOLUTIONS OF URANIUM- NEODYMIUM OXIDE

Short Summary of work done: During my PS-I, I worked on developing a solid material using a resin-based method followed by heating (sintering). This material was designed to mimic conditions found in used nuclear fuel. I was involved in preparing the material, optimizing processing steps, and analyzing its structure and properties using various lab instruments. The goal was to study how certain additives influence its behavior and to explore safer, more efficient ways to make such materials.

Objectives of the project: This project aims to synthesize uranium oxide (UO_2) solid solutions with rare earth oxides (REOs) using the ion exchange method. The goal is to achieve uniform composition and study how RE doping affects the structure, chemistry, and thermal behavior of UO_2, simulating conditions in spent nuclear fuel for advanced nuclear applications.

Tool used: H/w: Ion Exchange Column, pH Meter, UV-Vis Spectrophotometer, Furnace (for calcination/sintering), S/w: Microsoft Excel (for data fitting using Thomas model), OriginPro (for plotting and curve analysis), XRD software suite for pattern analysis, SEM for

Details of Papers/patents: Not published yet; may consider publication in the future after further research and development.

Brief description of the working environment: The working environment was very safe and engaging. Everyone was kind and helpful, which made the experience even better. My mentor was very encouraging and always ready to clear my doubts. The institute focused on helping us learn through hands-on experience. The biggest takeaway for me was understanding how the things we learn in theory are applied in real-life situations.

Academic courses relevant to the project: Analytical Chemistry, Solid State Chemistry, Chemical Experimentation

Learning Outcome: Understood ion exchange as a synthesis method for solid solutions.
Gained hands-on experience with uranium and neodymium compound handling.
Learned to operate and interpret results from advanced characterization tools like SEM, XRD, TGA, EDS, and FTIR.
Gained knowledge in nuclear materials synthesis, especially simulating spent fuel behavior.
Practiced scientific documentation and data interpretation.

PS-I station: Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam

Student

Name: SHRIRANG BHALE (2023B4A30935G)

Student Write-up:

PS-I Project Title: Semantic Knowledge Repository System for Heterogenous Unstructured Data

Short Summary of work done: During my PS-I at the Indira Gandhi Centre for Atomic Research (IGCAR), I worked on the development of a Semantic Knowledge Repository using a Retrieval-Augmented Generation (RAG) approach. The objective was to build a system that enables intelligent search and question-answering over scientific documents such as IGCAR newsletters and annual reports. My work began with extensive document preprocessing and parsing, where I explored tools like PyMuPDF and PDFMiner to extract structured text from unstructured PDFs. I then evaluated multiple embedding models (such as BGE and Sentence Transformers) to convert text into vector representations that capture semantic meaning. These vectors were stored and indexed in a local vector database using FAISS and ChromaDB. The final pipeline integrated a local language model to retrieve relevant documents and generate coherent, context-aware answers to user queries. I focused on ensuring that the system functioned completely offline, which is essential in high-security research environments like IGCAR. In addition to technical implementation, I documented my findings and presented the results to domain experts. This experience enhanced my skills in Python programming, transformer-based NLP, and technical communication, while offering valuable insight into applied AI research in the nuclear science domain.

Objectives of the project: To build a semantic knowledge repository for scientific documents such as newsletters and annual reports, excel sheets, ppts,, images etc from IGCAR. Aim was to develop a local Retrieval-Augmented Generation (RAG) system for extracting meaningful answers from these documents using natural language queries. To explore and integrate components like document parsing, embedding, vector database creation, and language model querying in a unified pipeline.

Tool used: Software: Programming Language: Python Document Parsing: PyMuPDF, PDFMiner Embedding Models: BGE (BAAI), Sentence Transformers Vector Databases: FAISS, ChromaDB Language Models: HuggingFace Transformers (e.g., Mistral, LLama models for local inferenc

Details of Papers/patents: Research Paper Under Process.

Brief description of the working environment: I was allotted a project in the Training School section at IGCAR, where I had the opportunity to work in a highly research-oriented environment. The working hours were officially from 9:00 AM to 5:00 PM, but there was a good degree of flexibility, allowing for self-paced learning and development. The entire staff was friendly and approachable, and my mentors were extremely supportive, always willing to clarify doubts and provide guidance throughout the project.
The work culture encouraged independent thinking while also promoting collaboration, which helped me grow both technically and professionally. I was treated as a responsible contributor to the research work, and my inputs were valued during discussions. The accommodation provided was free of cost and of very high quality, which made the stay comfortable and hassle-free.
Overall, the PS-I experience at IGCAR was immensely enriching. I got to apply theoretical knowledge to real-world research problems, particularly in Natural Language Processing (NLP) and AI-based knowledge retrieval systems. The exposure to scientific computing, interaction with domain experts, and hands-on experience with advanced tools and models were valuable takeaways that significantly enhanced my technical and soft skills.

Academic courses relevant to the project: PnS, Optimization, Natural Language Processing, Machine Learning, etc.

Learning Outcome: During the course of my PS-I at IGCAR, I acquired hands-on experience in Natural Language Processing (NLP) and Information Retrieval systems. I gained practical exposure to various tools and techniques, including document parsing libraries such as PyMuPDF and PDFMiner, embedding models like BGE and Sentence Transformers, and vector databases such as FAISS and ChromaDB. I developed a strong understanding of the architectural design of Retrieval-Augmented Generation (RAG) systems and successfully implemented a fully local pipeline. My coding skills in Python were significantly strengthened, and I learned to effectively apply transformer models in a research-oriented setting. Additionally, I enhanced my understanding of research methodologies, report writing, and presenting technical findings to domain experts. The experience also helped me improve my communication and collabration skills while working closely under the mentorship of scientists at IGCAR.

PS-I station: Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam

Student

Name: KHUSHAL VARDHAN NEELI . (2023B4A40680H)

Student Write-up:

PS-I Project Title: AI enabled information analytics.

Short Summary of work done: Good learning experience and taught me a lot on practical applications of stuff.

Objectives of the project: To achieve an uniform platform which works with locally hosted AI and can be impleted on local data.

Tool used: Ollama, html, Javascript, css, datatables, etc..

Details of Papers/patents: Ongoing

Brief description of the working environment: Good controlled and well supervised environment, from both IGCAR and the FIC side.

Academic courses relevant to the project: FDSA.

Learning Outcome: Web development integration with locally running and trained AI bot on data.

PS-I station: Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam

Student

Name: AYACHITULA SRI SHANMUKHA VAMSI . (2023B4A80649H)

Student Write-up:

PS-I Project Title: Analytics for security systems database using NLP

Short Summary of work done: First few days, I spent time learning Python and other theory required to complete the project. Then I started using VS Code and implemented my backend (created tools, graph structure using LangGraph etc.) and then using Gradio wrote frontend logic and tested the model for accuracy of results and kept improving on the basic model.

Objectives of the project: Modify a LLM (create tools in python) to process a question from the user entered in english, generate relevant SQL query and produce output from the database by implementing the query and create a lightweight web interface for this backend.

Tool used: VS Code, Ollama, Gradio, LangGraph

Details of Papers/patents: NONE

Brief description of the working environment: I worked from my mentor's office, where he provided me with a desktop and a stable internet connection, creating a comfortable space to focus and learn. He was incredibly supportive throughout and shared some excellent material that really helped me understand the theory behind the project. The IGCAR campus itself was beautiful, which made the experience even more enjoyable. I had taken up this project hoping to explore data analytics and understand how AI and ML fit into the larger picture of data science—and I'm genuinely happy with how much I've learned.

Academic courses relevant to the project: AI, few courses in Data Science and CnI minor programme

Learning Outcome: Learnt Python, agentic architectures, working of an LLM, softwares like LangGraph (graph based framework for LLM applications), Gradio (lightweight web interface), MCP (model context protocol)

PS-I station: Indium Software Pvt. Ltd., Chennai

Student

Name: PINAK SHARMA . (2023A2PS1301P)

Student Write-up:

PS-I Project Title: Smart Data Dashboard Using PostgreSQL

Short Summary of work done: We made a Data Dashboard which displayed bank transactions data in a informative and appealing manner giving various insights like total clients, amount transacted, fraud transactions, etc. The dashboard was made using streamlit, the database was stored and managed using PostgreSQL, the database and dashboard were connected using psycopg2 and Slack was used as a collaboration platform for UI.

Objectives of the project: To design a real-time dashboard that pulls and displays filtered data from a PostgreSQL database, triggered via a collaboration platform like Slack.

Tool used: PostgreSQL, Python - Streamlit, psycopg2, Slack API

Details of Papers/patents:NA

Brief description of the working environment: Working environment was good, had regular meets with the mentor, mentor was very supportive and helpful, got to learn a lot of new things and also improved my soft skills

Academic courses relevant to the project: - yes

Learning Outcome: Database integration with collaboration tools, Real-time data retrieval and reporting, Building lightweight bots with messaging platforms.

PS-I station: Indovision Services Private Limited, New Delhi

Student

Name: SANDESH KAMATH . (2023A7PS0092H)

Student Write-up:

PS-I Project Title: Integrated Human Resources Management System(iHRMS) Development

Short Summary of work done: During my PS-I at Indovision Services, I worked on the iHRMS project, which involved several modules including company management, submodules, ticket handling, and timesheet tracking. Initially, I learned HTML, CSS, and PHP, and then progressed to using Laravel and Bootstrap for the development process. I created Blade templates for multiple modules such as company, timesheet, and ticket, designed CRUD-based forms, and developed RESTful APIs using Laravel controllers. I was responsible for implementing file upload features, dynamic filtering, email notifications on ticket creation, and user-role-based content visibility. I also created custom routes, modals for ticket handler creation, and debugged API errors using Postman. In the later stages, I finalized the mail functionality and ensured that attachments were delivered properly. The final phase involved documentation and compiling the end-semester report. This experience helped me grow into a more confident and capable full-stack developer.

Objectives of the project: The objective of the iHRMS project at Indovision Services was to contribute to the development of a web-based human resource management system with features like ticket tracking, employee timesheets, company and submodule management, and user-level role control. The aim was to learn how full-stack development works in a real-world company setting using tools such as Laravel, Bootstrap, MySQL, and Git, and to implement features in both frontend and backend, integrated with APIs and database handling.

Tool used: Laravel, PHP, Bootstrap, Blade, JavaScript, SQLYog, Postman, Git, XAMPP, VS Code

Details of Papers/patents:NA

Brief description of the working environment: The working environment at Indovision Services was collaborative and conducive to learning. Initially, we were given the freedom to explore and learn web technologies such as HTML, CSS, and PHP on our own, while being guided by the industry mentor. Expectations from the company were clear: to actively contribute to the iHRMS project by learning relevant technologies, writing clean and efficient code, and adapting to professional workflows such as version control and module integration. I was made a contributor to the company's GitHub repository, worked independently on several modules, and received regular feedback from the mentor. Communication was open and supportive, and I had opportunities to interact with other interns to exchange ideas and solve issues. I learned how to manage a full-stack development project, handle real-time debugging, implement secure and scalable APIs, and apply best practices in both frontend and backend design. The overall experience offered a real-world view of how enterprise-level systems are built and maintained.

Academic courses relevant to the project: Computer Programming, Database Management Systems, Object Oriented Programming

Learning Outcome: Over the course of the internship, I gained hands-on experience in web development using Laravel framework and learned how the MVC architecture functions in real projects. I became proficient with tools like Git and SQLYog, worked extensively on CRUD

operations, API creation and consumption, and even implemented email functionalities. I also learned how to debug effectively using documentation, Stack Overflow, and AI tools. Furthermore, I got exposure to working with version control systems, resolving merge conflicts, designing user interfaces using Blade templates, handling file uploads, and filtering data dynamically.

PS-I station: Indovision Services Private Limited, New Delhi

Student

Name: AKSHAT AJMERA . (2023A7PS0141H)

Student Write-up:

PS-I Project Title: Ihrms

Short Summary of work done: During my PS-I internship at Indovision, I contributed to the development and enhancement of iHRMS (Integrated Human Resource Management System) — a web-based platform designed to centralize and automate HR processes. My primary focus was on both backend and frontend development. On the backend, I worked with PHP (Laravel framework) and MySQL to develop and refine modules such as Probation Employee, Contract Employee, and Joined Employee tracking. I optimized database structures, improved query efficiency, and ensured data integrity. I also contributed to the iHRMS Installer/Updater module, streamlining version control and deployment workflows for distributed systems. On the frontend, I developed intuitive user interfaces for HR managers and employees, ensuring smooth navigation and accessibility. This involved working with Blade templates, Laravel's MVC structure, and integrating responsive design principles.

Objectives of the project: The objective of the iHRMS project is to centralize and automate HR operations for efficient employee lifecycle management, ensuring data accuracy, security, and scalability. It aims to provide a user-friendly platform for streamlined workflows, real-time reporting, and improved accessibility.

Tool used: Software / Development Tools: Backend: PHP (Laravel Framework), MySQL Frontend: HTML5, CSS3, JavaScript, Blade Templating Engine Database Management: SQLyog IDE/Editor: Visual Studio Code Version Control: Git, GitHub Browser for Testing: Google Chro

Details of Papers/patents: No

Brief description of the working environment: During my PS-I at Indovision, I worked in a collaborative and professional environment that encouraged both technical learning and problem-solving. The team followed an agile development approach, with regular meetings to discuss progress, address challenges, and align tasks with project goals. My mentor provided valuable guidance while also encouraging independent research and implementation, which helped me develop confidence in my work.
The company's expectations were to actively contribute to the iHRMS (Integrated Human Resource Management System) project, ensuring that the modules developed were secure, scalable, and user-friendly. They emphasized writing clean, modular, and maintainable code, following best practices for both backend and frontend development. Timely completion of assigned tasks, effective communication, and thorough testing of developed features were key performance expectations.
During the internship, I gained extensive hands-on experience with PHP (Laravel framework), MySQL, Blade templating, and SQLyog for database management. I also enhanced my knowledge of UI/UX principles, responsive design, and deployment workflows through the iHRMS Installer/Updater module. Beyond technical skills, I learned the importance of collaboration, documentation, and iterative improvement in software development.

Academic courses relevant to the project: Database Management Systems (DBMS)
Object-Oriented Programming (OOP)

Learning Outcome: Gained hands-on experience in full-stack development using PHP (Laravel) and MySQL for real-world enterprise systems.
Improved skills in modular coding, database design, and query optimization for better system performance.
Learned to implement secure, scalable architectures and deployment workflows.
Enhanced UI/UX design abilities by building intuitive, user-friendly interfaces.
Developed team collaboration and agile development skills through regular interaction with mentors and peers.

PS-I station: Indovision Services Private Limited, New Delhi

Student

Name: ADVAY ANEESH MATAPURKAR (2023A7PS0459G)

Student Write-up:

PS-I Project Title: iHRMS(Interactive Human Resources Management System) lite mobile application

Short Summary of work done: Made a mobile application that was fucntionig as expected.

Objectives of the project: To create iHRMS mobile application that has the core functionalities and can run smoothly on mobile devices.

Tool used: React Native, Git, Javascript, Postman API, Android studio, Android emulator

Details of Papers/patents:N/A

Brief description of the working environment: Good working environment, helpful mentors overall a decent learning experience.

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

Learning Outcome: Learnt a lot about frontend development and how to integrate it with backend using API enpoints. Learnt about API handling and debugging. Learnt how to construct dynamic UI componenets using react native libraries, how to use Git for version control and code sharing. How to use Postman API for testing API enpoints.

PS-I station: Indovision Services Private Limited, New Delhi

Student

Name: HARSHITHA AMBAVARAPU (2023B2AD0873H)

Student Write-up:

PS-I Project Title: iHRMS Lite Mobile App

Short Summary of work done: During this PS, I worked on building a Mobile appplication called iHRMS Lite, which helps manage employee-related tasks in a company. I mainly worked on three parts of the app: the Leave Management System, the Holiday Module, and the Dependents Module. Leave Management system shows the leave quota and pending leaves of an employee and they could also apply for leaves. Holiday module shows the official holidays. Dependents module shows all the details about employee family members where we can edit, delete or add a new dependent. I used React.js to build the front end and Node.js to connect it to the back end. I have also connected the app to APIs to get and send real-time data, making sure everything worked smoothly. I handled things like showing updated information on the screen without refreshing, and tested all the API calls using Postman. I used Git and GitHub to save and manage my code and worked in VS Code as my main editor. To make sure the app worked on mobile devices, I tested it using Expo Go and Android Studio. This internship helped me understand how real projects work and gave me good experience in building apps and using tools that developers use in real companies.

Objectives of the project: Main goal of this project is to build iHRMS lite app for employees using React.js and Node.js, API integration and a user-friendly interface.

Tool used: Git, Github, reactjs, nodejs, reactnative, Android studio, Postman, Expo go, Vs code

Details of Papers/patents: NA

Brief description of the working environment: The working environment was very professional, friendly and supportive. The mentor is approachable and open to discussions which made it easier to ask questions and learn new things. Company mentors conducted meets everyday and asks about the work update and also cleared my queries. They were also willing to clear our doubts outside the working hours. Regular checking helped me stay aligned with project goals.

Academic courses relevant to the project: yes

Learning Outcome: Gained experience in app development using react.js and node.js, API integration, Version control with git, practical use of tools like postman and expo go

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PS-I station: Infinite Analytics - Non Tech, Mumbai

Student

Name: SHRIYA RODE (2023A3PS0223G)

Student Write-up:

PS-I Project Title: Sales Enablement and Business Development using AI-driven Insights

Short Summary of work done: During my PS-I at Infinite Analytics (Sherlock AI), I worked closely with the sales and marketing teams to support B2B outreach and lead generation efforts. My responsibilities involved identifying potential clients that fit the Ideal Customer Profile, classifying leads and initiating contact through both email and cold calls. I scheduled demos with companies such as Croma, CaratLane, and D-Mart and got the opportunity to attend a live client demo with the Sales Head, gaining firsthand exposure to real-time customer interactions.

Objectives of the project: To understand how AI tools like Sherlock AI are used in lead generation and qualification. To assist in the complete sales funnel: prospect research, outreach, follow-ups and demo scheduling. To support the sales team in CRM management, data updating and client communications.

Tool used: HubSpot, Apollo, LinkedIn

Details of Papers/patents: yes

Brief description of the working environment: The working environment at Infinite Analytics (Sherlock AI) was dynamic, fast-paced, and highly collaborative, reflecting the culture of an early-stage tech startup. I was part of a compact but driven sales team where frequent discussions and open communication were the norm. The company had clear expectations from me, to contribute actively to lead generation, follow-ups, CRM data maintenance and booking product demos. I was also expected to take initiative, think critically about lead qualification, and continuously improve communication strategies based on feedback. My key learnings during PS-I include understanding the end-to-end B2B sales process, improving interpersonal and persuasive communication through cold calling and email outreach.

Academic courses relevant to the project: yes

Learning Outcome: Understood how AI and data-driven tools enhance sales targeting and outreach strategies.
Gained practical experience using CRM platforms and managing real client interactions.
Attended and observed live sales demo calls to understand client needs and objection handling.

PS-I station: Infinite Analytics - Non Tech, Mumbai

Student

Name: JOSH MANOJ GEORGE (2023A3PS0524G)

Student Write-up:

PS-I Project Title: Enhancing customer engagement using AI

Short Summary of work done: I worked mostly with the customer engagement team helping them make onboarding docs

Objectives of the project: Understand how ai can help with digital marketing

Tool used: Google sheets ,sherlock ai

Details of Papers/patents: Nil

Brief description of the working environment: Helpful and accomodating mentors,expected us to be punctual and diligent ,taking initiative.

Academic courses relevant to the project: yes

Learning Outcome: Understanding and working ondigital marketing.

PS-I station: Infinite Analytics - Non Tech, Mumbai

Student

Name: LEORA MEHUL MODI (2023B4AD0866G)

Student Write-up:

PS-I Project Title: Customer Success and Retention using AI

Short Summary of work done: Learnt about customer success, used Meta ads and google sheets, worked for Coca Cola to filter out marketable restaurants, drafted objectives and challenges for 2 companies

Objectives of the project: Learn about customer success, digital marketing and data analysis

Tool used: Google sheets, Powerpoint, Meta ads

Details of Papers/patents: None

Brief description of the working environment: We were expected to be proactive, always ask questions, and be on time for any meet.

Academic courses relevant to the project: yes

Learning Outcome: Learnt how to navigate major advertising platforms and proficiency in google sheets.

PS-I station: Infinite Analytics - Tech, Mumbai

Student

Name: SWASTIK GOSWAMI . (2023A7PS0043H)

Student Write-up:

PS-I Project Title: POI Validation App

Short Summary of work done: During my PS-I at Infinite Analytics, I developed a Point of Interest (POI) editor application for visualizing and managing geolocation data. The project involved creating an interactive React.js frontend integrated with Kepler.gl to enable viewing, adding, editing, and deleting POIs on a map. I designed and implemented a FastAPI backend with MySQL and SQLAlchemy ORM for structured data storage and efficient CRUD operations, ensuring seamless API communication between the UI and the database. My work included handling Kepler-style geospatial data formats, optimizing query performance, and implementing features for filtering, categorizing, and searching POIs. I also collaborated on refining the UI/UX, troubleshooting integration issues, and documenting the technical architecture. This project strengthened my skills in full-stack development, geospatial data handling, and API integration, resulting in a functional and efficient POI editor for location-based dataset management.

Objectives of the project: To design and develop a POI editor application integrating geospatial visualization (Kepler.gl) with a FastAPI, MySQL backend for efficient management and interactive editing of location data.

Tool used: React.js, Kepler.gl, FastAPI, MySQL, SQLAlchemy, Python

Details of Papers/patents:N/A

Brief description of the working environment: My PS-I was conducted online everyday from 10:00 AM to 7:00 PM, with daily attendance marking and progress meetings every 2–3 days on Slack to share updates, clarify doubts, and plan upcoming work. The environment was collaborative, and it was easy to reach out for technical help or feedback, but the company's expectations for scope and quality were quite high. One thing I learned was the importance of getting project requirements clearly defined before starting, while my main task was to develop a POI editor application, a computer vision based text OCR feature was also expected later but was not mentioned at the beginning, which made it harder to plan and affected my performance.

Academic courses relevant to the project: OOPS, DBMS

Learning Outcome: Gained hands-on experience in full-stack development, geospatial data handling, API integration, and interactive map-based UI design.

PS-I station: Infinite Analytics - Tech, Mumbai

Student

Name: NILAY SADANAND BORKAR (2023A7PS0401G)

Student Write-up:

PS-I Project Title: POI Verification App

Short Summary of work done: Here's your under-2During my internship at Infinite Analytics, I worked on enhancing and validating large-scale Points of Interest (POI) data, progressing from data analysis to building a web-based validation platform. I began with manual and programmatic POI checks, verifying names, tags, coordinates, categories, and other key fields against sources like Google Maps and Kepler.gl. I also extracted deeply nested key-value pairs from semi-structured JavaScript and JSON files, enriching datasets while ensuring schema alignment. In the final phase, I developed a Next.js application integrated with Kepler.gl for interactive geospatial visualization. The platform allowed users to view, edit, and validate POI data directly on the map, with state management handled through Redux and changes submitted via API calls. I implemented editable forms, dynamic routing for POI details, and responsive UI design using Tailwind CSS. Version control was maintained through Git and GitHub, with branching strategies and pull requests supporting a smooth development process. Collaboration with the team took place via Slack and shared documentation, ensuring clarity and consistency in workflows. This project strengthened my skills in data parsing, automation, frontend development, and collaborative software engineering, while giving me a holistic view of how clean, structured data integrates into user-facing applications.

Objectives of the project: To make a computer and mobile website which can fetch location from user and show nearby pois giving them access to edit any of the information pertaining to a particular data point.

Tool used: Vs code, GitHub, nextjs, react js, kepler.gl, redux, uber h3 library.

Details of Papers/patents: None

Brief description of the working environment: The working times were monitored through an app you were supposed to clock in and clock out. They said it was an AI project in the PS allotment however they made us do a we'd development project. There were regular meetings with the mentor and they gave us time to learn and implement the things they needed. It was a very hands on PS with a lot of work, where you had to actually give a lot of time.

Academic courses relevant to the project: OOPs, Database Management, Computer Programming.

Learning Outcome: I learnt web development, about how data works, about working in a team and building good user friendly frontends.

PS-I station: Innokreat Technologies Pvt Ltd - Non Tech, Gurgaon

Student

Name: NANDINI GOYAL (2023AAPS0624G)

Student Write-up:

PS-I Project Title: Website update and Optimization

Short Summary of work done: During my internship at Innokreat Technologies, I contributed to two major projects: enhancing the MonitorExam educational platform and creating a new appliance e-commerce website. For MonitorExam, I systematically resolved key bugs and usability issues—fixing broken navigation, dropdown menus, FAQ dropdowns, and standardizing design elements like headers, footers, and client logos. I also added new features such as animated "How it Works" sections, integrated testimonial carousels, and improved video content, ensuring mobile and cross-browser compatibility. My work was driven by user analytics and team feedback, leading to a more reliable and engaging platform

Objectives of the project: To fix major functional issues of MonitorExam website, make it more attractive and user friendly and addition of features.

Tool used: Visual studio Code, Gitlab, GitHub, Microsoft Excel

Details of Papers/patents: None

Brief description of the working environment: At Innokreat Technologies, I worked in a friendly, team-driven environment where support and constructive feedback were valued as much as technical skills. The company encouraged proactive problem-solving and expected me to take real ownership of my projects—both the MonitorExam site optimization and building the ElectroNest appliance platform from scratch. My mentors provided clear guidance but also trusted me to independently identify issues, collaborate closely with teammates, and see tasks through from initial planning to launch. This approach allowed me to grow rapidly, as I learned

hands-on web development, refined my UI/UX sense, improved my project documentation, and practiced making decisions based on analytics and real user feedback. I also gained experience with modern tools and industry-standard workflows like GitHub, VS Code, and agile meetings. Overall, the internship helped me become more confident, adaptable, and ready for professional software engineering by giving me meaningful responsibility and the chance to directly impact real products.

Academic courses relevant to the project: Learnt how to code efficiently and working on a large codebase and file handling. Electronics courses also require extensive coding, thus this experience has been fruitful.

Learning Outcome: Learnt how to code in html, css and javascript.
How to identify errors in the codebase of a website.
Making the frontend, theme, layout of a website from scratch.

PS-I station: Innokreat Technologies Pvt Ltd - Tech, Gurgaon

Student

Name: SURYATEJA GANDHAVADI . (2023A8PS0329H)

Student Write-up:

PS-I Project Title: Using AI to verify a person's Identity

Short Summary of work done: Developed a Backend& Database application with a sample frontend to verify a person's identity using their voice parameters like accent, habits, pitch, tone, etc saved in the form of an embeddings and stored in the database, and later using that data to compare and see if its the same person logging in.

Objectives of the project: The web frontend should take voice input and convert it into the necessary format and then generate a voiceprint and then later needs to be able to differentiate between different people.

Tool used: Vscode, Postman, Render, Flask, MySQL

Details of Papers/patents: none

Brief description of the working environment: The mentor is pretty friendly, the deadlines are mostly doable and can be changed as per the need, the company expects a proper working prototype which would be used in the main product after some changes, you are given days off, if you have any health or similar reason, you learn everything by yourself and implement it after researching all options available you get to learn how organisations develop applications and the related things to pass on that code to someone else. Its a good experience to learn how companies work.

Academic courses relevant to the project: DBMS, Python programming, Cloud Programming

Learning Outcome: How to collaboratively develop an application on a large scale, how to communicate with others in the company, how to build a full stack application, etc

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PS-I station: Insight Rise Education Pvt Ltd, Mumbai

Student

Name: ARYAN CHOPRA . (2023A1PS0196P)

Student Write-up:

PS-I Project Title: Blogs

Short Summary of work done: Fine

Objectives of the project: SEO

Tool used: Latex, Canva

Details of Papers/patents: None

Brief description of the working environment: It was good.
Academic courses relevant to the project: yes

Learning Outcome: Learnt new things.

PS-I station: Insight Rise Education Pvt Ltd, Mumbai

Student

Name: ABHISHEK MISHRA . (2023B1A30960H)

Student Write-up:

PS-I Project Title: Expanding Global Education Opportunities Through Data-Driven Outreach and Mentor Matching for Study Abroad Aspirants

Short Summary of work done: During my Practice School-I at Rise Global Education, I worked on a combination of data-focused and content-based tasks aimed at supporting the company's outreach strategy. I was involved in scraping student data, such as names, emails, and LinkedIn profiles, using tools like Bardeen, Simple Scraper, and Perplexity AI. The data was primarily sourced from university student directories and LinkedIn, and was later enriched and organized using platforms like Google Sheets, Clay, and Make.com. This structured lead database was used to identify and reach out to potential candidates interested in studying abroad. Alongside data management, I also contributed to the company's content marketing efforts by drafting AI-assisted blog posts. One blog each week focused on guiding high school students, while another was tailored to promote Rise Global Education's services. These blogs were created using Google Docs and published as part of the company's branding strategy. Additionally, I engaged in Reddit-based marketing by participating in relevant subreddits, contributing to discussions, and sharing informative content aligned with the target audience. The combined focus on data scraping, content creation, and community engagement provided me with well-rounded exposure to real-world digital outreach workflows.

Objectives of the project: The primary objective of the project was to support Rise Global Education's lead generation and digital outreach efforts by leveraging data scraping, enrichment, and automation tools. The internship aimed to identify prospective students interested in study-abroad programs by collecting and managing student data from various online sources such as LinkedIn and university directories. In addition, the project involved contributing to the company's content marketing strategy through blog writing and community

engagement, with a focus on platforms like Reddit. The broader goal was to apply real-world tools and platforms to streamline and scale the company's outreach operations.

Tool used: The software tools I used during the internship included Bardeen, Apify, Derek, Simple Scraper, and Perplexity AI for web scraping and data extraction. For automation and enrichment, I worked with Clay and Make.com to streamline data workflows. Google She

Details of Papers/patents: No research papers or patents were produced during the course of the internship

Brief description of the working environment: The working environment at Rise Global Education was remote, flexible, and outcome-oriented. Despite the lack of a formal office setup, the expectations from the company were clear and structured. I was expected to work independently, manage my tasks proactively, and deliver measurable outputs on a weekly basis. Communication was maintained primarily through shared documents and asynchronous updates with the company co-founders.
The company encouraged experimentation with tools and workflows, which gave me the freedom to explore different scraping methods, automation processes, and content strategies. This autonomy allowed me to develop problem-solving skills and a sense of ownership over my work. I also learned how to prioritize tasks, manage time effectively, and adapt to a fast-paced digital environment. Working in such a setting gave me a realistic preview of startup culture, where initiative, efficiency, and adaptability are highly valued. Overall, the experience helped me grow both technically and professionally, strengthening my ability to contribute meaningfully in data-driven roles.

Academic courses relevant to the project: yes

Learning Outcome: Through this internship, I developed a strong understanding of how data scraping and enrichment tools can be used in lead generation workflows. I learned how to automate data collection and profiling using tools such as Clay and Make.com, which enhanced my skills in managing structured datasets. I also gained experience with content creation, specifically writing AI-assisted blogs aligned with marketing objectives. Additionally, the internship helped me understand the dynamics of Reddit communities and how to contribute value-driven content for soft marketing. Overall, I acquired practical experience in data handling, digital content creation, and workflow optimization.

PS-I station: Insight Rise Education Pvt Ltd, Mumbai

Student

Name: PRATHAM PANKAJ LADDHA (2023B1AA0679G)

Student Write-up:

PS-I Project Title: Business development

Short Summary of work done: Manually scrape data from university websites and linkedin

Objectives of the project: Mentor and student outreach.

Tool used: Colab , chatgpt

Details of Papers/patents: Nil

Brief description of the working environment: Nil

Academic courses relevant to the project: yes

Learning Outcome: Data scraping and filtering

PS-I station: Insight Rise Education Pvt Ltd, Mumbai

Student

Name: ARPIT . (2023B3A70482H)

Student Write-up:

PS-I Project Title: Web Development, Data analysis

Short Summary of work done: Web Development, Data analysis

Objectives of the project: Web Development, Data analysis

Tool used: Web Development, Data analysis

Details of Papers/patents:NA

Brief description of the working environment: Web Development, Data analysis

Academic courses relevant to the project: yes

Learning Outcome: Web Development, Data analysis

PS-I station: Insight Rise Education Pvt Ltd, Mumbai

Student

Name: PRIYANSH RAWAT (2023B5A70968G)

Student Write-up:

PS-I Project Title: Web Scraping using bs4 python

Short Summary of work done: Alot of repetitive and monotonous work not a valuable experience

Objectives of the project: Scraping websites to get info about phd graduates in a field and using those info to improve business of company.

Tool used: Python,google colab,ollama

Details of Papers/patents: None

Brief description of the working environment: The work was not tech related,It was a lot of manual work so I automated it by learning python.

Academic courses relevant to the project: C programming and basics of web scraping

Learning Outcome: Python,ollama python sdk,beautiful soup library

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PS-I station: ITE Infotech Pvt Ltd, Bhopal

Student

Name: ANURAG SINGH . (2023AAPS0737P)

Student Write-up:

PS-I Project Title: Upscale and improve the LMS of Eprashikshan website for NITTTR .

Short Summary of work done: I was responsible for designing the user interface and setting up the structure for a role-based access control system. This included creating dynamic navigation, implementing basic role segregation, and ensuring that components rendered appropriately based on user permissions.

Objectives of the project: Increase the server capacity from 1 Lakh to 10Lakh and Improve the website Basics.Include a Licence based system

Tool used: React.js, JavaScript, HTML, CSS, Git, GitHub, VS Code

Details of Papers/patents: Eprashikshan website

Brief description of the working environment: The PS-I working environment was laidback, with a flexible and self-paced workflow. While communication from the company was often delayed, the responses we did receive were supportive and encouraging. Expectations were open-ended, giving us the freedom to take initiative. My fellow team members were very helpful, and we maintained good communication throughout the project. This experience taught me to stay self-driven, collaborate effectively within a team, and adapt to working in a semi-structured setup, helping me grow both technically and professionally.

Academic courses relevant to the project: CS CDCs

Learning Outcome: During the RBAC project, I gained practical experience in designing and implementing a role-based access system using React.js. I learned how to manage user permissions and admin controls effectively, ensuring that the interface adapted dynamically to different user roles.

PS-I station: ITE Infotech Pvt Ltd, Bhopal

Student

Name: ATHARVA OKHADE (2023B2A30771G)

Student Write-up:

PS-I Project Title: College LMS

Short Summary of work done: Our team developed a comprehensive Learning Management System (LMS) tailored for a college environment to enhance teaching, learning, and administrative efficiency. The platform centralizes academic resources, allowing faculty to upload lecture materials, assignments, and assessments, while enabling students to access content anytime and submit work online. It also features real-time grading, progress tracking, and feedback mechanisms, ensuring continuous academic engagement. We designed the LMS with an intuitive user interface, prioritizing ease of use for both students and faculty. Key functionalities include a course management module, attendance tracking, announcement boards, and discussion forums to foster interactive learning. The system supports secure user authentication and role-based access to ensure data privacy.

Objectives of the project: Making a LMS for a college

Tool used: Tools & Technologies Used: • Frontend: HTML, CSS, JavaScript, Bootstrap (for responsive design) • Backend: PHP / Node.js / Django (whichever you used) • Database: MySQL / PostgreSQL • Version Control: Git & GitHub • Development Environment: VS Code

Details of Papers/patents: None

Brief description of the working environment: The company fosters a collaborative and growth-oriented working environment where teamwork, innovation, and continuous learning are encouraged. Employees work in a supportive atmosphere with open communication, flexible work practices, and access to modern tools and technologies. Regular team meetings, brainstorming sessions, and knowledge-sharing activities ensure alignment with goals. A healthy work-life balance is maintained, promoting productivity, creativity, and overall job satisfaction.

Academic courses relevant to the project: yes

Learning Outcome: Learnt how to create full stack websites

PS-I station: Iwayplus Private Limited- Artificial Intelligence, New Delhi

Student

Name: PARTH KUMAR GARG . (2023B5A71104P)

Student Write-up:

PS-I Project Title: Indoor Navigation using AR

Short Summary of work done: Created a basic app allowing user to login and and register. Data of the user is stored in firebase in a NoSql database in form of key-value pairs and can be fetched whenever needed. This is a realtime database allowing instant content updates without needing to update the app.

Objectives of the project: To create a navigation and notice display system for using flutter and Arkit/arcore.

Tool used: S/w - Flutter, android studio, dart, Firebase and its services like firebase auth, cloud firestore. unity was used a rendering engine and ARcore/ Arkit for AR overlays and also GPS. H/w - Beacons, magnetometer

Details of Papers/patents: None

Brief description of the working environment: The company environment was very supportive.

Academic courses relevant to the project: CS F111 Computer programming

Learning Outcome: Basic app development using flutter and dart, CMS and content setup was what i worked on using firebase.

PS-I station: JK Tech, Noida, Noida

Student

Name: DURVESH NIRANJAN GANGAN . (2023A3PS0342P)

Student Write-up:

PS-I Project Title: SQL Assistant

Short Summary of work done: During my Practice School-I internship at JK Tech, Noida, I helped develop an intelligent SQL Assistant powered by Gemini. The main goal was to make it simple for anyone—even those unfamiliar with SQL—to access and understand data stored in a MySQL database. Users can just type their questions in plain English, and the system automatically turns those questions into accurate SQL commands and displays the results in easy-to-understand language. My role focused on building the backend so that it was both organized and efficient. I used Gemini 2.5 Pro and LangChain for translating questions, keeping track of previous conversations, and executing SQL queries securely. I also worked on creating a user-friendly web interface with Streamlit, allowing people to submit questions in real time and easily see or reuse past queries. Through this project, I learned how to design helpful prompts for AI, manage conversation history, handle errors smoothly, and keep reliable records of every user interaction. Overall, this experience improved my Python and AI development skills, while also teaching me how technology can make data access straightforward for everyone.

Objectives of the project: The primary objective of the project is to design and develop a Gemini-powered SQL Assistant that bridges the gap between structured databases and non-technical users by enabling natural language interaction with enterprise data systems.

Tool used: During development of the Gemini-Powered SQL Assistant, I primarily used my personal laptop as the main environment for coding and testing, while also making use of JK Tech's secure office infrastructure for collaborative work and database management. For

Details of Papers/patents:N/A

Brief description of the working environment: During my Practice School-I at JK Tech, Noida, I worked in a collaborative and supportive environment that fostered both independent problem-solving and teamwork. The company provided access to modern development tools, clear project objectives, and approachable mentors who encouraged continuous learning. I was expected to be proactive, adapt quickly, deliver practical solutions, and maintain thorough project documentation. The experience broadened my technical expertise in AI, prompt engineering, Python programming, and web development, while also enhancing my communication and teamwork skills. Open communication channels, constructive feedback, and exposure to real-world enterprise challenges significantly accelerated my professional growth. Overall, the internship gave me valuable hands-on experience in building useful, scalable technology for real business needs.

Academic courses relevant to the project: Database Systems, Artificial Intelligence, Natural Language Processing, Machine Learning, Software Engineering, Web Development, Human–Computer Interaction, Data Structures and Algorithms, Python Programming, Object-Oriented Programming, Information Secur.

Learning Outcome: Through this project, we gained practical experience in integrating large language models with real-world databases and learned to craft effective prompts to generate accurate SQL queries. We deepened our understanding of maintaining conversational memory for context-aware interactions and implemented secure, modular code using Python, LangChain, and Streamlit. The work enhanced our skills in building user-friendly AI tools and gave us real exposure to deploying conversational AI for enterprise data access.

PS-I station: JK Tech, Noida, Noida

Student

Name: AKHIL SIDDHARTH PICHIKA . (2023A4PS0690H)

Student Write-up:

PS-I Project Title: AI - based Resume Screener

Short Summary of work done: Using python as the main programming language, we created an AI - based resume screener which screens all the resumes and retrieves the top 5 matching resumes with the match score.

Objectives of the project: Create a tool to search resumes based on the job description

Tool used: Visual Studio Code

Details of Papers/patents: None

Brief description of the working environment: Worked remotely

Academic courses relevant to the project: Minor in Computing and Intelligence

Learning Outcome: Gen-AI, Python

PS-I station: JK Tech, Noida

Student

Name: NEEL KIRAN NAIK (2023A7PS0429G)

Student Write-up:

PS-I Project Title: Massive Document Search QA Tool

Short Summary of work done: Built up concepts of python. Completed an assignment on Data Aggregation, followed a GenAI pipeline, Implemented the knowledge from that in the final POC.

Objectives of the project: To implement a Retrieval Augmented Generation (RAG) based Generative AI tool to search across large collections of documents.

Tool used: Python, Langchain, ChromaDB, Ollama

Details of Papers/patents: None

Brief description of the working environment: Submentors were assigned to PS-I interns, who gave advice and guidance. Meetings were held on every working day for updates on work done. Company maintained attendance (clock-in and clock-out) and a weekly timesheet. All information was communicated clearly.

Academic courses relevant to the project: BITS F464 Machine Learning, CS F425 Deep Learning, CS F437 Generative Artificial Intelligence, CS F429 Natural Language Processing,

Learning Outcome: Generative AI, Retrieval Augmented Generation

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PS-I station: JK Tech, Noida

Student

Name: PRATHAM PRAKASH LAHOTI (2023A7PS0434G)

Student Write-up:

PS-I Project Title: GEMINI]POWERED SQL ASSISTANTo NATURAL LANGUAGE TO SQL QUERY TOOL

Short Summary of work done: Developed an intelligent file reader and error logging system to seamlessly ingest and process multi-format data with automated error detection and handling capabilities. Built a Natural Language Query Tool that converts user-friendly English input into dynamic SQL queries, allowing non-technical users to intuitively query and modify database records. Collaborated within a 16-member cross-functional team, contributing to design discussions, code reviews, and integration efforts to ensure scalable and maintainable solutions.

Objectives of the project: Key objectives included creating an intuitive user interface, ensuring high accuracy in SQL generation, and maintaining system robustness under erroneous inputs.

Limitations of the current implementation include support only for MySQL databases and English-only query processing.

Tool used: s/w

Details of Papers/patents:no

Brief description of the working environment: Good work environment, company very structured and has branched overseas, they take regular meetings (twice a day), give actual work and provide us very helpful mentors.

Academic courses relevant to the project: AI, ML, genAI

Learning Outcome: Generative artificial intelligence, machine learning.

PS-I station: JK Tech, Noida, Noida

Student

Name: SHUBHAM RAJ GUPTA (2023AAPS0145G)

Student Write-up:

PS-I Project Title: AI Powered Resume Screener

Short Summary of work done: Developed and implemented AI-based tools for automation and content processing, including document parsing, keyword extraction, semantic search, and ranking systems using vector databases and embedding models. Integrated workflows to enhance speed, accuracy, and user interactivity.

Objectives of the project: To find out the usefull resume from a big dataset.

Tool used: Vscode, langchain ,huggingface, ollama, streamlit

Details of Papers/patents: Na

Brief description of the working environment: Working Environment:
The working environment at the company was collaborative, innovation-driven, and supportive. Team members were approachable and encouraged open communication, making it easy to share ideas and clarify doubts. The culture emphasized problem-solving, experimentation, and practical implementation of concepts. Tools and resources were readily available, enabling smooth project execution.
Expectations from the Company:
The company expected interns to take ownership of their tasks, deliver results within deadlines, and maintain professional communication. A proactive approach to learning, exploring new technologies, and contributing to real-world solutions was encouraged. The focus was on developing both technical and soft skills, preparing interns for industry-ready roles.
Learning during PS-I:
During the course of PS-I, I worked on developing and integrating AI-based tools for automation and content processing. I learned to perform document parsing, keyword extraction, semantic search, and ranking using vector databases and embedding models. The project deepened my understanding of AI/ML workflows, vector similarity searches, and embedding models such as HuggingFace and Ollama. I also gained hands-on experience in building interactive interfaces, integrating backend logic, and optimizing performance for faster results. Apart from technical knowledge, I improved my problem-solving abilities, adaptability to new tools, and collaboration skills in a professional setting. Overall, the experience bridged the gap between classroom learning and practical industry application, providing valuable insights into real-world AI-driven solutions.

Academic courses relevant to the project: Ml, AI, Computer programming

Learning Outcome: Ai/ml , python , model training

PS-I station: JK Tech, Noida

Student

Name: JOSHPAL SINGH BHALLA . (2023AAPS0726P)

Student Write-up:

PS-I Project Title: Section-Wise Data Aggregation and Fault-Tolerant Processing Framework.

Short Summary of work done: During my PS-I internship at JK Tech, Noida, I worked on a project titled "Section-Wise Data Aggregation and Fault-Tolerant Processing Framework." The primary objective was to design and implement a modular pipeline to process large volumes of structured files divided into five key sections. The framework aimed to extract, validate, and aggregate section-wise data while ensuring robustness and error tolerance in processing workflows. My role involved building a fault-tolerant architecture that could gracefully handle missing or corrupted data in any section without interrupting the entire processing pipeline. I implemented reusable modules for reading input files, performing section-wise data aggregation, computing statistical summaries, and generating structured outputs for further analytics. In addition, I focused on exception handling and logging mechanisms to enhance traceability and reliability. The framework also includes extensibility features to plug in new data formats or processing rules without changing the core logic.

Objectives of the project: This project involves the development of a modular data processing framework for handling structured files across five distinct sections. Each section contains over 100 files with varying formats and column structures. The task includes reading and aggregating data, computing statistical summaries, and generating structured output objects. Robust exception handling is to be implemented to capture and log errors such as file-level issues, line-level anomalies, and format mismatches in JSON format. The system must ensure continuity of execution despite data inconsistencies.

Tool used: Software Tools: Python, Pandas, NumPy, VS Code, Git, Excel, Jupyter Notebook; Hardware: macOS-based development environment (MacBook Air); Other Tools: Logging libraries, Exception handling modules, File I/O utilities.

Details of Papers/patents: No papers or patents were published during the course of this internship.

Brief description of the working environment: The working environment at JK Tech, Noida, was collaborative, supportive, and conducive to learning. From the initial orientation session, we were introduced to the company's structure, ongoing projects, and best practices. Regular check-ins with mentors ensured that we were aligned with project goals and were able to seek guidance whenever required. The team maintained open communication, encouraged us to ask questions, and provided timely feedback on our progress. My expectation from the company was to gain real-world exposure to software development, especially in the area of data processing frameworks, and to understand how scalable and reliable systems are built in the industry. JK Tech exceeded these expectations by assigning us a meaningful and technically engaging project and involving us in discussions and decision-making throughout. During the PS-I internship, I enhanced my technical skills in Python, data handling, modular programming, and error handling. I also developed a strong understanding of fault-tolerant architecture, file parsing strategies, and workflow design. In addition to technical growth, I gained valuable experience in team collaboration, professional communication, and task ownership.

Overall, the internship provided a solid foundation for working in real-world enterprise environments and significantly improved both my technical capabilities and soft skills.

Academic courses relevant to the project: Some courses like Probability and Statistics, Database Systems,etc.

Learning Outcome: Gained hands-on experience in building modular data processing pipelines, implemented section-wise aggregation techniques, and developed a fault-tolerant framework for handling structured files. Enhanced skills in Python, exception handling, and data validation while working in a real-world enterprise environment.

PS-I station: JK Tech, Noida

Student

Name: RAGHAVAN TOSHNIWAL (2023AAPS1052G)

Student Write-up:

PS-I Project Title: "Section-Wise Data Aggregation and Fault-Tolerant Processing Framework" and "Object Detection Using YOLO"

Short Summary of work done: During my PS-I at JK Tech, I worked on two complementary projects — a data aggregation pipeline and an AI-based object detection POC. In the first phase, I developed a Python-based pipeline to traverse nested directories, read multiple CSV files, compute section-wise performance metrics, and output results in a structured JSON format. The system incorporated robust error handling and logging to ensure fault-tolerant execution and scalability for cloud integration. In the second phase, I designed a YOLOv8-based door detection system. I collected and annotated a custom dataset, applied augmentations, trained and evaluated the model, and deployed it through a Streamlit web interface. The solution provided real-time inference, bounding box visualization, structured JSON outputs, and detailed detection logs. This internship gave me practical exposure to backend automation, AI model development, evaluation, and frontend deployment — equipping me with cross-functional skills in data engineering, computer vision, and scalable application design.

Objectives of the project: 1>Automate aggregation, structuring, and cloud-ready storage of raw CSV data into JSON format with built-in fault tolerance. 2>Develop a Proof of Concept (POC) for real-time door detection using YOLOv8, covering dataset creation, model training, evaluation, and deployment via a Streamlit-based UI. 3>Implement robust logging and error handling for both data processing and AI inference workflows.

Tool used: Programming & Data Handling: Python 3, os, csv, json, logging Machine Learning & CV: YOLOv8, PyTorch, OpenCV, NumPy, PIL, LabelImg Deployment & UI: Streamlit, Git, VS Code Cloud & Scalability: Google Cloud Platform (GCP) compatibility.

Details of Papers/patents: NA

Brief description of the working environment: My PS-I at JK Tech was conducted in a collaborative, professional, and learning-oriented environment. Even though the internship was online, communication channels with mentors, team leads, and fellow interns were open and effective, fostering regular discussions, feedback sessions, and problem-solving interactions. The company encouraged self-driven exploration, innovation, and delivering industry-relevant solutions.

From the outset, expectations were clearly defined — to deliver practical, deployable solutions aligned with real-world requirements. I was expected to take ownership of my work, document progress, maintain coding best practices, and ensure scalability in my solutions. The mentorship emphasized not only technical competence but also structured thinking, attention to detail, and the ability to handle incomplete or inconsistent real-world data.

Over the course of the internship, I learned how to design and implement fault-tolerant data pipelines, automate data aggregation, and prepare cloud-ready outputs. I gained hands-on experience in deep learning through building and deploying a YOLOv8-based door detection system, covering dataset preparation, model training, evaluation, and UI development using Streamlit. I also developed skills in error logging, modular coding, cloud integration concepts, and interpreting model performance metrics like mAP, precision, and recall.

The experience strengthened my ability to work independently, adapt to new technologies, and approach complex problems with structured, scalable solutions — closely simulating real industry scenarios.

Academic courses relevant to the project: Computer Programming
Data Structures and Algorithms
Probability & Statistics
Signals and Systems
Digital Image Processing
Machine Learning
Artificial Intelligence
Database Systems
Computer Networks
Software Engineering

Learning Outcome: Proficiency in Python scripting for data engineering and automation.
Hands-on experience with fault-tolerant pipeline design and error logging.
Skills in YOLOv8 model training, augmentation, evaluation (mAP, precision, recall), and deployment.
Experience in building real-time, interactive AI applications using Streamlit.
Understanding of cloud-ready architecture and scalable design practices.

PS-I station: JK Tech, Noida

Student

Name: RUSHIL DHARWAL . (2023B3A70965P)

Student Write-up:

PS-I Project Title: Massive Document Search Question Answer

Short Summary of work done: We used streamlit library to make the frontend of our chat model, we used langchain to build the backend working to invoke, use the Llm and embedding model. The task was divided between 3 of us collaborating on GitHub. Before the project we were trained using courses on ai, sql and ml ops working.

Objectives of the project: To get hands on of using open source LLM to retrieve answers from pre-stored documents.

Tool used: S/w: VS Code, Python, Langchain, Ollama, VS, Llama CPP, transformer, git and for sql MySQL and postgresql.

Details of Papers/patents: Nil

Brief description of the working environment: Our PS-1 was online we had 2 online sessions. One at 10 am with all teams joining together and other at 4 pm for daily update on the task we were assigned l. They are very cooperative like if we stuck and not able to do the task they tend to extend if reason is valid.

Academic courses relevant to the project: CP

Learning Outcome: Python, Langchain, Ollama, SQL

PS-I station: JK Tech, Noida

Student

Name: SURYAANSH GARG . (2023B3A70988P)

Student Write-up:

PS-I Project Title: NATURAL LANGUAGE QUERY TOOL

Short Summary of work done: This report presents a Natural Language Query Tool designed to address the challenge non-technical users face in accessing database information, which typically requires SQL knowledge. The system utilizes Google's Gemini 2.5 Pro model along with the LangChain framework to translate plain English questions into correct MySQL queries. It includes a conversational memory feature to manage follow-up questions and a user-friendly interface created with Streamlit. The project showcases the potential of LLMs to democratize data access, enabling users to interact with complex databases through simple conversation and thereby streamlining data-driven decision-making.

Objectives of the project: To create a system capable of translating natural language questions into accurate MySQL queries using an appropriate LLM and effective prompts. To implement a conversational memory mechanism to understand context and handle follow-up questions for a more natural user experience. To develop an accessible, user-friendly web application interface using Streamlit. To ensure the system is well-documented and maintainable. To evaluate the performance, accuracy, efficiency, and limitations of the developed tool.

Tool used: Software: Python, MySQL , Libraries/Frameworks: LangChain, Streamlit Models/APIs: Google's Gemini 2.5 Pro Large Language Model (LLM)

Details of Papers/patents: NA

Brief description of the working environment: The internship at JK Tech provided a structured and supportive working environment. The project was guided by a mentor, Mr. Naveen

Poovaiah, and a sub-mentor, Mr. Bhanu Prasad, through consistent leadership and technical insights. The work was kept on track with daily morning meetings (Tuesday to Friday) and focused evening review sessions to address technical challenges. The environment was collaborative, with valuable support from other sub-mentors. Administrative and system coordination, including access to tools like MS Teams, was handled efficiently. This valuable internship opportunity facilitated a strong collaboration between academia (BITS Pilani) and industry (JK Tech), providing an enriching experience that enhanced technical knowledge, problem-solving skills, and professional perspective

Academic courses relevant to the project: Practice School-I Course Nos. BITS C221/BITS C231/BITS C241

Learning Outcome: This project was an enriching experience that strengthened technical knowledge, problem-solving abilities, and professional perspective. Key learning outcomes included:
Successfully integrating the Gemini 2.5 Pro LLM for a Text-to-SQL task.
Effectively using the LangChain framework to build a modular and maintainable application.
Implementing conversational memory to create a more intuitive user experience.
Developing a clean and accessible user interface with Streamlit.

PS-I station: JSM Technologies P Ltd, Bangalore

Student

Name: AMRUTH SRIVATSAN S (2023A7PS0026P)

Student Write-up:

PS-I Project Title: Developing HRIS software

Short Summary of work done: We had to take forms from the software and write documentation for them. Once developers complete their coding based on the requirements, we test and push for further revisions until the software is bug free.

Objectives of the project: To create documentation and test the HRIS software

Tool used: Excel, VS Code, Word, proprietary company software

Details of Papers/patents: None

Brief description of the working environment: I learned how to manage tasks and complete work within deadlines.
Academic courses relevant to the project: Technical report Writing, Database Systems

Learning Outcome: Documentation and testing practices

PS-I station: Juvarya Technologies Pvt. Ltd, Visakhapatnam

Student

Name: ADARSH CHAKRAVARTHY VADDADI . (2023A7PS0089H)

Student Write-up:

PS-I Project Title: Frontend app development using angular

Short Summary of work done: As part of the PS-I internship project, I developed a full-fledged frontend for a product management system using Angular. I created multiple components such as a home page, product listing, individual product details, profile management, and sign-in/sign-up interfaces.

Objectives of the project: To develop a dynamic, responsive frontend application using Angular for managing product data in a pharmacy context. The application aimed to allow browsing, searching, and filtering of product items. The objective was to simulate a scalable and maintainable web interface integrated with dummy API data and multiple components

Tool used: Angular CLI, VS Code, Node.js, Git & GitHub, Chrome DevTools

Details of Papers/patents: None

Brief description of the working environment: The PS-I was conducted in an offline setting at the company's office, which offered a work-friendly and supportive environment. The

workplace had a structured yet relaxed atmosphere that encouraged learning and collaboration. The mentor was approachable and provided timely feedback, which helped guide my progress effectively.

Academic courses relevant to the project: Object-Oriented Programming
Data Structures and Algorithms.

Learning Outcome: Gained practical experience with Angular framework including components, routing, services, and modules.
Improved skills in TypeScript, HTML, and SCSS specific to Angular development.

PS-I station: Kerala Infrastructure and Technology for Education (KITE), Thiruvananthapuram

Student

Name: SOMDATH DEVANSH AGARWAL . (2023A7PS0044H)

Student Write-up:

PS-I Project Title: Web Development

Short Summary of work done: I have worked on a gamified quiz module which tests students in a space station based escape room in which the questions are dynamically generated using AI integration

Objectives of the project: developing a gamified quiz module for the students of kerala

Tool used: Frontend Web Dev- Angular, Backend- FASTAPI

Details of Papers/patents:NA

Brief description of the working environment: Working enviroment was fine,The mentors were flexible and wanted us to do the work on time.

Academic courses relevant to the project: yes

Learning Outcome: Learnt new Frameworks to continue my webdeleopment journey. They are FASTAPI and Angular.

PS-I station: Kerala Infrastructure and Technology for Education (KITE), Thiruvananthapuram

Student

Name: VENU SAI YELESVARAPU . (2023A7PS0149H)

Student Write-up:

PS-I Project Title: Rapid Reading Module for Samagra AI Platform

Short Summary of work done: A Rapid Reading Module was built which enhances students' reading efficiency.

Objectives of the project: To build a module for an EdTech platform which enhances the reading speed and comprehension of students. Create a platform which analyses the reading patterns of the student and gives relevant feedback.

Tool used: Angular JS, Fast API, SQLite

Details of Papers/patents:none

Brief description of the working environment: The mentors guided me well and helped me understand industry expectations.
Academic courses relevant to the project: yes

Learning Outcome: Full Stack Development, Prompt Engineering, Context Engineering, LLMs

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PS-I station: Kerala Infrastructure and Technology for Education (KITE), Thiruvananthapuram

Student

Name: AARUSH KANIPAKAM . (2023A7PS1160H)

Student Write-up:

PS-I Project Title: Creative Writing Module

Short Summary of work done: During my PS-I internship at KITE (Kerala Infrastructure and Technology for Education), I worked on the development of an interactive Creative Writing Module aimed at enhancing students' creative expression through technology. My primary contributions involved designing and developing the front-end using Angular, ensuring a clean and responsive user interface that was intuitive for students and educators. For content enhancement and interactivity, I integrated the DeepSeek API, a large language model, using Python to generate writing prompts and suggestions dynamically. This feature helped in making the module more engaging and adaptive to different user inputs. Throughout the internship, I followed a modular development approach, maintained version control using Git. I also focused on optimizing user experience and interface accessibility. This experience gave me practical exposure to full-stack development workflows, API integration, and the challenges of building educational tools. It improved my skills in Angular, Python, RESTful APIs, and UI/UX design principles. Additionally, I gained valuable insights into the role of technology in modern education and the importance of building inclusive digital learning platforms.

Objectives of the project: To create an AI-powered Creative Writing Module for their Samagra platform.

Tool used: Angular, Python, LLM API

Details of Papers/patents: None

Brief description of the working environment: The working environment at KITE (Kerala Infrastructure and Technology for Education) was collaborative, flexible, and intellectually stimulating. Although the internship was conducted remotely, regular communication with mentors and project coordinators ensured clear guidance and timely feedback. The team encouraged independent thinking while offering support whenever required, which fostered a balance between autonomy and mentorship.
KITE expected us to approach our tasks professionally—meeting deadlines, maintaining code quality, and ensuring that our work aligned with the broader goals of educational accessibility

and innovation. There was a strong emphasis on building solutions that were practical, user-friendly, and adaptable to the needs of students and teachers across Kerala.

Academic courses relevant to the project: Object Oriented Programming

Learning Outcome: Learnt to code in Angular

PS-I station: Kerala Infrastructure and Technology for Education (KITE), Thiruvananthapuram

Student

Name: ANN SAIRA THOMAS (2023B1A70906G)

Student Write-up:

PS-I Project Title: AI powered Escape room module for Samagra

Short Summary of work done: During my Practice School-I at Kerala Infrastructure and Technology for Education (KITE), I worked on the development of an AI-powered Escape Room Module for the Samagra platform. The module is a curriculum-aligned, gamified learning tool designed to enhance English language learning for students across various grade levels in Kerala. The project began with a review of the existing Samagra Learning Module, followed by research and a presentation on AI integration in education. Based on this, I took up the Escape Room module, which required both frontend and backend development. I contributed to building multiple Angular components such as landing pages, question displays, hints, and summary interfaces. On the backend, I used Python and FastAPI to implement dynamic question generation using Large Language Models (LLMs) via OpenRouter and DeepSeek APIs. I also developed an administrative interface for managing learning content using SQLite. Throughout the development, I implemented game mechanics like lives, hints, and retry options while ensuring user privacy. The interface was designed to be immersive and accessible without login requirements. This internship allowed me to gain real-world experience in full-stack development, AI integration, educational technology, and agile project management.

Objectives of the project: To design and develop an AI-powered, curriculum-aligned English learning module integrated into the KITE Samagra platform. The goal is to enhance student engagement through gamification, adaptive AI-driven question generation, and immersive

storytelling. The module aims to provide accessible, grade-specific grammar and literature practice without requiring logins, while maintaining user privacy and promoting effective, enjoyable learning.

Tool used: Software: Frontend Development: Angular, HTML, CSS, TypeScript, NgBootstrap Backend Development: Python, FastAPI, Node.js AI Integration: OpenRouter API, DeepSeek Database: SQLite Version Control: Git, GitHub Editors: VS Code

Details of Papers/patents: No

Brief description of the working environment: The PS-I internship was conducted online at Kerala Infrastructure and Technology for Education (KITE), a government initiative focused on integrating technology into school education. Despite being virtual, the working environment was collaborative, structured, and highly engaging. Guidance was provided through online sessions with mentors who played a crucial role in addressing technical doubts and offering feedback. Communication was maintained via Google Meet, email, and WhatsApp group chats.
The company expected interns to demonstrate initiative, adaptability, and a willingness to learn independently while contributing meaningfully to ongoing projects. There was an emphasis on understanding real-world applications of technology in education and delivering solutions that are practical, scalable, and aligned with the organization's mission of inclusive learning.
During the internship, I gained hands-on experience in full-stack web development using Angular, Python, and FastAPI. I also explored AI integration using Large Language Models (LLMs) and APIs like OpenRouter and DeepSeek. The internship offered exposure to version control using Git/GitHub, UI/UX design principles, and gamification strategies in ed-tech.

Academic courses relevant to the project: yes

Learning Outcome: Gained hands-on experience in full-stack web development using Angular, Python, FastAPI, and SQLite.
Learned to integrate AI tools like LLMs, OpenRouter API, and DeepSeek for dynamic content generation.
Strengthened skills in UI/UX design, gamification, and adaptive learning systems.

PS-I station: Kerala Infrastructure and Technology for Education (KITE), Thiruvananthapuram

Student

Name: JOHNS PANICKER MATHEWS . (2023B5A70967H)

Student Write-up:

PS-I Project Title: Rapid Reading Module for Samagra AI Platform

Short Summary of work done: The project focuses on the design and development of a Rapid Reading Module integrated into the SAMAGRA AI platform, aimed at enhancing reading speed and comprehension among school students. The module delivers timed reading passages followed by quizzes to assess understanding. Student performance is evaluated using AI techniques, and per- sonalized feedback with detailed explanations is generated through Large Language Models (LLMs). Additionally, the module analyzes students' reading patterns and provides compre- hensive performance insights post-evaluation. The system is built using AngularJS for the frontend and FastAPI for the backend, which handles API development, LLM integration, and data management using a SQLite database.

Objectives of the project: Create a language learning and comprehension tool for an Edtech platform

Tool used: Angular6, Python FastApi, SQLite

Details of Papers/patents: Nil

Brief description of the working environment: Worked in a remote mode(online). We had weekly virtual meetings and we collaborated through github.

Academic courses relevant to the project: CP

Learning Outcome: Full Stack development, web development, AI integration

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PS-I station: KVGAI Tech Pvt. Ltd, Lucknow

Student

Name: TUMPATI GUNASRI PHANINDRA SASANK (2023A3PS0309P)

Student Write-up:

PS-I Project Title: An Autonomous Multi-Agent System for Personalized Student Learning

Short Summary of work done: This project, titled "Studybuddy," involved the development of an autonomous AI learning companion. The system is built on a multi-agent architecture where a central orchestrator agent delegates tasks to specialized agents for different functions. These include a PerformanceAnalyticsAgent to analyze a student's past performance and mistakes, a CourseMaterialAgent that uses a Retrieval-Augmented Generation (RAG) pipeline to answer questions based on verified course content, and a VideoGenerationAgent that creates on-demand animated video explanations using Manim. The core innovation is its ability to access a student's performance history to provide deeply personalized and targeted academic support, moving beyond generic answers to address specific weaknesses. The project successfully demonstrates the potential of autonomous agents in creating a dynamic, adaptive, and effective personalized learning experience.

Objectives of the project: 1. To design and implement an autonomous multi-agent system capable of handling and delegating complex educational tasks. 2. To integrate student performance data to create a feedback loop for personalized learning. 3. To develop a Retrieval-Augmented Generation (RAG) pipeline for efficient and context-aware retrieval of course material. 4. To implement dynamic educational tools, including on-demand video generation and interactive visualizations.

Tool used: Frontend: Next.js, React, Tailwind CSS Backend: Python with FastAPI AI & ML: Gemini 2.5 Flash, Pro (LLM), gemini-embedding-001, Pydantic Agents Database: PostgreSQL with pgvector extension ORM: SQLAlchemy Data Validation: Pydantic Video Generation:

Details of Papers/patents: None

Brief description of the working environment: The working environment at KVGAI Tech Pvt. Ltd. was highly supportive and provided an invaluable opportunity for hands-on industry experience. The mentorship from Mr. Anubhav Elhence and Mr. Harshit Saraf was instrumental, offering continuous guidance and profound expertise that shaped the project's direction and success. The company provided a platform to tackle real-world challenges in AI development, such as managing agent hallucinations, ensuring the security of AI-generated code, and orchestrating a complex multi-agent system. The primary learning experience was in bridging the gap between theoretical knowledge and practical application, particularly in building a robust, full-stack AI application. The journey was one of immense growth, fostering a deep understanding of creating adaptive and personalized educational technology.

Academic courses relevant to the project: yes

Learning Outcome: Gained significant hands-on experience in architecting and implementing a complex multi-agent AI system from the ground up. Key learnings include designing a Retrieval-Augmented Generation (RAG) pipeline to ensure factual accuracy and prevent AI hallucinations, managing agent coordination through an orchestrator-specialist model, and implementing secure, sandboxed execution for AI-generated code. Developed practical skills in full-stack development, integrating a Python (FastAPI) backend with a Next.js frontend, and utilizing a PostgreSQL database with pgvector for advanced AI capabilities.

PS-I station: KVGAI Tech Pvt. Ltd, Lucknow

Student

Name: AARAV SINHA . (2023A7PS2001H)

Student Write-up:

PS-I Project Title: Cheating Detection using

Short Summary of work done: Built a backend system to accept frames from the frontend over websockets, run them through a cheating detection module which was implemented using the Roboflow API. Also a system to fetch videos from a public url, download them and process asynchronously using a task queue, Celery in this case.

Objectives of the project: Create a system to detect cheating in online interviews and assessments using gaze detection

Tool used: Python, FastAPI, WebSockets, Celery, Task queues

Details of Papers/patents: NA

Brief description of the working environment: Mentors were helpful throughout, work never felt too hectic or pressured, we were always given ample time to complete our tasks

Academic courses relevant to the project: OOPs, DBMS

Learning Outcome: Learnt how to build scalable backend systems, optimise performance, API development.

PS-I station: KVGAI Tech Pvt. Ltd, Lucknow

Student

Name: SUYASH HANDA . (2023AAPS0029P)

Student Write-up:

PS-I Project Title: Interview Copilot – A Gaze Detection Based Machine Learning System

Short Summary of work done: During PS-I at KVGAI Tech Pvt. Ltd. (online), I developed Interview Copilot, a gaze detection-based machine learning system aimed at improving the integrity of remote recruitment. The system processes a candidate's live webcam feed to detect behavioural anomalies such as prolonged off-screen glances, unusual blink rates, and fixed gazes—potential indicators of using unauthorized aids. I implemented a distributed architecture where video frames are sent from the candidate's browser to a GPU-enabled inference service on Microsoft Azure via WebSockets. Using Roboflow for facial landmark detection and OpenCV for gaze, blink, and head pose analysis, the system feeds results into a temporal state machine that flags persistent or repeated anomalies. The solution achieved 85% detection accuracy with sub-150 ms latency, ensuring real-time, non-intrusive alerts to the interviewer. I also developed a complete MLOps workflow for model monitoring, retraining, and deployment, ensuring scalability and continuous improvement.

Objectives of the project: 1) Develop a real-time detection system to identify cheating-related behaviours in remote interviews with minimal delay. 2) Achieve high accuracy and reliability while minimizing false positives. 3) Maintain low end-to-end latency (<150 ms) for a seamless interview experience. 4) Build a scalable, cost-effective, cloud-native architecture capable of handling large concurrent loads.

Tool used: - Languages & Libraries: Python, OpenCV, FastAPI, Roboflow, ReactJS - Frameworks/Protocols: WebSockets, Redis Pub/Sub - Cloud & Deployment: Microsoft Azure (ACI, Application Gateway, Azure Monitor) - Others: Docker, Git, VS Code

Details of Papers/patents: None

Brief description of the working environment: The PS-I was conducted entirely online with KVGAI Tech Pvt. Ltd., fostering a collaborative, startup-style environment that encouraged ownership of tasks and iterative development. My mentors provided regular feedback, helping refine both technical design and practical implementation. The company expected me to deliver a functional, deployable solution capable of meeting real-world constraints in scalability, latency, and accuracy.
I gained valuable experience in architecting cloud-native, distributed AI systems, mastering MLOps workflows, and integrating real-time computer vision into production environments. I also learned to optimize for low latency, handle large-scale concurrent workloads, and design ethical AI systems that augment rather than replace human judgment.

Academic courses relevant to the project: - Machine Learning
- Data Structures and Algorithms
- Computer Networks
- Cloud Computing

Learning Outcome: - Gained hands-on experience in designing and implementing low-latency computer vision pipelines using OpenCV and Roboflow.
- Learned to architect distributed, scalable systems using Azure Container Instances and asynchronous WebSocket communication.
- Developed proficiency in MLOps practices, including containerization, model lifecycle management, and automated retraining pipelines.
- Enhanced skills in real-time behavioural analytics and integrating multi-modal data (gaze, blink, head pose).

PS-I station: KVGAI Tech Pvt. Ltd, Lucknow

Student

Name: S ROHAN . (2023B2A70935P)

Student Write-up:

PS-I Project Title: Multimodal Computer Vision and Deep Learning-Based Webcam Proctoring Framework for Real-Time Cheating Detection in Online Interviews

Short Summary of work done: Contributed to the development of a comprehensive SaaS platform for online interview integrity monitoring using a modern microservices architecture. Implemented gaze detection algorithms leveraging OpenCV for computer vision processing and Roboflow for model deployment, analyzing candidate eye movements and attention patterns during video interviews. Used NumPy for efficient numerical computations and array operations in image processing pipelines, while Pandas facilitated data analysis and preprocessing of behavioral metrics for scoring algorithms. Developed the backend infrastructure using Flask for REST API services and Celery for asynchronous video processing tasks, with Redis serving as both cache and message broker. Built responsive frontend components using React to display flagged video segments with timestamps and suspicion scores for recruiters. Created an automated scoring system that processes video data through distributed task queues, utilizing statistical analysis of gaze patterns to identify suspicious behaviors while maintaining high accuracy. Deployed the entire solution using Amazon ECS for container orchestration, enabling horizontal scaling based on processing demands. Optimized the data processing pipeline using vectorized operations with NumPy and structured data handling with Pandas, ensuring efficient video analysis and real-time behavioral assessment.

Objectives of the project: Develop and deploy a SaaS-based gaze detection system that monitors candidate behavior during online interviews to identify suspicious activities, providing recruiters with flagged video content and quantitative cheat detection scores to ensure interview integrity.

Tool used: Flask, Celery, Redis, React, OpenCV , Roboflow, NumPy, Panda, Amazon ECS, Docker containers, Git.

Details of Papers/patents: -

Brief description of the working environment: The internship provided exposure to a fast-paced SaaS development environment focused on AI-driven solutions for the recruitment industry. The company emphasized modern development practices including microservices architecture, containerization, and data-driven decision making.
Company Expectations: Deliver production-ready code using industry-standard frameworks, implement efficient data processing pipelines with scientific Python libraries, maintain high accuracy standards for detection algorithms, and collaborate effectively with cross-functional teams including data scientists and product managers.
Key Learning: Gained practical experience with the complete Python data science stack (OpenCV, NumPy, Pandas), learned distributed computing concepts through Celery task queues, understood computer vision model deployment, and developed skills in statistical analysis of behavioral data. Acquired knowledge about optimizing numerical computations for real-time video processing.

Professional Growth: Enhanced ability to work with scientific computing libraries, improved understanding of data preprocessing and feature engineering, learned about ethical considerations in AI-powered monitoring systems, and developed appreciation for scalable data processing architectures in SaaS environments.
The environment encouraged innovation while maintaining focus on practical, production-ready solutions.

Academic courses relevant to the project: CS F111

Learning Outcome: Technical Skills: Computer vision implementation using OpenCV and Roboflow, data processing with NumPy and Pandas, real-time gaze tracking algorithms
Full-Stack Development: React frontend development, Flask API services, asynchronous task processing with Celery
Data Science: Statistical analysis of behavioral patterns, data preprocessing and feature extraction using Pandas
Cloud & DevOps: Container orchestration with ECS, Redis caching and task queuing, scalable cloud deployment.

PS-I station: KVGAI Tech Pvt. Ltd, Lucknow

Student

Name: ANURAG . (2023B3A21002P)

Student Write-up:

PS-I Project Title: Go-to-Market (GTM) Strategy and Pilot Launch Plan for SmartQna

Short Summary of work done: During my PS-I at KVGAI TECH PVT. LTD., I worked on developing a Go-to-Market strategy for SmartQna—an AI-powered digital evaluation platform. I conducted extensive competitor and market research to understand the target audience and pain points in the current assessment process. I segmented stakeholders and created tailored positioning for each. I was also involved in configuring the CRM to streamline leads and outreach, and in drafting product brochures, social media posts, and an onboarding kit. I contributed to executing a pilot launch with select institutions and prepared an executive presentation summarizing the GTM plan, findings, and next steps.

Objectives of the project: To design and execute a comprehensive Go-to-Market strategy for SmartQna, an AI-based digital evaluation platform. To position the product effectively for schools and colleges in line with NEP 2020. To develop marketing and sales collateral, identify pilot institutions, and contribute to the product launch roadmap.

Tool used: Google Workspace, Canva, MS Excel, Notion, HubSpot CRM, MS PowerPoint, WhatsApp Business API

Details of Papers/patents: N/A

Brief description of the working environment: The work environment at KVGAI TECH was highly collaborative and growth-driven. I had regular meetings with my mentor and cross-functional teams where I was encouraged to contribute ideas and take initiative. The company provided clarity in expectations and the flexibility to explore creative approaches. The team was open to feedback and valued innovation. Through this experience, I learned how startups function, the importance of market fit, and how to communicate value propositions effectively. The exposure to real-life problem-solving, planning a product launch, and cross-functional teamwork was immensely valuable.

Academic courses relevant to the project: Marketing
Principles of Management
New Venture Creation
Design Thinking
Strategic Management
Product Management (open elective)

Learning Outcome: Understood the key elements of GTM strategy including stakeholder segmentation, market research, and value proposition design.
Learned how to create impactful marketing content and plan outreach campaigns.
Gained hands-on experience in product positioning, CRM tools, and internal onboarding kit preparation.

PS-I station: KVGAI Tech Pvt. Ltd, Lucknow

Student

Name: OJAS DUBEY . (2023B3A70527H)

Student Write-up: The experience helped me understand my strengths and areas to improve.

PS-I Project Title: Agentic finance terminal

Short Summary of work done:
Objectives of the project: Make AI help you in portfolio management

Tool used: Js, express

Details of Papers/patents: None

Brief description of the working environment:

Academic courses relevant to the project: yes

Learning Outcome: Backend

PS-I station: KVGAI Tech Pvt. Ltd, Lucknow

Student

Name: KEVIN FELIX DCUNHA (2023B3A70690G)

Student Write-up:

PS-I Project Title: Multi Llm agentic system for mutual fund analysis

Short Summary of work done: Helped create a multi LLm agentic system that has 4 features . The first feature analysed mutual funds and used a gemini 2.5 pro to provide an accurate analysis , the feature identified key financial parameters, found common holdings accross different mutual funds and provided an analysis in a user friendly manner. The second feature generated predefined portfolios from nifty 100 stocks, portfolios such as value,safe,growth etc were made. The third feature let the user choose their risk appetite in the form of percentage

allocated to high risk low risk and medium stocks and generated a portfolio . You could see the back tested returns of you portfolio and a detailed table. The final feature needed the user to upload their portfolio and would analyse it using technical indicators and a forecasted value using an arima model. These indicators and forecasts were fed into the llm to provide a short term investment strategy to the user

Objectives of the project: Analysis of mutual fund portfolios and generation of personalised portfolios

Tool used: We used several APIs like Yahoo finance zerodha api, pandas numpy library , pmdarima,for front end we used a react framework

Details of Papers/patents: No patents

Brief description of the working environment: Working environment was very friendly and relaxed. We were given work as per our interest and availability. Flexible work hours. Expected a project where I learnt about finance and CSE.

Academic courses relevant to the project: Sapm,drm, CP,FUFA

Learning Outcome: Learnt vscode,copilot,api handling , portfolio generation

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PS-I station: KVGAI Tech Pvt. Ltd, Lucknow

Student

Name: ATHARVA SURAJ KRISHNAN (2023B3A70783G)

Student Write-up:

PS-I Project Title: Development of a Multi-LLM Agentic System for High-Throughput Analysis of Mutual Fund Reports and Investment Strategy Formulation

Short Summary of work done: The project aimed to develop a **multi-LLM agentic system** for high-throughput analysis of mutual fund reports and formulation of personalized investment strategies. Initially envisioned as a document analysis tool, the project evolved into

a fully functional, user-facing platform offering advanced financial insights. The system integrates multiple features: a **Mutual Fund Analysis** module that processes CSV data for detailed fund performance review; a **Thematic Basket Offering** that leverages LLMs to generate curated investment baskets based on key metrics like CAGR, volatility, and P/E ratio; a **Custom Stock Portfolio Generator** that builds portfolios aligned to user-specified risk appetite; and a **Personal Portfolio Analyzer** that forecasts future performance using technical indicators and ARIMA modeling. Technically, the platform is built using **Langchain** to orchestrate LLMs, **Gemini 2.5 Pro** for language understanding, and **Yahoo Finance API** for real-time data. A frontend was also developed to ensure intuitive user interaction, enabling CSV uploads and displaying results with clarity. The data pipeline involves preprocessing, indicator computation (e.g., RSI, MACD), and strategy generation based on LLM interpretations. The platform provides a **decision-support system** for retail investors, translating complex data into actionable insights. Key learnings included real-world LLM orchestration, financial NLP applications, and integrating AI models into user-friendly tools. Challenges included API limitations and lack of backtesting, which are identified as areas for future work. Overall, the project showcases a robust application of AI in **financial technology**, bridging technical innovation with practical investing needs.

Objectives of the project: 1.Extract and synthesize key financial and strategic information across a large corpus of data sources. 2. Benchmark and evaluate various LLMs to identify the most suitable models based on accuracy, latency, contextual comprehension, and domain alignment. 3. Determine optimal portfolio management parameters, such as sentiment, valuation metrics, risk indicators, and management commentary signals, which contribute meaningfully to investment decision-making.

Tool used: Software (S/w): Programming Languages: Python, JavaScript Frontend Development: HTML, CSS, JavaScript (ReactJS) Backend & LLM Orchestration: Python with Langchain Large Language Models: Gemini 2.5 Pro via Google Gemini API Data APIs: Yahoo Finance AP

Details of Papers/patents: -

Brief description of the working environment: The working environment at KVGAI Tech Pvt. Ltd. was dynamic, intellectually stimulating, and highly collaborative. The team fostered a culture of innovation and autonomy, encouraging us to explore creative solutions using the latest tools in AI and financial technology. We worked in a hybrid environment—balancing remote collaboration and independent research with regular check-ins and feedback from mentors.

The company expected us to contribute meaningfully to a real-world fintech product by combining technical knowledge with economic and financial insight. Emphasis was placed on understanding user needs, implementing scalable solutions, and maintaining high-quality documentation. Deliverables were expected to be practical, testable, and capable of evolving into production-level tools.

During PS-I, we gained extensive hands-on experience with cutting-edge technologies such as multi-agent LLM orchestration, financial data processing, and investment strategy modeling. We learned how to build robust pipelines using tools like Langchain, integrate APIs for real-time data, and apply statistical forecasting techniques such as ARIMA. Exposure to frontend development also helped us understand the importance of usability in data-driven applications.
Beyond technical skills, we developed a deep appreciation for project planning, teamwork, iterative development, and stakeholder communication. The mentorship and resources provided by KVGAI Tech significantly enhanced our problem-solving approach, preparing us for both academic and industry challenges ahead.
This experience was transformative, bridging the gap between theory and practical application, and reinforcing our passion for AI-driven financial innovation.

Academic courses relevant to the project: Artificial Intelligence
Machine Learning
Natural Language Processing
Data Structures and Algorithms
Financial Management / Investment Analysis
Probability and Statistics
Software Engineering
Database Systems

Learning Outcome: •A modular, scalable, and explainable multi-agent LLM framework for financial document analysis.

- Comparative performance analysis of leading LLMs in financial NLP.
- Strategic recommendations and preliminary model outputs for actionable investment insights.
- Initial prototypes of data-driven trading strategies informed by model conclusions.

PS-I station: Lifespark Technologies Private Limited, Mumbai

Student

Name: HRIDAY VIMAL BHUTA . (2023A2PS0901H)

Student Write-up:

PS-I Project Title: NeuroVision

Short Summary of work done: We learnt about computer vision and its use in healthcare.

Objectives of the project: Calculating lower body angles, iris tracking,pupil detection, gaze estimation and detecting and classifying colony cancer.

Tool used: Python, VSCode, MediaPipe, OpenCV, ResNet50

Details of Papers/patents: NA

Brief description of the working environment: The work culture was nice, we didn't have strict deadlines which helped us improve at our own pace and also understand the industrial standards of the work assigned to us.

Academic courses relevant to the project: yes

Learning Outcome: Python, Computer Vision, Image Classification

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PS-I station: Lifespark Technologies Private Limited, Mumbai

Student

Name: YUVAL DOSHI (2023A3PS0186G)

Student Write-up:

PS-I Project Title: Automated Gait Detection System

Short Summary of work done: During my Practice School-I at LifesparkTechnologies, I worked on the Gait Mat Project, a pressure-sensitive floor mat designed to record and analyze human gait patterns. My role involved integrating hardware components such as pressure sensors with a microcontroller (Raspberry Pi/Arduino), capturing raw data during walking trials, and preprocessing the data to generate meaningful gait parameters such as cadence, stride length,

and contact time. I also developed Python scripts for data acquisition, analysis, and visualization. The project aims to provide a cost-effective and portable solution for gait assessment, useful in physiotherapy, sports science, and clinical rehabilitation.

Objectives of the project: Create a working prototype of a pressure sensitive gait mat to be used as an insole.

Tool used: Kicad, Tinkercad, Arduino IDE, Vs code, Putty, Thonny, Arduino Uno, Arduino Nano, Raspberry Pi pico 2/2w, BJT's, Relay Transistors, Velostat Mat.

Details of Papers/patents: None at this stage; however, the project has potential for future publication or patenting once fully developed.

Brief description of the working environment: The working environment was collaborative, innovative, and supportive. I worked in a lab setting alongside a team of researchers and interns under the guidance of my mentor. The company expected us to take initiative, communicate effectively, and deliver tangible results. Weekly progress reviews and brainstorming sessions encouraged knowledge sharing and feedback. This environment helped me bridge the gap between academic concepts and real-world applications. I developed a better understanding of embedded systems, biomedical applications, and time-series data analysis.Overall, this experience significantly contributed to my technical and professional growth.

Academic courses relevant to the project: Digital Design, Signals and Systems, Microelectronic Circuits, Microprocessors and Interfacing.

Learning Outcome: Understanding of gait analysis and its significance in medical diagnostics and rehabilitation.
Experience in sensor integration, embedded systems, and data acquisition.
Improved programming and data visualization skills using Python.
Exposure to teamwork, technical documentation, and interdisciplinary collaboration.
Practical application of biomechanics and signal processing concepts.

PS-I station: Lifespark Technologies Private Limited, Mumbai

Student

Name: AKSHAY AGRAWAL . (2023A3PS1132H)

Student Write-up:

PS-I Project Title: Gait mat

Short Summary of work done: Described above

Objectives of the project: To design a gait mat which detects pressure and outputs a matrix which denotes at which point the pressure is applied and other miscellaneous sub projects

Tool used: Arduino, python,tinkercad,c++

Details of Papers/patents: Na

Brief description of the working environment: The people at the company were very nice and others from different bits campuses were all phenomenonal people. Special thanks to Madhav sir for making the PS environment enjoyable.
Overall it would be a good place if you want to explore new domain of electrical/electronics engineering or CS as many are confused as to what to do
But if you have decided what to pursue or what project to do, then choose that specific station.

Academic courses relevant to the project: MEC,DD,CP,SNS

Learning Outcome: Arduino, electrical machinations and coding

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PS-I station: Lifespark Technologies Private Limited, Mumbai

Student

Name: ANSHUL RAKESH (2023A7PS0394G)

Student Write-up:

PS-I Project Title: Neurovision/ Machine learning

Short Summary of work done: Got to know about the company, it works on patients having Parkinson's disorder, its a progressive neurodegenerative disorder where the mortor cortex of the brain starts producing less dopamine producing neuron which hampers the movement of the body. One of the main problems faced is freezing of gait where the person suddenly stops moving and starts freezing while walking this company provides a solution to this by providing tactile cues (vibration) to the thighs to stimulate the muscles there and make sure that person stops freezing during movement. Four our first project our group had to collect data of a moving patient just from camera or a video feed .We successfully calculated certain angles required for early diagnosing Parkinson by seeing the patients lower limb movements and formed the GUI using tkinter through which user could upload a video then it would analyze and output an annotated video with marking containing angles of legs at every frame. This was our first project that we successfully completed. For our second project we had to develop a way to test eye corneal reflex and pupil reflex using video feed. What we have done is provided a way where user will input data then our machine code will be able to track the iris and its movements at every part of frame, will generate a csv file with the iris coordinates at every timestamp. Our third project went in a completely different direction. This was not related to the company's current motive as of now. We had to detect polyps from images or video frames. Polyps are nothing but built of cells present inside our body we had to detect the polyps present in the epithelial layer of human intestinal track. To train a model we first need to find images/ dataset. Such images are usually held by medical hospitals and are sensitive so we had to fill forms for some of it. Now there are two types of images that is seen White light images (our normal vision), Narrow band images (focuses on blue/green light) nbi images make it easier to detect polyps as we can see the important features of a polyp in such type of image. These images are acquired from endoscopy done on patients in hospitals. Making our dataset was really difficult as its pretty difficult to get hold of such pictures (they look so disgusting XD). Found an appropriate model and trained it accordingly using certain special ml techniques and optimisations. We then further had to classify the detected polyp into two types namely adenomatous and hyperplastic. Hyperplastic are usually benign but adenomatous can be precancerous. We made our own dataset by manually labelling it and trained another model for binary classification. It was absolutely fun.

Objectives of the project: 1) Detect and extract body landmarks and calculate certain angled needed for early diagnosing Parkinson. 2) Find a way to Using Eye neurovision tests to early diagnose parkinson. 3) Train a maching learning model to detect polyps (dysplasia inside stomach region) and classify them.

Tool used: Vscode IDE , Python, opencv, mediapipe, tkinter, pandas, numpy, matplotlib Ultralytics, certain ml models, used GPU to train, ROBOFLOW (a famous website to find and augment datasets), Kaggle (famous website to find Datasets), Vs code (IDE), adamW.

Details of Papers/patents: Not sure

Brief description of the working environment: The company itself was fine. The peer group I had was exceptional, we were 11 people from different bits campuses and we enjoyed a lot. We were too lucky to have such a friend group where everyone was on the same wavelength. Used to roam in IIT Bombay campus during our lunch break, played certain games "Crazy legs", "Skrible", "Badminton", "Lock and Key" XDDD. Other interns in the company were really flexible as well. There was some miscommunication at the start but at the end it was fine at least for my group. Because of the friends I made there my experience was wonderful and I will always prefer an offline PS2 because of my experience in PS1. You just learn more than technical skills when you are present there. To the juniors reading this apply for this company if there is opening for atleast 6-7 students in the company that way it will be more fun.

Academic courses relevant to the project: yes

Learning Outcome: - Learning how to coordinate in a professional environment.
- A basic understanding of how a company works
- Understanding certain technical terms, reporting everyday to seniors ("standup") in a certain manner, making myself presentable, opening up to my peer group.
- From the projects I completed in my ps1 journey, learnt quiet a lot of python libraries and tools used in technical aspects.

PS-I station: Lifespark Technologies Private Limited, Mumbai

Student

Name: KALYANI A NAIK . (2023AAPS0038P)

Student Write-up:

PS-I Project Title: GAIT Mat Detection System

Short Summary of work done: Successfully developed and tested a functional Gait mat prototype • Verified analog data capture from multiple pressure points • Achieved basic matrix scanning using Arduino Uno, Nano, Raspberry Pi Pico 2 • Confirmed working implementation of MCP modules for analog input reading • Demonstrated ability to control and test hardware components using LEDs • Python scripting for generating a visual heatmap of pressure input •

Identified hardware and power limitations for future optimization • Gained strong hands-on experience with Arduino, MCP3208, and shift registers

Objectives of the project: Obtain a 24x8 working GAIT Mat by deciphering the hardware and software portions, such that when pressure is applied a shift is detected in the GUI.

Tool used: Arduino IDE, Python Vision, VS Code, Kicad, Thonny, Putty, Tinkercad

Details of Papers/patents: N/A

Brief description of the working environment: As it was a start up, we got to interact with multiple employees from the office of varying fields. This helped us understand the overall business and how multiple sections of the office come together to make a functioning product. The overall environment was formal but friendly.

Academic courses relevant to the project: Digital Design, Microelectronic circuits, Electronic Devices

Learning Outcome: Arduino IDE, Arduino (UNO, NANO, Raspberry Pi Pico 2), use of shift registers (74hc595), use of MCP ADC, debugging of hardware and software.

PS-I station: Lifespark Technologies Private Limited, Mumbai

Student

Name: NAVYA ANIRUDDHA KEKATPURE (2023B4AA0898G)

Student Write-up:

PS-I Project Title: Data Analysis and Visualization

Short Summary of work done: During my PS-I at Lifespark Technologies, I worked on projects involving movement disorder assessment using IMU (Inertial Measurement Unit) sensor data. We began by studying Parkinson's disease and its impact on gait, especially freezing of gait (FoG). I processed tri-axial accelerometer and gyroscope data to analyze walking patterns and developed a Python-based GUI using Tkinter to visualize this data alongside synchronized

walking videos. The interface included features like dropdown-based axis selection, animated plots in a moving window frame style, looped playback, pause/play controls, progress bar, and exportable graphs. Preprocessing involved trimming both video and sensor data to the millisecond using metadata for precise synchronization, followed by video rotation correction where needed. I learned to compute key motion parameters such as step length, forward speed, roll angle, integrated gyroscope angles, and head pitch, roll, and yaw — including the underlying math, logic, and implementation in code. We then recorded and preprocessed new IMU data from 5 subjects for cervical dystonia analysis using forehead-mounted sensors. The GUI for this was built with a similar core structure as the gait analysis GUI, and included an added feature to compute and display the angle range for pitch, roll, and yaw. Frame-delay synchronization was handled in the backend. An anomaly in one subject's CSV (likely due to jerky motion) was confirmed by recording fast and normal videos, which showed larger values during fast movement. I also created a detailed report on 9 public IMU datasets, including dataset structure, sensor specs, protocols, and preprocessing steps. This was supported by a comparative analysis table across 19 parameters and relevant visualizations for easy interpretation. Lastly, I recorded and documented 31 FRS sway test videos across 3 subjects, under 10 specific balance conditions each, to evaluate postural control and test consistency using wearable IMUs.

Objectives of the project: Analysing, collecting, visualizing and plotting data

Tool used: Hardware: 1. Company's wearable band (WALK) containing an IMU sensor (accelerometer and gyroscope) 2. Android tablet running a Serial Bluetooth Terminal app for real-time raw data logging 3. Goniometer (used for angle validation and comparison during t

Details of Papers/patents: No papers or patents were published during the PS-I. However, a detailed internal technical report was prepared containing information on 9 publicly available IMU datasets, including their specifications, protocols, and preprocessing methods. The report a

Brief description of the working environment: At Lifespark Technologies, I was part of a group focused on IMU-based data analysis and visualization. The company emphasized independent contribution and technical ownership. I gained experience in processing sensor data, computing gait and cervical motion parameters, developing GUIs using Python (Tkinter, Matplotlib), and compiling a comparative report on public IMU datasets.

Academic courses relevant to the project: 1. Data Structures and Algorithms – Efficient data handling, parsing, and computation
2. Python Programming / Object-Oriented Programming – GUI development, data visualization, and backend logic
3. Mathematics for Engineers – Signal integration, angle c

Learning Outcome: 1. Develop GUI's to visualize and analyze IMU-based gait and head movement data. 2. Estimate step length, walking speed, and joint angles from sensor signals. 3. Quantify head pitch, roll, and yaw angles using forehead-mounted IMU data. 4. Analyze, report on, and visualize public IMU datasets for gait analysis. 5. Record and evaluate balance using FRS sway tests on subjects.

PS-I station: Lifespark Technologies Private Limited, Mumbai

Student

Name: ARYA ANIRUDDHA KEKATPURE . (2023B4AD1049P)

Student Write-up:

PS-I Project Title: IMU-Based Gait and Cervical Movement Analysis for Parkinson's and Cervical Dystonia

Short Summary of work done: During my PS-I at Lifespark Technologies, I worked on projects involving movement disorder assessment using IMU (Inertial Measurement Unit) sensor data. We began by studying Parkinson's disease and its impact on gait, especially freezing of gait (FoG). I processed tri-axial accelerometer and gyroscope data to analyze walking patterns and developed a Python-based GUI using Tkinter to visualize this data alongside synchronized walking videos. The interface included features like dropdown-based axis selection, animated plots in a moving window frame style, looped playback, pause/play controls, progress bar, and exportable graphs. Preprocessing involved trimming both video and sensor data to the millisecond using metadata for precise synchronization, followed by video rotation correction where needed. I learned to compute key motion parameters such as step length, forward speed, roll angle, integrated gyroscope angles, and head pitch, roll, and yaw — including the underlying math, logic, and implementation in code. We then recorded and preprocessed new IMU data from 5 subjects for cervical dystonia analysis using forehead-mounted sensors. The GUI for this was built with a similar core structure as the gait analysis GUI, and included an added feature to compute and display the angle range for pitch, roll, and yaw. Frame-delay synchronization was handled in the backend. An anomaly in one subject's CSV (likely due to jerky motion) was confirmed by recording fast and normal videos, which showed larger values during fast movement. I also created a detailed report on 9 public IMU datasets, including dataset structure, sensor specs, protocols, and preprocessing steps. This was supported by a

comparative analysis table across 19 parameters and relevant visualizations for easy interpretation. Lastly, I recorded and documented 31 FRS sway test videos across 3 subjects, under 10 specific balance conditions each, to evaluate postural control and test consistency using wearable IMUs.

Objectives of the project: 1. Develop GUI's to visualize and analyze IMU-based gait and head movement data. 2. Estimate step length, walking speed, and joint angles from sensor signals. 3. Quantify head pitch, roll, and yaw angles using forehead-mounted IMU data. 4. Analyze, report on, and visualize public IMU datasets for gait analysis. 5. Record and evaluate balance using FRS sway tests on subjects.

Tool used: Hardware: 1. Company's wearable band (WALK) containing an IMU sensor (accelerometer and gyroscope) 2. Android tablet running a Serial Bluetooth Terminal app for real-time raw data logging 3. Goniometer (used for angle validation and comparison)

Details of Papers/patents: No papers or patents were published during the PS-I. However, a detailed internal technical report was prepared containing information on 9 publicly available IMU datasets, including their specifications, protocols, and preprocessing methods.

Brief description of the working environment: At Lifespark Technologies, I was part of a multidisciplinary setup with a Computer Vision team, an Electronics team, and our group focused on IMU-based data analysis and visualization. The company emphasized independent contribution and technical ownership. I gained experience in processing sensor data, computing gait and cervical motion parameters, developing GUIs using Python (Tkinter, Matplotlib), and compiling a comparative report on public IMU datasets.
Early on, I sensed that my initial impression may have been misconstrued (not positively), which may have influenced the level of involvement and mentorship I received. At times, I felt underutilized and had to proactively seek out meaningful work. Interactions with senior members were occasionally brief or distant, requiring extra initiative on my part.
Despite this, I contributed significantly by implementing time-synced graph animation, angle computation using Kalman filters, and data preprocessing pipelines. The experience strengthened my technical skills and highlighted how communication, initiative, and team dynamics impact one's learning in real-world settings.

Academic courses relevant to the project: 1. Data Structures and Algorithms – Efficient data handling, parsing, and computation
2. Python Programming / Object-Oriented Programming – GUI development, data visualization, and backend logic
3. Mathematics for Engineers – Signal integration, angle c

Learning Outcome: 1. Gained in-depth understanding of Parkinson's disease, freezing of gait, and cervical dystonia.
2. Learned to process and interpret raw IMU sensor data (accelerometer and gyroscope).
3. Developed interactive Python GUIs using Tkinter for synchronized video-data visualization.

4. Estimated gait metrics such as step length, forward speed, roll angle, integrated gyroscope angle, and head movement angles — pitch, roll, and yaw.
5. Improved accuracy of movement metrics using user-specific inputs (age, height, diagnosis).
6. Conducted literature review and comparative analysis of 9 public IMU databases.
7. Designed data visualizations (charts, histograms, pie graphs) for technical parameter comparison of the public IMU databases.
8. Gained hands-on experience in experimental setup, data collection, and subject testing.
9. FRS Sway Test- gathering and documenting data.

PS-I station: Lighthouse Energy - Electronics, Toronto

Student

Name: VEER PRATAP SINGH (2023A3PS0212G)

Student Write-up:

PS-I Project Title: System Architecture Mapping and data centre design for Light House Energy

Short Summary of work done: I was in a team of 2, we were asked to do the system architecture mapping of the company for two main reasons, the first one and the primary objective was to map the internal workings and systems in the company. The second is to present it in a way for future IP reference. We were tasked to focus on the data centres mainly.

Objectives of the project: To explain System design role in LHE for data centres

Tool used: Draw.io

Details of Papers/patents:N/A

Brief description of the working environment: Online company, expectations were quite straight forward, as long as you made relevant progress especially for the R&D team, you were appreciated. Sometimes in the presentation meetings, the company mentors would ask you to pivot to a new direction, just include that.

Academic courses relevant to the project: N/A. But gave me relevant experiences of how concepts in ES, EM, etc were being applied. Lightly touched though not in depth.

Learning Outcome: Learnt the birds eye view of data centres and inter departmental projects.

PS-I station: Lighthouse Energy - IT, Toronto

Student

Name: HRISHANT BHEDA (2023A7PS0378G)

Student Write-up:

PS-I Project Title: System Architecture Mapping and data centre design for Light House Energy

Short Summary of work done: At Lighthouse Energy, I worked on analyzing the electrical aspects of data center infrastructure, focusing on energy consumption, power distribution, and load management. My work involved studying equipment specifications, understanding power flow, and documenting system designs to ensure efficiency and reliability in energy usage.

Objectives of the project: The core objective of our project is to support Lighthouse Energy (LHE) in building a smart, energy-aware digital infrastructure that contributes meaningfully to solving Ontario's ongoing power curtailment issue.

Tool used: Draw io, python

Details of Papers/patents: No papers/patents

Brief description of the working environment: Good working environment, the mentors are very helpful and give regular feedbacks. Company sets reasonable expectations and work load.

Academic courses relevant to the project: yes

Learning Outcome: During my internship at Lighthouse Energy, I gained hands-on experience in the intersection of energy systems and technology. One of the major learning outcomes was understanding the role of electrical infrastructure in data center design, particularly how energy

efficiency and power management impact operational performance. I developed a practical understanding of load calculations, equipment specifications, and energy consumption patterns, while also improving my skills in documentation, technical communication, and project coordination. Overall, the internship provided a comprehensive view of how theoretical engineering concepts are applied in real-world energy and infrastructure project.

PS-I station: Lighthouse Energy - Management, Toronto

Student

Name: NANDAN STHAPAK . (2023A3PS0311H)

Student Write-up:

PS-I Project Title: Regulatory Compliance Team

Short Summary of work done: We researched regulations and certifications needed for a data center in Ontario. We then formulated an execution strategy along with other departments and did a cost, timeline and HR analysis for the same.

Objectives of the project: Source compliances and certifications for a data center in Ontario.

Tool used: OEB, OESC, Tableau

Details of Papers/patents: None

Brief description of the working environment: Very relaxed environment

Academic courses relevant to the project: yes

Learning Outcome: Legal research, planning and execution.

PS-I station: Lighthouse Energy - Management, Toronto

Student

Name: PREM MUNISWAMY CHANDRESH (2023A4PS0279G)

Student Write-up:

PS-I Project Title: Investor Relations

Short Summary of work done: We would meet 3 times a week and It started off with data room due diligence , where we are supposed to keep the documents organised , then Update the financial deck's numbers for accuracy , Prepared a newsletter for an Award and also for the substack, We would touch base with our mentors and get feedback on the changes to be made or whats the next thing to be done.

Objectives of the project: 1) Data room - Due Diligence. 2) Updating of Financial Decks . 3) Investor Relations and Sub-stack Newsletter

Tool used: Canva

Details of Papers/patents:-

Brief description of the working environment: Its in Online mode and we would regularly meet on Zoom , Have attendance and then move to our respective breakout rooms . We expected the company to provide and assist us with work that would help increase our understanding and experience in that field . I learnt a lot about The Investor Relations team and the work they do . Its crucial for due diligence with the Investors .Also learnt about the Business Operations team broadly as a whole.

Academic courses relevant to the project: ECON F211 Fundamentals of Finance and Accounting.

Learning Outcome: How the Business Operations vertical operates as a whole and how it is crucial for the growth of the company and the Investors.

PS-I station: Mailwave Technologies Pvt Ltd, Patna

Student

Name: AKSHAT TRIPATHI . (2023A7PS0107H)

Student Write-up:

PS-I Project Title: Beta testing and advertising crafts

Short Summary of work done: Marketted our products, researched thoroughly on various topics, debugged and coded bugs

Objectives of the project: Learning various current gen tech market strategies, better my skills in coding

Tool used: Bolt.new,cursor,perplexity, canva

Details of Papers/patents: None

Brief description of the working environment: Great and helpful environment

Academic courses relevant to the project: CS cds and dels

Learning Outcome: Beta testing, backend, front end, prompt engineering

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PS-I station: Mailwave Technologies Pvt Ltd, Patna

Student

Name: ANSHUL KUMAR (2023AAPS0621G)

Student Write-up:

PS-I Project Title: AI agent automations

Short Summary of work done: Developed Ai agents for multiple crm tools and made a webscrapper that can replicate the design of a website in an email.

Objectives of the project: Develop ai agents for crm tools

Tool used: Vscode

Details of Papers/patents: No

Brief description of the working environment: Great working environment,Very friendly peers and mentors.

Academic courses relevant to the project: yes

Learning Outcome: Ai Agent development

PS-I station: MD Enterprises Global, Michigan

Student

Name: MADHAV RAMINI . (2023A7PS0046H)

Student Write-up:

PS-I Project Title: AI algorithms to identify person with voice and face data

Short Summary of work done: Designed PLDA backend for the speaker recognition pipeline, and created an api server for use of the system in production

Objectives of the project: 1. Build a speaker recognition pipeline which is capable of registering speakers and verifying speakers using the registered voices.

Tool used: Python (Pytorch and SpeechBrain)

Details of Papers/patents:-

Brief description of the working environment: Interacted with the mentor on a daily basis. The mentor was appreciative, reasonable with workloads, and allowed participation in multiple projects. Enjoyed PS-I while learning about a lot of stuff. P.S. the experience will be more comfortable if you own a Mac.

Academic courses relevant to the project: ML, AI

Learning Outcome: Learnt about neural networks, PLDA, APIs and other soft skills like presentations, speaking skills etc.

PS-I station: MD Enterprises Global, Michigan

Student

Name: RAJ RAHUL (2023A7PS0449G)

Student Write-up:

PS-I Project Title: iOS programming (Swift) to enhance existing mobile apps

Short Summary of work done: Enhancing the pre-existing applications by adding features like code scanning, face and audio capture, etc, as well as improving application UI for better user experience.

Objectives of the project: To enhance the pre-existing iOS applications as per the company's requirements.

Tool used: Xcode, Github

Details of Papers/patents:none

Brief description of the working environment: The working environment was pretty supportive and flexible. We were assigned projects according to our interests and availability, with fair

deadlines. We updated the mentor everyday about the progress. Feedback and suggestions were adequately provided.

Academic courses relevant to the project: Object Oriented Programming, Database Systems.

Learning Outcome: SwiftUI, Swift, Github, Xcode

PS-I station: MD Enterprises Global, Michigan

Student

Name: ARIN SAMEER RODAY (2023A7PS0456G)

Student Write-up:

PS-I Project Title: IOS Development and Biometrics API

Short Summary of work done: As an iOS and Machine Learning Intern at MD Enterprises Global, you worked on their core biometric identity verification platform. Your responsibilities were split between the front-end and back-end. You upgraded the company's iOS application to Swift 6, significantly improving its performance and stability. On the backend, you built and tested a multi-modal authentication API using Python and FastAPI, which integrated facial recognition with voice verification models like TDNN to provide secure, real-time identity checks.

Objectives of the project: Upgrading existing IOS apps and implementing face and vioce recognition.

Tool used: A modern developer's toolkit combines powerful hardware with a suite of essential software to build, test, and deploy applications. 💻 On the hardware side, the primary tool is a high-performance laptop or desktop with a multi-core CPU.

Details of Papers/patents: None

Brief description of the working environment: My Practice School-I at MD Enterprises Global was in a dynamic and collaborative environment where I was given significant ownership over

my projects. I went in expecting to apply my academic knowledge to real-world challenges with strong mentorship, and the experience delivered exactly that. The learning was immense and spanned the full stack.
Technically, I gained hands-on experience in iOS development with Swift and backend API development using Python and FastAPI, learning to integrate complex machine learning models for facial and voice recognition. This fulfilled my goal of seeing how theoretical concepts are implemented in a production-style system.
More importantly, I learned invaluable soft skills that aren't taught in a classroom. I understood the importance of pragmatic problem-solving when I tackled a dataset bias issue, the discipline of writing production-quality code, and how to collaborate effectively in a professional engineering team to achieve a common goal. The internship was a crucial step in bridging the gap between being a student and becoming an engineer.

Academic courses relevant to the project: OOPS and DBMS

Learning Outcome: Learnt communication, python, swift, app development.

PS-I station: MD Enterprises Global, Michigan

Student

Name: KATHAN PRAJAPATI (2023A7PS0568G)

Student Write-up:

PS-I Project Title: Speaker recognition with TDNN trained on PLDA

Short Summary of work done: This project implements a robust speaker recognition system using Time Delay Neural Networks (TDNN) and Probabilistic Linear Discriminant Analysis (PLDA), following the x- vector paradigm. Leveraging open-source resources, the system is trained and evaluated on large-scale datasets with noise augmentation, achieving state-of-the-art accuracy in speaker identification and verification tasks. The workflow includes neural network training, x-vector extraction, PLDA backend training, and comprehensive evaluation, demonstrating the effectiveness of deep learning-based embeddings forspeaker recognition.

Objectives of the project: To design a speaker recognition model that can be computationally efficient for working on mobile apps, and having an accuracy on par with their face recognition model.

Tool used: PyTorch, Tensorflow

Details of Papers/patents: None

Brief description of the working environment: Dr. Ravi didn't conduct long meetings, thus allowing us to explore more areas and finishing our projects more effectively. Learning experience was a lot smoother this way.

Academic courses relevant to the project: Deep Learning (elective)

Learning Outcome: DL

PS-I station: MD Enterprises Global, Michigan

Student

Name: CHAUHAN DARSHIL DUSHYANT . (2023A7PS0609P)

Student Write-up:

PS-I Project Title: Text Independent Voice Recognition

Short Summary of work done: We read multiple papers, and designed and implemented our own architecture of a Time Delay Neural Network and paired it with a PLDA and cosine similarity to identify speakers. It involved finding datasets, processing them with relevant algorithms and training and fine-tuning models. Later as we got the pipeline working, we ran multiple experiments with different setups to push up the accuracy to SOTA levels.

Objectives of the project: Develop a complete machine learning pipeline that can recognize and authenticate a person based on their voice.

Tool used: Python, PyTorch, SpeechBrain

Details of Papers/patents: -

Brief description of the working environment: We had a daily review meet of around 45 mins to 1 hour. Project allocation was based on your interest and work was very balanced and not hectic. We got regular feedback from the company CEO, and they also organized guest lectures for us. The work was quite flexible and there were no hard deadlines, so we had plenty of time and freedom to make decisions regarding the project and implement it as we liked. Overall it was a very nice experience

Academic courses relevant to the project: Programming courses, M1 and M2 (Vectors and Linear algebra)

Learning Outcome: Machine Learning Applications

PS-I station: MD Enterprises Global, Michigan

Student

Name: SAI SAMYUTHA TALLURI . (2023AAPS0236H)

Student Write-up:

PS-I Project Title: Project 1: Improvement and Upgradation of Company Website, Project 2: Developing a Speaker recognition Model using voice data. Project 3: Database interaction Architecture and business pitch presentation preparation

Short Summary of work done: In the first week all the interns worked on making a business pitch presentation and developing a swift tutorial as part of a team building project. Then we were given flexibility to take up any project(s) of our choice and work on it. I was the lead on the web-dev project. I worked on improving the desktop version and designed and implemented a mobile version. I deployed this website to firebase for hosting. Then I helped the Speaker recognition model development by Pre-processing the data before training the TDNN+ cosine similarity model. I was the lead for the database architecture for which I had to research and come up with a 3 tier model for app-database interaction. Thus I contributed to 4 projects overall in PS1.

Objectives of the project: I worked on multiple projects while I was in my PS station. The main objectives were to improve the UI of the official website, develop a speaker recognition model for biometric verification and research on database interaction architecture along with a few common projects.

Tool used: HTML, CSS, JS, Python, Firebase, Cloud kit, GitHub, Swift, Figma

Details of Papers/patents:-

Brief description of the working environment: This was a US Based online PS station. We had regular meetings everyday to update our progress. The deadlines were reasonable and flexible and the work was evenly distributed. All the interns worked and took leadership on multiple projects. Most projects were ML/Web-dev/App-dev based. The working environment is really encouraging and interns were motivated to constantly learn. I learnt IOS programming, how to develop ML models, websites through this PS1 along with database architectures. All the interns learnt teamwork and we were encouraged to take ownership for our projects. Overall it was a really nice and productive experience.

Academic courses relevant to the project: Computer Programming

Learning Outcome: I learnt Web development using HTML, CSS, JS. I learnt how to develop an ML model, IOS programming and understood database architecture.

PS-I station: MeghaAI India Private Limited, Hyderabad

Student

Name: SAMARTH DIXIT (2023B1A30681G)

Student Write-up:

PS-I Project Title: Predictive Fault Detection in Trains Using AI Models

Short Summary of work done: During my PS-I at MeghaAI, I worked on predictive fault detection for trains using AI models. I began by preprocessing locomotive torque signal data

and identifying suitable input features for anomaly detection. I implemented an autoencoder-based model for detecting outliers in the time series, followed by DBSCAN clustering for enhanced anomaly grouping. A key contribution was developing a dynamic thresholding mechanism to improve anomaly detection performance. I identified a total of 57 anomalies and correlated them with known fault dates. In addition, I performed a slope analysis of the signals, especially focusing on pairwise slope differences in motor channels, which helped highlight early warning indicators. I also worked on identifying the top contributing signals behind each anomaly, allowing interpretability of model predictions. The results and insights were compiled into reports and visualizations for client presentation. This internship gave me valuable exposure to applied AI in industrial diagnostics and fault prediction.

Objectives of the project: To predict anomalies that could lead to faults in train systems by analyzing torque signal data using AI and machine learning techniques.

Tool used: Python, Jupyter Notebook, NumPy, pandas, matplotlib, scikit-learn, TensorFlow/Keras, DBSCAN, Git, Excel

Details of Papers/patents: NA

Brief description of the working environment: The working environment at MeghaAI was collaborative and supportive. I was guided by experienced mentors who ensured I understood both the domain and the project requirements. My daily work involved data analysis, coding, and discussing results with the team. The expectations were clear: deliver insightful, data-driven results and maintain consistent documentation. I received timely feedback that helped improve both my technical and communication skills. Regular sync-ups helped align our goals and timelines. This internship gave me deep exposure to industrial applications of machine learning, especially in the context of time-series signal processing for predictive maintenance. I also learned how to handle large real-world datasets and derive interpretable insights that have practical relevance. Overall, this experience improved my problem-solving ability and prepared me for future roles in AI and data science.

Academic courses relevant to the project: Machine Learning
Probability and Statistics
Basic knowledge about torque, current and all
Basic DSA
Programming in Python including libs like numpy, pandas etc

Learning Outcome: Gained hands-on experience in signal preprocessing and anomaly detection.
Understood the practical applications of unsupervised learning algorithms like autoencoders and DBSCAN
Learned slope-based feature extraction and its significance in predictive maintenance
Improved technical documentation and data presentation skills
Developed ability to work on real-world datasets and derive actionable insights.

PS-I station: MeMeraki Retail & Tech Pvt Ltd, Gurgaon

Student

Name: BAIBHAB MISHRA . (2023A2PS0239P)

Student Write-up:

PS-I Project Title: Enhancing User Journey & Data Analysis for Artisan E-commerce Platform

Short Summary of work done: During my PS-I at MeMeraki, I worked on several projects to enhance the platform's user experience and business intelligence. I began by familiarizing myself with the platform structure and conducted a comprehensive analysis of the user journey, covering both online and assisted sales flows. I created a detailed visual map of the complete user journey and identified drop-off points using PostHog analytics. I learned and applied SQL to extract key funnel metrics. Additionally, I contributed to classifying users into personas based on behavior, which helped refine targeting strategies. I also worked on automating user engagement using Interakt. Structured data was analyzed through pivot tables, and I performed sentiment analysis on user feedback. I conducted user interviews to gather direct insights and supported internal reporting. This internship gave me hands-on exposure to real-world product strategy, analytics, and user research in the context of an impact-driven e-commerce platform focused on Indian art forms.

Objectives of the project: To analyze and improve the online and assisted sales journey for MeMeraki's artisan products. To identify drop-off points using PostHog analytics and propose optimizations. To conduct user persona segmentation and feedback collection for better targeting. To automate user engagement using Interakt. To support strategic decision-making with structured data insights.

Tool used: PostHog Google Sheets & Pivot Tables SQL Interakt (for automation) Miro (for journey mapping) Google Forms (for user interviews)

Details of Papers/patents: None

Brief description of the working environment: MeMeraki provided a dynamic and collaborative startup environment. The team was welcoming and open to fresh ideas, offering constant feedback and mentorship. The work was fast-paced and impact-oriented, with interns expected to take ownership of tasks and present actionable insights. I was encouraged to learn new tools, ask questions, and approach tasks with a problem-solving mindset.
I appreciated the balance between structure and flexibility—the sprints allowed for clear goals, while the openness of the tasks allowed creative approaches. Weekly stand-ups and collaborative sprint reviews helped me align better with team expectations.
My key learnings include using analytics tools like PostHog for product decision-making, conducting meaningful user interviews, and building persona-based strategies. Exposure to automation tools like Interakt also helped me understand user lifecycle management. Overall, the PS-I experience greatly enhanced my practical understanding of how e-commerce platforms function behind the scenes and how data drives product decisions.

Academic courses relevant to the project: Data Structures and Algorithms
Database Systems
Human-Computer Interaction
Marketing Management
Design Thinking and Innovation
Data Analytics and Visualization

Learning Outcome: Hands-on experience with user journey mapping and persona development.
Practical skills in SQL, data visualization, and funnel analysis using PostHog.
Exposure to e-commerce product design principles and automation workflows.
Improved understanding of real-world business analytics and user research methods.

PS-I station: MeMeraki Retail & Tech Pvt Ltd, Gurgaon

Student

Name: DARSHAN JAIN . (2023A7PS0028H)

Student Write-up:

PS-I Project Title: GenAI experiments focused on improving SEO and product discovery.

Short Summary of work done: During my internship at Memeraki, I worked on the project Automated Art Mockup Generation using GenAI and APIs. I implemented an AI-driven pipeline that integrated APIs for image processing and mockup rendering, optimized for both efficiency and aesthetic quality. Alongside this, I contributed to improving the project's online reach by applying SEO practices—such as keyword optimization, metadata structuring, and content refinement—to ensure the generated outputs and related project documentation could be better indexed and discovered online. Overall, the experience deepened my understanding of applying technology to creative industries while also appreciating the importance of SEO in amplifying the project's real-world impact.

Objectives of the project: To design and develop an automated system for generating digital art mockups using Generative AI and APIs. To streamline the process of showcasing artwork on multiple mediums (frames, merchandise, etc.) with minimal manual effort. To explore the integration of SEO strategies for improving online visibility of generated mockups and artwork.

Tool used: Python, Generative AI APIs, GitHub, Jupyter Notebook

Details of Papers/patents:NA

Brief description of the working environment: The working environment at Memeraki was collaborative and dynamic, encouraging experimentation and combining creative design with technology. I was expected to deliver a working prototype that could automate art mockup generation while also contributing to the online visibility of the project through SEO optimization. This meant balancing technical problem-solving with strategic digital marketing.
Through this experience, I learned to approach problems from both a technical and business perspective. On the technical side, I gained expertise in automation, AI integration, and image processing, while on the marketing side, I understood how SEO strengthens the project's real-world applicability by reaching broader audiences.

Academic courses relevant to the project: NA

Learning Outcome: Practical exposure to Generative AI workflows, API integration, and SEO techniques.
Enhanced programming and automation skills using Python and image processing libraries.
Understanding how SEO optimization complements product development by increasing reach and discoverability.

PS-I station: MeMeraki Retail & Tech Pvt Ltd, Gurgaon

Student

Name: ASHMIT AGARWAL (2023A7PS0382G)

Student Write-up:

PS-I Project Title: Artform & Artist Database

Short Summary of work done: It was good. Learned Cloud firestore. Handled various errors.

Objectives of the project: Build a scalable database for Artist profiles & Artform Details.

Tool used: Cloud Firestore

Details of Papers/patents: NIL

Brief description of the working environment: Working environment is flexible, not at all hectic. Company expects the work give by them to be done.

Academic courses relevant to the project: DBMS (This is also not very relevant)

Learning Outcome: Python, Cloud Firestore

PS-I station: METASRUJAN, Bengaluru

Student

Name: AYUSSH TAYDE . (2023A7PS0140H)

Student Write-up:

PS-I Project Title: ISAR Imaging using Python

Short Summary of work done: Understood Radar systems, ISAR Imaging methodology. Implemented out understanding in Python

Objectives of the project: get ISAR image and RCS for targets

Tool used: Python

Details of Papers/patents:nil

Brief description of the working environment: Work environment is very good. There will be a meeting once a week. The PS mentor is chill and gives time to learn first before doing actual work.

Academic courses relevant to the project: OOP

Learning Outcome: python , defense radar systems

PS-I station: METASRUJAN, Bengaluru

Student

Name: AANSH MISHRA (2023B4A70761G)

Student Write-up:

PS-I Project Title: Automation of electronic measurement devices

Short Summary of work done: We used PYQT5 a python library to create application such that it takes S-parameters as input and output permittivity and permeability as output using NRW and NIST method. Also we had to graph the results

Objectives of the project: create a python application that runs NRW algorithm

Tool used: Python,numpy,PYQT5,matplotlib

Details of Papers/patents: None

Brief description of the working environment: Working hours wont be much as it will be around 3 hours per week.They majorly focus on your learning something useful at the end of internship. They will ask your opinions on how to work further. Overall a great company experience.

Academic courses relevant to the project: App Development and RF courses

Learning Outcome: S parameters ,NRW algorithm and NIST iterative algorithm

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PS-I station: MetaSynk Pvt Ltd, Visakhapatnam

Student

Name: SNEHA JAIN . (2023B2A70880P)

Student Write-up:

PS-I Project Title: FRONTEND USER INTERFACE DEVELOPMENT FOR ZAPIT: A FINTECH SUPER APP

Short Summary of work done: As part of the frontend development team at "ZAPIT", a UAE-focused super fintech app, I worked extensively with "React Native" to build smooth, modular, and highly responsive user interfaces tailored to financial operations. My contributions spanned the design and implementation of multiple core screens, including the "Transfer Money" flow (manual + quick selection with live AED to INR conversion), "QR-based payment screens", and a detailed "Recharge Confirmation" page that displays plan details, transaction breakdown, and dynamic UPI payment options. I integrated a **custom amount input dialpad**, ensuring both ease of use and accuracy, while maintaining pixel-perfect UI consistency with Figma designs. To meet AANI framework standards (the UAE's real-time banking rail), I designed screens with specific compliance in mind, such as deposit and transfer methods compatible with UAE banks. Additionally, I handled success screens that showcase transaction confirmation, payment metadata, and actionable follow-ups. All screens were integrated using **React Navigation v6**, and I ensured proper state management and seamless navigation within complex stack

structures. Beyond screen development, I actively participated in **Git-based version control**, working across feature branches, handling merges, resolving conflicts, and pushing production-ready code. Overall, my work enabled the ZAPIT app to offer an intuitive, localized, and secure experience to UAE users—bridging fintech features like UPI, recharge, and fund transfers under one unified mobile interface.

Objectives of the project: FRONTEND DEVELOPMENT

Tool used: React Native, TypeScript, React Navigation v6, Git, GitHub, Figma, Expo, Prettier, VS Code

Details of Papers/patents: None at the moment.

Brief description of the working environment: My PS-I station was a remote internship, conducted in a work-from-home environment. The company maintained a well-structured team hierarchy, with different teams dedicated to product management, frontend development, backend services, and AI/ML innovations. Daily stand-up meetings and regular team syncs ensured transparency, collaboration, and real-time progress tracking.
The company expected us to be self-motivated, meet deadlines, and communicate effectively. My tasks involved converting Figma designs into responsive React Native screens, building core UI components, and ensuring seamless navigation. I also worked on integrating user interactions and ensuring compatibility across devices.
Throughout the internship, I gained hands-on experience with React Native, component-based design, mobile UI/UX best practices, and Git-based collaboration. I learned the importance of writing clean, scalable code and handling version control in a team environment. The internship strengthened both my technical skills and my ability to work efficiently in a professional, distributed development setting.

Academic courses relevant to the project: Courses such as Object-Oriented Programming, Data Structures and Algorithms are directly relevant to the project.

Learning Outcome: REACT NATIVE, WEB DEVELOPMENET, ABOUT GIT , GITHUB

PS-I station: MetaSynk Pvt Ltd, Visakhapatnam

Student

Name: AKSHAT MADHOGARIA (2023B5A70994G)

Student Write-up:

PS-I Project Title: Building UAE's first multipurpose fintech application

Short Summary of work done: Developed the face recognition and ekyc feature of the application and worked on the backend tables.

Objectives of the project: To get the basic backend and frontend of the application running

Tool used: Python, Node.js, opencv, ollama, postman

Details of Papers/patents: None

Brief description of the working environment: The working environment was very good and the mentors were very helpful too. It was a fun experience and I learnt many new things in the ML world.

Academic courses relevant to the project: yes

Learning Outcome: Learnt about how to develop the backend of an application and how to use LLM's.

PS-I station: Montecarlo Limited- Tech, Ahmedabad

Student

Name: MANAN BANSAL . (2023A7PS0515P)

Student Write-up:

PS-I Project Title: To study ,design , and implement, a smart metering system that effectively monitors and manages energy consumption. Scope of study: The system will enable real time data collection,energy usage tracking, and communication between the energy meter and the

Short Summary of work done: To study ,design , and implement, a smart metering system that effectively monitors and manages energy consumption. Scope of study: The system will enable real time data collection,energy usage tracking, and communication between the energy meter and the utility provider. The project focuses on the integeration of of hardware ,communication systems and cloud systems for effective energy management.

Objectives of the project: To study ,design , and implement, a smart metering system that effectively monitors and manages energy consumption. Scope of study: The system will enable real time data collection,energy usage tracking, and communication between the energy meter and the utility provider. The project focuses on the integeration of of hardware ,communication systems and cloud systems for effective energy management.

Tool used: Sap software

Details of Papers/patents: Nothing

Brief description of the working environment: To study ,design , and implement, a smart metering system that effectively monitors and manages
energy consumption. Scope of study: The system will enable real time data
collection,energy usage tracking, and communication between the energy meter and the utility provider.The project focuses on the integeration of of hardware ,communication systems and cloud systems for effective energy management.

Academic courses relevant to the project: Computer networks

Learning Outcome: We studied and designed and implemented an advanced smart metering system.

PS-I station: Montecarlo Limited- Tech, Ahmedabad

Student

Name: AKSHAT PUNDHIR . (2023A7PS0584P)

Student Write-up:

PS-I Project Title: Research and Planning on Implementation of AI in an EPC Company

Short Summary of work done: Researched about different SAP Modules in AI tech provided by SAP as Mcl is a SAP-House company. Then created a roadmap of steps to take to increase efficiency followed by presentations to my department HODs

Objectives of the project: To research different ways and then plan out a roadmap of steps Montecarlo could take to implement AI in their workflow to increase efficiency.

Tool used: SAP, Databricks, Powerpoint

Details of Papers/patents:n/a

Brief description of the working environment: Wonderful working environment, got to learn a lot from my mentor as well as from everyone.

Academic courses relevant to the project: DBMS, ML

Learning Outcome: SAP and different AI technologies

PS-I station: MSA Global Technology and Engineering P Ltd.,, Bengaluru

Student

Name: SHASHANK PAYAL (2023A3PS1039G)

Student Write-up:

PS-I Project Title: Implementation of classification using python on any disease's detection

Short Summary of work done: For the first 3 weeks we did quality control, which included filling registers for the major part, and then filling excel sheets. After that for the remaining weeks we studied and applied data science to implement classification using python.

Objectives of the project: Learning data science and applying it

Tool used: Microsoft excel, python language in vs code

Details of Papers/patents:-

Brief description of the working environment: Very tiny cube space, core mechanical company, working hours are slightly high, but the work being done is overall nice. Company might be good for PS-2.

Academic courses relevant to the project: Computer science. Computer programming. Data science and algorithms.

Learning Outcome: Implementation of data science

PS-I station: MSA Global Technology and Engineering P Ltd.,, Bengaluru

Student

Name: ASIT INDURKAR . (2023B3A40523H)

Student Write-up:

PS-I Project Title: Datascience implementation using python

Short Summary of work done: Our internship at the company started at a natural tempo. For the first three weeks we were not given anything to work on, which allowed us to simply watch the organization function and get a feel for the professional environment. We got a good idea of how the different departments were coordinated with each other. At what level of connection teams in our various departments had to actually communicate. Also, just getting exposure to the entire organizational interactions was beneficial. Later on, we were given a project based on data science using real world applications.

Objectives of the project: Data Science using Python

Tool used: Python and various libraries like Seaborn, SKlearn, etc

Details of Papers/patents: Na

Brief description of the working environment: The company has a very rigid working environment with long work hours from 9 to 6. Overall it was good.
Academic courses relevant to the project: CS F111

Learning Outcome: Regression, Classification in Python

PS-I station: Multigraphics Group - Renewable Energy, Delhi

Student

Name: ADITYA SINGH . (2023A7PS0580P)

Student Write-up:

PS-I Project Title: Optimizing CRM & LMS Systems through Data Analytics and UX Design

Short Summary of work done: During my PS-I internship, I worked on enhancing CRM, LMS, IMS, and mobile application interfaces to improve usability and performance tracking. Key contributions included designing KPI-driven dashboards, improving lead tracking and follow-up systems, and creating wireframes for product listings with advanced filters. I also proposed analytics for vendor management supervision, Olympiad portals, and LMS attendance tracking. Additionally, I worked on backlinking strategies, social bookmarking lists, and UI refinements to boost SEO and user engagement

Objectives of the project: 1. Analyze real CRM and LMS data to improve sales and learning processes. 2. Design dashboards and KPI metrics for better tracking. 3. Suggest enhancements for mobile apps, Olympiad portal, and ERM system. 4. Learn predictive analytics, backlinking strategy, and practical UX design..

Tool used: CRM & LMS Platforms – For lead tracking, dashboard design, and analytics setup. Wix Studio – Website design and layout customization. Google Analytics & SEO Tools – Keyword tracking, backlinking, and performance monitoring. Wireframing Tools – For mobi

Details of Papers/patents:NA

Brief description of the working environment: During my PS-I at Multigraphics Group, I worked in a collaborative and technology-driven environment where innovation and problem-solving were encouraged. The company expected me to deliver practical solutions, improve dashboard designs, analyze CRM and LMS data, and suggest enhancements that could be directly implemented.

Academic courses relevant to the project: Database Systems – Understanding relational databases, queries, and data management for CRM/LMS.
Data Structures & Algorithms – Optimizing data handling and processing for faster analytics.
Software Engineering – Applying SDLC principles, requirement ga.

Learning Outcome: Improved data analysis & visualization skills, turning raw CRM data into actionable insights
Designed intuitive dashboards and KPI frameworks to track performance clearly
Learned wireframing and UI tools to present complex data in user-friendly formats
Explored predictive analytics to estimate future sales and identify trends.
Balanced functional usability with clean visual design to support daily decision-making.
Strengthened reporting and presentation skills for business and technical audiences.

PS-I station: MU-TEASER PRIVATE LIMITED, Gurgaon

Student

Name: DIVYANSH SHARMA . (2023A3PS0345P)

Student Write-up:

PS-I Project Title: Emotional appeals in advertising

Short Summary of work done: During this project, I examined the role of emotional appeals in advertising and their impact on consumer decision-making. A set of advertisements from different industries (FMCG, automobile, healthcare, and social awareness campaigns) were collected and analyzed to identify the emotions they primarily target, such as happiness, fear, guilt, or nostalgia. The study compared emotional advertising strategies with rational approaches to evaluate which is more effective in influencing brand recall, purchase intention,

and audience engagement. Surveys and secondary research were conducted to understand consumer perceptions of emotionally-driven advertisements. The findings highlighted that emotional appeals often create stronger connections with audiences, enhance brand loyalty, and improve long-term consumer engagement. However, the results also emphasized the importance of ethical advertising and balancing emotional triggers with factual information. The project provided valuable insights into marketing psychology, advertising strategies, and consumer behavior.

Objectives of the project: To study how emotional appeals are used in advertising to influence consumer behavior. To analyze different types of emotional appeals (fear, humor, love, pride, guilt, etc.) in selected advertisements.

Tool used: Microsoft Ppt, ms word

Details of Papers/patents:-

Brief description of the working environment: -

Academic courses relevant to the project: yes

Learning Outcome: Understood the ethical considerations of using emotions in persuasive communication.
Gained an understanding of consumer psychology and how emotions influence purchasing decisions.

PS-I station: MU-TEASER PRIVATE LIMITED, Gurgaon

Student

Name: PULKIT BHARDWAJ . (2023A4PS1339P)

Student Write-up:

PS-I Project Title: STRATEGIES TO DRIVE GROWTH, ENGAGEMENT, AND BRAND LOYALTY OF THE TARGET D2C BRAND - THE SOUL CO

Short Summary of work done: Came up with creative strategies to boost CTR and consumer conversion of the target brand, made an app called AdPulse which derived data from meta ads library and had an ai chat bot functionality to help user to come up with advertisement ideas/ inspirations

Objectives of the project: Come up with creative strategies to boost CTRs and consumer conversions

Tool used: Flutter, meta ads library, asana

Details of Papers/patents: Nil

Brief description of the working environment: It was online so it was pretty comfortable, the domain of the company was mentioned as CSIT but the work was solely related to marketing.

Academic courses relevant to the project: Nil

Learning Outcome: Various types of creative strategies

PS-I station: National Centre for Polar and Ocean Research (NCPOR) - Sub Shelf Exploration of Nivl Ice Shelf (SENS), Goa

Student

Name: ADHYAYAN PANDEY . (2023B5AA1119P)

Student Write-up:

PS-I Project Title: Sub Shelf Exploration of the Nivl Ice Shelf

Short Summary of work done: First, tracked the ice-water interface of the GPR data (em wave shot into the Antarctic Ice Shelf) using the seismic software named OpendTect. Once that was done, the LMI-CMI interface was tracked to get a gist of the ice density. Once all of this was done, the data was exported to MATLAB and the ice thickness was calculated and plotted using the scatter function on MATLAB

Objectives of the project: The objective of the project was to calculate and plot the ice thickness of the Nivlisen Ice Shelf.

Tool used: MATLAB, OpendTect

Details of Papers/patents: None

Brief description of the working environment: The environment was quite flexible, and I learnt a lot while working on MATLAB, especially for someone who wasn't very fluent at coding. The location is amazing too.

Academic courses relevant to the project: Optics, Mech Oscillation and Waves (MeOW), Computer Programming

Learning Outcome: Learnt about the nature of ice shelves, why it is important to study them and most importantly learnt how to operate in MATLAB.

PS-I station: National Centre for Polar and Ocean Research (NCPOR) - Application of Spectral element, Goa

Student

Name: SHOURIN CHAKRABORTY . (2023B4AA1053P)

Student Write-up:

PS-I Project Title: Spectral Element Analysis of Seismic Waves Propagation

Short Summary of work done: I set up the simulation framework at NCPOR to run earthquake simulations, and also wrote a helper program to make the mesh generation step faster. I simulated an earthquake in Myanmar to test the framework.

Objectives of the project: To simulate earthquakes using the spectral element analysis

Tool used: SPECFEM3D

Details of Papers/patents: None

Brief description of the working environment: You'll have to pay for food and arrange travel accommodations yourself. Overall, it was a productive and valuable experience that will help me in my career.

Academic courses relevant to the project: yes

Learning Outcome: Learnt Fortran

PS-I station: National Centre for Polar and Ocean Research (NCPOR) - Intercomparison of sea ice concentration, Goa

Student

Name: KAAVYA MER . (2023A7PS0678P)

Student Write-up:

PS-I Project Title: intercomparison of sea ice concentration

Short Summary of work done: Here's a concise summary of the worDuring my Practice School-I at the National Centre for Polar and Ocean Research (NCPOR), I worked on a project titled "Intercomparison of Sea Ice Concentration". The objective was to assess the accuracy of passive microwave-derived sea ice concentration by using high-resolution Synthetic Aperture Radar (SAR) data as the reference. I acquired and processed SAR data from Sentinel-1 and EOS-04 satellites, and passive microwave data from SSMIS and AMSR2 sensors for the same regions and dates. SAR data were preprocessed using the SNAP toolbox through steps such as radiometric calibration, noise removal, speckle filtering, terrain correction, and subset extraction. Supervised classification was applied using Random Forest and backscatter thresholding to distinguish between sea ice, open water, and land. Sea ice concentration from SAR images was computed by calculating the proportion of pixels classified as sea ice in a defined region of interest. Passive microwave data were linearly scaled to estimate concentration. The two datasets were compared to evaluate the accuracy of passive measurements, revealing a 10–12% underestimation by passive sensors, particularly in coastal and mixed regions. This project helped identify the strengths of SAR for sea ice mapping and

highlighted the limitations of passive microwave radiometry. The findings support future AI-based prediction models and suggest the potential of multi-sensor data fusion for improved sea ice monitoring.

Objectives of the project: To compare the sea ice concentration from two to four different satelite data.

Tool used: SNAP toolbox, QGIS, speaking skills

Details of Papers/patents:N/A

Brief description of the working environment: The organization expected students to be self-motivated, disciplined, and capable of independently exploring technical tools and methodologies. We were encouraged to think critically, troubleshoot issues, and maintain accuracy in data handling and analysis. Punctuality, regular documentation, and clear communication of progress were also emphasized.
Through this internship, gained practical exposure to remote sensing, image processing, and satellite data analysis. I developed technical proficiency in using tools such as SNAP and QGIS, and learned advanced techniques like SAR data preprocessing, supervised classification, and sea ice concentration estimation. also learned how to evaluate satellite sensor accuracy and interpret scientific data meaningfully. Additionally, understood the challenges in real-world data analysis-such as handling temporal mismatches, data resolution discrepancies, and algorithm limitations.

Academic courses relevant to the project: Machine learning/ data mining, image processing

Learning Outcome: image preprocessing, image analysis, classification

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PS-I station: National e-Governance Division (NeGD), Delhi

Student

Name: VADANT NAGPAL . (2023A7PS0523P)

Student Write-up:

PS-I Project Title: Gen AI rag based chatbot for government platforms

Short Summary of work done: During my Practice School-I internship at the National e-Governance Division (NeGD), I worked on developing two chatbot systems aimed at improving public access to government information. The first was a multimodal RAG-based chatbot that allows users to interact with unstructured government PDFs through natural language queries. These PDFs often include complex combinations of text, tables, and images. I built a pipeline that extracts this data, summarizes visual elements, semantically indexes the content, and retrieves relevant answers in response to user queries. A user-friendly interface was developed using Streamlit to enable document upload, visualization, and conversation. The second project was a FAQ chatbot tailored for use on government platforms. It processes structured FAQ datasets, chunks them meaningfully, and enables semantic question-answering through a chat interface. The system also supports short-term chat memory, allowing users to ask follow-up questions and receive context-aware responses.

Objectives of the project: To build a secure chatbot, that answers queries by taking data from large pdf files

Tool used: Python, Streamlit, LangChain, Unstructured, pdfplumber, PyMuPDF, ChromaDB, Cohere Embeddings, Google Gemini Flash.

Details of Papers/patents:N.A.

Brief description of the working environment: The working environment at NeGD, New Delhi was clean, professional, and well-equipped with stable Wi-Fi and other essentials. We had supportive mentors who guided us throughout the internship, encouraged exploration, and helped us understand real-world project development. Expectations were clear, and we were given the freedom to innovate while receiving regular feedback. It was a valuable and enriching learning experience.

Academic courses relevant to the project: DBMS, deep learning

Learning Outcome: RAG, embeddings , llms

PS-I station: National Informatics Centre (NIC), Delhi

Student

Name: OJAS GANDHEEL . (2023A4PS1299P)

Student Write-up:

PS-I Project Title: Log Analytics(Cybersecurity) along with anomaly and threat detection

Short Summary of work done: After brushing up my cybersecurity fundamentals in my first week , I started working on SIEM Tools for management and analysis of logs , along with configuring alert rules and identifying anomalies . I used ELK Stack for this purpose . First I began writing data ingestion pipelines using Logstash , and performed parsing and normalization of data fields of logs in them . I used Kibana for making visualizations(dashboards) and perform relevant analysis on the logs data(e.g.:- generating maps to visualize geo-locations of IP addresses and users) . I also used Kibana for generating alert rules based on log correlation and conditions . I further used Python(pandas library) for storing certain portions of data and used various ML techniques like Isolation Forest for outlier detection on logs(e.g. IP addresses) and TF-IDF for detecting phishy/unusual domain names on DNS queries/names.

Objectives of the project: Perform Log Analytics(SIEM Tools) to parse and analyse data , and perform anomaly and threat detection on various kinds of logs.

Tool used: ELK Stack , Python , Nmap(only basics for port and network scanning)

Details of Papers/patents:N/A

Brief description of the working environment: The location of the PS-Station was really appropriate and nice . Mostly we stayed and worked on a specific floor(room) designated for trainees and interns . The assigned project had a vast scope for learning about how logs , data and security management is done in industries and firms , even integrating Machine Learning along with traditional SIEM Tools . The only problem I sometimes came across was that since my assigned mentors(scientists) were mostly busy with their routine office work , I had to sometimes wait a lot of time before contacting them .

Academic courses relevant to the project: Machine Learning(may help) , Computer Networks(it's a 3rd year CDC for CS Students though)

Learning Outcome: Learnt about 3 Tools in ELK Stack(Elasticsearch , Logstash and Kibana)
Learnt hands-on Python skills
Used certain ML algorithms for analysis and anomaly detection.

PS-I station: National Informatics Centre (NIC), Delhi

Student

Name: SAJAL BATRA . (2023B3A70957P)

Student Write-up:

PS-I Project Title: Data Analytics of File Workflows

Short Summary of work done: During my 8-week internship at the National Informatics Centre (NIC), Delhi, I contributed to the "Data Analytics of File Workflows" project. My responsibilities involved gathering operational data from multiple departments, cleaning and structuring datasets, and performing SQL and Pandas-driven transformations. I focused on building high-quality, interactive dashboards using ViAS, mapping key dimensions and measures for real-time tracking of active workloads, complexity, and closure rates. My work included aggregating metrics, creating calculated fields, and enabling intuitive data exploration through slicers and filters. I also faced and addressed challenges like data quality, chronological sorting, and user adoption while ensuring privacy compliance and cross-departmental data integration. Ultimately, my contributions improved the transparency, efficiency, and analytical depth of operational reporting at NIC, promoting evidence-based governance and optimizing internal processes.

Objectives of the project: Analyze and visualize government file workflows to improve operational efficiency, transparency, and decision-making within public administration. Develop interactive dashboards on the ViAS platform for real-time monitoring, KPI tracking, and workflow complexity analysis.

Tool used: Software: SQL, Python (Pandas), ViAS dashboard, Tableau, Power BI, Matplotlib, Seaborn Hardware: Standard desktops provided by NIC headquarters for data processing and dashboard development.

Details of Papers/patents: No papers or patents were submitted during this project.

Brief description of the working environment: The working environment at NIC was collaborative, professional, and innovation-driven. Under the guidance of experienced data scientists and project managers, I gained access to ample resources, clear guidance, and training in advanced analytics practices. The culture emphasized teamwork, problem-solving,

and continuous improvement, supported by training sessions and documentation for smooth onboarding. My role involved delivering quality analyses and dashboards while following strict security and privacy protocols. The experience provided valuable exposure to e-governance, legal compliance, and best practices in data management, dashboard design, and operational reporting through cross-functional collaboration.

Academic courses relevant to the project: Data Science
Database Management Systems
Data Analytics
Machine Learning
Data Visualization
Statistics
Programming in Python

Learning Outcome: Gained hands-on experience with data extraction, cleaning, structuring, and manipulation using SQL and Pandas.
Learned to build and design interactive dashboards that summarize and drill-down performance metrics for government workflows.

PS-I station: National Load Despatch Centre, Grid Controller of India Limited, New Delhi

Student

Name: KRISHNA GARG . (2023A3PS0365P)

Student Write-up:

PS-I Project Title: DATA AUTOMATION OF TRANSMISSION ELEMENTS AVAILABILITY, FREQUENCY CONTROL AND ANALYSIS OF GRID EVENTS

Short Summary of work done: Analyzed 55 major grid events between April 2024–July 2025 using PMU and SCADA data. Calculated key parameters: Inertia Constant (H) – energy stored in the grid RoCoF(Rate of Change of Frequency) – speed of frequency change Nadir/Zenith – frequency extreme post-disturbance Frequency Deviation – max delta from pre-event value.

Objectives of the project: Building a Python tool that could automatically extract and format transmission line outage data from all the RLDCs daily outage file. This really helped cut down on manual work and made the data much easier to analyze.

Tool used: Python libraries(Openpyxl, matplotlib), Excel

Details of Papers/patents: None

Brief description of the working environment: I experienced a professional and intellectually stimulating working environment. The team encouraged curiosity, precision, and collaboration, which greatly enhanced my understanding of real-time grid operations. The workspace was structured yet supportive, with mentors providing timely feedback and encouraging independent problem-solving.
From the company, I expected hands-on exposure to national power system operations, especially in areas such as frequency control, reserve management, and contingency analysis. These expectations were met and exceeded, as I was given access to real datasets and tasked with meaningful assignments that aligned with ongoing operational needs.
My key learnings included understanding the intricacies of grid frequency behavior, automation of outage data processing, and performance-based regulatory compliance under CERC guidelines. I also gained insights into event classification using rule-based logic, the concept of primary and secondary frequency response (FRO/FRC), and the importance of system inertia. Furthermore, I improved my technical skills in data handling using Python and Excel, and honed my ability to present findings clearly and concisely.
Overall, the PS-I experience offered a valuable blend of technical learning, regulatory exposure, and practical system operation insight, laying a strong foundation for future work in the energy sector.

Academic courses relevant to the project: Power System

Learning Outcome: Developed understanding of grid's dynamic behavior under stress.
Learned to work with large, noisy time-series datasets from SCADA.
Understood how frequency metrics tie into CERC's regulatory and incentive-based frameworks.
Identified patterns:
Most events occurred during solar hours.
Events during low-inertia periods (e.g., early mornings) were more severe.

PS-I station: National Load Despatch Centre, Grid Controller of India Limited, New Delhi

Student

Name: AYUSH AGARWAL (2023A8PS1066G)

Student Write-up:

PS-I Project Title: Refinement and Hyperparameter Tuning of a Prototype LSTM-Based Model for Electricity Demand Forecasting

Short Summary of work done: The project aims to improve a baseline LSTM-based model developed for short-term electricity demand forecasting for designated control area load. A CNN-LSTM model was developed to improve pattern learning within the data, lowering the MAPE from the baseline around 7% to 1.34% on weekdays. The model uses historical load data, weather data and calendar features, with special emphasis on enhancing performance over peak hours, holidays and weekends. The project highlights the application of machine learning in enabling smarter grid operations.

Objectives of the project: The objective of this project was to significantly enhance the performance of an LSTM based electricity demand forecasting model for short-term forecasting at 5-minute granularity. The key goals were to reduce the Mean Absolute Percentage Error (MAPE) of the baseline LSTM model from around 7% to below 3%, significantly improving its accuracy during peak hours, weekends and holidays. The project was to design a hybrid CNN-LSTM architecture to enhance the model's capability to learn local patterns as well as long-range dependencies in data. The project was also designed to expand the model's input features by adding weather parameters and calendar effects to make it more sensitive to demand variability. Hyperparameter tuning using Keras Tuner was applied to enhance model performance and SHAP analysis was employed to enhance interpretability by ranking key input features affecting predictions. An iterative refinement approach was employed to make the model robust and generalize-able to make it operational-ready for dynamic grid conditions.

Tool used: Python, Keras, TensorFlow, SHAP, Pandas, NumPy, Matplotlib

Details of Papers/patents:--

Brief description of the working environment: The work environment was very professional and relaxed. My mentor gave me an initial goal at the start and I showed him my progress at regular intervals. Special care was taken while handling data and drafting report as there was a lot of sensitive and confidential data to work on. We were made to sign a NDA at the beginning.

Academic courses relevant to the project: Computer Programming (CS F111)

Learning Outcome: This project strengthened my understanding of deep learning for time series forecasting, particularly in designing and optimizing LSTM and CNN-LSTM models. I gained hands-on experience with hyperparameter tuning, feature engineering and model evaluation using Keras Tuner and SHAP analysis. Working with real-world electricity demand data taught me the importance of contextual features like weather and calendar effects. I experimented with various forecasting models such as CNN, RNN, TFT, ARIMA, XGBoost, etc. Overall, it deepened my technical knowledge and problem-solving approach in applying machine learning to real-world power system operations.

PS-I station: National Load Despatch Centre, Grid Controller of India Limited, New Delhi

Student

Name: SUJAL MITTAL . (2023B5A81144P)

Student Write-up:

PS-I Project Title: COMPREHENSIVE VALIDATION OF HIGH VOLTAGE TRANSMISSION NETWORK MODELS IN EMS THROUGH SINGLE-LINE DIAGRAM RECONCILIATION

Short Summary of work done: During my Practice School I at the National Load Despatch Centre, I worked on validating the 765 kV and 400 kV transmission network models in the Energy Management System through Single Line Diagram reconciliation. The task involved comparing Energy Management System network data with real time SCADA telemetry and official DNV diagrams to identify discrepancies in equipment status, connectivity and parameters. I systematically checked breakers, isolators, transformers, reactors and node connections, documenting mismatches and updating the Energy Management System model to match actual field configuration. The corrections addressed issues such as missing component, incorrect node links and outdated parameters, which improved state estimation accuracy and reduced telemetry residual error. Post reconciliation, power flow simulations and contingency analysis was performed to verify that the updated model aligned closely with real time operating conditions. In parallel, I developed a Python based automation tool to generate substation Single Line Diagrams directly from structured CSV files. The tool parsed equipment data, grouped elements into logical bays using defined topology rules and visually rendered layouts following the one and a half breaker scheme. This significantly reduce manual effort in Energy Management System SCADA validation and enhanced consistency across substations.

Through this project, I gain practical exposure to SCADA and Energy Management System operations, RTU data integration, power system modeling and automation scripting, while contributing to improving the reliability and operational readiness of the national grid.

Objectives of the project: The project aimed to validate the 765 kV and 400 kV transmission network models in the Energy Management System at NLDC by reconciling them with SCADA telemetry and official Single Line Diagrams. It involved identifying and rectifying discrepancies in equipment status, connectivity, and parameters to improve model accuracy. A Python-based automation tool was developed to generate substation SLDs from structured data, reducing manual effort and enhancing the efficiency of EMS–SCADA model verification while ensuring compliance with grid codes and best practices.

Tool used: Hardware: SCADA system terminals, Remote Terminal Units, NLDC server infrastructure for EMS access. Software: Python, Pandas, Numpy, Matplotlib, OS library, CSV-based substation data templates, EMS interface tools, SCADA data viewer, Microsoft Excel for

Details of Papers/patents: No papers or patents were published from the work done during this Practice School.

Brief description of the working environment: The National Load Despatch Centre provided a professional and technically rich working environment focused on real time grid operation and energy management. The workplace was highly collaborative, with engineers from system operation, SCADA and IT divisions working closely to ensure reliable power system monitoring and control. As an intern I had access to live Energy Management System and SCADA systems, official Single Line Diagrams and structured engineering data which created a practical learning setup closely link to actual grid operations.

The company expected work to be detail oriented, technically accurate and deliver within deadlines. There was strong emphasis on following standard operating procedures, maintaining data integrity and aligning results with grid code requirement. I was encourage to approach tasks systematically, document finding clearly and suggest process improvements where possible.

During the internship I learnt how Energy Management System models are build, validated and updated to match real world configurations, how SCADA telemetry is integrated through RTUs and how discrepancies in equipment connectivity and parameters effect state estimation. I also got experience in automation by developing a Python tool for Single Line Diagram generation which reduce manual effort in model reconciliation. This exposure improved my technical skills, problem solving ability and understanding of the operational needs of a national level power system control centre.

Academic courses relevant to the project: Relevant courses include Electromagnetic Theory II, Electrical and Electronic Measurements, Transducers and Measurement Systems, Power Electronics, and Industrial Instrumentation and Control. These provided the technical foundation in power systems.

Learning Outcome: I gained practical experience in validating high-voltage transmission network models by comparing EMS data with SCADA telemetry and official SLDs. Developed skills in identifying and resolving topology and parameter discrepancies to improve state estimation accuracy. Acquired hands-on knowledge of SCADA, RTUs, and EMS workflows, along with proficiency in Python for automating SLD generation from structured substation data. Learned the importance of data consistency, standardized equipment mapping, and the role of accurate network models in secure grid operations.

PS-I station: National Remote Sensing Centre, Hyderabad

Student

Name: SURBHI THAKUR . (2023A2PS0862P)

Student Write-up:

PS-I Project Title: RECENT CHANGES IN THE ARCTIC OCEAN ENERGY BUDGET: THE ROLE OF CLOUDS, ALBEDO, AND RADIATIVE FLUXES (2019–2024)

Short Summary of work done: We studied Earth's Energy Budget and how things have been changing across the years in the Arctic Region.

Objectives of the project: Understand the changes in different variables in the Arctic Region

Tool used: Python, Google Colab, Perplexity, Chat GPT

Details of Papers/patents:NA

Brief description of the working environment: Very supportive team, the more you want to learn the more you will learn.

Academic courses relevant to the project: General Physics, Computer Programming, Fluid Mechanics, Probability and Statistics.

Learning Outcome: Good introduction to Climate Change, Cryosphere Studies and Data Analytics.

PS-I station: National Remote Sensing Centre, Hyderabad

Student

Name: RUJUL KRISHNA . (2023A7PS0051H)

Student Write-up:

PS-I Project Title: Landcover extraction of liss4 sensor imagery

Short Summary of work done: ML reasearch on classifying image's pixels into categories like vegetation, impervious areas, water and others using ML models like rf, svm, and DL models like the unet model.

Objectives of the project: ML reasearch on classifying image's pixels into categories like vegetation, impervious areas, water and others using ML models like rf, svm, and DL models like the unet model.

Tool used: Python and some of its many modules, google earth engine, bhoonidhi, google colab.

Details of Papers/patents:NA

Brief description of the working environment: Was a government role where people have guaranteed employment, so they are rather laid back and to be frank lazy. Our guide did help us a lot though and was friendly and easy enough to approach, and was able to explain the basic required concepts from remote sensing, required for this project. Rest of the staff was very friendly too.

Academic courses relevant to the project: ML and DL, electives like that

Learning Outcome: Huge exposure to ML and DL applications on images, and also image preprocessing for this.

PS-I station: National Remote Sensing Centre, Hyderabad

Student

Name: YUVRAJ SHARMA . (2023B5A71122P)

Student Write-up:

PS-I Project Title: Role of Quantum Computing and a Case Study on Superdense Coding

Short Summary of work done: We conducted an in-depth study on Quantum Computing, exploring its fundamental principles such as superposition, entanglement, quantum parallelism, and quantum gates etc. The report also included a detailed discussion on computation theory, models of computation, and various quantum algorithms including Grover's search algorithm and Shor's factoring algorithm. Additionally, we studied different qubit generation techniques and implemented multiple quantum circuits using the IBM Quantum Composer, verifying the outcomes with analytical hand calculations. As a practical case study, we implemented Superdense Coding, both through IBM Quantum Composer and using the Amazon Braket SDK, thereby gaining hands-on experience in circuit design, simulation, and verification.

Objectives of the project: To study the fundamental principles of Quantum Computing such as superposition, entanglement, quantum parallelism, and quantum gates.To explore and analyze key quantum algorithms like Grover's search and Shor's factoring algorithm.To design and implement quantum circuits using the IBM Quantum Composer and validate them with hand calculations.To carry out a case study on Superdense Coding, implementing it both on IBM Quantum Composer and Amazon Braket SDK.

Tool used: IBM Quantum Composer, Amazon Bracket SDK, PowerPoint, Word doc.

Details of Papers/patents:NA.

Brief description of the working environment: In my opinion, NRSC is a pretty good station. The scientists here are very knowledgeable, understanding, and they guide you quite well.

I'm not saying that I didn't learn anything—I definitely did—but I feel I ended up spending too much time just formatting my report and presentation. NRSC is still a very good station overall, because I saw other BITS students getting some really good projects, and for them, it was a great learning experience.

Academic courses relevant to the project: Quantum Info and Computing and Quantum Mechanics.

Learning Outcome: Learned Python , IBM Quantum Composer, Amazon Bracket SDK .Learned Presentation Skills and Communication skills.

PS-I station: NICSI(National Informatics Centre services Inc.), Delhi

Student

Name: ADITYA KHANDELWAL . (2023A4PS0452P)

Student Write-up:

PS-I Project Title: COMPUTER VISION

Short Summary of work done: Our mentor asked us to start with the basics of CNN architecture and image classification. Our first project was dog/cat classifier. We were then asked to build an ML model to detect vehicles in a live video and read their number plates. The last project was to monitor smoke emission levels from these vehicles using the same ML model.

Objectives of the project: TO DETECT VEHICLES IN A LIVE VIDEO STREAM, READ THEIR LICENSE PLATES AND MONITOR SMOKE EMISSIONS FROM THESE VEHICLES USING OCR

Tool used: YOLO, KERAS, TensorFlow,MatplotLib,EasyOCR

Details of Papers/patents:none

Brief description of the working environment: Everyone was helpful throughout the PS. The other colleagues used to interact with us regularly. The mentor, though a little strict about discipline in the office premise, was really friendly.

Academic courses relevant to the project: Machine Learning, Neural Networks

Learning Outcome: Utilising major Python libraries Like Ultralytics, YOLO, Tensorflow, matplotLib.

PS-I station: NICSI(National Informatics Centre services Inc.), Delhi

Student

Name: ATUL KUMAR . (2023AAPS0180H)

Student Write-up:

PS-I Project Title: Using data science for public welfare

Short Summary of work done: During my Practice School internship at NICSI, I worked on three key data science and analytics projects with a focus on government datasets and public sector applications. The first project involved Road Accident Severity Analysis using historical accident and road infrastructure data from NDAP. I performed data cleaning, merging, exploratory analysis, and regression modeling to understand correlations between road length and accident fatality rates across Indian states. The second project focused on Seed Distribution Forecasting for 2025, using past agricultural distribution data. I applied time series processing and implemented a Random Forest model to predict future seed requirements by state and crop type, aiding in resource planning. The third and most comprehensive project was a PSU Risk & Sentiment Monitoring Dashboard. I combined financial data from yfinance with sentiment analysis on news articles using FinBERT. This project used rule-based anomaly detection and public sentiment signals to flag risk patterns in selected PSU stocks. It was deployed as an interactive Streamlit dashboard. Across all projects, I gained practical experience in data preprocessing, EDA, ML modeling, visualization, and real-world problem-solving in a public-sector context. The internship enhanced my technical skills while exposing me to impactful, data-driven decision-making processes in governance.

Objectives of the project: Use data science to analyse, predict and suggest about various public matters like crop sufficiency etc

Tool used: Google colab, vs code, GitHub, yfinance

Details of Papers/patents: None

Brief description of the working environment: The working environment at NICSI was structured yet flexible, encouraging independent learning and timely communication. Interns were guided by mentors who provided problem statements, datasets, and feedback while allowing freedom to explore relevant methodologies. Weekly updates, documentation, and project presentations ensured accountability and consistent progress.
The company expected interns to take ownership of their assigned projects, work with public data platforms like NDAP and data.gov.in, and apply academic knowledge to solve real-world challenges in governance and public service. Emphasis was placed on analytical thinking, reproducible coding, and impactful visualization.
During PS-I, I significantly enhanced my understanding of data analysis, machine learning, and dashboard development. I worked on three diverse projects: Road Accident Severity Analysis, Seed Distribution Forecasting, and a PSU Risk & Sentiment Monitoring Dashboard. These projects helped me develop skills in data cleaning, EDA, predictive modeling, and using APIs like yfinance and FinBERT for sentiment analysis. I also gained hands-on experience with tools such as Python (pandas, matplotlib, scikit-learn), Streamlit, and government data formats.
The internship bridged the gap between classroom theory and applied data science, especially in the public sector domain, and sharpened my ability to deliver data-driven insights in a structured, professional setting.

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

Learning Outcome: Data science

PS-I station: NICSI(National Informatics Centre services Inc.), Delhi

Student

Name: ANANYA SHANKAR . (2023B1A30836P)

Student Write-up:

PS-I Project Title: Smart Vehicle Monitoring for Seatbelt Detection and License Plate Recognition.

Short Summary of work done: During my internship at NICSI, I developed a computer vision system to automate vehicle safety monitoring. Two key tasks were addressed: (1) detecting seatbelt compliance and (2) recognizing vehicle license plates. I trained two YOLOv8n models on custom-annotated datasets for these tasks using Roboflow. The detected license plate regions were processed with EasyOCR to extract alphanumeric text. The end-to-end pipeline was implemented in Python and tested on static images, producing annotated outputs with seatbelt status and license numbers. I also worked on a secondary project that monitored crowd safety on metro platforms using YOLOv8m to identify individuals in danger zones. Both projects were executed in Google Colab, emphasizing real-time inference, image processing, and safety enforcement applications.

Objectives of the project: The objective of the project was to develop an automated computer vision system that enhances road safety by detecting whether vehicle occupants are wearing seatbelts and recognizing vehicle license plate numbers from images. The system aimed to use YOLOv8 for object detection, EasyOCR for text extraction, and integrate the models into a unified Python-based inference pipeline for safety enforcement applications.

Tool used: Python, YOLOv8, EasyOCR, OpenCV, Roboflow, Google Colab, Matplotlib, NumPy, PIL, Torch, Kaggle

Details of Papers/patents: None

Brief description of the working environment: NICSI provided a professional and goal-oriented environment that encouraged practical learning and the application of artificial intelligence to public safety solutions. I was guided by experienced mentors who provided regular feedback and encouraged experimentation with tools and datasets. The company expected us to work independently while maintaining documentation and delivering real-world outcomes. I learned how to manage technical challenges, optimize model performance, and integrate different components into a scalable system. Exposure to applied machine learning and the opportunity to build solutions for actual traffic and surveillance use cases made this internship highly enriching.

Academic courses relevant to the project: Artificial Intelligence, Machine Learning, Image Processing, Deep Learning, Python Programming, Neural Networks and Pattern Recognition.

Learning Outcome: I learned how to train and fine-tune YOLOv8 models for object detection tasks, prepare and annotate datasets using Roboflow, implement OCR using EasyOCR, and build an end-to-end AI pipeline in Python for real-world safety monitoring. I also gained experience in using OpenCV for image processing, Google Colab for GPU-accelerated training, and understood how to balance model accuracy with inference efficiency.

PS-I station: NICSI(National Informatics Centre services Inc.), Delhi

Student

Name: SHUKANT SINGH . (2023B2A30922P)

Student Write-up:

PS-I Project Title: MULTI-MODAL IMPLEMENTATION OF MODELS IN SMOKE AND LICENSE PLATE RECOGNITION

Short Summary of work done: We worked on the integration of two models of which one detects the number plate and the other vehicular smoke leveraging algorithms like YOLO and OCR to implement in our task. We worked on this from a bottom-up approach, learning about CNNs and image classification, building one of our own and then further fine-tuning it using different methods till we had to separate models for each of the tasks. Then we integrated them together to work in tandem so ask to detect both of the license plate and the smoke.

Objectives of the project: This project follows the implementation of computer vision on traffic footage for vehicle detection/classification and optical character recognition (OCR) for number plate recognition. An additional model for vehicular smoke detection is also being developed as of the week this report is being written.

Tool used: Jupyter Notebooks, YOLO algorithm, Roboflow,

Details of Papers/patents:N/A

Brief description of the working environment: The working environment during PS-1 was professional providing a comfortable space to learn and grow. The team and mentor were approachable and supportive offering constructive feedback and regular guidance.
The company maintained realistic expectations from interns, however a consistent effort and willingness to learn were valued. I gained valuable exposure to corporate environment.

Academic courses relevant to the project: BITS F464- Machine Learning

Learning Outcome: Training models and CNNs were a good introduction to ML. Learned how to implement YOLO and how to ease up preprocessing using Roboflow.

PS-I station: NICSI(National Informatics Centre services Inc.), Delhi

Student

Name: VANSHIKA BANSAL . (2023B3A70968P)

Student Write-up:

PS-I Project Title: APPLICATIONS OF COMPUTER VISION: CLASSIFICATION, METRO SAFETY, AND TRAFFIC COMPLIANCE SYSTEMS

Short Summary of work done: During my PS-I internship, I worked on a series of computer vision projects that demonstrated the practical applications of deep learning in real-world scenarios. The work was divided into three key areas: image classification, metro safety surveillance, and traffic compliance monitoring. The first part focused on building and training a convolutional neural network (CNN) to classify images of cats and dogs, which provided a strong foundation in deep learning, model evaluation, and dataset handling. The second project involved metro safety, to detect individuals entering a restricted polygonal zone in surveillance footage, aimed at improving crowd management and safety in public transport systems. The final project addressed road safety compliance, using the YOLOv8 model to detect seatbelt usage and recognize license plates through integrated OCR. Throughout the internship, I gained hands-on experience in data annotation, model training, testing on real-world footage, and developing complete detection projects. This experience significantly improved my understanding of deep learning, object detection, and the integration of AI with public safety systems.

Objectives of the project: To develop and demonstrate computer vision-based systems for real-world applications, including image classification, metro station safety monitoring through zone-based person detection, and enforcement of traffic compliance by detecting seatbelt usage and reading license plates using deep learning models.

Tool used: Hardware: Personal computer with GPU support Software & Libraries: Python, Google Colab / Jupyter Notebook, TensorFlow & Keras, Ultralytics, YOLOv8, OpenCV, EasyOCR, Matplotlib, Roboflow

Details of Papers/patents: None

Brief description of the working environment: During my PS-I internship, I worked in a guided yet independent environment that promoted self-learning and practical application. Most of the work was done using cloud platforms like Google Colab. The structure allowed for flexibility while encouraging regular progress and documentation.
The expectations were to understand computer vision concepts and apply them to real-world problems, such as metro safety and traffic compliance. I was expected to train and evaluate deep learning models, manage datasets, and present my work effectively.
Over the course of the internship, I learned to use tools like YOLOv8, CNNs, etc. for object detection and classification tasks. I also gained experience with OCR, data annotation, and model evaluation. These hands-on projects enhanced my understanding of AI applications in public safety and surveillance.
Overall, the internship helped me strengthen my technical skills, problem-solving ability, and time management, while giving me exposure to how computer vision is used in real-life scenarios.

Academic courses relevant to the project: Computer Programming

Learning Outcome: This project helped me understand and apply deep learning techniques, especially CNNs and object detection models like YOLOv8 to real-world problems. I gained practical skills in image classification, safety violation detection, and license plate recognition using OCR. I also learned how to manage datasets, perform annotations, and improve model performance through data augmentation and evaluation techniques. Additionally, I developed the ability to build end-to-end computer vision pipelines and troubleshoot model issues effectively, while also exploring the real-world impact of such systems on metro safety and traffic compliance.

PS-I station: NICSI(National Informatics Centre services Inc.), Delhi

Student

Name: EESA AHMED . (2023B4AA1034P)

Student Write-up:

PS-I Project Title: ANALYSIS OF THE UDISE DATASET USING RANDOM FOREST REGRESSION AS PREDICTIVE MODEL, DBSCAN AND K-MEANS CLUSTERING AS ANALYTICAL MACHINE LEARNING MODELS

Short Summary of work done: Using Unsupervised Machine Learning Algorithmic Techniques for the data given for the year 2014 to 2017, conclusions have been drawn. Python and its relevant libraries (Pandas for Data cleaning, Matplotlib and Seaborn for Data visualization, Numpy for mathematical tools and nonparametric inference, Scikit-learn, Pytorch for Machine learning models etc). Random Forest Regression Model has been used to predict the output for the year 2018 using the data for the years 2014 to 2017 as the test data. Extensive Research was performed to detect consequences of Dropout rates in certain states and Hypothesis testing has been used to identify the underlying consequences. One such example was The Net enrolment ratio Data in these particular states. Consequences of dropout rates were researched and the impact on enrolment ratio was identified. K-means Clustering and DBSCAN have been used as Unsupervised Learning models for Analytical purposes and Anomaly detection within the data and for proving the Null and Alternative Hypotheses in this project. The Unified District Information System for Education functions as a central platform that enables respective schools to efficiently record and submit data respective to the profile. Statistical Inferences have been drawn from the data of Dropout rates for Various spheres of Indian Education System for all States and union Territories extracted from National Data Analytics Portal and UDISE.

Objectives of the project: Understanding the Statewise background when it comes to the Dropout rates for students enrolled within the Indian Schooling system through the UDISE and relevant datasets available there. Using Machine Learning models spanning both Supervised and Unsupervised learning for Data analysis, Predictive Analysis and Anomaly detection within the data.Using and applying Statistical methods with intricate mathematical foundations for performing Parametric and Non-parametric Inference techniques to derive conclusions and relevant results.

Tool used: Apache superset, GitHub

Details of Papers/patents:NA

Brief description of the working environment: The working environment at the office was very flexible and an overall nice experience. We learnt a lot about work ettiquetes and communciation. Apart from gaining technical knowledge, The centre was overall a decent experience for growing soft skills too. The work timings were flexible too.

Academic courses relevant to the project: MATH F353 Statistical Inferences and Applications.

Learning Outcome: Python and Its relevant libraries (Pandas for data cleaning, Matplotlib and seaborn for visualizations, scipy and Numpy for importing mathematical functions and statistical distributions), Machine Learning models spanning both Supervised and Unsupervised learning for Data analysis, Predictive Analysis and Anomaly detection within the data.

PS-I station: Niftrix Technologies Private Limited, Bengaluru

Student

Name: VISHISHT T B . (2023A7PS0042H)

Student Write-up:

PS-I Project Title: AI driven renewable energy optimization

Short Summary of work done: NA

Objectives of the project: Build a classification and regression model for solar panel effeciency drops due to debris.

Tool used: Pytorch, openCV

Details of Papers/patents:NA

Brief description of the working environment: Flexiblre and nice working people.

Academic courses relevant to the project: ML

Learning Outcome: ML, deep learning

PS-I station: Nitisara - Operations, New Delhi

Student

Name: PALAK BHAGASRA (2023D2TS1231P)

Student Write-up:

PS-I Project Title: Operational management and outreach

Short Summary of work done: During my PS-I at NITISARA, I was actively involved in both operational and outreach-related tasks. I wrote and scheduled multiple blogs, ensuring they were properly formatted and ready for publishing. I also created posters and visual content to promote these blogs on social media platforms. In addition to content creation, I contributed to the development of a product demo video, where I assisted in planning the structure, collecting content, and coordinating with the video editor. I regularly attended meetings, shared updates, and collaborated with other team members to complete tasks on time. I used tools like Google Docs, Canva, and Notion to manage my work efficiently. This experience helped me develop practical skills in digital communication, planning, and teamwork. Overall, the internship gave me valuable exposure to how digital platforms manage operations and outreach, and how content and visuals play a key role in improving online presence and engagement.

Objectives of the project: To understand the integration of digital content and operational systems in a value chain platform. To contribute to marketing outreach strategies through SEO, blogs, and social media. To assist in data collection, organization, and communication for internal operations.

Tool used: Google Workspace (Docs, Sheets, Slides) , Canva, Ms Word

Details of Papers/patents: None

Brief description of the working environment: NITISARA offered a flexible and collaborative working environment. As an intern, I had the freedom to suggest content ideas, engage with real-time projects, and participate in team discussions. The mentorship was encouraging and allowed space for learning through feedback. My contributions were respected, and I was encouraged to ask questions, improve my communication skills, and participate in client-focused activities.
The company expected punctuality, independent thinking, professionalism in communication, and timely delivery of assigned work. The experience taught me how digital platforms support business development through targeted outreach and content-driven visibility. I also

understood the balance between operational work and creative contribution. The cross-functional nature of tasks provided a holistic view of how operational and outreach strategies work hand-in-hand to build digital platforms.

Academic courses relevant to the project: Principles of Management
Business Communication
Marketing Management

Learning Outcome: Practical knowledge of operational workflows in digital organizations.
Improved content writing and SEO optimization skills.
Understanding of client outreach, cold calling, and lead generation in B2B settings.

PS-I station: NIXI(National Internet Exchange of India), Delhi

Student

Name: ARJUN GAUTAM (2023A3PS0209G)

Student Write-up:

PS-I Project Title: Revamping NIXI IX portal

Short Summary of work done: The work was related to revamping NIXI's Internet exchange portal using Django MySQL and HTML/CSS/JS

Objectives of the project: To learn web dev in Python (Django and Flask), and related tech stacks.

Tool used: Python, MySQL, HTML/CSS/JS, Bootstrap

Details of Papers/patents: NA

Brief description of the working environment: NA

Academic courses relevant to the project: yes

Learning Outcome: Learnt many things.

PS-I station: NIXI(National Internet Exchange of India), Delhi

Student

Name: KRISHNA DHAWAN . (2023A7PS0111H)

Student Write-up:

PS-I Project Title: REVAMPING THE IXP APPLICATION PORTAL FOR NIXI'S WEBSITE

Short Summary of work done: One of the roles of NIXI is to provide Internet Exchange Points (IXPs) so ISPs and CDNs can exchange traffic within the country, improving connectivity and reducing reliance on international routes. As part of this project, we were tasked with rebuilding the IXP Application Portal from scratch using Django, integrating it with NIXI's legacy MySQL database, and making selective improvements to the database structure. The new portal includes separate interfaces for end users (to submit applications and KYC documents, view approoved and pending connections and apply for upgrade, downgrade or disconnections while also giving updates on verification and to resubmit parts of the form rejected), the customer care unit (to view all the applications from members side and to either reject parts of it or fully, or verify and pass it to the next team easily), and the IX team (which receives verified applications and provides the ports), each with features tailored to their workflows. Multiple functional endpoints were developed to manage registrations, document verification, support, and administrative tasks. Security was also considered, including secure login, input validation, and access control to protect data and operations. The rebuilt portal preserves the necessary functions of the old system, improves efficiency, and lays a flexible foundation for future enhancements.

Objectives of the project: To make a new IXP Application portal to replace the old one on ix.nixi.in

Tool used: Django, Python, AJAX, HTML/CSS/JS, MySQL

Details of Papers/patents: N/A

Brief description of the working environment: Most of our first week was spent as they kept telling us to learn different languages or frameworks each day. None of us could have guessed before the end of the first day the the project was going to be web development. We still decided to take initiative and make a section of the website on our own based on what we knew about the workflow and left it to them to review it.
About the working environment outside of this, we were made a team of our own (8 interns) and i was assigned leader. As we all sat together, I was able to efficiently hand out tasks, have discussions and solve doubts. One other employee also introduced us to Internet governance and we attended seminars regarding it a few times.

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

Learning Outcome: Technologies like Django, AJAX, REST APIs, MySQL, Other skills like Leadership, Communication, Teamwork.

PS-I station: NIXI(National Internet Exchange of India), Delhi

Student

Name: ISHAAN SEMWAL (2023A7PS1014G)

Student Write-up:

PS-I Project Title: Redeveloping NIXI IX website

Short Summary of work done: This project involved the complete redevelopment of user and CCU portals of NIXI's Internet Exchange (IX) website using modern web technologies. The backend was built using Django (Python), frontend with Bootstrap (HTML/CSS), and MySQL was used as the relational database. The new system incorporates modular architecture, secure login mechanisms, multi-step member onboarding work lows and support ticketing. It also provides admin tools for application review, document veri ication, and user management, while ensuring strong security practices overall.

Objectives of the project: • Modernize the existing system. • Streamline member onboarding Enhance user experience. • Improve work low and state management. • Build an admin-side

Customer Care Unit (CCU) portal for user management. • Ensure safety of user data and protection of website from malicious attacks using proper security measures

Tool used: VS Code, Cursor, Git/GitHub (and GitHub Desktop), Django (Python), Bootstrap (HTML+CSS), JavaScript, MySQL (and MySQL Workbench), BurpSuite

Details of Papers/patents: NA

Brief description of the working environment: The working environment was nice. Mentors were really helpful.
My expectations from the company were completely different from what I saw in terms of the project. The project details in the PSMS portal were related to networks, DNS, IPv6 etc. but after coming to the station we were given a web dev project. Eventually things got sorted and we went ahead with web dev.
The was a lot of learning during my PS. A major challenge we faced early on was a clear mismatch between our actual skill level and what the instructors expected from us. They assumed we already had a deep understanding of the framework and could explain every line of code in detail. In reality, we were still getting familiar with the basics, which led to confusion, pressure, and delays in the original schedule. This misunderstanding made it difficult to keep up, and we struggled to meet their expectations while also trying to learn the necessary concepts on the go. This was, however, during the initial week only. We gradually learnt the Django framework and how to collaborate using GitHub.

Academic courses relevant to the project: Database Systems

Learning Outcome: 1. Learnt Python's Django framework for web development.
2. Understood Internet governance and various policies related to it.
3. Learnt how to collaborate on same codebase as a team using Git and GitHub.

PS-I station: NIXI(National Internet Exchange of India), Delhi

Student

Name: AADI NARAYAN PRAKASH . (2023A8PS0442H)

Student Write-up:

PS-I Project Title: FULL STACK WEB DEVELOPMENT

Short Summary of work done: This project involved the end-to-end redesign and development of NIXI's Internet Exchange Point (IXP) portal to enhance usability, performance, and operational efficiency. Built as a full-stack web application, the system was developed using Django (Python) for the backend, MySQL for database management, and HTML, CSS, and JavaScript for the frontend. The portal serves as a critical interface for managing member organizations, peering arrangements, and internal workflows. A major component of the project was the creation of the Customer Care Unit (CCU) interface, which supports internal staff in reviewing applications through a structured, paginated, and searchable dashboard. Emphasis was placed on secure authentication, data validation, and responsive design to ensure reliability across devices and use cases. Performance was further enhanced through multithreading in asynchronous processes like email dispatch. Security was a core focus throughout development. Burp Suite was used to simulate real-world attacks and identify vulnerabilities such as SQL injection, XSS, and CSRF. These were addressed through Django's built-in middleware and custom validation strategies. The project concluded with thorough testing, deployment documentation, and handover processes. This experience provided practical exposure to building scalable, secure, and production-ready systems in a collaborative environment.

Objectives of the project: To redesign and modernize NIXI's IXP portal for improved usability, performance, security, and operational efficiency through a full-stack web development approach.

Tool used: DJANGO(PYTHON), HTML, CSS, JAVASCRIPT, BURPSUITE AND GIT

Details of Papers/patents: NA

Brief description of the working environment: The working environment at the National Internet Exchange of India (NIXI) was professional, collaborative, and goal-oriented. Interns worked closely with the mentor and followed structured development practices. Emphasis was placed on timely delivery, secure coding, and effective team communication in a real-world project setting.

Academic courses relevant to the project: C PROGRAMMING

Learning Outcome: Acquired practical proficiency in full-stack web development, secure coding practices, and collaborative software engineering through the end-to-end implementation of a production-grade portal.

PS-I station: NoQs Digital, Ahmedabad, Ahmedabad

Student

Name: ADEESH JAIN (2023A3PS0180G)

Student Write-up:

PS-I Project Title: Skills-Extraction using Contextual Document-Embedding from Resumes and Job Recommendation System using an ML Model

Short Summary of work done: 1st Model - Keyword matching between resume and task description did not yield in optimal matching. 2nd Attempt - Used api from current LLM models to read resume and create similarity score according to task description along with a website that is easy to use for this purpose.

Objectives of the project: Recruiters can save time on interviewing top candidates rather than all candidates that apply for a job

Tool used: SW: Python, Git, LLM, API

Details of Papers/patents: NA

Brief description of the working environment: Work environment was constructive and very nice, company founder was also a good person who interacted well with the interns, giving them direction and time.

Academic courses relevant to the project: OOPS, CP, DSA/FoDSA

Learning Outcome: ML, API, Python, Business Communication

PS-I station: NoQs Digital, Ahmedabad

Student

Name: RANVEER MASKARA (2023A3PS0188G)

Student Write-up:

PS-I Project Title: Task Automation system

Short Summary of work done: Created a task automation system that uses Gemini API and Fast API to assign scores to most relevant employees for the task.

Objectives of the project: Make a task automation system that assigns score to an employee in terms of fit for the project.

Tool used: Gemini API

Details of Papers/patents: No

Brief description of the working environment: Flexible working environment. Only expected to complete deadlines.

Academic courses relevant to the project: ML for EEE

Learning Outcome: Web dev and ML

PS-I station: NoQs Digital, Ahmedabad, Ahmedabad

Student

Name: HARSHAVARDHAN SHAH (2023A7PS0358G)

Student Write-up:

PS-I Project Title: Task management system

Short Summary of work done: web dev project

Objectives of the project: make task management system using AI

Tool used: React Node.js gemini API key

Details of Papers/patents:NO

Brief description of the working environment: good working environment good faculty and good mentor.

Academic courses relevant to the project: object oriented programming and database systems

Learning Outcome: Web development

PS-I station: NoQs Digital, Ahmedabad, Ahmedabad

Student

Name: KHUSHI MISHRA (2023A7PS0468G)

Student Write-up:

PS-I Project Title: Library Management System

Short Summary of work done: Built library management system with different user roles

Objectives of the project: To build Library Management Portal for university usage

Tool used: VS Code, react, node, express, javascript, html, css, middleware packages

Details of Papers/patents: None

Brief description of the working environment: Great working environment, great manager.

Academic courses relevant to the project: DBMS

Learning Outcome: Learning about web development

PS-I station: NoQs Digital, Ahmedabad, Ahmedabad

Student

Name: JAYDITYA KABRA . (2023A7PS1059H)

Student Write-up:

PS-I Project Title: AI powered task management system

Short Summary of work done: Our project, AI-Powered Task Management System, is designed to streamline the process of assigning tasks to employees based on their skills and expertise. Traditionally, managers manually go through resumes and allocate work, which is time-consuming and prone to bias or inefficiencies. Our solution automates this process by leveraging AI to extract and analyze skills from uploaded resumes and match them to relevant tasks. The system offers two main interfaces: a manager dashboard and an employee dashboard. Managers can create new tasks, view ongoing assignments, and see which employee is best suited for a task. Employees can upload their resumes and get tasks automatically assigned based on their capabilities. We used HTML for structuring the web pages, CSS for styling, and JavaScript for adding interactivity such as file uploads and dynamic routing. Flask is used as the backend framework to handle requests, route data, and connect the frontend to our Python-based resume parsing logic. The system ensures quick redirection, real-time updates, and smooth user experience. By combining AI with a clean user interface, the system reduces managerial workload and improves task allocation efficiency. It's a smart, scalable solution ideal for growing teams or companies.

Objectives of the project: Our AI-powered Task Management System aims to automate task assignment by matching tasks with employees based on their skills extracted from resumes. It simplifies resume handling, enables real-time task tracking, and improves overall productivity. The platform offers a smooth and intuitive interface for both managers and employees.

Tool used: GitHub, frontend(HTML, CSS JavaScript), Flask

Details of Papers/patents:none

Brief description of the working environment: The working hours were very flexible. We would have 2-3 meets per week for 15-20 mins each where we would update the manager with our work and discuss the further work to be done. We did not quite interact with any other employee of the company except for the founder himself. My expectations from the PS station were that I would learn something and make an actual project to get experience which I did.

Academic courses relevant to the project: yes

Learning Outcome: Learned GitHub, frontend(HTML, CSS JavaScript), Flask, machine learning basics

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PS-I station: NoQs Digital, Ahmedabad, Ahmedabad

Student

Name: AYUSH YADAV (2023A8PS0246G)

Student Write-up:

PS-I Project Title: AI Powered Task Management System

Short Summary of work done: Created a python project using Numpy, Ollama and llama3 to extract text from the resume and rate employees based on their past experiences. Used a vector based method to automatically suggest employees for a particular task whose skill requirements are given, the system also biases the employee skill level so that none of the employee is overloaded with multiple tasks. Also the skill levels are adjusted after every task by some amount based on the input by the employer (thus implementing a continuous evaluation system) Used a Flask based backend to communicate with JS frontend to implement the functionality.

Objectives of the project: Creating a system capable of taking resume PDFs as a input and extracting / rating the skills of the employees based on the resume. Allow the employer to add Tasks and the system should auto recommend the best match (i.e. the employees most likely to complete this task)

Tool used: Python, Flask, Ollama, numpy, LLAMA3, Figma, JS

Details of Papers/patents:N/A

Brief description of the working environment: The working environment required us to work online from our location of choice; the timings were 9-6 (Mon-Sat) but were flexible i.e. one can start and end the work at their desired time provided they work for 9 hours every day.
We needed to mark our attendance at the start and end of our work time via google forms.
Also, we had to attend 3 meetings every week on alternate days. These meetings were with our manager (which in my team's case was the company founder), in the meetings we had to give brief about what we are doing / planning to do.

Academic courses relevant to the project: Web Development (HTML, CSS, JS, Flask) - for creating the Frontend UI, backend
Machine Learning - for the main task allotment and employee rating system

Learning Outcome: Was able to learn more about the Natural Language processing (NLP), tried to use various LLMs using OLLAMA, implemented a simple reinforcement learning system to continuously evaluate employees based on their performance, also used Flask to create a simple backend for the project to run.

PS-I station: NoQs Digital, Ahmedabad

Student

Name: SHANTANU KOTIAN . (2023AAPS0286H)

Student Write-up:

PS-I Project Title: FD Portfolio Optimizer

Short Summary of work done: Built a system which takes into account the user's existing FD Investments and suggests new investments taking into account TDS regulations and nominee distribution.

Objectives of the project: To create a system which takes into account the user's existing FD Investments and suggests new investments taking into account TDS regulations and nominee distribution.

Tool used: Google Sheets

Details of Papers/patents:NA

Brief description of the working environment: The working environment was good, we had 3 meetings every week where we updated our work to Adit and he would give us new tasks.

Academic courses relevant to the project: yes

Learning Outcome: Learnt about data analytics, finance concepts.

PS-I station: NoQs Digital, Ahmedabad

Student

Name: HIMANSHU GARG (2023AAPS0599G)

Student Write-up:

PS-I Project Title: IMPLEMENTING VERSION CONTROL AND USER ACCESS CONTROL IN THE WEBSITE DEVELOPMENT WORKFLOW

Short Summary of work done: During the 8-week Practice School-I internship at NoQs Digital, Ahmedabad, the project focused on improving the company's WordPress-based website development workflow. The key goal was to introduce structured version control using Git and GitHub, replacing a previously manual and untracked process. A local Git repository was configured with a .gitignore file, and changes were consistently committed and pushed to GitHub for collaborative development. A test clone of the site was set up using LocalWP to allow safe experimentation without risking the live site. The Bedrock framework was explored to restructure the WordPress setup into a modular and maintainable architecture. User access control was significantly improved using plugins that defined roles and permissions, reducing the risk of unauthorized changes. In addition to backend improvements, several frontend issues

were identified and fixed, including a broken contact form, outdated footer links, and a missing sticky menu. The site was further optimized by minifying assets and proposing CDN integration. The project resulted in a secure, scalable, and professional-grade development model, laying the foundation for future enhancements and team collaboration. Documentation was prepared to help future developers adopt these practices effectively.

Objectives of the project: The project focused on improving the existing WordPress-based website at NoQs Digital by integrating Git-based version control and establishing struc- tured user access controls.

Tool used: WordPress, Git & GitHub, LocalWP, Bedrock Framework, Elementor, (WordPress Page Builder) Advanced User Access Management Plugin, WP Backup Plugin InfinityFree & Hostinger (Web Hosting) VistaPanel (Hosting Control Panel) Google Sheets, Power Query

Details of Papers/patents:NA

Brief description of the working environment: The working environment at NoQs Digital, Ahmedabad, was collaborative, focused, and conducive to learning. As a digital solutions company catering primarily to SMEs, the firm maintained a fast-paced yet supportive atmosphere where interns were given real responsibilities and opportunities to contribute meaningfully. The founder, Mr. Arun Agarwal, was actively involved in mentoring and regularly provided feedback on tasks, ensuring alignment with both technical standards and business goals.

From the outset, the expectations from the company were clear: to identify inefficiencies in the current website development workflow and propose sustainable, scalable improvements. I was expected to independently explore tools, implement solutions, and document changes with clarity. This trust in self-direction created a strong sense of ownership over the work.

Throughout the internship, I was encouraged to take initiative, troubleshoot problems, and present structured solutions. The learning curve involved not just technical tools like Git, WordPress, and Bedrock, but also an understanding of collaborative workflows, modular architecture, and the importance of staging environments in web development. I also gained experience in UI/UX improvements, deployment safety, and backup systems, contributing directly to the site's security, performance, and maintainability.

The internship offered a holistic view of real-world software development in a small-team setting and provided me with both technical depth and practical insight into the challenges SMEs face during digital transformation.

Academic courses relevant to the project: Object Oriented Programming, Computer Programming

Learning Outcome: Gained hands-on experience with version control using Git and GitHub in a professional web development environment.

Learned how to implement role-based access control systems within WordPress using plugins like Advanced User Access Management.

Understood the importance of staging environments and created a safe, local development workflow using LocalWP.
Explored modular web architecture using the Bedrock framework for WordPress, improving maintainability and scalability.
Strengthened debugging skills through Git tools like diff, blame, and revert.
Developed a structured deployment and testing approach aligned with modern DevOps practices.
Improved UI/UX sensibilities by fixing usability issues and proposing enhancements like sticky navigation, live chat, and SEO-friendly features.

PS-I station: NoQs Digital, Ahmedabad

Student

Name: AARYA DEOTALE (2023B3A70845G)

Student Write-up:

PS-I Project Title: Bank reconciliation using ML

Short Summary of work done: The project "Bank Reconciliation Using Machine Learning" aims to automate the classification of bank transactions to streamline and improve the accuracy of the reconciliation process. Traditionally, bank reconciliation involves manually matching bank statements with internal financial records, which is both time-consuming and prone to human error. This project leverages machine learning techniques to intelligently categorize transactions, thereby reducing manual intervention and ensuring more consistent financial reporting. The solution involves several key stages. First, the dataset containing transaction details was cleaned and preprocessed by handling missing values, converting date formats, and standardizing text. Exploratory Data Analysis (EDA) was performed to understand patterns and correlations among features such as transaction amount, date, and descriptions. Machine learning models such as Logistic Regression, Random Forest, and Support Vector Machines were trained to classify transactions into categories like "Salary", "Food", "Utilities", etc. These models were evaluated using accuracy, precision, recall, and F1-score to determine the best-performing algorithm. Random Forest emerged as the most reliable model due to its robustness and ability to handle complex patterns in the data. The project was developed and tested in a collaborative environment using Google Colab, allowing real-time code sharing and version control. Overall, the system enhances efficiency, reduces errors, and offers a scalable

solution for both personal and enterprise-level financial reconciliation tasks. This project demonstrates the practical application of machine learning in the finance domain and highlights how intelligent automation can simplify routine accounting processes.

Objectives of the project: to categorise bank statements with multiple bank accounts

Tool used: Google colab

Details of Papers/patents:-

Brief description of the working environment: Good

Academic courses relevant to the project: Machine Learning

Learning Outcome: Basics of ML, complete ML pipeline , NLP

PS-I station: NoQs Digital, Ahmedabad

Student

Name: KEDAR MEDISHETTY (2023B4A70873G)

Student Write-up:

PS-I Project Title: Automation of Task Flow

Short Summary of work done: Initially, we were provided with training materials on building dynamic dashboards. Following this, we automated task workflows by creating a dummy database and using triggers to send API notifications based on predefined deadlines. For the frontend, the website was designed using Figma, and the wireframes have been handed over to the development team for implementation. Startups are now being onboarded for their initial tasks. A presentation was created to introduce the process, and to incentivize participation, we offered the first three tasks free of charge to attract and engage new startups.

Objectives of the project: Building a website, onboarding startups and automation of back end smoothly.

Tool used: Google Workspace, FIGMA

Details of Papers/patents: No

Brief description of the working environment: My PS-I at Noqs offered a fast-paced and innovation-driven startup environment that emphasized independence,creativity, and real-time problem-solving. The team culture was open and collaborative, where interns were treated as contributors rather than observers. We were encouraged to think critically and come up with scalable solutions.

Academic courses relevant to the project: DBMS

Learning Outcome: FIGMA designing, App script, Google Workspace

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PS-I station: NoQs Digital, Ahmedabad

Student

Name: YASH RAJA . (2023B4A71056P)

Student Write-up:

PS-I Project Title: Skills-Extraction using Contextual Document Embedding and Job Recommendation system using an ML Model

Short Summary of work done: Created said model using FastAPI and NLP techniques such as NER along with a website which had interactive JS elements and was user-friendly, which is going to be deployed for the consumers of NoQs products.

Objectives of the project: To create an application which automatically parses resumes (skills, experience and profile) in order to assign the best candidate for a job description.

Tool used: Python, FastAPi, spaCy, PyMyPDF, Git, HTML, CSS, JS and scikit-learn

Details of Papers/patents: None

Brief description of the working environment: Meets 3 times a week, alloted team (of other batchies from other campuses), told to work on the model using our own convenient platforms so we chose to create the GitHub repo and have Gmeets 5 days a week. Expected more expertise on Machine Learning from the company, like a guide which could teach us better and industry relevant techniques in Machine Learning but we were meant to figure and implement things ourselves.

Academic courses relevant to the project: FODS, ML, DL

Learning Outcome: NLP, Machine Learning, Web Development, Teamwork

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PS-I station: OnFinance AI - IT, Bangalore

Student

Name: CHIRANTAN S . (2023A7PS0154H)

Student Write-up:

PS-I Project Title: Regulatory Horizon Scanning using Programs and AI agents

Short Summary of work done: In PS1, I mainly worked on building the web scraper for the given websites. I mostly used the playwright library and coded the entire scraper in Python. I also had to use tesseract when required.

Objectives of the project: To build a web scraper that scrapes regulatory/mutual fund websites for required data and documents

Tool used: Playwright, Python, Docker

Details of Papers/patents:NA

Brief description of the working environment: The working environment was pretty nice. The work was decent, but not very hectic. However, after a while, building a scraper for more websites became dull as the process is similar for every website.

Academic courses relevant to the project: Computer Programming, OOPS(very limited)

Learning Outcome: Python, Playwright library, writing Dockerfiles, Tesseract

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PS-I station: OnFinance AI - IT, Bangalore

Student

Name: RAHUL SHARMA (2023A7PS0484G)

Student Write-up:

PS-I Project Title: REGULATORY HORIZON SCANNING USING AI AGENTS

Short Summary of work done: During my internship at OnFinance AI, I worked on building AI-assisted tools for regulatory horizon scanning, focusing on the financial and compliance sector. My role involved creating Python-based automation scripts to gather and process regulatory data from multiple sources, including financial institutions and government portals. I integrated AI agents to classify, summarize, and extract relevant insights from large datasets. I also contributed to optimizing the scraping pipelines to handle complex, dynamic websites and large-scale document retrieval. Additionally, I implemented preprocessing modules to clean and organize extracted data for analysis, making the results more accurate and accessible to clients. Throughout the project, I collaborated with the team to test, refine, and deploy these tools, ensuring they met industry standards for performance and reliability. This experience enhanced my technical proficiency in AI integration, data handling, and automation, while also providing exposure to real-world financial compliance challenges.

Objectives of the project: To design and implement AI-powered financial data processing and analysis tools that automate regulatory horizon scanning, detect relevant policy and compliance changes, and generate actionable insights for clients in the finance sector. The project also aims to integrate multiple data sources, improve data retrieval speed, and ensure accuracy in compliance monitoring using AI agents and automation scripts.

Tool used: Software: Python, Playwright, BeautifulSoup, Requests, Pandas, pdfkit, Git, GitHub, VS Code Libraries/Frameworks: LangChain, OpenAI API, NumPy Hardware: Standard workstation/laptop environment.

Details of Papers/patents: NONE

Brief description of the working environment: The working environment at OnFinance AI was collaborative and innovation-driven, with a strong emphasis on applying AI technologies to real-world financial problems. The company maintained an open communication culture where feedback and ideas were encouraged, allowing interns to contribute meaningfully to ongoing projects. The expectations from the company were to deliver efficient, scalable, and accurate data processing solutions within set deadlines, while maintaining code quality and documentation standards. The internship offered continuous learning opportunities through exposure to advanced AI tools, data pipelines, and regulatory compliance workflows. I learned to adapt quickly to new challenges, optimize web scraping techniques for dynamic data sources, and integrate AI for intelligent document analysis. Additionally, I developed a deeper understanding of compliance regulations, data privacy requirements, and industry-standard best practices. Overall, the experience strengthened both my technical and analytical abilities while providing valuable insights into the application of AI in the finance sector.

Academic courses relevant to the project: yes

Learning Outcome: Gained hands-on experience in developing AI-driven data extraction and analysis workflows.
Improved skills in Python programming, web scraping, and API integration for large-scale financial datasets.
Learned to automate end-to-end pipelines for compliance monitoring using AI agents.
Developed understanding of regulatory frameworks, compliance processes, and financial data handling.
Enhanced collaboration, version control, and task management skills in a real-world professional environment.

PS-I station: OnFinance AI - IT, Bangalore

Student

Name: ADVAY KUMAR . (2023B3A70964P)

Student Write-up:

PS-I Project Title: Making MCP server tools for note taking

Short Summary of work done: Created a note taking app by integrating MCP server with FastAPI. Also scraped data from SEBI circular and converting into JSON format by using their software.

Objectives of the project: Understanding of Llms, APIs

Tool used: FastAPI

Details of Papers/patents:NA

Brief description of the working environment: It was a smooth working environment with mentors guiding us all the time. The company expected us to work both together as a team and also individually.

Academic courses relevant to the project: Computer Programming

Learning Outcome: How to integrate API with MCP server

PS-I station: OnFinance AI - IT, Bangalore

Student

Name: CHAITANYA KEYAL . (2023B4A70727H)

Student Write-up:

PS-I Project Title: AI Agent for ComplianceOS

Short Summary of work done: Developed an AI Agent system for ComplianceOS, a regulatory compliance automation platform serving the BFSI (Banking, Financial Services, and Insurance) sector. The project focused on automating complex compliance processes for major Indian regulatory bodies including SEBI, RBI, IRDAI, and AMFI. Key Technical Accomplishments: Multi-Agent AI System: Implemented specialized AI agents using LangGraph and LangChain

frameworks for distinct compliance tasks including metadata extraction, actionables generation, and reference mapping Workflow Orchestration: Developed graph-based workflow management with intelligent routing and state management for complex document processing Document Processing Pipeline: Created automated systems for parsing regulatory documents, extracting structured metadata, and generating department-specific actionable tasks Database Integration: Designed and implemented 40+ MongoDB models with comprehensive CRUD operations and audit trails Query System: Built natural language query capabilities for compliance officers to access regulatory information efficiently Business Impact: Successfully reduced compliance processing time from 60+ hours to under 10 hours across major BFSI institutions, transforming manual workflows into automated, audit-ready processes. Technical Stack: Utilized advanced LLMs (Claude-Sonnet-4, GPT-4o), Model Context Protocol (MCP) for tool integration, FastAPI for REST services, and Docker for containerization. The project demonstrates practical application of agentic AI in highly regulated industries, contributing to the advancement of intelligent compliance automation while gaining valuable experience in cutting-edge AI technologies and regulatory domain expertise.

Objectives of the project: Build a multi-agentic framework for ComplianceOS - A complete solution for financial regulatory compliance.

Tool used: Python, Langchain, Langgraph, MCP, FastAPI, MongoDB, Qdrant, Docker

Details of Papers/patents: NA

Brief description of the working environment: Working Environment: OnFinance AI provided an excellent collaborative working environment that fostered innovation and learning. The company culture emphasized open communication, knowledge sharing, and hands-on experience with cutting-edge AI technologies. The team was highly supportive and welcoming, creating an atmosphere conducive to professional growth and technical development.
Company Expectations: Expectations were clearly communicated and managed through daily standup meetings, ensuring transparent goal-setting and progress tracking. The company maintained a structured yet flexible approach, allowing for adaptive project management while maintaining accountability. Regular feedback sessions helped align individual contributions with project objectives, promoting continuous improvement and effective collaboration.
Learning Outcomes: The internship provided comprehensive exposure to building AI agents in the financial domain, specifically focusing on regulatory compliance automation. Key learning areas included:
Agentic AI Development: Gained expertise in designing and implementing multi-agent systems using LangGraph and LangChain frameworks
Financial Domain Knowledge: Developed deep understanding of BFSI sector regulations and compliance requirements across SEBI, RBI, IRDAI, and AMFI
Technical Skills: Advanced proficiency in large language model integration, workflow orchestration, and database design with MongoDB
Production Systems: Experience in building scalable, production-ready AI applications with proper error handling and audit trails

Regulatory Technology: Understanding of how AI can transform complex compliance processes in highly regulated industries
The experience successfully bridged theoretical AI knowledge with practical application in a specialized domain, providing valuable insights into real-world AI implementation challenges and solutions in the financial services sector.

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

Learning Outcome: Building AI Agents

PS-I station: OnFinance AI - Non IT, Bengaluru

Student

Name: ASHRITH R (2023A3PS1040G)

Student Write-up:

PS-I Project Title: GROWTH INTERN

Short Summary of work done: I worked with a fintech and compliance company to understand their internal data flow and improve the quality of outputs shared with clients. My primary focus was on creating and structuring JSON files that store financial and compliance-related information. I ensured consistent formatting across files to support smooth integration with client-facing tools and internal systems. Alongside this, I explored basic UI/UX design principles, helping design simple yet effective layouts to present transaction and compliance data clearly. This work directly contributed to improving the accuracy and readability of client deliverables, especially in regulatory reporting contexts. The experience gave me a clearer understanding of how data structuring and interface design impact performance and reliability in real-world fintech workflows.

Objectives of the project: To understand the operations of a fintech and compliance company and enhance the accuracy of its client deliverables.

Tool used: JSON, LOVABLE, VERCEL(internal tool)

Details of Papers/patents:

Brief description of the working environment: The working environment during my PS-I was collaborative and well-structured. Seniors were approachable and supportive, offering guidance whenever needed without micromanaging. Tasks were clearly defined, and deadlines were manageable, allowing space for learning and experimentation. Regular feedback and open communication helped me improve quickly. The team encouraged independent problem-solving while being available for help, creating a balance between responsibility and support. Overall, it was a professional yet friendly atmosphere that fostered growth and gave me valuable exposure to real-world workflows and expectations.

Academic courses relevant to the project: Finance courses(not mandatory).

Learning Outcome: Gained understanding of fintech operations and regulatory compliance processes in companies. Learned JSON structuring and file creation for efficient data handling. Acquired practical knowledge of UI/UX design principles for improving user interaction and accessibility.

PS-I station: OnFinance AI - Non IT, Bengaluru

Student

Name: MOHAMMED SHADAB AMEEN (2023A3PS1132G)

Student Write-up:

PS-I Project Title: Master Circulars JSON Parsing

Short Summary of work done: My work mainly involved parsing JSON files, which meant I was responsible for extracting specific and meaningful data from those structured documents. I then used this extracted information to create webpages, essentially building processes that could automatically populate web layouts with content directly from the JSON data. Additionally, my efforts included regulation mapping, where I developed methods to link specific data points or content within the JSON to relevant regulatory requirements or standards, ensuring compliance or providing necessary context. In short, I focused on

transforming raw JSON data into well-presented, organized, and regulation-aligned web experiences.

Objectives of the project: To efficiently reduce time taken for parsing literature to the AI model.

Tool used: S/w - HTML, JAVASCRIPT, CSS, LLMs

Details of Papers/patents: None

Brief description of the working environment: The working environment was decent the employees did communicate when needed, the expectations are high as they expect you to work spontaneously.

Academic courses relevant to the project: DBMS, CP

Learning Outcome: Financial fair play, Web development, LLMs

PS-I station: OnFinance AI - Non IT, Bengaluru

Student

Name: SWATI KUMARI (2023B2AD0692G)

Student Write-up:

PS-I Project Title: Mutual Fund Master Circular Documentation for Dataset

Short Summary of work done: At OnFinance AI, I worked on transforming complex financial documents—specifically the 2023 and 2024 Mutual Fund Master Circulars into structured, machine readable JSON and HTML formats using OCR and data parsing techniques. I identified and mapped cross-references across multiple circulars, extracted regulatory rules across regions (MENA, US, SEA), and compiled a curated database of 500+ relevant company contacts for internal use and Excel documentation. This contributed to building a robust, searchable backend for AI-driven financial insights.

Objectives of the project: The objective is to convert the PDF circular into structured JSON and HTML formats, enabling machine readability and seamless data extraction.

Tool used: Pythn, HTML, Excel

Details of Papers/patents:none

Brief description of the working environment: The working environment at OnFinance AI was calm, flexible, and efficient. Being a small team, there were fewer employees, which meant communication was direct and tasks were well-defined. The workload was not overwhelming, but efficiency and attention to detail were expected. Since the internship was mostly remote, with only one weekly in-person meeting, it provided a good balance between flexibility and responsibility.
The company expected interns to work independently, deliver structured outputs on time, and be proactive in solving problems. My primary tasks included converting mutual fund master circulars (2023 and 2024) into machine-readable JSON and HTML formats using OCR and data parsing tools. I also identified and mapped reference points across multiple circulars, extracted region-specific financial rules (MENA, US, SEA), and built a database of over 500 relevant company contacts for internal documentation.
Throughout PS-I, I gained hands-on experience in Python, Tesseract OCR, data extraction, and structuring financial documents for machine readability. I also improved my understanding of regulatory content and enhanced my skills in Excel, JSON, and HTML. Working in a remote setup taught me discipline, time management, and how to meet deliverables with minimal supervision.
Overall, it was a practical and insightful experience that allowed me to apply my technical skills in a real-world fintech setting.

Academic courses relevant to the project: yes

Learning Outcome: Using OCR tools to convert PDF circulars into structured JSON and HTML formats, applying data extraction techniques and technical skills to enhance machine readability and automate information processing.

PS-I station: OnFinance AI - Non IT, Bengaluru

Student

Name: SPARSH K (2023B3A30848G)

Student Write-up:

PS-I Project Title: AI-Powered Compliance Solutions: Market Research, Regulatory Parsing, Mapping, and HTML Diff Generation

Short Summary of work done: During my Practice School-1 at OnFinance AI, I worked on multiple projects aimed at building compliance-focused AI agents. I participated in market research to analyze regulatory bodies in the USA, SEA, and MENA regions, overcoming significant challenges in data collection and analysis. I was deeply involved in parsing SEBI master circulars—converting 1000+ page PDFs into highly accurate, nested JSON files to make them machine-readable. A dedicated portal was developed with the IT team to preserve the exact wording of regulatory clauses and eliminate paraphrasing errors. I also worked on mapping regulations between circulars and master circulars, a task that required extensive analysis to establish consistent linkages. Another key project involved generating HTML comparison pages by identifying year-over-year differences in regulatory JSON files, enabling compliance officers to track new obligations efficiently. Lastly, I was responsible for correcting legacy JSON files, many of which were missing data, incorrectly parsed, or linked to wrong files. All these contributions supported training for OnFinance AI's upcoming compliance agent and provided me with valuable hands-on experience in regulatory technology, problem-solving, and cross-functional collaboration.

Objectives of the project: Assist OnFinance AI in building AI agents for compliance by creating accurate, structured regulatory data. Conduct international market research to identify regulatory bodies in the USA, SEA, and MENA regions. Parse SEBI master circular PDFs into highly accurate, nested JSON files for AI consumption. Map regulations across circulars and master circulars to create meaningful linkages. Generate HTML comparison pages for clients to highlight year-over-year regulatory changes. Correct and standardize legacy JSON datasets to improve accuracy for training new AI products.

Tool used: Software: Python, HTML/CSS/JavaScript, custom text-extraction portal, Excel, Git Hardware: Standard office laptops/desktops with internet connectivity

Details of Papers/patents: NA

Brief description of the working environment: The working environment at OnFinance AI was highly collaborative, fast-paced, and innovation-driven. As an AI company focused on building compliance-focused agents, the culture encouraged problem-solving, teamwork, and open communication with mentors and the IT team. We were expected to quickly adapt to new tools and workflows, deliver accurate outputs, and maintain high attention to detail, especially when handling complex regulatory data.

During PS-I, I worked on multiple projects including international market research, parsing 1000+ page SEBI master circulars into nested JSON files, mapping regulations between circulars and master circulars, generating HTML comparison pages for clients, and correcting legacy datasets. Each task came with its own challenges, such as difficulties in collecting and analyzing large volumes of data, maintaining accuracy in parsing regulatory clauses, and coding efficient solutions for HTML diff generation.
The experience significantly enhanced my technical and analytical skills. I learned how to handle large unstructured datasets, improved my coding and document parsing expertise, and gained insight into regulatory mapping and compliance workflows. I also developed problem-solving abilities, perseverance, and collaboration skills through constant interaction with my team. Overall, the internship provided valuable exposure to real-world regulatory technology and AI applications while shaping my ability to work in a professional, results-oriented environment.

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

Learning Outcome: Hands-on experience with compliance-focused AI systems and regulatory technology.
Learned parsing and structuring of large regulatory documents into machine-readable formats.
Improved skills in regulatory mapping, data analysis, and HTML diff generation.
Developed problem-solving and coding skills while handling real-world data quality issues.
Strengthened teamwork and collaboration with IT and research teams.

PS-I station: Petasense Technologies Pvt. Ltd. - Analytics, Bengaluru

Student

Name: KAVIN SHANMUGAM . (2023A7PS0668P)

Student Write-up:

PS-I Project Title: Petasense WebApp Testing

Short Summary of work done: Create automated tests for the Petasense WebApp with Playwright, also port existing tests from Cucumber/Selenium to Playwright.

Objectives of the project: Migrate testing framework from Cucumber/Selenium to Microsoft Playwright.

Tool used: Playwright, Docker WSL, NodeJS, Typescript,

Details of Papers/patents:N/A

Brief description of the working environment: Office is in a coworking space in Koramangla, cafeteria(paid) is there, team lunch on fridays. Monday, Wednesday, Friday work from office, and Tuesday, Thursday work from home.

Academic courses relevant to the project: yes

Learning Outcome: Learn about Web Application testing, testing with microsoft Playwright.

PS-I station: Petasense Technologies Pvt. Ltd. - Analytics, Bengaluru

Student

Name: SHOBHIT ARYA . (2023A7PS1054H)

Student Write-up:

PS-I Project Title: End-to-End Web Testing with Microsoft Playwright.

Short Summary of work done: Our project was worked on by two of us and was divided in two parts in which both of us worked together- 1) First half of the project included preparing a Proof of Concept of the feasibility of migrating the testing framework from the Gherkin like Selenium-Cucumber framework, which was like English and manually hard-coded, to the automated features (particularly the Codegen feature) of Microsoft Playwright. This was to save time in testing of the company's cloud portal, which both the client and company has access to. We spent the initial few weeks installing, exploring and configuring playwright, its features, and spent more time on exploring Codegen and its MCP features by using free-open-source web

applications available on the internet. We documented the best practices on how we can better test applications for their usability and how can we fix certain issues with parallel loading of certain applications by either extending the test timeout in the config.ts file and by using options such as assert text, assert visibility, locators etc of Codegen. 2) The second part of the project started after our midsem seminar, in which we had to make a presentation to the management about our PoC prepared. Post which after getting access to the company frontend, we added a few tests for the cloud portal, using best practices documented in the PoC.

Objectives of the project: Migrate the existing testing framework from Selenium-cucumber to a more automated Microsoft Playwright.

Tool used: Microsoft Playwright, VS Code, WSL, React, NodeJS

Details of Papers/patents:N/A

Brief description of the working environment: The company was very flexible, and supporting. The company consists of many BITSians, both full time and as PS2 interns, which is an add on. At times the mentors maybe a little strict if you are slow in doing your work, but that is very rare and we were given a lot of flexibility in terms of work hours, speed of work and days we wanted to come to office (we had to come 2-3 days a week.) Mentors were supportive as well. Every Friday was a team lunch, which basically meant only a few hours of work followed by bonding with the team, something which we PS1 interns looked forward to in the week and enjoyed. It's a good station and I would recommend it if you are not looking for a lot of heavy work.

Academic courses relevant to the project: None, but having knowledge of web development would be beneficial.

Learning Outcome: Automated web testing

PS-I station: Petasense Technologies Pvt. Ltd. - Analytics, Bengaluru

Student

Name: MAANAS ADITYA POPURI . (2023AAPS0740P)

Student Write-up:

PS-I Project Title: Compression Algorithms Implementation on ESP-32 board

Short Summary of work done: Worked on deploying the various possible compression algorithms that exist on a device that has been deployed by the company, it was fun to analyze and make changes to ensure it worked and met the constraint requirements.

Objectives of the project: To gain an understanding of the various possible compression algorithms that can be tested on a real life machinery with fixed constraints of battery and storage.

Tool used: H/W - ESP 32 kit board, S/W - C++, ESP-IDF

Details of Papers/patents:NONE

Brief description of the working environment: The working environment was fun, interactive and very helpful, everyone was insightful and looking to help us learn more, we had fixed friday lunches with the team which helped us bond more. The company expected us to help finish our tasks on time and report to them as much as we could. I learnt alot about the actual work culture, how to behave and interact with everyone around me in such a formal setting.

Academic courses relevant to the project: Computer Programming, Embedded Systems

Learning Outcome: Learnt about IoT devices, the various protocols and how IIoT works.
Learnt the various types of compression algorithms - DHC, FLAC, LZ77, etc and how to run them, gained an understanding on how these algorithms actually work, why is it necessary and what are drawbacks.
Majorly learnt how to deal with ESP-32 board, and worked with ESP-IDF in an environment where these devices were actually being implemented by machinery around the world.

PS-I station: Petasense Technologies Pvt. Ltd. - Analytics, Bengaluru

Student

Name: SIDDHARTH SASTRI . (2023B5A70230H)

Student Write-up:

PS-I Project Title: DATA COMPRESSION ON THE ESP32 MICROCONTROLLER

Short Summary of work done: Our task was to code and test several different compression algorithms for sensor data from the ESP32. We tried out algorithms like GZIP, heatshrink, Delta-Huffman Coding and ZSTD, among others. Then, we ran these algorithms on data obtained by sensors developed by the company. We measured their performance and tried to determine which algorithm offered the best compression ratio for this particular kind of data. Then, we tested it on the microcontroller. This was challenging because microcontrollers have specific constraints on speed and memory which limit performance. Once we had selected and tested an algorithm, we needed to try out some basic hardware-interfacing tasks on the ESP32, such as blinking an LED. By the end, we had a good grasp on embedded systems programming and data compression.

Objectives of the project: To determine the compression algorithm which was best suited for sensor data from the ESP32.

Tool used: C, C++, Github, ESP32 microcontroller, ESP-IDF

Details of Papers/patents: None.

Brief description of the working environment: The environment is very relaxed, with the interns afforded a lot of flexibility in timings and deadlines. The office is rather small, with ~10 employees, so everyone can get to know each other. The company met all of my expectations in terms of workload, assistance given, and how interesting the project was. As someone who is interested in embedded systems and software, I had the opportunity to learn relevant skills and tools while seeing how they are used in an industry setting.

Academic courses relevant to the project: Computer Programming, Microprocessors and Interfacing.

Learning Outcome: We learnt how to program embedded systems, and how to interface hardware with software. We learnt about different data compression algorithms, and how to implement them in C and C++. Perhaps the most important learning outcome was how to install and utilize user-defined libraries in C++, and how to use documentation to write good code.

PS-I station: Phodu Club - Non Tech, Panaji

Student

Name: MUTHYALA NAGA SAI HAASINI . (2023B2A30954H)

Student Write-up:

PS-I Project Title: Social media management

Short Summary of work done: Learnt something new and interesting apart from academics.

Objectives of the project: To understand marketing strategies (social media) for an educational startup and to make engaging content.

Tool used: Canva, davinci

Details of Papers/patents: None

Brief description of the working environment: Working there was nice I have learnt lot of new things especially social media marketing and brand development strategies though I have expected more interaction and work it was good.

Academic courses relevant to the project: None

Learning Outcome: Understood marketing strategies and learnt editing

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PS-I station: PNT Robotics & Automation Solutions,LLP, Mumbai

Student

Name: AYUSH AMAN . (2023A4PS0228P)

Student Write-up:

PS-I Project Title: GUI for the Stepper motors,MotorController,Robotic Arm Controller

Short Summary of work done: I have created the Graphical User Interface for the stepper motors ,Robotic Arm ,MotorController using the pyqt5 ,arduino ide ,pyserial,qtdesigner to communicate with the motors and servos.It provides the very smooth interface to operate the user without having the deep knowledge of robotics or other related applications and can understand how the functioning happens when you provide the command.

Objectives of the project: Goal was to create the functional GUI for the stepper motor,Robotic Arm ,MotorController

Tool used: Pyqt5,OOPs,Pyserial,Qtdesigner,python

Details of Papers/patents: None

Brief description of the working environment: Working environment is quite good,people will support you and will give you the time to understand and implement what you have assigned .
Also they clear doubts ,if you get stuck somewhere
So overall experince was quite good.
Also,got to know about many good stuff regarding the PS like how communication works in frontend to the devices like arduino and esp.

Academic courses relevant to the project: yes

Learning Outcome: Understood how the communication between Arduino and Esp via GUI and Desktop application

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PS-I station: PNT Robotics & Automation Solutions,LLP, Mumbai

Student

Name: REHAAN TAHILIANI . (2023AAPS0272H)

Student Write-up:

PS-I Project Title: UAV Autonomous Navigation In GPS-Denied Environments

Short Summary of work done: The work done by me during PS-1 initially involved reading various research papers and understanding the different ways in which a drone can be controlled in GPS denied environments as well as analyzing the advantages and disadvantages of each method. After this we moved forward with using a system which integrates Magnetometer and IMU readings using quaternion method for which a code was written and tested.

Objectives of the project: This project studied the various methods of autonomous drone control in GPS-denied locations of 5km range.

Tool used: Arduino IDE

Details of Papers/patents: None

Brief description of the working environment: The working environment at PNT Robotics is quite relaxed with the companies expactitons

Academic courses relevant to the project: Control Systems, Computer Programming, Signals and Systems

Learning Outcome: The major learning outcomes included increased familiarity with various sensors and their integration in drone systems.

PS-I station: PNT Robotics & Automation Solutions,LLP, Mumbai

Student

Name: AVYAKT VERMA . (2023B5AD1083P)

Student Write-up:

PS-I Project Title: ADO Robot backend

Short Summary of work done: I was tasked with developing the backend of a Robot called ADO. Specifically the robot has a chest mounted screen which is used to human communication and advertisement and product display and so i was tasked with developing a dynamic backend which can be used in any industry procduct and showrooms.

Objectives of the project: Write and learn about the backend working of mounted screen on ADO Robot

Tool used: Django, React

Details of Papers/patents:none

Brief description of the working environment: It was online

Academic courses relevant to the project: Object Oriented Programming, DSA, DM, Logics in CS

Learning Outcome: Backend Framework Django

PS-I station: Progist Solutions LLP - Non Tech, Mumbai

Student

Name: DEVARSH KHATRI (2023A7PS0465G)

Student Write-up:

PS-I Project Title: MCP SERVER CONTEXTUAL MEMORY, DRILL TRACKER AND N8N AUTOMATION WORKFLOWS

Short Summary of work done: During my Practice School-I at Progist Solutions LLP, I worked on projects at the intersection of backend engineering, AI integration, and process automation. My primary contribution was enhancing the MCP (Model Context Protocol) server used in ProPhish, a phishing simulation platform. I integrated contextual memory using LangChain, allowing the AI system to generate phishing emails based on previous interactions—making them more realistic and adaptive. I also contributed to the development of a Drill Tracker web application, which provides clients with a dashboard view of completed, ongoing, and upcoming phishing

drills. This system aids in compliance monitoring and improves visibility into employee training progress. In addition, I explored low-code automation using n8n and successfully designed two production-grade workflows. One workflow automated employee onboarding tasks—such as sending welcome emails and Slack notifications—while the second handled the detection and escalation of critical emails by filtering keywords, forwarding them, and logging them as tasks. Throughout the internship, I gained practical experience in Node.js, MongoDB, Express.js, JWT authentication, WebSockets, Postman, LangChain, and n8n. I also followed Agile development practices, daily learning sessions, prototyping, and frequent testing. Overall, this internship gave me valuable hands-on exposure to real-world software development, AI agent design, and workflow automation in a cybersecurity context.

Objectives of the project: TO build an MCP server for their flagship project Prophish

Tool used: NOde.js, jwt token,web sockets

Details of Papers/patents: nope

Brief description of the working environment: The working environment at Progist Solutions LLP was dynamic, collaborative, and intellectually stimulating. The company fostered a learning-first culture with daily technical sessions conducted by mentors to introduce core backend and AI concepts such as JWT authentication, WebSockets, LangChain, and workflow design. We worked in small, focused teams where initiative and experimentation were encouraged.

The expectations from the company were clear and growth-oriented. We were expected to quickly grasp new technologies, contribute meaningfully to live projects, and maintain consistent communication regarding progress and blockers. There was a strong emphasis on learning through building—be it through prototyping backend servers, debugging real-time APIs, or designing automation workflows. We were also expected to manage our time effectively and adhere to coding best practices and documentation standards.

During my time here, I learned how to design and build scalable backend applications using Node.js and Express.js, integrate AI tools like LangChain for contextual logic, and develop secure APIs. I gained hands-on experience in using Postman for API testing, MongoDB for data management, and n8n for visual workflow automation. I also learned the importance of version control, collaboration using GitHub, and debugging with console tools and community platforms like Stack Overflow.

Overall, the PS-I experience was transformative, bridging the gap between academic knowledge and industry practices while giving me confidence in building practical, production-level systems.

Academic courses relevant to the project: DBMS,Web development

Learning Outcome: Backend development

PS-I station: Progist Solutions LLP - Tech, Mumbai

Student

Name: AMRIT LAHARI . (2023A4PS0442P)

Student Write-up:

PS-I Project Title: Building an AI Agent for cybersecurity (phishing simulation)

Short Summary of work done: Made a Centralised MCP server for tool handling using custom locally running llm on Ollama . Made an agent for phishing simulation generation and query retrieval too.

Objectives of the project: Built an AI agent for phishing simulation

Tool used: Python Notebooks , Langchain

Details of Papers/patents: None

Brief description of the working environment: .

Academic courses relevant to the project: Cybersecurity, LLM

Learning Outcome: Got to learn about MCP servers , backend and system design . Hands on experience with APIs and integration.

PS-I station: ProvenTech Consulting Pvt. Ltd, Hyderabad

Student

Name: PRAGY PRANJAL . (2023A1PS0874H)

Student Write-up:

PS-I Project Title: ENTERPRISE ASSET MANAGEMENT, PRODUCTIVITY TRACKING, AND MACHINE LEARNING IMPLEMENTATION

Short Summary of work done: During my internship at ProvenTech Consulting, I worked on three key areas: enterprise asset management, employee productivity tracking, and machine learning application. I developed a centralized IT asset management platform using Python, FastAPI, and Streamlit. This system automated asset tracking, compliance monitoring, and provided real-time dashboards, reducing manual errors and improving data transparency. Alongside, I built an employee productivity tracker that monitored login/logout times, session activity, and application usage. This tool offered managers clearer insights into productivity trends and helped design wellness initiatives. In the second phase, I focused on machine learning, learning core mathematical foundations like linear algebra, calculus, and probability. I implemented various ML models including logistic regression, decision trees, and random forests using scikit-learn, with practical feature engineering techniques. As a final project, I developed a real-time image classification system using deep learning (PyTorch, ResNet18) and OpenCV. The project captured screen data, ran live classification, and allowed real-time dataset labeling, offering a scalable framework for future AI projects at ProvenTech. Overall, this internship helped me apply full-stack development and machine learning concepts in real-world enterprise environments, contributing to operational improvements and AI readiness for the organization.

Objectives of the project: 1. Develop an enterprise asset management system to automate IT asset tracking, streamline compliance reporting, and provide real-time analytics through interactive dashboards. 2. Implement an employee productivity tracking solution to enable transparent, data-driven monitoring of employee activity and well-being using automated session and application usage analytics. 3. Apply machine learning techniques to design, train, and deploy predictive models, with a focus on real-time image classification using computer vision. 4. Strengthen full-stack development skills by building end-to-end solutions using modern frameworks such as FastAPI, Streamlit, and PyTorch, adhering to industry best practices. 5. Deliver tangible business value by enhancing operational efficiency, reducing manual intervention, and enabling ProvenTech to adopt intelligent, scalable digital solutions.

Tool used: * Python 3.x for all development * FastAPI for backend APIs * Streamlit for dashboards and UI * scikit-learn and PyTorch for machine learning and deep learning * OpenCV for real-time image processing * pandas and NumPy for data handling * VS Code and Goog

Details of Papers/patents: None.

Brief description of the working environment: During my Practice School-I at ProvenTech Consulting, I worked in a professional, fast-paced environment focused on delivering digital solutions for enterprise operations. The company maintained a collaborative culture, with regular interactions through Slack and Teams, daily stand-ups, and weekly review sessions. I had direct mentorship from industry professionals who provided technical guidance and regular feedback on my progress.

The company expected me to quickly adapt to their agile workflow, understand operational challenges, and deliver practical, deployable solutions. I was encouraged to independently explore solutions, while adhering to industry coding standards, documentation practices, and maintaining version control using professional tools.

The learning during PS-I was comprehensive. I strengthened my technical skills in Python, API development, and dashboard creation. I gained hands-on experience in machine learning and deep learning workflows, real-time system design, and the deployment of data-centric applications. I also developed a deeper understanding of how technology directly improves operational efficiency in a corporate setting.

Beyond technical knowledge, I improved my problem-solving skills, learned effective project documentation, and developed confidence in delivering solutions under deadlines—skills essential for any professional work environment.

Academic courses relevant to the project: Machine learning, Artificial Intelligence, Mathematics-2, Probability and Statistics.

Learning Outcome: 1. Gained practical experience in building end-to-end enterprise systems, including backend APIs and interactive dashboards.

2. Acquired foundational knowledge in machine learning and deep learning, with hands-on model development and deployment.

3. Strengthened understanding of key mathematical concepts such as linear algebra, calculus, and probability relevant to machine learning.

4. Improved technical proficiency in Python, FastAPI, Streamlit, and PyTorch following industry-standard coding practices.

5. Developed problem-solving skills through real-world project challenges involving data quality, system performance, and security.

PS-I station: ProvenTech Consulting Pvt. Ltd, Hyderabad

Student

Name: DEVENDRANATH MOPARTHI (2023A3PS1174H)

Student Write-up:

PS-I Project Title: Employee productivity management and employee asset management

Short Summary of work done: Intresting

Objectives of the project: Web development

Tool used: Streamlit, vscode

Details of Papers/patents: No

Brief description of the working environment: Good working environment, nice working there.

Academic courses relevant to the project: yes

Learning Outcome: Made a website

PS-I station: ProvenTech Consulting Pvt. Ltd, Hyderabad

Student

Name: ARYAN KUMAR . (2023A8PS0428H)

Student Write-up:

PS-I Project Title: OptiWork: AI-Powered Productivity Intelligence & Automated Asset Management

Short Summary of work done: ProvenTech Solutions offered an agile, collaborative environment grounded in innovation and continuous learning. The workspace fostered rapid prototyping of technology solutions with regular mentor support, cross-team feedback, and opportunities for independent research and hands-on implementation. The team of five BITS

interns was entrusted with ownership of the entire development pipeline—from backend coding to systems integration and end-user dashboard delivery—while prioritizing user privacy, data protection, and effective communication of technical advances. Daily and weekly check-ins ensured that all technical strategies remained aligned with evolving business objectives. The open culture encouraged the proposal and execution of an image-classifier-driven productivity tracker, which was successfully piloted and garnered significant organizational attention for its potential to extend AI-driven analytics to additional domains. Organizational expectations highlighted scalable automation, clear documentation practices, and production of solutions with tangible business impact. This experience thoroughly developed both technical and professional skills across the team, emphasizing the delivery of maintainable solutions, adaptability to changing project scopes, and the crucial importance of transparent reporting and collaborative problem solving.

Objectives of the project: To design and deploy an advanced employee productivity monitoring and analytics system—integrating automated screen, application, and browser tracking; live screenshot classification via machine learning and computer vision; and real-time productivity scoring dashboards—alongside a robust IT Asset Management solution for streamlined asset workflows, compliance, and actionable enterprise insights at ProvenTech Solutions.

Tool used: Python; PyAutoGUI, PyTorch, TorchVision, PIL (Pillow), OpenCV, Pytesseract, pandas, numpy, Streamlit, FastAPI; SQLite, Excel; Plotly, Streamlit Dashboards; Visual Studio Code, Jupyter Notebooks, Google Colab, Git/GitHub.

Details of Papers/patents:N.A

Brief description of the working environment: ProvenTech Solutions fostered a dynamic, innovation-driven atmosphere promoting technical exploration, rapid prototyping, and collaborative teamwork. The workplace prioritized open communication, regular mentorship, and code reviews with the AI department and operational staff, creating strong alignment between learning and organizational goals. Clear expectations emphasized scalable, automated solutions, thorough documentation, and business-focused outcomes. Interns were entrusted with meaningful ownership of projects, from backend development to end-user dashboard delivery, while upholding high standards of data security, privacy, and transparency. This professional environment enabled the team to develop advanced technical skills, adapt to evolving requirements, and produce impactful, maintainable systems. The experience reinforced the importance of teamwork, continuous learning, and clear reporting—key competencies for success in modern technology organizations.

Academic courses relevant to the project: 1)Computer Programming and Data Structures
2)Software Engineering
3)Database Systems
4)Linear Algebra and Calculus
5)Probability and Statistics
6)Machine Learning

7)Artificial Intelligence
8)Computer Vision

Learning Outcome: •Mastered automation of screen time tracking, application/browser usage, and regular screenshot capture using PyAutoGUI, with results directly feeding into analytics pipelines.
•Developed and deployed a deep learning-based image classifier (PyTorch, TorchVision, PIL) to decode on-screen content for productivity, context, and distraction detection—capable of working beyond mere application/window titles.
•Used OCR with Pytesseract to extract text from screenshots, providing additional context and enhancing the granularity of activity understanding.
•Designed a productivity scoring and visualization framework, mapping complex digital behaviors to clear metrics, presented via an interactive Streamlit dashboard.
•Built an enterprise-scale IT Asset Management platform (Streamlit, FastAPI, pandas) featuring asset lifecycle automation, compliance tracking, advanced search, Excel integration, and real-time visualization.
•Strengthened expertise in modular software design, ML/AI coding practice, data wrangling, professional documentation, and requirements-driven iterative development.

PS-I station: ProvenTech Consulting Pvt. Ltd, Hyderabad

Student

Name: ADITYA RAVINDRAN . (2023B1A41003H)

Student Write-up:

PS-I Project Title: ENTERPRISE ASSET MANAGEMENT, PRODUCTIVITY TRACKING, AND MACHINE LEARNING IMPLEMENTATION

Short Summary of work done: During our PS-I internship at ProvenTech Consulting, we worked on two software projects and one machine learning project as a team. We started with building an IT Asset Management System and an Employee Productivity Tracker using Python, FastAPI, and Streamlit. These platforms helped automate tasks like asset tracking, compliance reporting, and employee activity analysis, using real-time dashboards and smart backend logic. As we

progressed, we shifted focus towards machine learning. We took time to understand the mathematical foundations—like linear algebra, probability, and optimization—before applying them in practical projects. We implemented various ML models including logistic regression, decision trees, and random forests, using real datasets and validation techniques. Towards the end, I took up a major project involving real-time image classification using PyTorch and OpenCV. It captured screen data live, predicted objects using a pre-trained model, and even allowed manual dataset creation. This project brought together all our skills—from Python scripting and UI building to ML deployment. Overall, I got to explore the complete development cycle, from backend APIs and front-end dashboards to model training and deployment. It was a very enriching and hands-on experience.

Objectives of the project: To develop enterprise-grade solutions for IT asset management and employee productivity tracking using modern full-stack tools, and to implement a real-time image classification system using machine learning, thereby addressing operational needs and enhancing data-driven decision-making at ProvenTech Consulting.

Tool used: Python, FastAPI, Streamlit, pandas, numpy, scikit-learn, PyTorch, OpenCV, pyautogui, Jupyter Notebooks, Google Colab, Git, GitHub, VS Code.

Details of Papers/patents: None

Brief description of the working environment: ProvenTech Consulting provided a highly encouraging, fast-paced, and learning-oriented environment. As interns, we were treated as part of the team and were given real responsibilities and expectations. Regular check-ins, code reviews, and mentoring sessions ensured we were always on track. The workplace culture was good and the mode and timings of work was also hybrid and flexible. Our mentors, especially Mr. Ruthvik and Mr. Ashrit, offered detailed technical guidance and practical feedback that accelerated our learning. It was a transformative learning experience overall.

Academic courses relevant to the project: ML, Computer Programming, M2(Linear Algebra)

Learning Outcome: Built full-stack applications using Python, FastAPI, and Streamlit.
Gained hands-on experience in enterprise-level data handling, dashboarding, and backend integration.
Understood machine learning workflows, model evaluation, and deployment.
Applied mathematics, statistics, and feature engineering for ML projects.
Developed soft skills including collaboration, documentation, and version control using Git.

PS-I station: Pyrome Innovations Private Limited, Hyderabad

Student

Name: AREON BANERJEE . (2023A3PS0324H)

Student Write-up:

PS-I Project Title: Digital Twin- Application and Future, with a special focus at the energy industry

Short Summary of work done: A lot of research paper was scoured to gain all the insightful knowledge. Apart from that I also regularly visited a lab setup to learn in depth about the systems. Using all this I was given smaller byte sized tasks like preparing a comparison table which then I could put in my report.

Objectives of the project: It was a concise study into the state of the art for digital twin systems and then evolved into a focused study into the digital twin application in photovoltaic industry.

Tool used: NA

Details of Papers/patents:NA

Brief description of the working environment: Working environment was great. The mentors were students themselves so they became like older siblings just guiding me on my process.

Academic courses relevant to the project: IoT, Edge Devices, Artificial Intelligence, Machine Learning

Learning Outcome: 1. Learnt about various aspect of digital twin framework
2. Digital twin applies so many different fields together so naturally my knowledge on subjects like Sensor Technology, Data Acquisition Systems, Edge Computing and edge systems, system communication and protocols, Cloud Computing, AI/ML, Simulation engines and much more was greatly deepened
3. Also learnt about photovoltaic technology. Historical challenges in it and how the new wave of IIoT can solve these challenges.

PS-I station: QicApp Pvt. Ltd., Gurgaon

Student

Name: KUSHAL GUPTA (2023B1A70698G)

Student Write-up:

PS-I Project Title: Library Management System API Frontend

Short Summary of work done: Got it! Here's a During PS1, I designed and developed the complete frontend for the Library Management System, implementing responsive user interfaces for login/signup, book browsing, borrowing management, and seamless integration with backend APIs to ensure smooth user interactions.

Objectives of the project: To develop a system which could be used by library which are using the traditional method of maintaining data which reduces efficiency and there is always a risk of losing the potential data.

Tool used: React JS, JavaScript, Postman, Cursor

Details of Papers/patents: Nill

Brief description of the working environment: The experience helped me understand my strengths and areas to improve.

Academic courses relevant to the project: I am dualite and my BE degree Courses was started after the PS1.

Learning Outcome: I have learned to build responsive web pages, integrate frontend with REST APIs, implement user login and signup with role-based access control, and enhanced my UI/UX design skills.

PS-I station: QicApp Pvt. Ltd., Gurgaon

Student

Name: KAVYA KHANDELWAL . (2023B1AA0823P)

Student Write-up:

PS-I Project Title: BACKEND DEVELOPMENT FOR EVENT PROMOTION AND MANAGEMENT SYSTEM

Short Summary of work done: During my Practice School-I at QicApp Pvt. Ltd., I worked on developing the backend for an Event Promotion and Management System. The primary focus was on building a secure and scalable backend using Node.js, Express.js, and MongoDB. The project began with environment setup and database configuration, followed by implementing user authentication with password hashing and JWT-based session management. Core functionalities like event creation, viewing, updating, and deletion were developed, along with role-based access control to differentiate between regular users and admins. In the later stages, admin-specific APIs were created to allow event approval, rejection, and moderation, ensuring only verified events were displayed. User-focused features such as event search, category-based filtering, and pagination were also integrated to enhance usability. Security measures including input validation, rate limiting, and centralized error handling were implemented to protect the system from potential threats. API logging and monitoring were set up for performance tracking and debugging. Comprehensive testing using Postman and detailed API documentation using Swagger ensured the backend was stable and ready for frontend integration. Deployment configurations were finalized, and the system was prepared for production deployment. Overall, the project provided practical exposure to RESTful API development, backend security, database management, and deployment practices in a professional environment.

Objectives of the project: To develop a secure, scalable, and efficient backend system for managing user registrations, event creation, and admin moderation for an event promotion platform.

Tool used: Node.js, Express.js, MongoDB, Mongoose, Postman, Swagger, Git, and Visual Studio Code were used as primary development tools.

Details of Papers/patents:-

Brief description of the working environment: The working environment at QicApp Pvt. Ltd. was supportive and technically focused, with flexibility in handling tasks independently. Although the environment was generally comfortable, formal meetings and structured team discussions were limited, which sometimes made it challenging to get timely feedback or guidance on technical roadblocks. Communication was largely informal, relying on direct

messages rather than scheduled progress reviews or collaborative sessions. Regular meetings or sprint reviews could have improved clarity in project expectations and team alignment.
Despite this, the company provided opportunities to work with modern backend technologies and industry-relevant tools. I was expected to independently understand project requirements, develop secure backend APIs, and ensure efficient database handling with minimal supervision. This expectation encouraged self-learning, problem-solving, and ownership of tasks throughout the project timeline.
During PS-I, I gained hands-on experience in backend development, focusing on API creation, database management, authentication systems, and production-level deployment.Exposure to real-time challenges like security implementation, error handling, and role-based access control helped develop both technical and analytical skills. Working with real-world project requirements also improved my understanding of software development life cycles and the importance of system documentation and testing.
Overall, while more structured interactions could have enhanced collaborative learning, the experience significantly contributed to my understanding of backend systems and industry practices.

Academic courses relevant to the project: Courses like Database Systems, Web Technologies, and Software Engineering were directly relevant to the project work.

Learning Outcome: Gained hands-on experience in building secure RESTful APIs using Node.js, Express.js, and MongoDB with role-based access control and production-ready deployment.

PS-I station: Quality Kiosk Tech Pvt. Ltd. - Gen AI, Navi Mumbai

Student

Name: ADVAITH REMANI (2023A8PS1071G)

Student Write-up:

PS-I Project Title: Chaos Testing

Short Summary of work done: The primary objective of this project was to explore the reliability, resilience, and fault tolerance of microservices-based architectures using Chaos Engineering principles. Chaos Engineering involves intentionally injecting faults to observe system behavior under stress. In this context, Chaos Mesh—a Kubernetes-native chaos tool—was used to simulate CPU and memory stress, network delays, and pod failures. These experiments were conducted within a Kubernetes cluster to assess how effectively the system could maintain performance and recover from disruptions. The findings helped identify architectural weaknesses and improve system robustness. In parallel, the project included a study of Service-Level Objectives (SLOs) and Service-Level Indicators (SLIs), key components of Site Reliability Engineering (SRE). Using documentation and Dynatrace's observability platform, I explored how SLOs define reliability thresholds and how SLIs measure metrics such as availability, response time, and error rates. Though full-scale integration of SLOs into the chaos testing process was not implemented, basic configurations were attempted using Dynatrace templates to understand their practical application. Overall, this project offered a combined hands-on and conceptual approach to system reliability. The integration of chaos testing and reliability metrics presents a valuable strategy for improving system observability and resilience in modern DevOps environments.

Objectives of the project: Understanding and hands on chaos testing

Tool used: Chaos Mesh

Details of Papers/patents: None

Brief description of the working environment: The primary objective of this project was to explore the reliability, resilience, and fault tolerance of microservices-based architectures using Chaos Engineering principles. Chaos Engineering involves intentionally injecting faults to observe system behavior under stress. In this context, Chaos Mesh—a Kubernetes-native chaos tool—was used to simulate CPU and memory stress, network delays, and pod failures. These experiments were conducted within a Kubernetes cluster to assess how effectively the system could maintain performance and recover from disruptions. The findings helped identify architectural weaknesses and improve system robustness.

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Overall, this project offered a combined hands-on and conceptual approach to system reliability. The integration of chaos testing and reliability metrics presents a valuable strategy for improving system observability and resilience in modern DevOps environments.

Academic courses relevant to the project: yes

Learning Outcome: Understood and implemented one of the tools and also learnt SRE terminologies.

PS-I station: Quality Kiosk Tech Pvt. Ltd. - Gen AI, Navi Mumbai

Student

Name: ARYAN DATTATRAYA PAWAR . (2023B4A71070P)

Student Write-up:

PS-I Project Title: ML Model for Software Effort Estimation

Short Summary of work done: During my Practice School-I internship at QualityKiosk Technologies Pvt. Ltd., Mumbai, I worked on a project titled "Effort Estimation Using Machine Learning", aimed at improving the accuracy of software development effort predictions. The first phase of the project focused on understanding traditional estimation techniques such as COCOMO and Function Point Analysis, and identifying their limitations in modern agile environments. We then explored the application of machine learning algorithms on the Desharnais dataset, using models like Linear Regression, Random Forest, KNN, and SVR to predict effort based on historical project attributes. To simulate real-world project variations, we constructed a synthetic dataset with relevant features such as sprint count, delivery methodology, and test case volume. We also developed automation scripts using Selenium WebDriver to interact with the company's internal estimation tool, the Unified Estimator (PowerApp). This automation enabled us to collect over 600+ valid entries, significantly reducing manual effort and ensuring a diverse dataset. In the later phase, we implemented a Keyword Extraction module using NLP techniques to map unstructured requirement texts into structured parameters compatible with our model. The final ML models achieved over 90% accuracy on clean data, demonstrating clear improvements over traditional approaches. This project helped me gain practical experience in data preprocessing, ML model development, automation, and NLP, while contributing to a live industry use case.

Objectives of the project: To Prepare an ML Model that predicts the amount of effort and commercials required for a Project taken by the company based on the parameters provided by the client.

Tool used: Python libraries, ScikitLearn, Selenium, Google Collab

Details of Papers/patents:NA

Brief description of the working environment: During my PS-I internship at QualityKiosk Technologies Pvt. Ltd., I experienced a professional and learning-driven environment that encouraged independent thinking and technical growth. The company expected us to take ownership of our project, meet deadlines, and deliver practical, scalable solutions. I worked on a real-world ML project involving automation, predictive modeling, and NLP. Through this, I learned to build end-to-end systems, automate workflows using Selenium, and extract structured insights from unstructured text. The experience strengthened my technical, analytical, and communication skills while offering valuable exposure to real-time challenges in software engineering and enterprise tools.

Academic courses relevant to the project: - yes

Learning Outcome: Applied Machine Learning in a Real-World Context
Gained hands-on experience in applying ML models (Linear Regression, Random Forest, SVR, KNN) for software effort estimation, including data preprocessing, feature selection, and model evaluation using industry-standard metrics (R^2, RMSE, MAE).
Understanding of Traditional and Modern Estimation Techniques
Developed a strong conceptual understanding of traditional effort estimation models like COCOMO and Function Point Analysis, and critically analyzed their limitations compared to modern data-driven approaches.
Automation Using Selenium
Learned to build robust web automation workflows using Selenium WebDriver to simulate user actions, enabling large-scale data generation through automation of PowerApps forms.
Dataset Generation and Curation
Created and validated a custom dataset of over 600 samples tailored to realistic estimation parameters, ensuring data diversity and quality for effective ML training.
Natural Language Processing (NLP)
Built a keyword extraction tool using Regex and spaCy to parse unstructured requirement texts and map them to structured ML model inputs.
End-to-End ML Pipeline Development
Understood the full ML development lifecycle, from raw data collection to model deployment, and integrated automation + prediction workflows.
Professional Work Environment Exposure
Adapted to team collaboration, project deadlines, documentation standards, and real-time feedback in a corporate setting.
Problem-Solving and Initiative
Tackled practical constraints (data inconsistency, UI automation challenges), while independently proposing and implementing scalable solutions.

PS-I station: QuGates Technologies Pvt. Ltd, Bengaluru

Student

Name: NIHAL SHIVANNA (2023A3PS1045G)

Student Write-up:

PS-I Project Title: Robotic Arm Simulation

Short Summary of work done: We used blender to create the model of the arm .Then we visulaized it in Rviz.And finally we did a physics simulation in Gazebo.We implement various gestures and picking and dropping the ball,curling ,straighteningetc..

Objectives of the project: To simulate a robotic arm

Tool used: Ubuntu,Ros2,c++,python,rviz,gazebo,blender

Details of Papers/patents:NA

Brief description of the working environment: Our original objective was to simulate it in 4 weeks and use the remaining time to actuate the physical arm .But they kept postponing the physical part which was mostly the reason for taking this project and finally modified the objective to just simulation.

Academic courses relevant to the project: Robotics
C/C++

Learning Outcome: Learnt ROS2 and how to use the gazebo simulation

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PS-I station: QuGates Technologies Pvt. Ltd, Bengaluru

Student

Name: SHRUTHI KRISHNAMURTHY . (2023A5PS1162P)

Student Write-up:

PS-I Project Title: Collision Avoidance Navigation Robot

Short Summary of work done: Over the span of eight weeks, our team worked on the mechanical design and development of two types of robots — bipedal and wheeled — along with an additional robotic arm. My contributions primarily focused on designing key parts such as the chassis, lower leg, and arm components (base, jaw1, jaw4), and collaborating with teammates for assembly and testing. We explored different design alternatives, finalized components with mentors, and shifted simulations and testing to later stages due to delays in design finalization. Although fabrication was ultimately not carried out due to time constraints, we submitted all STL files for both bots. In the later weeks, we extended the scope of the project by designing and assembling the robotic arm, which was not part of the original plan but added substantial value. Our final tasks involved submitting all designs to the company and compiling the progress into a final report and presentation. This project helped me gain deep practical insights into mechanical design, simulation, teamwork, and problem-solving within limited timelines. Despite challenges, we completed our deliverables successfully and demonstrated adaptability, technical skill, and clear communication throughout.

Objectives of the project: To design, build and program a mobile wheeled robot and a bipedal robot that canautonomously navigate an environment while avoiding obstacles in real time. The robotmust detect and respond to obstacles using sensors such as ultrasonic, IR or LiDAR, andintegrate navigation systems for intelligent path planning.The solution should demonstrate obstacle detection, path planning, and dynamicresponse capabilities. Integration of sensors, microcontrollers, and motor controlsystems are essential. Optionally, display movement or system status via a mobile or webdashboard.

Tool used: Fusion 360 , autocad

Details of Papers/patents:-

Brief description of the working environment: The working environment during PS-I was largely collaborative and dynamic, offering us space to explore and contribute meaningfully to real-world design problems. We were expected to take initiative, meet deadlines, and maintain clear documentation throughout. However, more structured and consistent guidance from mentors would have helped streamline progress and reduced confusion, especially during crucial decision-making stages. Frequent last-minute changes in project direction—such as

introducing the robotic arm unexpectedly or cancelling the fabrication phase—made it challenging to plan and execute our tasks smoothly.
Despite this, the experience was rich in learning. I contributed to designing and assembling critical components for both bipedal and wheeled robots, including chassis structures, lower leg parts, and robotic arm elements like the base, jaw1, and jaw4. I was involved in simulation and motion testing, particularly focused on stability and balance, while also handling coordination within a multi-member team.
The iterative nature of the project taught me adaptability, patience, and the value of clear communication. I became more proficient in CAD tools, simulation platforms, and team-based workflows. Shifting priorities taught me to manage time better and make practical design decisions under uncertainty. Though not all components were fabricated, submitting complete STL files and compiling a final report allowed us to showcase our efforts effectively. PS-I gave me firsthand exposure to project-based engineering, with all its technical, interpersonal, and logistical realities.

Academic courses relevant to the project: Engineering graphics

Learning Outcome: *Designed and assembled key mechanical components for bipedal and wheeled robots.
*Gained hands-on experience in CAD modeling, simulation, and motion testing.
*Adapted to design changes and incorporated a robotic arm into the project workflow.
*Collaborated effectively in a team setting, managing roles and responsibilities.
*Successfully submitted STL files for all designs, ensuring fabrication readiness.
*Strengthened technical documentation and presentation skills.
*Learned to work under time constraints and realign goals when plans changed.

PS-I station: QuGates Technologies Pvt. Ltd, Bengaluru

Student

Name: ARJUN M (2023AAPS0608G)

Student Write-up:

PS-I Project Title: Robot Arm Simulation

Short Summary of work done: We successfully created a simulation of the InMoov robotic arm, comprising the palm, forearm, and bicep, using ROS 2 and Gazebo. The robot model was developed using URDF and simulated in a physics-enabled environment to test movements and behavior. A tendon-driven control mechanism, inspired by human muscle actuation, was implemented using virtual strings and joints. Keyboard input was mapped to control individual fingers and joints, simulating real-time actuation. RViz was used for visualization and verification of joint states and coordinate frames. The simulation provides a testbed for future integration of computer vision and gesture tracking for autonomous control. This project enhances understanding of humanoid robot mechanics, control strategies, and simulation tools, while laying the groundwork for further applications in prosthetics and human-robot interaction.

Objectives of the project: We were tasked with creating the simulation of a robot arm and also controlling it based on string tendon mechanism in a physics based environment

Tool used: ROS 2 (Humble) – Robotics middleware for control and communication, Gazebo (Harmonic) – 3D physics simulation environment, RViz – Real-time robot visualization tool, URDF/XACRO – Robot description formats, Python/C++ – For plugin development and control l.

Details of Papers/patents:NA

Brief description of the working environment: The project was executed in a Linux-based ROS 2 environment using Gazebo and RViz for real-time robot simulation and visualization. The team worked in a collaborative and exploratory setting, troubleshooting simulation errors, plugin issues, and joint configuration mismatches to achieve a functional model. By working with a company like Qugates, we aimed to bridge the gap between academic projects and industry-ready robotic systems.

Academic courses relevant to the project: Robotics and automation, Machine Learning, Computer vision, Control systems

Learning Outcome: Understood the structure and kinematics of the InMoov humanoid arm (palm, forearm, bicep). Gained practical experience in ROS 2, Gazebo simulation, and RViz visualization. Implemented a tendon-driven control mechanism using strings to mimic real-world muscle actuation. Developed skills in robot modeling (URDF/XACRO), custom plugin integration, and joint control. Strengthened debugging and system integration skills in a ROS-Gazebo environment.

PS-I station: QuGates Technologies Pvt. Ltd, Bengaluru

Student

Name: SUMUKHA K NAYAK . (2023B2A10932P)

Student Write-up:

PS-I Project Title: Automated Trading system using Machine learning

Short Summary of work done: During my PS1, I worked on building an end-to-end algorithmic trading framework that combined technical analysis, sentiment analysis, and machine learning for predictive modeling. I collected historical stock data using public APIs and generated technical indicators like RSI, Bollinger Bands, EMA, and SMA, which were stored in a PostgreSQL database through a modular data pipeline. In parallel, I developed a sentiment analysis module using NLP techniques on real-time news headlines from Google News and NewsAPI to score market sentiment and integrate it with the feature set. I trained regression and classification models using LightGBM and deep learning architectures to predict price ranges and generate buy/sell signals. The strategy was backtested using the Alpaca paper trading API and evaluated using financial metrics such as returns and Sharpe ratio. Alongside the project, I independently completed the Financial Mathematics course from MIT OCW, where I studied key quantitative finance concepts including stochastic processes, Ito calculus, the Black-Scholes model, risk management, and options trading theory. This helped me develop a strong theoretical foundation to support my practical work in algorithmic trading and financial modeling.

Objectives of the project: The objective of this project is to design and implement a robust end-to-end algorithmic trading framework that combines structured technical indicators, unstructured sentiment data, and advanced machine learning models to generate predictive trade signals and automate order execution. By integrating data-driven technical analysis with real-time market sentiment extracted from news sources, the system aims to improve decision-making accuracy, optimize trading strategies through backtesting, and ensure real-world deployability via broker API integration and built-in risk management mechanisms.

Tool used: Python, yfinance, Google News API, NewsAPI, pandas, numpy, PostgreSQL, ta-lib, nltk, TextBlob, scikit-learn, LightGBM, TensorFlow/Keras, Alpaca Paper Trading API, matplotlib, seaborn, Git, GitHub, Jupyter Notebook, VS Code.

Details of Papers/patents: None

Brief description of the working environment: Learnt from team work and groups.

Academic courses relevant to the project: Yet to start these courses namely finance minor.

Learning Outcome: The major learning outcomes of this project include a deep understanding of how to integrate diverse data sources—technical indicators and real-time news sentiment—into a unified machine learning pipeline for financial prediction. It enhanced practical skills in data engineering through building a modular processing pipeline and managing databases with PostgreSQL. The project provided hands-on experience with advanced modeling techniques such as LightGBM and deep learning for both regression and classification tasks, along with backtesting strategies in realistic market environments using Alpaca API. Additionally, it offered insights into risk management practices.

PS-I station: QuGates Technologies Pvt. Ltd, Bengaluru

Student

Name: AMOGH MUGULAVALLI HARISH KASHYAP (2023B3A30826G)

Student Write-up:

PS-I Project Title: Collision avoidance robot

Short Summary of work done: In the collision-avoiding robot project, I worked as part of the Object Detection and Proximity Sensors team. My main contributions included developing a basic user interface using HTML and CSS, and setting up the Flask back end to ensure smooth communication between the front end and other components. For object detection, I implemented YOLOv5, enabling the robot to accurately detect and track obstacles in its environment. I also integrated Vosk for voice recognition, allowing for hands-free voice commands to control the robot. I was also responsible for designing the movement logic and defining movement states, ensuring the robot could make intelligent decisions and avoid collisions based on proximity sensor inputs. While I was excited to see our system in action, the company unfortunately wasn't able to provide the necessary hardware components, which limited our ability to fully test the robot in a real-world setting. Despite this, we focused on building a robust software foundation and simulation-ready logic to ensure the system would be ready for deployment once the hardware became available.

Objectives of the project: To make a collision avoiding robot using raspberry pi, LiDAR and IR sensors.

Tool used: Flask,yolov5,vosk,html and css. Didn't receive the hardware components that were supposed to be used based on our plan- raspberry pi, LiDAR and IR sensors, motor drivers, servo motors.

Details of Papers/patents: -

Brief description of the working environment: Initially they didn't oblige to make it hybrid and were traditional in their methods of keeping Monday to Friday + alternate Saturdays working from 8am-5pm.

Academic courses relevant to the project: ED,EM

Learning Outcome: It was an insightful journey as it gave us exposure to the corporate world and helped us get used to the corporate set up

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PS-I station: QuGates Technologies Pvt. Ltd, Bengaluru

Student

Name: SRI KRISHNA CHAITANYA KONDAMUDI (2023B4A80787H)

Student Write-up:

PS-I Project Title: Control and Navigation Robot

Short Summary of work done: Learnt about popular chips(Arduino, Raspberry Pi), mechanisms involved in the movement of the robot and various hardware components used commonly, such as LiDAR, Ultrasonic sensors and IMU sensors. However, none of the above was put into practice as hardware components weren't provided.

Objectives of the project: Aimed at making a robot that could move from point A to B and avoid obstacles along the way.

Tool used: Arduino IDE, ROS2, KiCAD, simulation softwares like Gazebo and design softwares like Fusion 360.

Details of Papers/patents: None

Brief description of the working environment: Everything had to be learnt by the students themselves. Hardware components required for the project weren't provided without submitting a simulation, which wasn't required initially. Components meant to be used according their problem statement became secondary. We were told to use substitutes in "Phase-1." However, they were open to letting us create and work on our own projects. Basic amenities were provided.

Academic courses relevant to the project: Yes

Learning Outcome: Working of basic electronic components, software-hardware integration.

PS-I station: QuGates Technologies Pvt. Ltd, Bengaluru

Student

Name: VENKATA PRADYUMN RAYASAM (2023B5AD0973G)

Student Write-up:

PS-I Project Title: Robotic Arm

Short Summary of work done: We started with creating the models for the Robotic arm, we used an open source project for the 3d-printable models which we assembled in blender. We then used Blender and a plugin called Phobos to generate a URDF file for the arm. We started by importing a single finger in ROS and RViz and controlling it using sliders. After setting up the finger model in RViz and ROS we imported it into Gazebo and simulated its string mechanism. We followed the similar workflow for simulating the entire hand. Once we were able to simulate the hand with a decent degree of accuracy we simulated the arm. After this we attempted to implement some simple gesture detection and motion tracking using Computer vision.

Objectives of the project: The aim of our project was to make and porgram a robatic arm that can grab and move objects.

Tool used: ROS2(humble), RViz, Gazebo, Blender

Details of Papers/patents: None

Brief description of the working environment: The environment provided by Qugates was very conducive to self learning. They gave us a room and asked us to come up with a plan for the entire 7 weeks.This environment helped us learn to figure things out on our own. Although this made making progress on our projects very slow and we were unable to meet the final goal completely. The experience was unique and certainly helped us learn how to fend for ourselves.

Academic courses relevant to the project: yes

Learning Outcome: learnt how to setup and simulate robots using ROS, RViz and Gazebo, Learnt modelling using blender.

PS-I station: Quinfo Systems Pvt. Ltd, Hyderabad

Student

Name: KRISH CHETAN DESAI . (2023A3PS0701P)

Student Write-up:

PS-I Project Title: Agentic AI in cybersecurity

Short Summary of work done: Project was to create a system that could be implemented for cybersecurity. It started out by learning from github repos and coursera on how to build and launch agentic ai systems. We used to have daily meets in the morning to share our progess and work on the days tasks. We had to procure datasets and create database vectors. Next we worked on creating logic apps and promptflows to implement the agents and deploy the

models. The end model was one that could be linked to your mail or any other platform which could detect the link and classify the same and send a reply to your mail id if required.

Objectives of the project: Implement an agentic framework that detects for phishing links

Tool used: Azure AI foundry, ML studio, Gema Studio, Github

Details of Papers/patents: None

Brief description of the working environment: Very easy going. They gave us a week to prepare and get into it and also provided with resources to start with. Work environment was pretty constructive but not rigorous. Project was mostly lite but it was a little more demanding than other online stations. Our project was supposed to be on quantum computing but the teams were split into AI and quantum based on choice. I'd say its good if you want to get started with agentic systems or ai. By the end of our PS we could implement multiple agents that do tasks well beyond the original objective.

Academic courses relevant to the project: Coursera-Agentic AI courses and Microsoft repos on AI were useful though

Learning Outcome: Implementing agents that can handle multiple tasks.

PS-I station: Quinfo Systems Pvt. Ltd, Hyderabad

Student

Name: ABHIRAM MANDADI (2023A7PS0020G)

Student Write-up:

PS-I Project Title: AI Tune

Short Summary of work done: Was in charge of building media part of project; designed automated scripts in Python for generation of stylized lyric videos and frames for music video as well as automation of YouTube upload through OAuth 2.0 using token.json file and GCP

Objectives of the project: To build an end-to-end automated AI pipeline that generates music videos upon user prompt and uploads it to YouTube.

Tool used: Software- Python, GCP

Details of Papers/patents: None

Brief description of the working environment: Remote working environment; no major expectations from the company, just sincere and timely efforts towards contributing to the project.

Academic courses relevant to the project: yes

Learning Outcome: Learnt the use of various APIs, how AI pipelines work in real life, and how various Python libraries work together to make files like videos and music

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PS-I station: Quinfo Systems Pvt. Ltd, Hyderabad

Student

Name: BUSSA NAVYA SRI . (2023B1A40993H)

Student Write-up:

PS-I Project Title: Quantum computing programming language

Short Summary of work done: ChatGPT said: The QuCPL project involved the design and implementation of a custom quantum programming language that supports fundamental quantum operations and canonical algorithms like Bell state, GHZ state, and quantum teleportation. A complete language toolchain was developed, including custom syntax, an Abstract Syntax Tree (AST) parser using Lark, and a JSON-based Intermediate Representation (IR) to bridge the frontend with the backend. The compiler translated QuCPL code into executable circuits via integration with Qiskit and its simulators (Qiskit Aer). A runtime engine was built for program validation and error handling, ensuring robustness during execution. The project also included visualization support using Plotly and Matplotlib to generate circuit

diagrams and measurement histograms. Comprehensive documentation was created and deployed via GitHub Pages.

Objectives of the project: The objectives of project include design a custom syntax, parser and json based intermediate representation to simulate quantum programs on Qiskit.

Tool used: Qiskit, python, GitHub, vs code, lark and parser.

Details of Papers/patents: None

Brief description of the working environment: During PS-I, the working environment was friendly and focused on learning. We worked closely with our mentor and teammates, shared ideas, and tracked our progress using GitHub. The mentor expected us to take initiative, write proper code, and help build the project from start to finish. We were asked to understand Qiskit, learn how compilers work, and solve any problems we faced on our own. Through this project, we learned how quantum programs are written and run, how to design a new language, how to check and fix errors in code, and how to document everything clearly. It helped us apply what we learned in class to a real project.

Academic courses relevant to the project: I haven't taken any courses on campus which are relevant but learning python would be helpful.

Learning Outcome: I have learnt how to create a programming language from scratch using lark and parser to generate AST and simulate programs on Qiskit.

PS-I station: Quinfo Systems Pvt. Ltd, Hyderabad

Student

Name: MELLIMPUDI TEJAS . (2023B5A70802H)

Student Write-up:

PS-I Project Title: Quantum Computing Programming Language

Short Summary of work done: During my PS-1 internship at Quinfo Systems Pvt Ltd in Summer 2025, I contributed to the development of a custom quantum programming language named QUCPL (Quantum Computing Programming Language). This project aimed to design a high-level, intuitive syntax to facilitate quantum algorithm design and simulation, particularly suited for educational and prototyping purposes. My role was centered on the design and implementation of the core language infrastructure. This included defining the language syntax and semantics, crafting a formal grammar using the Lark parser generator (grammar.lark), and developing the language parser (parser.py) to correctly interpret and compile QUCPL code into an intermediate representation. I ensured that the grammar supports fundamental quantum operations, qubit declarations, classical-quantum interfacing, and control flows. In addition to backend development, I was also responsible for the documentation and final project delivery. I authored a clear and concise README.md and final documentation that outlines the language's features, architecture, sample programs, and installation instructions. This served as a user manual and technical reference for future contributors and developers. The internship provided a unique opportunity to explore the intersection of compiler design and quantum computing, helping me enhance my skills in formal languages, abstract syntax trees, and domain-specific language (DSL) development. My contributions helped shape the foundational components of QUCPL and laid the groundwork for its future evolution as an educational quantum language.

Objectives of the project: The main goal of the QuCPL project is to design a quantum programming language that: 1. Allows easy and readable expression of quantum logic and circuits. 2. Converts user-written code into an Abstract Syntax Tree (AST) and then into a machine-friendly JSON-based Intermediate Representation (IR). 3. Executes quantum programs using Qiskit as the backend for circuit construction, simulation, and result visualization. 4. Supports canonical quantum programs such as Bell state, GHZ state, and quantum teleportation. 5. Includes robust error handling and validation at runtime. 6. Provides user-friendly documentation and demo support via GitHub Pages and video tutorials.

Tool used: Hardware: Personal Laptop. Software Tools: Python 3.10 – Core programming language for parser development. Lark Parser Library – Used for defining and implementing QUCPL grammar (grammar.lark). VS Code – Primary code editor for development and debuggin

Details of Papers/patents: NONE

Brief description of the working environment: The PS-I internship at Quinfo Systems Pvt Ltd was conducted entirely online, which made it both flexible and well-structured. Even though I was working remotely, the experience felt collaborative and connected. We used platforms like GitHub, andZoom to stay in touch with both my team and working professional, which helped keep communication clear and consistent. Regular check-ins and feedback sessions created a positive and productive environment where I felt encouraged to take initiative and grow professionally.
Right from the start, the company made their expectations clear. My main focus was on QUCPL, a custom-built quantum computing programming language. I was involved in several technical

aspects of the project, including designing the language's syntax, writing the grammar using Lark (grammar.lark), developing the parser (parser.py), and preparing detailed documentation like the README.md. These tasks gave me real-world exposure to how quantum programming languages are built and maintained and also gave lots of hands-on experience of quantum technoligies.

Throughout the internship, I gained hands-on experience in compiler design, domain-specific languages, and version control. I also learned how to manage my time effectively, take responsibility for code, and communicate clearly with a distributed team—all of which are crucial in any professional setting.

Looking back, this internship was a game-changer for me. It helped me connect what I've learned in class with how things work in the real world. More importantly, it gave me the confidence to contribute to cutting-edge fields like quantum computing and a better understanding of what it's like to work in a fast-paced, research-driven startup.

Academic courses relevant to the project: Quantum Mechanics I
Technical Report Writing

Learning Outcome: This internship has been one of the most intellectually rewarding and transformative experiences of my academic journey. It offered a unique opportunity to work at the intersection of quantum physics and computer science, blending theory with hands-on systems development. Building QuCPL a quantum programming language from the ground up allowed me to engage deeply with both abstract scientific ideas and the rigor of software engineering.

From the technical perspective, I gained end-to-end exposure to compiler design, quantum simulation, and toolchain integration:

- I learned how to write formal grammars using PEG and implement a working parser with Lark in Python.
- I designed a clean and extensible Abstract Syntax Tree (AST) format and translated it into a backend-agnostic Intermediate Representation (IR).
- I integrated this IR with Qiskit, allowing execution of programs written in QuCPL on simulators with full support for Bell, GHZ, and teleportation protocols.
- I also developed circuit visualization tools, runtime error handling, and a structured MkDocs-based documentation site, all of which helped polish the usability and functionality of the platform.

From a personal and professional standpoint, the internship helped me grow in multiple dimensions:

- I significantly improved my problem-solving and debugging skills, especially while building the grammar, managing parser errors, and designing the IR.
- The freedom to experiment and build from scratch taught me the importance of modularity, clarity, and future-proof design in software development.
- My ability to self-learn complex concepts, manage project timelines, and communicate technical ideas clearly in documentation.

PS-I station: Quinfo Systems Pvt. Ltd, Hyderabad

Student

Name: VIRAJ DHARA (2023B5A71100P)

Student Write-up:

PS-I Project Title: Agentic AI in cybersecurity

Short Summary of work done: We were assigned from our station, Quinfosys to Ciberts, so we didn't do anything for the first week. We further spent three weeks doing a Microsoft Agentic AI course on GitHub. Then we worked on the tasks given to us by the company, which was a lot of fixing Azure Cloud permission issues, which Ciberts employees were not effective in helping us fix. We had some decent work in last three weeks.

Objectives of the project: To make a cybersecurity phishing prevention system with incorporation of Agentic AI

Tool used: Azure Ai foundry, Azure AutoML, Azure PromptFlow, Azure Logic Apps, Semantic Kernel SDK, Autogen SDK, Azure Ai Projects SDK, python, python std. Libraries, Basic API principles (POST requests, endpoint, structure of a request)

Details of Papers/patents: Two PSD requirements (not published I think) - on Agentic AI in Cybersecurity

Brief description of the working environment: Entirely Online, even though initially we were told offline (some students wanted to make it online).
Two employees in Ciberts, some more in Quinfosys (only interacted in first week). Ciberts employees were supportive, instructive, and available 24/7 for communication. Overall good enviornment.

Academic courses relevant to the project: Prompt engineering/Agentic AI related courses

Learning Outcome: Azure related stuff, python, Simple Web requests, prompt flow, Agentic AI, Rag, Software skills.

PS-I station: Regional Remote Sensing Center-North, NRSC, ISRO - IT, New Delhi

Student

Name: PRIYANSHU TALWAR (2023A7PS0361G)

Student Write-up:

PS-I Project Title: Land Use and Land Cover Classification using Machine Learning

Short Summary of work done: The project involved generating a high-resolution Land Use Land Cover (LULC) classification map using temporal Sentinel-2 imagery. Multi-date satellite images were processed to create median composites that represent seasonal variations, enhancing the temporal depth of analysis. Based on the distinct spectral and temporal profiles observed, custom land cover classes were carefully defined to suit the area's specific landscape characteristics. Training samples for each class were manually collected, after which outlier detection techniques such as Isolation Forest and DBSCAN were applied to remove mislabeled or noisy data points, ensuring cleaner and more reliable training data. A Random Forest classifier was then trained on the refined dataset, utilizing both spectral bands and vegetation indices (NDVI, NDWI, NDBI) to accurately distinguish between classes. Finally, the classification results were visualized on interactive maps and analyzed through accuracy assessment and visual overlays, enabling a clear interpretation of land cover distribution over time and supporting environmental monitoring and planning activities.

Objectives of the project: To develop a high-resolution Land Use Land Cover (LULC) classification map using 10-meter spatial resolution satellite data. The project aims to improve LULC mapping accuracy, support environmental monitoring, and assist in land management decisions using advanced remote sensing and geospatial analysis techniques.

Tool used: Jupyter notebook, google earth engine, QGIS

Details of Papers/patents:NA

Brief description of the working environment: The internship environment was often unstructured, with frequent idle periods and limited mentor interaction, making the workflow feel uneven and rushed towards the end. Much of our time was spent waiting for tasks or guidance, which impacted productivity. However, the experience did have some positive aspects. With minimal supervision, we became more self-reliant and improved our problem-solving abilities. A key highlight was getting hands-on experience with complex machine learning models for LULC classification, which strengthened our technical skills.

Academic courses relevant to the project: Fundamentals of Data Science

Learning Outcome: Gain skills in processing 10m satellite data, applying classification algorithms, and generating accurate LULC maps for environmental analysis, planning, and sustainable land resource management.

PS-I station: Regional Remote Sensing Center-North, NRSC, ISRO - IT, New Delhi

Student

Name: ASHMIT RANA (2023A7PS0443G)

Student Write-up:

PS-I Project Title: Change Detection

Short Summary of work done: The problem of change detection is an unsolved task that has major application in surveillance,but due its certain challenges like lack of annotated data and poor performance of unsupervised methods.So during my project I experimented with various architectures that existed and applied some modifications to it.From raw data collection from Google earth engine ,preprocessing and feature engineering to implementing models from scratch and validating results .I experienced the complete life-time of the ML project .

Objectives of the project: To create an ML model that flags man made changes that are non seasonal

Tool used: H/W Nvidia A100 gpu ,remote server. S/W-Python,QGIS,Pytorch

Details of Papers/patents: My work set the foundation for any future work at ISRO

Brief description of the working environment: Working environment was prettty good,the only caveat was we weren't allowed any electronics inside the building. But our belongInfo were kept safely at the main gate. The mentors were pretty helpful but their availability was subjective as they were busy with meetings and other stuff.The pace of the project depends on how much effort you want to put and how much you want achieve and learn.

Academic courses relevant to the project: Machine Learning, Fundamental of data science

Learning Outcome: Satellite imagery,Geographic information system ,Self supervised Machine Learning,Literature review.

PS-I station: Regional Remote Sensing Center-North, NRSC, ISRO - IT, New Delhi

Student

Name: GAURANG GUPTA . (2023A7PS0648P)

Student Write-up:

PS-I Project Title: DEEP LEARNING BASED SEMANTIC SEGMENTATION

Short Summary of work done: During my PS-1 internship at RRSC-North, ISRO (Remote Sensing and Regional Centre), I gained valuable exposure to the practical applications of remote sensing and geospatial technologies. My primary focus was on understanding how satellite imagery can be processed and analyzed for environmental and urban monitoring. I learned to work with various Earth observation datasets and explored techniques in **semantic segmentation**, particularly for land cover classification and water body detection. This involved training machine learning models to extract meaningful features from satellite images. In addition to technical image analysis, I was introduced to **Google Earth Engine (GEE)**—a powerful cloud-based platform for geospatial analysis. Using GEE, I performed large-scale data processing tasks and developed scripts for NDWI and NDVI-based vegetation and water detection. The internship also included a **web development** component, where I built interactive web applications to visualize and analyze geospatial data. This helped bridge the gap between backend data processing and frontend user interaction, improving accessibility of

spatial data insights. Overall, the internship significantly enhanced my understanding of applied remote sensing, geospatial programming, and full-stack development, while offering hands-on experience with tools used in national-level satellite data analysis and decision-making.

Objectives of the project: To identify and analyze water bodies in a given area in a given time stamp.

Tool used: google earth engine, flask , geopandas,mndwi index

Details of Papers/patents:none

Brief description of the working environment: The working environment at RRSC-North, ISRO, was professional, collaborative, and research-oriented. We were encouraged to engage in independent exploration while receiving consistent guidance from scientists and mentors. The atmosphere fostered learning, innovation, and application of theoretical knowledge to real-world problems. Regular interactions with domain experts helped us understand the significance of remote sensing in national development and resource management.
The organization expected interns to be self-motivated, disciplined, and proactive in approaching tasks. We were given well-defined problem statements but had the freedom to explore various methodologies and tools to arrive at effective solutions. Emphasis was placed on both technical competence and the ability to communicate our findings clearly through reports and presentations.

Academic courses relevant to the project: dsa,dbms

Learning Outcome: Learnt about remote sensing , semantic segmentation , web development , google earth engine etc.

PS-I station: Regional Remote Sensing Center-North, NRSC, ISRO - IT, New Delhi

Student

Name: HARDIK AGARWAL (2023B3A70838G)

Student Write-up:

PS-I Project Title: OSCEO Webservice Analytics for Flood Damage Assessment

Short Summary of work done: Developed a website in React for flood damage assessment and also trained an early warning flood detection model

Objectives of the project: GIS, Remote Sensing, Python

Tool used: React, Python, GeoPandas

Details of Papers/patents: None

Brief description of the working environment: The experience helped me understand my strengths and areas to improve.
Academic courses relevant to the project: yes

Learning Outcome: React, Python

PS-I station: Regional Remote Sensing Center-North, NRSC, ISRO - IT, New Delhi

Student

Name: ADITYA RAJESH GAWADE . (2023B3A71009P)

Student Write-up:

PS-I Project Title: Development of a FastAPI-based Crop Yield Prediction Interface

Short Summary of work done: Developed a FastAPI-based Crop Yield Prediction Interface

Objectives of the project: The core objective of this research is to develop an automated backend interface for crop yield prediction that minimizes user effort while maximizing model accuracy and interpretability.

Tool used: Python, VSCode

Details of Papers/patents:NA

Brief description of the working environment: The company culture was heavily research oriented, which allowed me to learn a variety of interesting phenomena, not just constrained to my project.

Academic courses relevant to the project: Machine learning courses (Econometric Methods, Intro to LLMs etc.)

Learning Outcome: ML concepts, Web-Development

PS-I station: Regional Remote Sensing Center-North, NRSC, ISRO - IT, New Delhi

Student

Name: ABHAV GARG (2023B3A71189G)

Student Write-up:

PS-I Project Title: Estimating rainfall thresholds for landslide detection

Short Summary of work done: This project focused on analyzing rainfall-induced landslides by integrating landslide point data with gridded daily rainfall datasets over India. The first step involved extracting coordinates and occurrence dates from a national landslide shapefile and matching them with corresponding rainfall time series using IMD NetCDF files. Rainfall intensity and duration values were computed for each event to characterize the conditions leading to slope failures. A threshold model was then developed by fitting a power-law curve to the lower envelope of the intensity–duration (I–D) data using differential evolution optimization. The model was validated using classification metrics like precision, recall, and F1-score by comparing predicted triggering conditions with actual landslide occurrences. Negative samples were generated to represent non-triggering rainfall events for a balanced evaluation. Additionally, the study explored the use of effective rainfall by considering cumulative rainfall over previous days to improve prediction accuracy. The derived regional thresholds were compared with global empirical thresholds to assess their relevance in the Indian context. Finally, the results contribute toward building a hazard matrix by integrating rainfall thresholds

with geological susceptibility, with potential applications in early warning systems for landslides.

Objectives of the project: To evaluate and classify rainfall events as triggering or non-triggering using machine learning metrics like True Positives, False Negatives, etc.To provide a framework for generating hazard matrices that combine rainfall thresholds with geological susceptibility to inform early warning systems.

Tool used: QGIS VSCode scikit learn

Details of Papers/patents:-

Brief description of the working environment: Decent you are given work only if you take the initiative to ask for it.

Academic courses relevant to the project: PnS and CP

Learning Outcome: This project enhanced my understanding of integrating geospatial and temporal data to derive rainfall intensity duration thresholds for landslide prediction. It also provided hands-on experience with threshold fitting, evaluation metrics, and the role of effective rainfall in hazard assessment.

PS-I station: Regional Remote Sensing Center-North, NRSC, ISRO - IT, New Delhi

Student

Name: SHIVANSH BHATNAGAR . (2023B4A71018P)

Student Write-up:

PS-I Project Title: GNSS Applications

Short Summary of work done: Built out an application from a 2009 paper to find cryospheric parameters and evaluated their model on our AOI on proprietary data

Objectives of the project: Using GNSS IR to evaluate cryospheric parameters for the AOI

Tool used: Python primarily, FORTRAN, ArcGIS, QGIS, some amount of C

Details of Papers/patents:

Brief description of the working environment: Incredible work environment, clearly demarcated working hours, Great work culture, People are knowledgeable and enthusiastic, yet expectations on interns were seemingly not high. Experience may depend on mentor allotted, I was allotted a great mentor, allowed me push through the project easily. Learnt a fair bit about communications, GNSS systems, antennas, Geoinformatic Software. Had to apply mix of Deterministic and statistical ML methods.

Academic courses relevant to the project: yes

Learning Outcome: Windows Networking, Some concepts of Communications, Antennas, Electronics, Working with rasters and vectors, QGIS, ArcGIS

PS-I station: Regional Remote Sensing Center-North, NRSC, ISRO - IT, New Delhi

Student

Name: DILESH CHURIWAL . (2023B4A71064P)

Student Write-up:

PS-I Project Title: Identifying Suitable Algorithms for Generating Unique Address Identifiers across India

Short Summary of work done: The project to develop an algorithm for generating unique 12-digit address identifiers across India started with review and evaluation of centroid generation and correction algorithms. I studied many centroid generation algorithms and after picking one, went through two centroid correction algorithms- Point on Surface and Pole of Inaccessibility. After this step DIGIPINs were generated using these centroids. Then we developed a design for the 12-digit identifier, i.e. how it should be constructed in parts and after an extensive study of some cryptographic algorithms, I implemented the hashing algorithm along with some thoughtful integration of DIGIPIN. A lot of my time also went in studying checksum digit

algorithms which we also used. Finally the algorithm was implemented on two cities Lucknow and Siliguri and further encryption algorithms were under study for implementation.

Objectives of the project: 1. To establish a standardized framework for uniquely identifying building-level address units across India. The aim is to ensure that every address, regardless of shape or complexity, is assigned a tamper-proof and unique code, which can be used across digital platforms and government records. 2. To design and implement an algorithm for generating 12-digit Unique Address Identifiers (UAIs) using spatial features (like building footprints) and cryptographic techniques ensuring uniqueness, traceability scalability, and data integrity in address referencing.

Tool used: 1. QGIS Software 2. Python

Details of Papers/patents:A discussion on patenting our design of the 12-digit identifier is on right now as informed by my mentor. However, the patent is not finalized yet

Brief description of the working environment: Working Environment- It was overall good. My mentor was very enthusiastic, determined and disciplined in his work. We often had good amount of time brainstorming some ideas and I also had some lengthy presentations infront of him. Most of the other mentors were also goo. The working staff etc were good and friendly. Overall I liked working in the center.
Expectations from the company- I got a very good project, gained a lot of knowledge in diverse fields- cryptography, group theory, spatial analysis, mathematical algorithms, even general knowledge etc. Also the guidance I received helped me take my project to a good stage. Hence my expectation from the company are fulfilled.
Learning during PS-I:
1. Cryptographic Algorithms- Hashing (SHA-256/512), Encryption (AES-256) and Authentication (HMAC)
2. Concepts of Group Theory- Dihedral Groups and Permutations
3. The Verhoeff Algorithm and other CheckSum Digit Algorithms having worldwide real life applications in- Postal codes, Parcels, Books, License, etc.
4. Algorithms for Generation and Correction of Centroids of Building Footprints and their Mathematical Foundations

Academic courses relevant to the project: Algebra-I, CS F111, MATH F111

Learning Outcome: 1. Cryptographic Algorithms- Hashing (SHA-256/512), Encryption (AES-256) and Authentication (HMAC)
2. Concepts of Group Theory- Dihedral Groups and Permutations
3. The Verhoeff Algorithm and other CheckSum Digit Algorithms having worldwide real life applications in- Postal codes, Parcels, Books, License, etc.
4. Algorithms for Generation and Correction of Centroids of Building Footprints and their Mathematical Foundations
5. True Random Numbers, Pseudo Random Numbers, their applications and theory

6. Various Statistical Randomness Tests for checking randomness of Pseudo Random Numbers
7. Counter based Collision Check Method used popularly in applications like PNR number generation
8. Concepts of Quantum Cryptography like- Quantum Key Distribution

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PS-I station: Remote Sensing Application Centre U.P, Lucknow

Student

Name: SHIVANSH SAXENA . (2023A7PS0637P)

Student Write-up:

PS-I Project Title: LAND USE AND ENCROACHMENT DETECTION USING TEMPORAL SATELLITE IMAGERY ANALYSIS FOR IDENTIFYING CONSTRUCTION AND ENCROACHMENT

Short Summary of work done: During my PS-I internship, I worked on satellite image analysis with a focus on building identification and land use mapping. The tasks included preprocessing satellite .tif images, preparing masks using clustering and supervised learning, and applying machine learning and deep learning models such as CNN, U-Net, Random Forest, and K-Means. I performed polygonization of cleaned masks, centroid extraction, and CSV export for further analysis. Additionally, I prepared project reports and presentations summarizing the workflow and outcomes. This experience enhanced my understanding of remote sensing, geospatial tools, and AI/ML applications in real-world mapping tasks.

Objectives of the project: DETECT BUILDINGS FROM A SATELLITE IMAGERY

Tool used: Laptop/Desktop, External Storage, Python, TensorFlow, Keras, Scikit-learn, QGIS, Google Earth Engine, Rasterio, GeoPandas, OpenCV, NumPy, Matplotlib, K-Means, Random Forest, CNN, U-Net, GDAL, Pandas, MS Word, LaTeX, PowerPoint, Google Colab

Details of Papers/patents: NA

Brief description of the working environment: During my PS-I internship, I worked in a structured yet flexible environment that encouraged independent exploration and teamwork. The atmosphere was collaborative, with regular guidance from mentors, while also providing

the freedom to experiment with tools and techniques. The company expected us to take initiative, meet deadlines, and deliver results with accuracy and innovation. I gained hands-on experience with tools such as QGIS, Rasterio, GeoPandas, Google Colab, and machine learning models including CNN, U-Net, Random Forest, and K-Means. The learning went beyond technical aspects—I developed problem-solving skills, adaptability to new challenges, and improved documentation and presentation abilities. Overall, PS-I was a comprehensive learning experience, bridging academic concepts with practical applications and preparing me for future research and professional roles.

Academic courses relevant to the project: Being a CS student, it helped me to understand how ai/ml works and its implementation

Learning Outcome: AI/ML

PS-I station: RenewCred (Net Zero Initiative Pvt Ltd), Bengaluru

Student

Name: ANSHUMAN SHARMA . (2023A3PS0404H)

Student Write-up:

PS-I Project Title: DMRV ARCHITECTURE AND CARBON CREDITS

Short Summary of work done: Over the course of eight weeks at RenewCred, I focused on DMRV architecture and carbon credits. My initial task was to gain a fundamental understanding of dMRV systems, including their core technologies like IoT sensor networks, machine learning, and blockchain, and their advantages over traditional MRV. I then conducted a hands-on evaluation of the EcoHodo dMRV platform, assessing its architecture, data integration, and user experience. A significant part of my work involved studying AI/ML for analyzing EV performance using IoT, BMS, and GPS data, which included predicting battery State of Charge (SoC) and detecting driving patterns. As part of a group, I helped conduct a comparative analysis of 10 global dMRV platforms. I also researched and concluded that Indian farmers could benefit from carbon credits through aggregation models, such as Farmer Producer Organizations (FPOs)

Objectives of the project: The objectives of the project, titled "DMRV Architecture and Carbon Credits," was to understand Voluntary Carbon Markets (VCM) and Digital Monitoring Reporting and Verification (DMRV).

Tool used: XGBoost (Regression) for real-time SoC estimation, LSTM for long-term degradation tracking, K-Means Clustering to identify driver types, and Random Forest Classifier for behavior classification.

Details of Papers/patents:NA

Brief description of the working environment: Learned how to handle responsibilities and work professionally.

Academic courses relevant to the project: NA

Learning Outcome: My internship was a valuable experience where I rigorously researched a new topic for me: the Carbon Credit Market. I gained insights into Voluntary Carbon Markets (VCMs), carbon credit trading, price fluctuations, and the development of DMRV platforms. I also had the opportunity to work with real-time data from an EV fleet that the RenewCred team is currently working on. Overall, it was a good exposure to these markets.

PS-I station: RenewCred (Net Zero Initiative Pvt Ltd), Bengaluru

Student

Name: SOHAN RAVINDRA GHAWAT (2023A3PS1042G)

Student Write-up:

PS-I Project Title: IoT solutions for ev in carbon credit market

Short Summary of work done: None

Objectives of the project: How to integrate an IoT system for EV into carbon credit market architecture

Tool used: Google Docs

Details of Papers/patents: None

Brief description of the working environment: None

Academic courses relevant to the project: Yes

Learning Outcome: Learned about different vendors which provide services for EV's in India , learned about dMRV architecture and its implementation and about integration of the IoT systems in this architecture

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PS-I station: RenewCred (Net Zero Initiative Pvt Ltd), Bengaluru

Student

Name: SKANDHA PRASANNA KUNTAGOD (2023A7PS0344G)

Student Write-up:

PS-I Project Title: Carbon Credits demand sides thesis

Short Summary of work done: Mainly a research based project, with a lot of leeway.

Objectives of the project: Understand carbon markets, their demand and supply

Tool used: -

Details of Papers/patents:-

Brief description of the working environment: Good

Academic courses relevant to the project: None that I have taken so far

Learning Outcome: Carbon markets

PS-I station: Roboaviate (BotSavvy Private Limited), Ranchi

Student

Name: NAVEEN KUMAR . (2023A7PS0521P)

Student Write-up:

PS-I Project Title: Employee Management System

Short Summary of work done: During my PS-I, I worked on developing an Employee Management System (EMS) entirely from scratch using Python. The project incorporated essential features such as employee data management, attendance tracking, and a leave portal. The EMS allowed administrators to add, update, and manage employee records, mark daily attendance, and approve or reject leave requests, while employees could apply for leave and view their own attendance history. All stages of the project — from conceptualization and planning to coding and testing — were carried out independently, without any direct assistance from the host organization. I relied on self-learning through ChatGPT, GitHub repositories, and Google resources to understand requirements, design the database schema, and implement both backend logic and a graphical user interface using Python's tkinter and mysql.connector libraries. The backend was powered by a MySQL database to ensure secure and persistent storage of employee records, attendance logs, and leave data. I also implemented features for generating reports, enhancing the practicality of the system in a real-world setting. This project not only strengthened my technical skills in Python programming, database integration, and GUI development, but also improved my problem-solving, self-learning, and time-management abilities. By building the EMS entirely through self-research and experimentation, I gained valuable experience in independent project execution and practical application of software development concepts.

Objectives of the project: During my PS-1, we were assigned to develop an Employee Management System in Python, with features including attendance tracking and a leave portal.

Tool used: Python , pycham , ChatGPT , deekseek , GitHub

Details of Papers/patents:N/A

Brief description of the working environment: Brief description of the working environment, expectations from the company, learning during PS-I

Academic courses relevant to the project: DBMS , OOPs ,

Learning Outcome: We learn to work in collaboration with others and python to develop an api

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PS-I station: Roboaviate (BotSavvy Private Limited), Ranchi

Student

Name: AYUSHMAN SINGH (2023B3A11178G)

Student Write-up:

PS-I Project Title: Learning Management System

Short Summary of work done: Learnt web development and backend developement,Gained experience in managing backend system and using MERN stack etc.

Objectives of the project: To make a udemy like website

Tool used: HTML,CSS,Js,React Js,Express Is,Node Js, MongoDb

Details of Papers/patents: None

Brief description of the working environment:

Academic courses relevant to the project: Computer programming

Learning Outcome: Web development experience, HTML ,CSS,JS

PS-I station: Roboaviate (BotSavvy Private Limited), Ranchi

Student

Name: PRANAW KUMAR (2023B5A40997G)

Student Write-up:

PS-I Project Title: CAD Modeling and 3D Printing Of Ajax Argo Concrete Mixer

Short Summary of work done: During my Practice School-I at Roboaviate (BotSavvy Private Limited), I executed a project focused on the CAD modeling and 3D printing of the AJAX Argo Concrete Mixer. I created a highly accurate 1:25 scale digital model of the AJAX Argo 4000 using Autodesk Fusion 360 and prepared it for fabrication by optimizing slicing parameters with Ultimaker Cura. The resulting prototype, produced on a Creality Ender 3 printer, demonstrated full mechanical functionality with features such as rotating drum and articulated excavator arm. A key aspect of the project was leveraging reverse engineering and photogrammetry techniques to overcome the absence of factory blueprints, ensuring dimensional accuracy and realism of the model. The entire workflow—from component modeling and assembly simulation to slicing optimization and physical prototyping—strengthened my hands-on skills in digital manufacturing and project management. Beyond the technical achievements, my work directly contributed to Roboaviate's expansion into custom 3D modeling and rapid prototyping services, attracting new clients and enabling on-demand product customization. This project fostered a culture of innovation at the station, shifted workflows from using generic internet-sourced designs to original custom ones, and established Roboaviate as a regional leader in advanced CAD and additive manufacturing. The experience not only honed my core technical abilities and problem-solving skills but also provided meaningful industry exposure and demonstrated how student-driven innovation can yield tangible business benefits and support sustainable growth.

Objectives of the project: 1) The project was aimed to create a highly accurate 1:25 scale CAD model of the AJAX Argo 4000 concrete mixer, optimize it for 3D printing, and fabricate a functional prototype. 2) Helping Roboaviate expand into custom 3D modeling and prototyping services, streamline product development, and enable on-demand customization for clients.

Tool used: The main hardware tools used were the Creality Ender 3 (V1) 3D printer and PLA filament (1.75 mm, operated at 200 °C). The primary software tools included Autodesk Fusion 360 (for detailed 3D modeling and assembly design) and Ultimaker Cura (version 5.7)

Details of Papers/patents: None

Brief description of the working environment:
During my Practice School-I at Roboaviate (BotSavvy Private Limited), I worked in a remote workstation that was far from the main city. Despite the location, the collaborative atmosphere and continuous encouragement made the experience extremely positive. The Faculty In Charge of the PS station, with deep expertise in CAD and 3D printing, provided invaluable guidance throughout the project. His mentorship was instrumental in navigating technical challenges and advancing my skills.
The support from my teammates ensured that work never felt overwhelming. Together, we managed responsibilities efficiently, maintaining a healthy balance between productivity and well-being. My station head and technical supervisors were always available to help finalize the design and provided timely assistance whenever I faced hurdles. Their combined input enriched the project and ensured its successful completion.
I was particularly motivated because the project was closely aligned with my domain of interest. This made the work engaging, and as a result, time seemed to pass quickly. The encouraging workplace culture, the dedicated faculty, and my supportive peers transformed what could have been a solitary and challenging experience into one of constant learning and growth. The journey not only strengthened my technical and project management skills but also taught me the value of teamwork and a nurturing environment in accomplishing ambitious engineering goals.

Academic courses relevant to the project: ME F318 : Computer Aided Design, ME F314 : Design of Machine Elements

Learning Outcome: The most important learning outcome was acquiring hands-on experience through the entire digital manufacturing process, from accurate CAD modeling of a sophisticated industrial machine to optimized slicing and successful 3D prototyping. The project enhanced my problem-solving skills through solving real-world issues like working without blueprints, enhanced my technical expertise with software packages like Fusion 360 and Ultimaker Cura, and enhanced my skills in managing project timelines. It provided industry exposure and hands-on experience highly relevant to a career in mechanical engineering.

PS-I station: Samaro software pvt ltd, Navi Mumbai

Student

Name: VANAD GUPTA (2023A7PS0421G)

Student Write-up:

PS-I Project Title: WeddingWise

Short Summary of work done: During Phase I, a fully functional prototype of a RAG-powered chatbot was developed using Streamlit for the front end and LangChain for the back end. The system allows users to upload PDF documents, which are parsed with PyPDF2 and split into overlapping text chunks via RecursiveCharacterTextSplitter. These chunks are embedded using a custom SentenceTransformerEmbeddings class (leveraging the "all-MiniLM-L6-v2" model) and stored in a persistent ChromaDB collection. A Streamlit sidebar was implemented for model configuration—enabling selection among multiple CogCache-accelerated LLMs—and for uploading both PDF files and free-form company data. Upon data ingestion, the LangChain vectorstore is rebuilt and a ConversationalRetrievalChain is instantiated, combining a ChatOpenAI LLM (proxied through CogCache) with a retriever that fetches the top-5 relevant chunks per query. The main interface supports ongoing chat with memory of past messages, displays AI responses along with source document excerpts, and offers buttons to clear chat history or reset cached resources. Extensive error handling was added at each stage—from environment variable loading to PDF parsing and database operations—to ensure a smooth UX. This phase concluded with demonstration of real-time querying over company documents and performance validation of the CogCache acceleration layer.

Objectives of the project: To make a RAG-based chatbot

Tool used: Python 3.8+ Streamlit – for interactive web app interface. PyPDF2 – for PDF text extraction. Sentence-Transformers ("all-MiniLM-L6-v2") – for sentence-level embeddings. LangChain – for text splitting (RecursiveCharacterTextSplitter), memory (Conversat

Details of Papers/patents: None

Brief description of the working environment: Very healthy environment, FIC always kept track of everything that was being done, expectation was to be able to build a GenAI project which was completed and fulfilled. I learnt how to make a RAG Based chatbot and learnt industry ready and valuable tech stacks and libraries such as langchain, langgraph, bs4, chromaDB among others.

Academic courses relevant to the project: Machine Learning, DBMS, OOPs, DSA

Learning Outcome: Through this project, the following key learning outcomes were achieved: Architecting a RAG Pipeline: Gained hands-on experience designing a Retrieval-Augmented Generation (RAG) architecture that ingests, processes, and retrieves information from PDF documents using PyPDF2, LangChain, and ChromaDB.

Embedding Integration: Understood how to integrate Sentence-Transformers to generate vector embeddings for both documents and user queries, and how to store and retrieve them efficiently from ChromaDB.
Streamlit App Development: Learned to build an interactive Streamlit interface that supports file uploads, dynamic vectorstore updates, conversational history management, and real-time chatting with context.
ChromaDB Persistence: Mastered configuration of a persistent ChromaDB client for storing and retrieving document embeddings across sessions.
Conversational Memory & Retrieval: Implemented LangChain's ConversationBufferMemory and ConversationalRetrievalChain to maintain dialogue state and fetch top-k relevant chunks for informed responses.
CogCache Acceleration: Explored using the CogCache proxy for accelerated LLM inference and model selection, including configuring custom base URLs and API keys.
Error Handling & UX: Developed robust error handling and user feedback (success, info, warning, error messages) within the Streamlit workflow.

PS-I station: Samaro software pvt ltd, Navi Mumbai

Student

Name: VIVEK RISHI PANCHAGNULA (2023A7PS0481G)

Student Write-up:

PS-I Project Title: Camera2Cloud

Short Summary of work done: Design and deployment of a cloud service that accepts photos and videos through an FTP connection then automatically edits (editing code in opencv written by Kaushik) and uploads this to the organization's storage bucket and uploads the metadata to the django backend.

Objectives of the project: Upload photos to backend directly using camera's FTP feature

Tool used: Async Rust, vsftpd (an ftp server), Django (python), bash, Docker compose

Details of Papers/patents: None come to mind.

Brief description of the working environment: Acceptable

Academic courses relevant to the project: Database management, network programming.

Learning Outcome: Planning and designing software systems, writing and debugging code after testing, communication, reading and editing medium-sized codebases, manual deployment and deployment through docker/docker compose.

PS-I station: Samaro software pvt ltd, Navi Mumbai

Student

Name: DHRUV GUPTA . (2023A7PS0551P)

Student Write-up:

PS-I Project Title: Event-Aware Conversational Assistant

Short Summary of work done: During my PS-I internship at Samaro Software Pvt. Ltd., I worked on developing an event-aware chatbot system aimed at simplifying communication between event hosts and guests. The core objective was to allow users to upload event-related documents such as PDFs and Excel files, and enable guests to query this information via a conversational assistant. The backend was built using FastAPI, where I implemented endpoints for file uploads, parsing routines for structured data, and integrated a Retrieval-Augmented Generation (RAG) pipeline. This included generating embeddings from the uploaded content using Sentence Transformers and storing them in a FAISS vector store for semantic retrieval. On the frontend, I used Angular to build user-friendly components for file upload and chatbot interaction. Initially, OpenAI's GPT-3.5 was used for the LLM responses, but later switched to Google Gemini due to quota constraints, requiring adjustments to the API integration. Throughout the project, I worked on resolving real-world issues such as CORS errors, environment variable management, and deployment concerns. I also collaborated with mentors and followed a modular development approach, maintaining clean code and using Git for version control. This project gave me deep insights into NLP, full-stack web development, and working with APIs, while significantly contributing to Samaro's goal of reducing the manual overhead on event hosts through intelligent automation.

Objectives of the project: The primary objective of this project is to develop an intelligent, event-aware chatbot system for Samaro that allows users—particularly event attendees—to query event-specific information through natural language. The aim is to reduce the communication burden on event hosts by enabling a self-service interface where guests can find answers to commonly asked questions such as event timings, venue details, dress code, or speaker schedules. The project focuses on building a full-stack solution using Angular for the frontend and FastAPI for the backend, integrating file upload functionality for PDF and Excel formats, parsing the content, storing it in a structured manner, and using a Retrieval-Augmented Generation (RAG) pipeline to generate accurate responses using a language model. By leveraging modern NLP tools, vector search libraries like FAISS, and LLMs such as Gemini, the project aspires to deliver a scalable and efficient solution that enhances the overall user experience on the Samaro platform.

Tool used: FastAPI – Backend web framework for building APIs Angular – Frontend framework for building the user interface Python – Primary programming language for backend and data processing TypeScript – Used in Angular for strongly-typed frontend development.

Details of Papers/patents: No research papers or patents published related to this work.

Brief description of the working environment: The working environment at Samaro Software Pvt. Ltd. was highly collaborative, fast-paced, and focused on delivering practical solutions to real-world problems in the event management domain. The team encouraged interns to work independently while also providing support and timely feedback through regular check-ins. Communication was transparent and effective, making it easy to clarify doubts and brainstorm ideas. The company fostered a startup-like culture that emphasized innovation, rapid prototyping, and user-focused development.

As an intern, I was expected to actively contribute to the development of new features, explore relevant tools, debug errors, and ensure that the solution aligned with the organization's goals. While I was initially introduced to cybersecurity testing tools like Burp Suite, the focus later shifted to building a chatbot-based event assistant, where I worked end-to-end on backend logic, LLM integration, and frontend testing.

This hands-on experience allowed me to gain practical insights into web application development using FastAPI and Angular, integrate LLMs via Gemini API, and explore advanced tools like FAISS and SentenceTransformers. I also learned to handle real deployment issues like CORS errors, API key security, and environment variable configuration. The exposure to real-time debugging, version control with Git, and collaborative development practices helped me grow as a developer and problem-solver.

Overall, PS-I provided a robust learning experience that strengthened both my technical and communication skills, giving me a better understanding of industry expectations and how academic knowledge translates into impactful software solutions.

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

Learning Outcome: Through this project, I gained hands-on experience in building a complete full-stack application, combining frontend development using Angular with backend logic built on FastAPI. I learned how to handle file uploads (PDF and Excel), parse and preprocess structured and unstructured data, and use embedding models to convert this data into vector representations for semantic search. I explored FAISS for implementing efficient vector-based retrieval, and integrated Large Language Models (LLMs), initially with OpenAI and later with Google Gemini, to generate context-aware responses in a chatbot setting. I developed a deeper understanding of Retrieval-Augmented Generation (RAG) systems and how they can be used to ground LLM outputs in factual data. Additionally, I improved my debugging skills, especially while resolving CORS issues and adapting to API limitations. I also learned how to securely manage environment variables, use Git and GitHub for version control, and collaborate effectively with mentors and team members in a professional setting. Overall, the project enhanced both my technical proficiency and my problem-solving abilities.

PS-I station: Samaro software pvt ltd, Navi Mumbai

Student

Name: NAGA VENKATA KRISHNA KAUSHIK KARPURAPU (2023AAPS0185H)

Student Write-up:

PS-I Project Title: Samara desk2clould desktop utility

Short Summary of work done: Researched and found a crate in rust that converts RAW format photos into usable jpegs, worked on concurrency that leverages the system user is using making compressing multiple photos at once possible, Integrated mpsc pipeline into the utility to ensure smooth uploads, Integrated folder sync into the utility that detects if new photos have been added to a folder and uploads them automatically reducing user interference, working on preliminary stages of editing the photos using CLAHE and gamma correction to make the under/over exposed photos look natural.

Objectives of the project: to build a desktop utility for photographers that automatically recognizes, compress, resize, cull and edit photos appropriately according to user priority.

Tool used: Laptop, Visual Studio, Github

Details of Papers/patents: None

Brief description of the working environment: The ps was online and the company was using an online platform called cosmos that makes it easier for evryone to connect during working hours, Slack was used for text communication, the mentors were friendly helping us with technical stuff and having meets regularly, we learnt how a startup organization works the workflows and got a good understanding of rust programming language and git version control.

Academic courses relevant to the project: Computer Programming

Learning Outcome: Rust programming language, tauri framework

PS-I station: Samaro software pvt ltd, Navi Mumbai

Student

Name: AMAN SHARMA . (2023AAPS0753P)

Student Write-up:

PS-I Project Title: AI Image Clustering with Best Shot Selection and Vector Database Integration

Short Summary of work done: We were initially divided into different projects and I was given the AI/ML project. We were supposed to develop a backend service which will cluster similar images and then take out the best shot out of them based on predefined metrics that we had to find and arrive at on our own, all alongside a small marketing gig on Reddit.

Objectives of the project: The objective was to make the Photo Culling part automated for the photographers who use our service by making clusters of very similar images and suggesting them the best shot out of it. Hence speeding up the process of photograph delivery to their clients.

Tool used: Python, Insightface, Tensorflow, Pytorch, Torchvision, Pillow, dlib, FER, Git, Github

Details of Papers/patents: Under an NDA to not discuss

Brief description of the working environment: The working environment was very relaxed and refreshing. Although we had to login in a virtual office on time, there were very lenient deadlines with follow ups twice a week. We interacted with the founder, CTO, CMO and the VP of Engineering directly and it was a great learning experience.

Academic courses relevant to the project: Machine Learning, Deep Learning, Computer Networks,

Learning Outcome: > Knowledge about Tech and Application of AI/ML to industry level scope.
> Exposure to how development takes place inside an organistaion.
> Marketing job was compulsory for all, but not very tedious

PS-I station: Samaro software pvt ltd, Navi Mumbai

Student

Name: NIRALI JAIN (2023B3AD1213G)

Student Write-up:

PS-I Project Title: Backblaze UI

Short Summary of work done: We developed a React-based file manager for Backblaze B2 Cloud Storage, enabling users to access and manage multiple buckets through a single web interface. The application supports secure authentication, file navigation, upload/download, and real-time folder statistics. We also conducted VAPT using tools like OWASP ZAP and Burp Suite to ensure security. The project enhanced both usability and data management efficiency for cloud storage users.

Objectives of the project: To develop a web-based application that enables users to securely access Backblaze B2 buckets from a single interface.

Tool used: React, JavaScript, Tailwind CSS, Netlify

Details of Papers/patents:-

Brief description of the working environment: Regular feedback from mentor on a day-to-day basis on Slack; meets were held almost once weekly. Reddit marketing meets were held regularly (almost daily at one point). Did not expect to be made to do marketing work; sometimes felt like that was the main project rather than the tech work we were initially alloted.

Academic courses relevant to the project: -

Learning Outcome: Learnt to build a React project, make a basic web security report, and marketing strategies.

PS-I station: Samaro software pvt ltd, Navi Mumbai

Student

Name: DEEP MITRA . (2023B5AA0670H)

Student Write-up:

PS-I Project Title: Backblaze Bucket File Manager

Short Summary of work done: During my PS-I, I worked on building a frontend-based file manager for Backblaze B2 cloud storage using React and the AWS SDK. The goal was to allow efficient browsing, uploading, downloading, and deletion of files stored in B2 buckets. The interface supports pagination (50 items per page), breadcrumb-based navigation, and real-time folder statistics (size, file count, last modified), even for folders containing thousands of files. I implemented CDN and B2 URL generators, allowing quick access to stored files. All credentials (Key ID, Application Key, and Bucket Name) are securely taken via a login form and stored temporarily, with no use of .env files for sensitive data. We initially started with a backend-based multi-bucket manager, but eventually transitioned to a frontend-only architecture for simplicity, performance, and ease of deployment. The application is optimized with token-based caching to avoid redundant network calls, improving speed and reducing load. I also collaborated with the team to evaluate cloud deployment options (Render, Firebase, Railway, etc.), and helped finalize a secure, scalable, and cost-effective frontend-only setup.

Objectives of the project: Making a React App to access a B2 bucket and manage the files inside.

Tool used: Chrome Dev Tools, Git, Linux Terminal, VS Code, JavaScript, Node.js, React, Netlify.

Details of Papers/patents:NA

Brief description of the working environment: The working environment was remote, collaborative, and technically enriching. Communication was primarily async, with regular check-ins via messages and version control systems. The company expected us to be self-driven, solve problems independently, and make informed architectural decisions. While guidance was available, there was ample autonomy, allowing us to research and compare various platforms (like Firebase, Render, Netlify, Railway) to suit our project's needs. We were also expected to prioritize scalability, performance, and maintainability while writing code. I learned how to balance engineering trade-offs, like when to introduce or avoid a backend and how real-world decisions often involve factors beyond just code; such as deployment ease, costs, and security practices. I also got a glimpse into vulnerability assessment and penetration testing (VAPT), which we were tasked to perform on an existing application as part of a side module. Overall, the experience helped me grow as a full-stack developer, strengthened my problem-solving ability, and exposed me to production-ready workflows.

Academic courses relevant to the project: CS F111 (Computer Programming), BITS F112 (Technical Report Writing)

Learning Outcome: I developed a deeper understanding of cloud storage systems and their integration with web applications. I learned how to interact with Backblaze B2, an S3-compatible cloud storage service, using the AWS SDK. I implemented advanced React concepts like hooks, pagination, and state management for efficient file browsing. I also gained practical experience in working with secure credential handling, presigned URLs for file access, and performance optimization techniques like caching. Deploying the project on Netlify and collaborating on infrastructure decisions (like choosing between front end-only vs. back end-based architectures) also helped me understand real-world development and DevOps trade-offs.

PS-I station: Sasha Innoworks Pvt. Ltd., Hyderabad

Student

Name: ASISH KUMAR BEHERA (2022A1PS1303G)

Student Write-up:

PS-I Project Title: Design and Development of a Real-Time Automation & Robotics Platform: Landing Page & Internal Dashboard

Short Summary of work done: During my PS-I internship at Sasha Innoworks, I contributed to the full stack design and development of two key projects: a public landing page and a secure internal robotics dashboard. The landing page was carefully crafted to enhance the company's credibility, integrating visually rich sections such as grants received, an animated team profile (with credentials and patents), and robust SEO optimization. After deploying the landing page, I worked extensively on the internal dashboard, which is used by factory operators and engineers to monitor live camera feeds and view AI-driven analytics like infill detection, defect detection, and dimension verification. My responsibilities included implementing modular real-time data streams, interactive charts, authentication, and user-oriented design enhancements. The entire development process was managed in agile sprints, with weekly mentor reviews guiding refinements. I also contributed to technical documentation, code reviews, and iterative testing cycles, gaining significant insights into both the software development lifecycle and practical industrial applications of digital automation.

Objectives of the project: To design and develop a modern, responsive landing page that builds public trust by showcasing company grants, team expertise, and achievements. To create an internal, secure dashboard as a real-time operator tool for monitoring manufacturing operations with live video feeds and AI-powered analytics. To integrate advanced UI/UX, animation, and SEO optimization for the landing page, and ensure robust real-time data flow, visualization, and access control for the dashboard.

Tool used: Next.js (React framework) TypeScript Tailwind CSS, Shadcn UI (UI frameworks) Figma (prototyping/design) Supabase/PostgreSQL (backend, database) Socket.IO (real-time data streaming) Chart.js (data visualization) Git, GitHub (collaboration/version co

Details of Papers/patents: No personal papers or patents during this internship.
(However, the company and team have multiple patents—these were highlighted and showcased on the project landing page.)

Brief description of the working environment: The working environment at Sasha Innoworks Pvt. Ltd. was highly collaborative, innovative, and growth-oriented. As an intern, I was encouraged to step beyond my comfort zone, take responsibility for core modules, and participate in weekly technical and design discussions. The company set clear expectations for

technical quality, creativity, and independent problem-solving, while always offering mentoring and timely feedback. I learned how agile workflows, iterative UI/UX design, and stringent review cycles contribute to robust industrial software products. Exposure to real-world challenges in manufacturing automation and live data analytics was invaluable. The culture was supportive and flexible, balancing structured task division with room for creative experimentation. Overall, this internship bridged my academic learning with practical skills in software engineering, team dynamics, and industrial digitalization.

Academic courses relevant to the project: Object Oriented Programming
Data Structures and Algorithms
Database Systems
Computer Networks
Software Engineering
Artificial Intelligence and Machine Learning
Human Computer Interaction
Web Technologies
Operating Systems

Learning Outcome: Practical experience in full-stack web development (Next.js, React, Tailwind CSS, Shadcn UI).
In-depth understanding of integrating real-time industrial video feeds and AI analytics for manufacturing.
Mastery of UI/UX design for both public and internal user interfaces.
Professional exposure to SEO, deployment, and security practices.
Agile teamwork, iterative development, and effective communication with mentors and stakeholders.

PS-I station: Sasha Innoworks Pvt. Ltd., Hyderabad

Student

Name: B VIKYATH PATIL . (2023A3PS0343H)

Student Write-up:

PS-I Project Title: Real-Time Conveyor Monitoring Dashboard for Sasha Innoworks

Short Summary of work done: During my PS-I internship at Sasha Innoworks, I contributed to the development of a real-time monitoring dashboard for an industrial conveyor system. The goal was to create a centralized interface where plant supervisors could monitor conveyor performance, identify issues promptly, and improve operational efficiency. My role focused on frontend development using React, where I created reusable components and integrated charting libraries to display live data such as speed and temperature. I also worked on simulating data streams to mimic real-time industrial conditions, which was essential for testing. The team collaborated closely to design the UI on Figma and manage tasks using GitHub. In addition, I supported the integration of AI-based fault detection to enable predictive alerts. This project gave me exposure to real-world challenges in industrial automation and helped me apply my technical knowledge in a meaningful way.

Objectives of the project: The main objective of this project was to design and develop a real-time web-based dashboard to monitor conveyor systems used in industrial settings. The project aimed to provide a responsive and user-friendly interface that visualizes key operational parameters such as speed, load, and temperature. It also intended to integrate AI-based anomaly detection to help in predictive maintenance and reduce operational downtime. Another objective was to build a modular system that could be easily scaled or adapted to different conveyor environments.

Tool used: The software tools used in the project included React.js, Tailwind CSS, Chart.js, Node.js, Python for AI integration, Figma for UI/UX design, and GitHub for version control. Hardware-wise, the project utilized simulated data inputs representing conveyor.

Details of Papers/patents:-

Brief description of the working environment: The working environment at Sasha Innoworks was collaborative, fast-paced, and focused on innovation. From the beginning, the company expected us to approach the project with ownership and creativity. Regular meetings and design reviews kept us aligned with real-world industrial needs. We were encouraged to apply theoretical knowledge to solve practical problems in automation and AI integration. I got to interact with experienced engineers and developers who offered constant feedback and mentorship. The team culture was open and adaptive, allowing me to contribute meaningfully despite being a trainee. I also learned to handle tasks independently, meet deadlines, and document progress effectively. The company emphasized the importance of modular, scalable design and real-time performance — both of which were key learning aspects. Working in this setting sharpened my problem-solving abilities and taught me how to manage complexity in a live project. Overall, the internship bridged the gap between academic knowledge and industrial expectations, giving me confidence to work on full-scale tech solutions.

Academic courses relevant to the project: Object-Oriented Programming, Computer Networks, Software Engineering, Artificial Intelligence, Data Structures and Algorithms, Embedded Systems, and Web Technologies.

Learning Outcome: Through this project, I gained practical knowledge in building real-time web applications using modern frontend technologies such as React and Tailwind CSS. I learned how to visualize dynamic data using charts and graphs while ensuring the interface remains responsive and intuitive. I also understood the process of integrating AI models into a live system for fault detection. The project enhanced my understanding of industrial automation and IoT workflows and improved my ability to collaborate effectively in a team setting, manage version control through GitHub, and follow a structured development process.

PS-I station: Sasha Innoworks Pvt. Ltd., Hyderabad

Student

Name: AARUSHI TIWARI . (2023A5PS1171P)

Student Write-up:

PS-I Project Title: Designing and development in industrial automation

Short Summary of work done: 3D designing of diffrent components and reserach and documentation

Objectives of the project: Designing of a a machine vision system for testing of pharmaceutical products and designing of robotic arm for industriual automation.

Tool used: Fusion 360, google scholar

Details of Papers/patents:none

Brief description of the working environment: The working environment was positive and supportive, providing good learning opportunities throughout the PS-I. Both the mentors and the Faculty Off-Campus Instructor (FOCI) were very helpful and approachable, offering guidance whenever needed. Under their supervision, I was able to learn a lot and gain practical exposure, making the entire experience valuable and enriching.

Academic courses relevant to the project: Mechanical and manufacturing

Learning Outcome: Fusion 360, research analysis

PS-I station: Sasha Innoworks Pvt. Ltd., Hyderabad

Student

Name: KAITHOJU POOJA . (2023A7PS0001H)

Student Write-up:

PS-I Project Title: Path planning and grasping

Short Summary of work done: During my PS-I, I worked on developing an autonomous navigation system using Robot Operating System (ROS). The goal was to enable mobile robots to navigate indoor environments using SLAM, path planning, and obstacle avoidance. I simulated TurtleBot3 and Jackal in Gazebo, visualized sensor data in RViz, and integrated ultrasonic sensors with Raspberry Pi. Communication between the Raspberry Pi and host PC was established for real-time data exchange. I gained experience in ROS tools, Linux environment, and sensor integration. This project helped me understand robotics frameworks and laid the groundwork for future real-world robotic deployments.

Objectives of the project: Build an autonomous navigation system using ROS. Implement SLAM for indoor mapping. Simulate using TurtleBot3 and Jackal in Gazebo. Use ultrasonic sensors for obstacle detection. Integrate Raspberry Pi with ROS system. Visualize data using RViz. Test and validate system performance.

Tool used: Hardware: Raspberry Pi 4, Ultrasonic Sensors, Breadboard, Jump Wires, Power Bank
Software: ROS Noetic, Ubuntu 20.04, Gazebo, RViz, Python, SSH, VNC Viewer

Details of Papers/patents: None

Brief description of the working environment: At Sasha Innovorks, the work environment was collaborative and supportive, with regular guidance from mentors. The company expected interns to be proactive, disciplined, and communicative, providing timely progress updates.

During PS-I, I gained practical experience with ROS, Gazebo, Raspberry Pi sensor integration, and SLAM algorithms. I improved my skills in simulation, real-time data communication, and troubleshooting embedded systems.
This internship strengthened both my technical and soft skills, including teamwork, documentation, and presentations. It was a valuable experience bridging theory with real-world robotics applications.

Academic courses relevant to the project: Robotics and Automation
Embedded Systems
Operating Systems (Linux)
Computer Networks
Artificial Intelligence and Machine Learning
Sensors and Actuators
Control Systems
Data Structures and Algorithms

Learning Outcome: Understood ROS architecture and workspace.
Gained hands-on experience with TurtleBot3 & Jackal simulation.
Learned SLAM and autonomous navigation techniques.
Integrated sensors with Raspberry Pi and ROS.
Used Gazebo and RViz for simulation and visualization.
Improved problem-solving and debugging skills.
Learned teamwork, documentation, and presentation skills.

PS-I station: Sasha Innoworks Pvt. Ltd., Hyderabad

Student

Name: SHRINIKETH DEEVANAPALLI . (2023A8PS0414H)

Student Write-up:

PS-I Project Title: COMPUTER VISION AND AUTOMATION SYSTEMS FOR INDUSTRIAL APPLICATIONS

Short Summary of work done: During my Practice School at Sasha Innoworks, I developed a real-time machine vision system for industrial automation. The work involved configuring industrial cameras, optimizing lighting setups, and implementing camera control using the pypylon SDK with features like auto-exposure and digital zoom. I built a dynamic control routine that adjusted camera parameters based on live feedback to ensure consistent image quality across varying conditions. A core focus was implementing an object detection pipeline using YOLOv3. I created a high-quality, annotated dataset by collecting, filtering, and labeling images of target objects. I developed base scripts for image preprocessing, running inference, and visualizing detection outputs. The system was tested for performance in real-time conditions, emphasizing low-latency and reliability. I also worked on hardware-software interfacing, handling low-level communication with the camera, and managing real-time constraints common in embedded ML workflows. Additionally, I contributed to designing a comparative study framework for IoT-enabled hydroponic and aeroponic systems to support data-driven analysis in smart agriculture. The final outcomes included a deployable camera setup, annotated datasets, and modular detection scripts. This experience sharpened my skills in computer vision, embedded systems, and real-world deployment of AI-based solutions in industrial environments.

Objectives of the project: The objectives of the project are to analyze and implement optimal lighting solutions for industrial machine vision, develop an advanced camera control system using the pypylon SDK with auto-brightness and digital zoom features, implement and test a real-time object detection system using the YOLOv3 algorithm, design a comparative study of IoT-enabled hydroponic and aeroponic indoor farming systems, prepare a comprehensive dataset for machine learning applications in industrial environments, and outline a workflow for integrating all these systems into a unified perception-to-action pipeline.

Tool used: Hardware: Industrial cameras (Basler), LED lighting systems, embedded controllers for camera interfacing, IoT sensors for farming systems. Software: pypylon SDK for camera control, Python for scripting and automation, OpenCV for image processing, YOLOv3

Details of Papers/patents:nil

Brief description of the working environment: The work culture at Sasha Innoworks was flexible but focused. People were helpful and open to questions. Everyone pushed to get things done on time without too much pressure. It was a good mix of independence and teamwork, with regular feedback to keep me on track. Overall, a solid environment to learn and work without stress.

Academic courses relevant to the project: yes
But Basic Coding Knowledge is needed - CS F111 (Computer Programming)

Learning Outcome: Gained hands-on experience with industrial cameras, lighting systems, and imaging standards. Understood real-time constraints in machine vision and embedded ML

pipelines. Worked on hardware-software interfacing with low-level camera control and real-time feedback. Built a deployable camera setup for live inference, created an annotated dataset, and developed base models and scripts for object detection.

PS-I station: Sasha Innoworks Pvt. Ltd., Hyderabad

Student

Name: DAMERA SHARANYA (2023B3TS2203H)

Student Write-up:

PS-I Project Title: Autonomous navigation of a mobile robot, Path planning

Short Summary of work done: , I worked on developing and implementing autonomous navigation for a mobile robot in a warehouse-like environment. The primary objective was to enable the robot to navigate from one point to another efficiently while avoiding static and dynamic obstacles. My work began with setting up the Robot Operating System (ROS Noetic) on Ubuntu and creating a simulation environment using Gazebo and RViz. I configured the robot's sensors and tested navigation algorithms such as Dijkstra and A* for global path planning, and Dynamic Window Approach (DWA) for local planning. I integrated sensor data from ultrasonic modules to detect obstacles and fine-tuned the robot's parameters to optimize its speed, safety, and path accuracy. I ensured smooth movement by adjusting ROS navigation stack parameters like inflation radius, cost maps, and velocity limits. After successful simulation, I transitioned to real hardware, deploying the ROS packages onto a Raspberry Pi onboard the robot. I established communication between the host PC and Raspberry Pi using ROS networking, allowing real-time data exchange and remote monitoring. Finally, I performed real-world tests in a controlled environment to validate the system's reliability and efficiency. This project enhanced my understanding of autonomous systems, ROS architecture, sensor integration, and robot control.

Objectives of the project: To build a robot that could make it's own path to move while avoiding the obstacles inthe path

Tool used: ROS Noetic ,Ubuntu 20.04 , Gazebo , RViz , Raspberry Pi ,Ultrasonic Sensors ,ROS Navigation Stack , Teleop Twist Keyboard Python Bash TF (Transform Library) ,RViz Plugins and Diagnostic Tools

Details of Papers/patents: No

Brief description of the working environment: The working environment during my PS-I was highly collaborative, technically enriching, and supportive. I worked in a research and development setting focused on robotics and automation, where I was encouraged to take initiative and solve real-world problems. The team followed a structured yet flexible workflow, enabling me to experiment, learn, and apply theoretical knowledge to practical scenarios.
From the company, I expected exposure to core robotics technologies, hands-on experience with hardware and software integration, and mentorship from experienced professionals. These expectations were not only met but exceeded. I was guided through every stage of the project, from initial setup to real-world testing, which helped build my confidence in system-level thinking.
During the internship, I gained practical experience in autonomous navigation using ROS, simulation using Gazebo and RViz, and sensor integration on a physical robot. I also developed critical skills in debugging, system configuration, and path planning. Working with Raspberry Pi gave me a deeper understanding of embedded systems and real-time control. Beyond technical skills, I learned the importance of teamwork, documentation, and iterative development.
Overall, the PS-I experience strengthened my understanding of robotics and enhanced my ability to work independently on complex engineering problems in a professional environment.

Academic courses relevant to the project: Robotics
Control Systems
Embedded Systems
Computer Programming (Python, C/C++)
Data Structures and Algorithms
Digital Electronics
Artificial Intelligence / Machine Learning
Mathematics for Engineers (Linear Algebra, Calculus)
Sensor Technology /

Learning Outcome: Ubuntu software, ROS with python, testing and debugging

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PS-I station: Savycode Private Limited, Nagpur

Student

Name: DHUMAL SHRIRAM SUDHAKAR . (2023A7PS0003P)

Student Write-up:

PS-I Project Title: Predictive Modeling for Loan Approval using Machine Learning

Short Summary of work done: During my Practice School-I (PS-I), I worked on a project focused on loan approval prediction using machine learning. The objective was to analyze a structured dataset containing various financial and demographic attributes of applicants to determine whether a loan should be approved. The work began with data preprocessing, where I handled missing values, encoded categorical variables, and normalized numerical features. This was followed by exploratory data analysis (EDA) to uncover patterns and correlations in the data, helping identify key factors that influence loan approval decisions. Multiple classification models such as Logistic Regression, Decision Trees, Random Forest, and XGBoost were implemented and compared. Performance was evaluated using metrics like accuracy, precision, recall, and F1-score, with hyperparameter tuning applied to optimize model effectiveness. In addition, I documented the workflow and findings, including feature importance rankings and model insights that could assist stakeholders in decision-making. This project enhanced my practical knowledge of machine learning workflows, data wrangling, and model evaluation, while also strengthening my understanding of credit risk assessment in financial systems.

Objectives of the project: To analyze and understand the key features influencing loan approval decisions using historical loan applicant data

Tool used: Python,Google Collab,pandas,NumPy, Matplotlib & Seaborn

Details of Papers/patents: None

Brief description of the working environment: The working environment during PS-I was professional, collaborative, and conducive to learning. Regular tasks were structured around self-paced exploration, team reviews, and mentor guidance. I was given the flexibility to explore data science workflows while being encouraged to meet deadlines and present findings periodically.
The company expected us to approach the problem with analytical thinking, maintain discipline in documentation, and demonstrate an understanding of real-world applications of machine learning in the financial domain.

Academic courses relevant to the project: Data Structures and Algorithms
Probability and Statistics
Programming Fundamentals

Learning Outcome: Understanding of the Loan Approval Domain
Data Preprocessing and Cleaning Skills
Exploratory Data Analysis (EDA)
Model Building and Evaluation

PS-I station: sfHawk – Tech, Pune

Student

Name: RHYTHM BULANI . (2023A7PS1098H)

Student Write-up:

PS-I Project Title: Content Automation Pipeline

Short Summary of work done: I made a portal using streamlit for frontend and python for backend, I integrated openai's API to generate content and images for website. and also used wordpress rest API. I wrote a base prompt which is passed with the user prompt which contains the instructions about how to write the content. I also learnt about deployment on streamlit community cloud. there was another project on which I worked which was related to performance monitoring of the server for which I used perfmon.

Objectives of the project: Create a portal which can generate content like blogs and case studies by taking a a basic prompt from used and allow the user to publish it on his wordpress website.

Tool used: cursor, python, streamlit, OpenAI API, WordPress Rest API, Streamlit Community Cloud

Details of Papers/patents:NA

Brief description of the working environment: It was a good experience for me. I was assigned a good project and the employees in the company were helpful and easy to reach out to. The vibe of the office was good and very positive. We had weekly reports with the director of the company where he discussed about the progress about our project. and my manager used to

hold the meeting whenever possible otherwise connects me with other employee who has the knowledge about this.

Academic courses relevant to the project: Not sure

Learning Outcome: Python, API integration, Prompt engineering, Streamlit, deployment on streamlit community Cloud, presenting the Project.

PS-I station: sfHawk – Tech, Pune

Student

Name: ISHITA KAUSTUBH MEHTA (2023A8PS1070G)

Student Write-up:

PS-I Project Title: CNC Program Optimization and Social Media Automation Bot

Short Summary of work done: My internship at sfHawk Solutions, a product-based startup based in Pune, has been focused on building intelligent software tools for the analysis and optimization of CNC (Computer Numerical Control) machine programs. The company's fl agship product, Vajra, is an industrial analytics platform designed to monitor Overall Equipment Effectiveness (OEE) and improve the operational effi ciency of CNC machines. Vajra aims to bridge the gap between manufacturing and data intelligence by providing actionable insights through real-time data tracking and machine log analysis. As part of this vision, my project involves the optimization of CNC programs by analyzing G-code, other CNC programming formats, and detailed machine log fi les generated by Vajra. The core objective is to extract key performance metrics—such as RPM, feed rate, spindle load, and cycle time—and use them to identify ineffi ciencies in machining processes. To achieve this, I have been developing Python-based scripts that transform raw machine data into structured tabular formats and generate visual analysis for easier interpretation. This process not only aids in understanding the behavior of CNC machines but also lays the foundation for recommending optimized code that can enhance machine performance and reduce idle time. I was assigned a second project titled "Social Media Automation Bot." This project aimed at automating the content creation, image generation, and post-scheduling process across multiple social media platforms using APIs and AI-powered assistants. The goal was to create workfl ows using tools like n8n.io and OpenAI to

automate posts, tailor content per platform, and even engage with audience comments. This project significantly contributed to my understanding of real-world software applications in digital environments.

Objectives of the project: Convert raw CNC data into actionable insights - Automate parameter extraction and performance analysis - Identify inefficiencies and reduce cycle time - Enhance quality and reduce cost via optimization - Establish a foundation for real-time monitoring and predictive maintenance - Automate posting on social media platforms like Facebook, LinkedIn, and X. Engage with users by commenting on their posts, responding to queries, and interacting with comments in real-time. Ensure all actions are domain-specific and aligned with the product information or marketing strategy. Enhance customer engagement and brand visibility across targeted social media platforms. Provide an easy-to-use dashboard for tracking interactions, comments, and posts

Tool used: Programming Languages: JavaScript (for frontend), HTML/CSS. ● AI/NLP Tools: Make.com, n8n.io. Open-source workfl ow automation tool used, with drag-and-drop node-based execution. ● Social Media APIs: Facebook Graph API, LinkedIn Marketing API, X (Twitter)

Details of Papers/patents:none

Brief description of the working environment: The environment was very friendly. I got to learn a lot from the project. Seniors their are very skilled and willing to help.

Academic courses relevant to the project: OOPS, C programming

Learning Outcome: Data & Process Learnings:

Structured formats are essential
Value of automation in industrial settings
Visual data > raw data for communication
Iterative and modular development is effective

Gained hands-on experience with API integration across multiple platforms (Facebook Graph API, LinkedIn API, and X API).

• Developed skills in prompt engineering and AI assistant configuration for content and image generation using OpenAI.

• Improved debugging, error handling, and modular code organization in a real-time workflow environment.

• Understood the backend architecture of bots involving modular task nodes, scheduling, and response parsing.

PS-I station: sfHawk – Tech, Pune

Student

Name: AKSHAT YOGESH LAD (2023B2AD0764G)

Student Write-up:

PS-I Project Title: Spindle Load Monitoring System and Social Media Automation

Short Summary of work done: The first project involves the design of a Spindle Load Alarming System for CNC machines, which monitors real-time spindle load data to prevent damage and optimize maintenance. Using Machine Learning and Deep Learning techniques such as Isolation Forest and LSTM Autoencoder, the system detects and filters out anomalous data across various Tool IDs, Part Counts, and Program Groups. Graphical visualizations compare spindle load behavior before and after anomaly detection, enabling more accurate decision-making. The second project focuses on building an AI-based Social Media Automation System that streamlines content generation and publishing across platforms like Facebook, LinkedIn, X, and Instagram. Leveraging OpenAI's Assistant and the n8n automation platform, the workflow extracts article content from URLs, summarizes it, generates visuals, and crafts platform-specific posts.

Objectives of the project: Spindle load Management to avoid any damage or downtime of CNC machine and automating Social media posting.

Tool used: Python Lib and n8n

Details of Papers/patents: None

Brief description of the working environment: During my PS-I, I worked in a professional and collaborative environment that encouraged learning and problem-solving. The workplace was well-structured, with clear communication channels and a culture of mutual respect between mentors and interns. I had access to necessary resources, tools, and guidance, which created an ideal setting for skill development and hands-on application of theoretical knowledge.

Academic courses relevant to the project: yes

Learning Outcome: I learnt Machine Learning algorithms implementation.

PS-I station: Siemens Digital Industries Software India Pvt Ltd, Pune

Student

Name: ARCHIT DIWANE . (2023A3PS1361H)

Student Write-up:

PS-I Project Title: Requirement Specific Import Optimization

Short Summary of work done: As part of the Product Lifecycle Management (PLM) division, I developed a system to automate the extraction and import of client-provided requirements from PDF documents. The solution handled both text-based and scanned/image-based PDFs using a combination of OCR (Optical Character Recognition), PDF parsing libraries like pdfplumber and PyMuPDF, and LLM-based prompting to identify and structure the requirements. The extracted data was cleaned, formatted, and integrated into the PLM system for downstream engineering use.

Objectives of the project: extract requirements in a hierarchy into a JSON from a PDF input

Tool used: mistral OCR , Azure openAI , pytesseract ,various python libraries

Details of Papers/patents:na

Brief description of the working environment: the work life balance was very good , with daily project sync ups we got proper advice and mentorship. which helped ur throughout the project .

Academic courses relevant to the project: yes

Learning Outcome: Learned how to approach and. solve real world problems.

PS-I station: Siemens Digital Industries Software India Pvt Ltd, Pune

Student

Name: ISHAN TARANEKAR (2023A4PS0268G)

Student Write-up:

PS-I Project Title: NFR and Multipart features

Short Summary of work done: This project explores how to ensure software systems work well under pressure by using Apache JMeter. We created a detailed testing setup that checks how applications handle uploading and downloading files at the same time - something that happens frequently in real-world scenarios. Our approach uses various JMeter features like data processors and control mechanisms to simulate realistic user behavior. It also helps users to stay up-to-date to prevent vulnerabilities. We show how developers can use everyday tools like Gradle and IntelliJ IDEA to automatically check for and fix security issues in their code libraries. Since many applications now rely on cloud storage, we have tried to investigated ways to optimize file operations using Amazon S3, particularly focusing on techniques that break large files into smaller pieces for faster, more reliable uploads. This approach helps overcome common limitations that slow down file transfers and also problems like gateway limitations. Multipart functionalities have been implemented with the proper steps like documentation, control flow, writing unit tests and deployment in the pipelines for further testing. This testing is performed for individual APIs using Postman tool and for collections of APIs using Newman tool.

Objectives of the project: To add a feature to the existing services and to test for the NFRs

Tool used: ChatGPT, Java, Swagger, Jmeter

Details of Papers/patents:NONE

Brief description of the working environment: The company made all the projects beginner friendly and provided a great learning as well as working environment during the entire period of my internship.

Academic courses relevant to the project: Computer Programming

Learning Outcome: Successfully added the partial download feature to the existing company APIs.

PS-I station: Siemens Digital Industries Software India Pvt Ltd, Pune

Student

Name: ATHARVA DESHKAR . (2023A7PS0121H)

Student Write-up:

PS-I Project Title: AI based product guidance system

Short Summary of work done: We build a python backend using flask. This was used to generate natural language instructions from LLM endpoints. Then we had the client side code where we added necessary UI elements. We also had a database to store all the meta data. All of these pieces worked together using APIs.

Objectives of the project: To build an AI assistant of sorts for users to be able to navigate through complex workflows in an enterprise software.

Tool used: Python, OpenAI APIs, JavaScript(React), HTML

Details of Papers/patents:NA

Brief description of the working environment: The working environment was very flexible. The office is very nice. The mentors are very helpful. The projects we were given were real projects that would go into production at a later date. We had to seek help for a lot of things and our mentor was always there to guide us. We only had to ask.

Academic courses relevant to the project: DBS

Learning Outcome: Front end
APIs
LLMs

PS-I station: Siemens Digital Industries Software India Pvt Ltd, Pune

Student

Name: ATHARV PATIL . (2023A7PS0161H)

Student Write-up:

PS-I Project Title: Supplier Selection based on Predictive Algorithms

Short Summary of work done: Developed an intelligent supplier recommendation system for Siemens by processing product descriptions using LLMs, applying predictive algorithms like Markov Chains and Apriori, and integrating the solution into their PLM platform via Flask-based APIs.

Objectives of the project: To make supplier selection for different items easier.

Tool used: VS Code, DevOps tool, Postman.

Details of Papers/patents:NA

Brief description of the working environment: During my PS-I at Siemens, I worked in a supportive and innovation-driven environment where I was encouraged to take ownership of my project while receiving guidance from mentors. The company expected clear communication, timely updates, and a strong grasp of the problem at hand. Through this experience, I gained practical exposure to applying machine learning and algorithmic approaches to real-world challenges, learned how to build scalable backend systems, and improved my professional and collaborative skills in a corporate setting.

Academic courses relevant to the project: OOPS.

Learning Outcome: Machine Learning, API, JavaScript, Python, Flask

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PS-I station: Siemens Digital Industries Software India Pvt Ltd, Pune

Student

Name: MANTHAN ANURAG BOKDE . (2023AAPS0218H)

Student Write-up:

PS-I Project Title: AI based project guidance system.

Short Summary of work done: During my PS-I internship, I worked on building an AI-powered product guidance system designed to enhance user onboarding in complex enterprise platforms. The core objective was to transform raw user interaction data into smart, step-by-step tutorials using large language models (LLMs). The process involved capturing front-end metadata such as clicks, command flows, and UI transitions, and designing a backend pipeline to structure this data for AI processing. We then used LLMs to auto-generate human-readable instructions that reflect actual user workflows. A key feature was making these tutorials interactive and clickable, enabling users to jump directly to relevant screens—making the experience smooth and intuitive. Beyond implementation, a significant part of the work was focused on designing the system architecture, understanding user behavior, and applying AI in a way that adds real, usable value. Working in a real-world industrial software context helped me appreciate the scale, modularity, and precision required in enterprise systems like Teamcenter. Overall, the internship sharpened my skills in AI integration, metadata processing, frontend-backend coordination, and user-centric design. It gave me hands-on exposure to building intelligent systems that sit at the intersection of UX, data, and automation.

Objectives of the project: The aim of our project is to build an AI-based guidance system that helps users understand and navigate complex enterprise software more efficiently. We do this by tracking user interactions — like clicks, tabs opened, or buttons pressed — and then use large language models (LLMs) to convert that data into step-by-step tutorials. What makes it powerful is that the tutorials include clickable instructions. So when a user reads a step like "Open the settings tab," they can click it, and it will directly execute that instruction in the software. This improves onboarding, reduces training effort, and helps users become productive faster — all without needing manual documentation.

Tool used: Teamcenter, Git and Gitlab, DOUG, React js, Python Flask

Details of Papers/patents: No.

Brief description of the working environment: My PS-I internship was a really great experience at Siemens. The work environment was chill and everyone was super supportive — lots of smart people around who were always ready to help or share ideas. It made learning and collaborating fun and stress-free.
So, Siemens is a big MNC, and was one of the best stations offered in ps1.

The company definitely lived up to my expectations. I got hands-on experience working on some cool AI-driven features, like Teamcenter, premium AI models. It was exciting to see how tech can actually make powerful software easier to use.
Besides the tech, I learned a lot about how important teamwork and communication are in a real work setting. The project gave me insight into building scalable systems and thinking from the user's perspective to improve the overall experience.
All in all, the internship was a solid opportunity to level up my skills, work with talented folks, and contribute to something meaningful. It was actually a kind of BITS away from BITS thing because there were ps2 and summer interns , BITS alumni also.

Academic courses relevant to the project: My branch is ECE, So only c programming and FDSA were relatable.

Learning Outcome: During the project, I gained experience in working with LLMs and integrating AI into real-world applications. I learned how to track user interactions, process metadata, and generate dynamic, clickable tutorials. I also improved my skills in frontend-backend integration using React, Flask, and REST APIs, and understood how to automate user onboarding and guidance in complex software systems.

PS-I station: Siemens Digital Industries Software India Pvt Ltd, Pune

Student

Name: UJJWAL JAIN (2023AAPS0602G)

Student Write-up:

PS-I Project Title: Extracting requirements spec import

Short Summary of work done: Software intern

Objectives of the project: To make a system that extracts requirements specs automatically when fed with pdf.

Tool used: Python, azure, postman api

Details of Papers/patents: Na

Brief description of the working environment: Na

Academic courses relevant to the project: Computer programming

Learning Outcome: Prompt engineering

PS-I station: Siemens Digital Industries Software India Pvt Ltd, Pune

Student

Name: NAVKAR CHORDIYA . (2023B3A71006P)

Student Write-up:

PS-I Project Title: Intelligent Error Monitoring and Root Cause Analysis Framework

Short Summary of work done: Engineered an AI-augmented, cloud-native observability pipeline leveraging Python microservices, AWS CloudWatch, and Siemens ENS to autonomously detect and triage 5xx server anomalies. Integrated dynamic regex-based log correlation and real-time alerting, with an interactive HTML diagnostics dashboard—enabling rapid root cause analysis, reducing MTTR, and advancing DevOps intelligence across scalable, modular infrastructure.

Objectives of the project: Developed an AI-augmented, cloud-native observability framework for autonomous detection, contextual correlation, and root cause analysis of 5xx server errors in AWS. The system integrates Python-based microservices, real-time CloudWatch querying, dynamic regex extraction, and ENS API-driven smart alerting to enable rapid incident triage. An interactive HTML dashboard visualizes correlated logs and failure timelines, enhancing situational awareness. Designed with modular, scalable architecture and future-ready for AI diagnostics and cross-cloud integration, the framework significantly reduces MTTR and empowers DevOps with actionable, real-time operational intelligence.

Tool used: AWS, Cloudwatch, Datadog

Details of Papers/patents:N.A.

Brief description of the working environment: The Organisation had a decent environment, not much pressure. Deadlines were flexible and the mentor was understanding.

Academic courses relevant to the project: CS F111, OOPS.

Learning Outcome: The major learning from this project was a deep, hands-on understanding of Cloud computing and DevOps practices, particularly in cloud-native observability, incident automation, and root cause analysis.

PS-I station: Siemens Digital Industries Software India Pvt Ltd, Pune

Student

Name: AMAN KUMAR SINGH . (2023B5A70795H)

Student Write-up:

PS-I Project Title: Efficient Storage and Constraint-Based Computation of Variant Configurations Using Decision Trees and Z3 Solver

Short Summary of work done: During PS our work was divided into two phases, in the first phase we focused mainly on efficient storage of buildable configurations using decision trees. In the second phase we shifted to testing solver limits by mapping 207 real world variant tables into the Z3 SMT solver, we applied both positive and negative constraint techniques to model valid and invalid configurations respectively and also finally we conducted time and memory complexity analysis, used BFS based techniques to study feature correlation.

Objectives of the project: The main Objective of the project was to efficiently represent and compute valid buildable configurations using industrial variant tables.

Tool used: Hardware: Personal laptop used for development and testing Software: Python, Z3 SMT Solver, Pandas, NumPy, Scikit-learn, Microsoft Excel, VS Code, Matplotlib.

Details of Papers/patents:NA

Brief description of the working environment: The working environment during at Siemens was structured, we had regular meetings with our mentor, which helped us to know and ensure that we were on the right track. The workload was balanced not too heavy but enough to keep us involved. The overall atmosphere was professional.

Academic courses relevant to the project: CSF111(Computer Programming)

Learning Outcome: We learned how to model real world configuration problems using Z3, apply constraint encodings analyze solver performance and work with real world industrial variant tables.

PS-I station: Silver Touch Technologies Ltd., Ahmedabad

Student

Name: KUSH GUPTA . (2023A8PS0713P)

Student Write-up:

PS-I Project Title: Automated Regulatory Data Processing: Independent Systems

Short Summary of work done: This initiative involved developing five distinct and independent automated systems for regulatory compliance data. Four foundational projects—FDA safety labeling, REMS analysis, eCFR XML extraction, and Mumbai Customs PDF classification—leveraged traditional tools like Python, Selenium, and regex, achieving significant efficiencies (e.g., 98% manual effort reduction for FDA, 80% overall PDF classification). Separately, a novel DeepSeek 8B LLM-based system, integrated with LangChain and RAG, was developed. This advanced system addresses the limitations of rule-based methods for unstructured data, emphasizing contextual understanding and adaptability. The collective effort demonstrates a multi-faceted approach to enhancing regulatory data processing.

Objectives of the project: To develop and implement advanced automated data processing systems, combining traditional methods with novel Large Language Model (LLM) approaches, to

efficiently and accurately address critical data extraction and classification challenges within diverse regulatory compliance contexts.

Tool used: OpenRouter, Hugging Face, Regex, Selenium, LangChain, ChunkRAG, Tesseract

Details of Papers/patents: NA

Brief description of the working environment: The working environment at Silver Touch Technologies, an ISO and CMMi Level 5 certified IT solutions provider in Ahmedabad, India, involved applying technical knowledge to real-world regulatory data extraction challenges. The company expected the development of advanced automated systems to drastically reduce manual effort, enhance data integrity, and accelerate compliance information access, thereby improving operational efficiency and regulatory adherence. During PS-I, I gained a comprehensive understanding of regulatory data complexities. I developed proficiency in traditional web scraping (Beautiful Soup, Selenium), XML parsing (ElementTree), PDF extraction (PyPDF2, Tesseract OCR), and regex-based classification. Critically, I acquired practical experience in parallel computing, robust data validation, and integrating Large Language Models (DeepSeek 8B), designing RAG pipelines, and applying prompt engineering for structured data extraction.

Academic courses relevant to the project: yes

Learning Outcome: Through these projects, a comprehensive understanding of regulatory data complexities was gained, alongside proficiency in web scraping (Beautiful Soup, Selenium), XML parsing (ElementTree), PDF extraction (PyPDF2, Tesseract OCR), and regex-based classification. Practical experience was also acquired in parallel computing, robust data validation, and critically, in integrating Large Language Models, designing RAG pipelines, and applying prompt engineering techniques using DeepSeek 8B and LangChain for structured data extraction.

PS-I station: Slash Experiences, Pilani

Student

Name: KEERTHIKA MUDDADA . (2023A7PS0010H)

Student Write-up:

PS-I Project Title: Full Stack Web Development

Short Summary of work done: During my PS-I at Slash Experiences, I worked as part of the product development team on improving the company's gifting platform. Our primary focus was to enhance both the frontend and backend components of the web application to deliver a smoother and more personalized user experience. I contributed to developing and refining several full-stack features using React for the frontend and Django for the backend. Throughout the internship, I collaborated with my team to implement functionalities that improved performance, usability, and maintainability of the platform. This included working with APIs, handling user data, and optimizing workflows. I also participated in regular team meetings, code reviews, and testing phases, which helped me understand the importance of clean code practices, version control using Git, and agile methodologies in a real-world setting. Overall, the internship gave me practical exposure to full-stack web development, improved my technical and teamwork skills, and deepened my understanding of building scalable and user-focused web applications in a startup environment.

Objectives of the project: The objective of the project was to enhance the overall functionality, performance, and user experience of the Slash Experiences platform. The team worked on developing and refining full-stack features, improving scalability and maintainability, and ensuring a smoother experience for both users and internal teams. The goal was to build a more reliable, efficient, and user-friendly platform in line with the company's vision.

Tool used: Visual Studio Code (Code Editor), Git and GitHub (Version Control) , React.js (Frontend Framework) , Django (Backend Framework) , Postman (API Testing) , Figma (UI/UX Design Reference)

Details of Papers/patents:NA

Brief description of the working environment: The working environment at Slash Experiences was collaborative, fast-paced, and supportive. As interns, we were treated like team members and were encouraged to take initiative, ask questions, and contribute meaningfully to the product.
The company expected us to be proactive, responsible, and open to learning. While guidance was always available, we were also given the freedom to explore and solve problems independently.
During PS-I, I gained practical experience in full-stack web development using React and Django. I learned how real-world development teams function, how to use tools like Git and GitHub for version control, and the importance of clear communication in a team setting. This internship helped me grow both technically and professionally, giving me a deeper understanding of web development and product building in a startup environment.

Academic courses relevant to the project: Database Management System(DBMS)
Data Structure and Algorithms (DSA)

Learning Outcome: During the course of the project, I gained hands-on experience in full-stack web development using technologies like React and Django. I learned how real-world product development works in a fast-paced startup environment and improved my ability to collaborate within a development team using tools like Git.

PS-I station: Slash Experiences, Pilani

Student

Name: PRITHVISH CHANDRAYAN . (2023A7PS0014P)

Student Write-up:

PS-I Project Title: Full stack web development

Short Summary of work done: We had to build a website for the company where users can browse and purchase experiences. We first fixed bugs in the existing website and then implemented new features into the website. Most of the website was developed using Cursor AI where we just had to type out detailed prompts about what we wanted for the website and the AI would do it itself.

Objectives of the project: Develop a website for the company

Tool used: Cursor AI, Supabase, React, Vite, TypeScript, Netlify

Details of Papers/patents:.

Brief description of the working environment: It was online so work timings were very flexible. There was no stipulated timing as such, they just assigned work with a date deadline.

Academic courses relevant to the project: DBMS

Learning Outcome: Learnt how to build and deploy a working website from scratch using cursor AI.

PS-I station: Slash Experiences, Pilani

Student

Name: ANANYA PURWAR (2023A7PS0017G)

Student Write-up:

PS-I Project Title: RAG - Based recommendation chatbot

Short Summary of work done: Our primary task was to build a "Gifting Assistant," an AI-powered chatbot that suggests personalized experiences a user can gift, based on the information they share. We implemented a Retrieval-Augmented Generation (RAG) architecture to fetch relevant suggestions from a structured experience database. The chatbot used embeddings and vector search to understand user queries and provide tailored responses. Supabase was used to store and manage user inputs, tags, and session data. The project had a flexible timeline, which gave us the opportunity to manage our own schedules and work independently. After successfully completing the chatbot ahead of schedule, we were assigned two additional projects—one involving a swipe-based recommendation system, and another focused on building a "Suggested for You" feature based on user interactions.

Objectives of the project: To build a gifting assistant for their website that lets users enter recipient details and suggests gifts accordingly.

Tool used: Python, Supabase, FastAPI, Azure OpenAI, Qdrant, Git and GitHub

Details of Papers/patents: None

Brief description of the working environment: The company divided us into verticals based on our individual strengths and interests. These verticals included Web Development, Artificial Intelligence, Growth, Social Media & Content, among others. Being part of a growing startup, the work environment encouraged collaboration across teams to complete the product launch. Due to the startup nature of the organization, this project demanded strong initiative, as there was minimal external guidance provided.

Academic courses relevant to the project: yes

Learning Outcome: - Learnt how to build a chatbot using Retrieval-Augmented Generation (RAG) concepts
- Learned how to store and manage user data in Supabase
- Improved skills in working with APIs and backend services
- As the company is a very recent BITS student started startup, there was an opportunity to give your inputs and be in full control of the work you're doing. Thereby gaining first-hand knowledge into startups.

PS-I station: Slash Experiences, Pilani

Student

Name: SATVIK ADERLA . (2023A7PS0167H)

Student Write-up:

PS-I Project Title: Design and Implementation of an AI-Powered Experience Gifting System Using Retrieval-Augmented Generation (RAG)

Short Summary of work done: I contributed as the Lead AI Engineer and Content Strategist. I developed multiple AI-backed systems to personalize gifting recommendations. My work began with the RAGBot, a conversational AI that collected user preferences and used Groq LLMs and Qdrant vector search to recommend experience gifts. I designed the backend, embedding pipeline, and Supabase integration, and resolved multiple deployment issues around memory constraints. To address preference capture challenges, I architected the Swipe Recommendation Engine, a Tinder-like UI where swipes translated into dynamic recommendations. This included real-time API design, vector scoring logic, and cold-start handling. I also contributed to the “Suggested for You” and “Similar Experiences” modules, implementing semantic inference and history-based filtering to suggest relevant experiences on both homepage and individual listings. Alongside technical work, I led multiple content campaigns, writing Instagram captions, bios, brand hooks, and gift narratives. I also participated in AGI-style benchmark testing of our systems and co-authored GitHub documentation for future developers.

Objectives of the project: To design and implement scalable AI-powered systems for personalized experience gifting, including a conversational recommendation assistant and a swipe-based preference capture engine, leveraging LLMs, vector databases, and modern backend infrastructure.

Tool used: • Software: Python, FastAPI, Supabase, Qdrant, Groq LLaMA-3, OpenAI API, NumPy, PyDantic, LangChain, Uvicorn, Git, VSCode, Postman •Hardware: Render (cloud deployment), local development on MacBook M1

Details of Papers/patents: None submitted yet. Internal AGI-style evaluation benchmarks were used for system validation.

Brief description of the working environment: Slash Experiences fostered a high-growth, fast-paced startup culture with a strong emphasis on ownership and experimentation. As an AI Product Intern, I was trusted with architecting core systems from scratch and iterating rapidly based on testing and feedback. Despite being a remote internship, the team maintained a collaborative environment through async communication and regular syncs.

The expectations were product-driven: building systems that worked in the real world, were efficient under resource constraints, and were user-friendly. I was encouraged to take initiative, propose architectural pivots, and even contribute to the company's content and branding direction. Cross-functional collaboration with design and marketing allowed me to approach tech development through a holistic, product-first lens.

It is important to note that traditional mentorship expectations did not apply in this environment, as the team lacked senior engineering leadership. Most learnings were self-driven or collaborative within a peer-learning dynamic. This setup demanded a high degree of self-research, rapid prototyping, and independent debugging.

The learning curve was steep—from building scalable FastAPI backends and embedding pipelines to deploying real-time recommendation engines and conversational agents. The Swipe Project especially tested my agility, requiring a complete redesign within 48 hours after a model failure in production.

Overall, the experience sharpened my problem-solving mindset and reinforced the importance of technical versatility, product thinking, and initiative—making it a transformative first industry experience.

Academic courses relevant to the project: Machine Learning, oops, DSA, DBMS

Learning Outcome: • Built production-grade FastAPI applications integrating LLMs, semantic search, and Supabase.

- Learned end-to-end system design involving vector embedding pipelines and real-time feedback loops.
- Understood limitations of deploying heavy ML models and adapted with efficient, custom-designed embeddings.
- Gained practical exposure to collaboration across engineering, design, and content strategy teams.

- Practiced structured documentation, architecture mapping, and prompt engineering.

PS-I station: Slash Experiences, Pilani

Student

Name: RISHIT LAVANIA (2023A7PS0446G)

Student Write-up:

PS-I Project Title: Backend and Chatbot Development for an AI-Based Gift Concierge and Swipe Application

Short Summary of work done: Initially we had to research about how to build a Chatbot, then we arrived at rag based after, most of the technical heavy lifting was done by my team lead, i worked on particular modules lime budget filter and chunking mechanism, then after midsem we were assigned another project in the form of swipe based application there we re used the basic AI pipeline and build the surrounding swipe interface. P.S. it is a startup.

Objectives of the project: To create a AI Chatbot that acts as a gift concierge and a tinder like swipe application to allow users to filter through experiences

Tool used: Vs code, python, superbase, future agi, grok llm,llama3

Details of Papers/patents: Paper mainly consist of how the project was made

Brief description of the working environment: I had a great learning experience in the company and understood how real projects work.

Academic courses relevant to the project: Dsa, DBMS, basic c programming

Learning Outcome: Learned how a RAG based AI bot works and how to build it, learned how to work with different python libraries and LLMs, learned how to work with superbase.

PS-I station: Slash Experiences, Pilani

Student

Name: JAGRUTH DODDA . (2023A7PS2013H)

Student Write-up:

PS-I Project Title: Building an initial working version of Slash experiences' website

Short Summary of work done: As a Web Developer Intern, my work was primarily focused on fixing persistent bugs in the website and developing new features. I also had the freedom to express my feedback and suggest new features and improvements for the website. I also worked on fixing issues on the backend database. Apart from web development, I was also given short tasks involving market research and product design.

Objectives of the project: Build a fully functioning version of the website.

Tool used: React js, Tailwind CSS, Vite, Supabase, GitHub

Details of Papers/patents:none

Brief description of the working environment: Within our station, we had diverse teams involving different kinds of work from tech to non tech. We were given the freedom to choose what team we want to work in regardless of our skillset. Since it was an online PS station, we also had flexible work hours. A basic roadmap was provided for the initial two weeks to aid in preparation for the Web Development Interns. I had only 3-4 meetings with mentors throughout the entire internship duration, primarily focused on monitoring project progress and guiding us moving forward. We also had minimal interaction with the faculty. We had one or two meetings a week where we were explained the upcoming evaluation components. I learnt most of the tech-stack on my own, which helped me develop my skills immensely in both Backend and Front Development. For the most part, we also divided the work among ourselves without much input from mentors or the faculty. This further helped me develop my communication and collaboration skills.

Academic courses relevant to the project: Database Systems

Learning Outcome: As an intern for a startup, I worked across both technical and product-facing aspects of the platform. This gave me exposure to full-stack development, UI/UX design, and the strategic decision-making involved in building products from the ground up.

PS-I station: Slash Experiences, Pilani

Student

Name: MOFASSER ARAFAT MIDDA . (2023B1A80965H)

Student Write-up:

PS-I Project Title: AI Intergrated V0 of the company's website

Short Summary of work done: Worked on the frontend part of the company website, and helped make it more efficient. Successful integrated a Razorpay Payment Portal on it as well, and linked it to the backend. Also worked on company's social media strategy using Instagram reels.

Objectives of the project: To integrate a working AI chatbot on the company's website and launch a social media campaign

Tool used: Cursor, Netlify, Substack, Inshot

Details of Papers/patents:none

Brief description of the working environment: Overall, it was a productive.
Academic courses relevant to the project: yes

Learning Outcome: Full Stack Web Dev using Cursor and Substack, and deploying a site using Netlify

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PS-I station: Slash Experiences, Pilani

Student

Name: ANUBHAV CHOURASIA (2023B4AA0939G)

Student Write-up:

PS-I Project Title: Supplier curation and content management

Short Summary of work done: During my PS-I at Slash Experiences, I contributed to content management and supplier curation. I planned and created social media posts, managed Instagram and WhatsApp Business communications, and structured blog workflows to enhance brand identity. On the supplier side, I extracted and verified over 200 provider contacts using LinkedIn and Chrome extensions like Lusha and Hunter, drafted outreach emails, and coordinated interviews via Calendly. I also participated in team discussions for product strategy, including proposing five long-term directions aligned with platform scalability. I led the daily execution of a trend-driven Instagram content calendar and implemented interactive elements (polls, quizzes) to boost engagement. Furthermore, I explored AI automation to streamline reel production, improving efficiency. This internship deepened my skills in digital tools, design thinking, communication, and strategic planning.

Objectives of the project: To streamline content workflows and optimize the onboarding process of experience providers on the Slash Experiences platform. The focus was on enhancing digital presence through content strategy and improving operational efficiency in supplier outreach.

Tool used: Canva, DaVinci Resolve, Streak (Gmail CRM Extension), Calendly, Lusha, Hunter, Google Sheets, CapCut, Meta Suite.

Details of Papers/patents: None

Brief description of the working environment: The working environment at Slash was agile, collaborative, and growth-focused. As a student intern, I was entrusted with core responsibilities in digital operations and given opportunities to present ideas directly to the founding team. Expectations were centered on creativity, consistency, and proactive contribution. The mentorship provided was hands-on and constructive, fostering both personal and professional growth. I learned the nuances of content planning, branding strategy, and how to build communication workflows that scale. Exposure to a startup's fast-paced culture gave me valuable insights into product-market fit, stakeholder management, and iterative

development. The environment encouraged curiosity and experimentation, allowing me to explore AI tools for automation and bring real impact to live campaigns.

Academic courses relevant to the project: Digital Design and Communication
Marketing and Brand Strategy
Product Management (elective exposure)
Communication Skills
Introduction to Programming

Learning Outcome: Learned tools such as Canva, DaVinci Resolve, Streak CRM, Calendly, Lusha, and Hunter.

PS-I station: Smart Owl Studio LLP, Jaipur

Student

Name: PRITHVI VISHAK (2023AAPS0027G)

Student Write-up:

PS-I Project Title: Reblob AI: AI Design Generator for Print-On-Demand Products

Short Summary of work done: I did mostly backend work in NodeJS, and some prompt engineering for text-to-image models. Easy to pick up and do.

Objectives of the project: To develop a web-based application that helps customers design custom-printed merchandise with AI image generation.

Tool used: NodeJS, Postman

Details of Papers/patents:N/A

Brief description of the working environment: Point-of-contact was very friendly and easy to work with. Very little interaction needed with the station (maybe 1 Google Meet per week,

occasional updates on Slack). AI-friendly, with very GPT-able work. Learned a little bit about NodeJS and asynchronous programming. Light workload.

Academic courses relevant to the project: yes

Learning Outcome: Web backend development, professional collaboration

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PS-I station: Smart Owl Studio LLP, Jaipur

Student

Name: RAJ KESHARWANI (2023B2A30770G)

Student Write-up:

PS-I Project Title: Reblob AI - AI Design Generator for Print-on-Demand Products

Short Summary of work done: During my PS-I, I contributed to the REBLOB AI project, which aims to create an advanced foundation for AI-driven design generation in the print-on-demand sector. The project focused on building strong technical capabilities, setting up a reliable backend infrastructure, and defining clear objectives to address challenges in automated design creation. My work involved implementing core functionalities using Node.js and the Express framework, ensuring that the system could handle real-time processing requirements and support high-concurrency operations effectively. I also worked on applying asynchronous programming techniques, integrating APIs, and designing a modular system architecture to enhance scalability and maintainability. These efforts validated the use of the selected technology stack for AI-integrated applications. Overall, the experience provided practical exposure to combining software engineering principles with artificial intelligence, while strengthening my problem-solving, technical, and teamwork skills in a professional working environment.

Objectives of the project: The objective of the project was to establish a strong foundation for AI-driven design generation in the print-on-demand industry by developing a scalable backend infrastructure, implementing Node.js and Express framework, integrating APIs, and designing a modular architecture to validate the feasibility of AI-integrated applications.

Tool used: Programming Language : Javascript Software Visual Studio Code – For writing and editing code. Node.js – Core runtime environment for backend development. npm (Node Package Manager) – For managing project dependencies. Postman – To test HTTP requests.

Details of Papers/patents: No papers or patents have been published

Brief description of the working environment: Brief Description of the Working Environment:
The working environment was professional, collaborative, and conducive to learning. It encouraged discipline, teamwork, and time management while providing exposure to real-world work culture.
Expectations from the Company:
The company was expected to provide guidance, mentorship, and opportunities to gain practical knowledge through hands-on tasks, as well as exposure to industry practices and professional ethics.
Learning During PS-I:
During PS-I, I learned how to apply theoretical knowledge in practical situations, improved my technical and communication skills, gained an understanding of organizational functioning, and developed problem-solving and teamwork abilities.

Academic courses relevant to the project: None of the academic courses are directly relevant to this project.

Learning Outcome: Practical exposure to applying theoretical knowledge in real-world projects
Hands-on experience with Node.js and Express framework
Understanding of API integration and asynchronous programming
Knowledge of backend infrastructure design and modular architecture
Improved problem-solving and debugging skills
Development of teamwork, communication, and time management abilities
Awareness of professional work culture and industry practices

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PS-I station: Smart Owl Studio LLP, Jaipur

Student

Name: PRACHI BHADAURIA (2023B2A70735G)

Student Write-up:

PS-I Project Title: AI ADVERTISEMENT AND VIDEO CREATION

Short Summary of work done: Over an eight-week sprint, version control is established, a full-stack framework is chosen, scalable media storage is configured and a user-friendly interface is built to collect product names, descriptions, platforms and optional assets with real-time validation. In week two, OpenAI's API is integrated to draft a three-part script (hook, pitch and call to action) for user review and editing, followed in week three by the addition of a TTS service to produce a natural-sounding customizable voiceover. During week four, a rendering engine such as Remotion synchronizes visuals, on-screen text, background music and voice into a polished video. Week five adds cloud storage with a preview player and download options. Week six implements split testing and analytics dashboards, week seven adds multi-language localization support, and week eight optimizes performance, refines UX and prepares for launch. This approach reduces video ad production from days to minutes, enabling creators and small businesses to produce high-quality promotional content with ease.

Objectives of the project: To build a feature which helps make AI advertisements

Tool used: Node, Express, React, Postman, Remotion, TTS API, GitHub

Details of Papers/patents: None

Brief description of the working environment: The working environment at PS-I is welcoming and highly efficient, featuring modern workspaces designed to foster collaboration and focus. From the outset, clear objectives and realistic deadlines are communicated to ensure full alignment with organizational goals. Open dialogue is promoted through regular stand-ups, peer reviews and casual "coffee chats," so feedback arrives swiftly and constructively. The PS-I program delivers a steep yet manageable learning curve: hands-on projects introduce foundational concepts, while weekly knowledge-sharing sessions and practical workshops deepen technical skills. Seasoned mentors remain readily available to guide through challenges, offering technical insights, career advice and encouragement at every stage. Upon completion, mastery of key tools and methodologies is achieved alongside the confidence and professional connections essential for future success.

Academic courses relevant to the project: Computer Programming

Learning Outcome: Understanding web development and prompt engineering

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PS-I station: Smartlink Holdings Ltd, Goa

Student

Name: ADITYA BHATIWAL . (2023A7PS0617P)

Student Write-up:

PS-I Project Title: WApplication Development using Supabase and React

Short Summary of work done: During my PS, I worked on building a prototype of the application. I created the database schema in Supabase, developed web pages in React, and connected the frontend with backend APIs. I also implemented basic CRUD operations (create, read, update, delete) and tested the app to fix issues

Objectives of the project: The main objective of the project was to create a working web application where data could be stored, managed, and displayed. I aimed to connect the frontend made in React with the backend powered by Supabase, while also learning how to use APIs effectively

Tool used: I used React.js, Supabase, and JavaScript as the main technologies. I worked in VS Code for coding, GitHub for version control, and Postman for testing APIs. These tools helped in smooth development and testing

Details of Papers/patents: No

Brief description of the working environment: I worked in a collaborative environment where GitHub was used to share code and track changes. Regular discussions with the mentor helped in improving the design and solving problems. The project followed small iterative steps, which made development easier and more organized.

Academic courses relevant to the project: The courses that helped me in this project were Web Technologies, Database Management Systems, Software Engineering, Computer Networks, and Data Structures & Algorithms. These subjects gave me the base knowledge to apply while working on the project.

Learning Outcome: Through this project, I learned how to design a frontend using React.js and connect it with Supabase for database and authentication. I also gained knowledge about API integration, version control with GitHub, and testing/debugging methods. Overall, the project improved my technical as well as teamwork skills.

PS-I station: SNS Technosys LLP, Pune

Student

Name: VARUN SETH (2023A7PS0453G)

Student Write-up:

PS-I Project Title: SOFTWARE INTERN

Short Summary of work done: BUILT AN APP,GENERATED AN AUTOMATIC GITHUB SYSTEM

Objectives of the project: BUILD AN APP,GENERATE AN AUTOMATIC GITHUB SYSTEM

Tool used: Github,xcode,flutter

Details of Papers/patents: NA

Brief description of the working environment: Good

Academic courses relevant to the project: yes

Learning Outcome: NA

PS-I station: Society For Cyberabad Security Council, Hyderabad

Student

Name: SAI DHEERAJ YADAVALLI . (2023A3PS0346H)

Student Write-up:

PS-I Project Title: Traffic Marshal Attandance management App

Short Summary of work done: ChatGPT said: The Traffic Marshal Attendance Management App is a mobile-based solution designed to streamline attendance tracking and workforce management for on-ground personnel such as traffic marshals. Traditional attendance methods—like manual registers—are error-prone, inefficient, and lack real-time monitoring. This app addresses those challenges by using modern technologies such as Flutter for cross-platform mobile development and Firebase for real-time backend operations, authentication, and cloud data storage. A core feature of the app is GPS-based geo-fencing, ensuring that marshals can only mark attendance within authorized locations. The system implements role-based access control, where traffic marshals can check in/out and view their schedules, while administrators can monitor live attendance, assign shifts, and generate reports from an admin dashboard. The app is currently in the testing phase, with APKs distributed to selected users for feedback. Initial results have shown high usability, accurate location validation, and reliable data synchronization. Security measures such as permission-based location access and secure authentication are in place to ensure data privacy and integrity. This project enhances accountability, reduces administrative overhead, and provides event organizers and traffic authorities with a scalable, efficient tool for managing field personnel in real-time.

Objectives of the project: Application development

Tool used: Flutter,dart,android studio

Details of Papers/patents:NA

Brief description of the working environment: The PS-I (Practice School-I) program offered a highly dynamic and collaborative working environment where students from various backgrounds worked on diverse, real-world projects. Our work setting encouraged independent learning, teamwork, and regular interaction with mentors. Alongside my own project—Traffic Marshal Attendance Management App—there were several other parallel projects being undertaken by different teams, ranging from AI-powered analytics platforms to web-based admin dashboards and mobile applications. This multi-project atmosphere fostered a culture of shared learning, peer review, and continuous improvement.

The expectations from the company were structured yet flexible. We were expected to deliver a functioning prototype or a minimum viable product (MVP) within the project duration, maintain consistent progress, and demonstrate initiative in solving technical and design challenges. Timely reporting, responsiveness to mentor feedback, and practical implementation of learned concepts were emphasized.

During the PS-I period, I significantly enhanced my technical and problem-solving skills. I worked extensively with Flutter for mobile development, Firebase for backend integration, and location services for geo-fencing functionalities. Beyond technical development, I learned how

to collect and analyze user feedback, prioritize feature enhancements, and balance functionality with usability. Observing and occasionally collaborating with peers on their projects broadened my understanding of multiple technologies and approaches.
Overall, PS-I offered a well-rounded learning experience—strengthening both my technical foundation and my ability to work in a semi-professional, collaborative environment, while exposing me to real-world constraints, user expectations, and team dynamics.

Academic courses relevant to the project: yes

Learning Outcome: Mobile App Development with Flutter
Gained hands-on experience in building a cross-platform mobile application using Flutter and Dart, including UI/UX design, navigation, and widget management.
Firebase Integration
Learned how to integrate Firebase services such as Authentication, Firestore, and Realtime Database for secure user login, role-based access, and cloud-based data handling.
Geo-fencing and Location Services
Understood how to use the Geolocator plugin to access device GPS data and implement custom logic for geo-fencing using latitude and longitude distance calculations.
Role-Based Access Control (RBAC)
Implemented role-specific functionalities for marshals and administrators, enhancing system security and modularity.
Real-time Data Synchronization
Experienced the benefits and challenges of syncing data between frontend and backend in real time using Firebase, which is crucial for field-based applications.
Testing and Feedback Loop
Learned how to gather user feedback through APK testing, analyze usability issues, and iterate on features based on real-world usage.
Problem Solving and Debugging
Improved debugging skills and logical thinking while fixing bugs and optimizing functionality based on user interactions.
Project Management and Collaboration
Developed teamwork and coordination skills by working in a two-member team with clear task separation and communication.

PS-I station: Society For Cyberabad Security Council, Hyderabad

Student

Name: VENKATA SAI SOHAN KRISHNAMSETTY (2023A3PS0389H)

Student Write-up:

PS-I Project Title: Traffic Load Analyzer

Short Summary of work done: During PS-I, I developed a smart traffic management system capable of analyzing real-time traffic video feeds to dynamically control signal timings. The system integrates YOLOv8 for vehicle detection, classifies vehicles into types (car, bus, bike, etc.), and computes traffic weight and congestion level per signal. A PyQt5-based GUI visualizes the video streams, congestion data, and signal states. The system dynamically adjusts green signal durations based on detected traffic density and weight, while also prioritizing emergency vehicles. All traffic data is stored in a MySQL database and is further used to generate insights via a Flask-based web dashboard using Plotly for visualization. The system includes a multithreaded architecture to manage video input, detection, signal switching, and analytics simultaneously. I also designed congestion scoring algorithms and incorporated historical traffic trends into decision-making. This project involved the use of OpenCV, PyTorch, threading, JSON configuration files, and area-based detection. The system is modular, scalable, and suitable for real-world urban deployment.

Objectives of the project: To design and implement an intelligent, adaptive traffic signal control system tailored to Indian urban traffic conditions. The system uses real-time video input and deep learning (YOLOv8) for vehicle detection, congestion analysis, emergency vehicle prioritization, and data-driven decision-making to improve traffic flow and reduce wait times.

Tool used: Hardware: Dell Precision 3541 (Intel i7, 16GB RAM, NVIDIA Quadro P620) Software/Libraries: YOLOv8 (Ultralytics) PyQt5 (GUI) OpenCV (Computer Vision) MySQL + MySQL Connector (Database) Flask + Plotly + Pandas (Web Dashboard & Analytics) Python 3.10+

Details of Papers/patents: None at present. The project has potential for publication or patent based on further real-world testing and performance benchmarking.

Brief description of the working environment: During PS-I, I was exposed to a highly collaborative and technically rich environment where innovation and real-world problem solving were actively encouraged. The work culture was structured yet flexible, allowing me to explore advanced technologies like YOLOv8 for real-time vehicle detection and integrate them into a complete traffic management system. My mentors provided timely feedback and were supportive in resolving both technical and design-level challenges. I was expected to deliver a functioning prototype that could analyze live traffic footage, adapt signal timing based on congestion, and prioritize emergency vehicles—all of which required strong programming, analytical thinking, and debugging skills.

The company fostered an environment of independence, where I was given end-to-end ownership of my module, yet teamwork was promoted through periodic sync-ups and code reviews. The expectations were aligned with industry-level standards, especially in terms of code quality, modularity, and performance optimization.
Through this internship, I enhanced my skills in computer vision, multithreading, MySQL database handling, UI design using PyQt5, and real-time analytics. I also learned to build and deploy a Flask-based web dashboard to visualize traffic trends. This experience has deepened my understanding of how AI can be applied to public infrastructure and has motivated me to further pursue smart city technologies. Overall, PS-I was a transformative experience that bridged the gap between classroom learning and real-world application.

Academic courses relevant to the project: Data Structures and Algorithms
Computer Vision
Machine Learning
Operating Systems
Database Management Systems
Software Engineering
Python Programming
Artificial Intelligence
Computer Networks

Learning Outcome: Practical implementation of deep learning with YOLOv8 for real-time object detection.
Multithreaded application development using PyQt5 and OpenCV for GUI and video processing.
Real-time database integration using MySQL for storing traffic data and analytics.
Designing adaptive signal algorithms based on traffic density, weight, and historical trends.
Prioritization of emergency vehicles and handling dynamic traffic scenarios.
Creating a web dashboard using Flask and Plotly for visual traffic analytics.

PS-I station: Society For Cyberabad Security Council, Hyderabad

Student

Name: TAVISH SINGH . (2023A8PS0718P)

Student Write-up:

PS-I Project Title: Traffic Load Analyzer

Short Summary of work done: During my PS-I internship, I worked on developing an AI-powered Traffic Load Analyzer System aimed at improving urban traffic management through real-time video analytics. The system uses YOLOv8 for vehicle detection and classification from CCTV footage, and includes a custom-trained model to identify emergency vehicles such as ambulances and fire trucks. One of the major contributions was the design and implementation of a congestion scoring algorithm, which evaluates real-time traffic density. Initially, this caused significant lag, which was resolved by introducing multithreading — separating video processing, analytics, and congestion computation into dedicated threads for optimal performance. A MySQL database was integrated to store vehicle data, congestion events, and signal timing logs. We designed a schema with three primary tables to support historical analysis and reporting. For visualization, we built a Flask-based dashboard that displays traffic insights using bar, pie, and line charts. The dashboard includes features like time-based filters (last 6, 12, and 24 hours) and date-wise data retrieval, enabling users to analyze traffic trends and congestion patterns interactively. Finally, we integrated the emergency detection module with the traffic signal logic — enabling the system to automatically trigger green signals for emergency vehicles when detected in the frame. This project provided hands-on experience with full-stack development, computer vision, real-time data handling, and smart traffic systems — aligning closely with real-world applications in intelligent transport infrastructure.

Objectives of the project: Real-Time Traffic Load Analysis Develop a system capable of analyzing live CCTV traffic footage to detect, count, and classify different types of vehicles — including cars, bikes, buses, trucks, autos, and emergency vehicles — in real time using computer vision. Emergency Vehicle Detection and Signal Prioritization Customize a YOLOv8 model to accurately detect emergency vehicles (ambulances, fire trucks, police cars) and automatically trigger a green signal override to ensure their swift passage through intersections. Dynamic Congestion Scoring Design and implement a congestion scoring algorithm to evaluate traffic density levels at various times. Use this score to support dynamic traffic signal control and historical congestion trend analysis. Full-Stack Dashboard Development Build an interactive and responsive Flask-based dashboard to visualize traffic insights through bar charts, pie charts, and line plots. Include features like real-time data display, last 6/12/24-hour views, and date-wise analysis. Backend Infrastructure and Data Logging Integrate a MySQL database to store historical traffic data, congestion events, and signal timing logs, enabling deeper analysis and reporting. System Performance Optimization Implement multithreading in the backend to separate video processing, congestion computation, and analytics tasks, ensuring smooth real-time performance without UI lags.

Tool used: YOLOv8 (Ultralytics) – Object detection framework for vehicle and emergency vehicle detection. Label Studio – Annotation tool for creating custom training datasets. Python – Core programming language for backend logic and video analytics. PyQt5 – main.

Details of Papers/patents:NA

Brief description of the working environment: During my PS-I internship, I had the opportunity to work with the Society for Cyberabad Security Council (SCSC) in Hyderabad, an organization focused on using technology to improve urban safety and infrastructure. The experience was both professionally enriching and socially impactful, as our work directly aligned with real-world traffic and emergency response challenges in the city.

The working environment was open, collaborative, and problem-driven. While we had the freedom to explore solutions independently, we also received consistent support and guidance from mentors and technical leads. Regular discussions, feedback loops, and weekly goals kept the project on track and pushed us to think critically about performance, scalability, and usability.

The organization expected us to design a functional and efficient Traffic Load Analyzer System capable of detecting and classifying vehicles (including emergency ones), computing congestion scores, and helping optimize signal timings. They emphasized the importance of practical deployment and real-time performance — not just theoretical implementation.

Over the course of the internship, I gained hands-on experience in YOLOv8 model training, multithreaded programming, MySQL-based data management, and Flask dashboard development. More importantly, I learned how to build software that is directly usable in public safety contexts, which gave a deeper sense of purpose to the work.

Overall, working at SCSC provided an ideal blend of technical growth, social impact, and real-world problem-solving, making it a deeply fulfilling PS-I experience.

Academic courses relevant to the project: Yes

Learning Outcome: End-to-End System Design and Integration

Gained hands-on experience in building a complete real-time system — from computer vision-based video analysis to backend data handling and frontend visualization using Flask.

Advanced YOLOv8 Customization

Learned how to custom train a YOLOv8 model, including dataset collection, annotation (via Label Studio), hyperparameter tuning, and deploying it for real-time emergency vehicle detection.

Multithreading for Real-Time Performance

Understood how to identify and resolve performance bottlenecks using multithreading — effectively separating video processing, analytics, and congestion scoring tasks to improve system responsiveness.

Database Design and Integration

Designed and implemented a structured MySQL database schema to store and query large-scale traffic data, congestion events, and signal timing logs, enabling powerful historical analytics.

Interactive Dashboard Development

Built a professional-grade Flask-based dashboard with dynamic charts using Plotly.js, implementing real-time updates, custom time filters (6/12/24 hours), and date-wise data retrieval.

Collaborative Debugging and Problem Solving
Worked through real-world challenges like chart update failures, backend lags, false detections, and deployment bugs, reinforcing skills in team-based debugging, iterative improvement, and agile development.
Smart Traffic Management Logic
Understood the importance of data-driven traffic optimization, including adaptive signal control and congestion-based decision-making.

PS-I station: Software Tree, California

Student

Name: MANAN HARSHAD NANDHA (2023A7PS0333G)

Student Write-up:

PS-I Project Title: Simplifying Transfer of data from one RDBMS to another RDBMS (of different kind) locally and on Google Cloud Platform (GCP).

Short Summary of work done: I built and set up Gilhari microservices to automatically move data between MySQL and PostgreSQL databases using REST APIs, with the ability to filter and adjust data as needed. I wrote Python scripts to handle the data in batches, transforming and mapping fields smoothly. The whole setup was executed using Docker containers and deployed on Google Cloud.

Objectives of the project: The project simplified data migration between MySQL and PostgreSQL using Gilhari microservices and REST APIs, handling differing attribute names and structures.

Tool used: MySQL, PostgreSQL, Python, Docker, GCP

Details of Papers/patents:NA

Brief description of the working environment: We had weekly meetings in the first half and then twice a week in the second half. We were expected to write an article related to the

project and a GitHub repository with proper readme files. The company mentor was very helpful and provided assistance wherever we were stuck on the project.

Academic courses relevant to the project: Database Systems, Object Oriented Programming.

Learning Outcome: During the project, I learned how to use Gilhari microservices to move data between different databases, using filters and adapting data as needed. I also gained experience with Docker and Google Cloud. I wrote Python scripts and tested APIs with Postman.

PS-I station: Steel Authority of India Ltd. (SAIL), Delhi

Student

Name: JAYESH SHARMA (2023A7PS0357G)

Student Write-up:

PS-I Project Title: Sail HR dashboard and Smart bill processing using ocr

Short Summary of work done: During PS-I at SAIL, I worked on two group projects: the HR Dashboard and Smart Bill Processing System. In the HR Dashboard, I handled the Backend Logic & Functionality Module, which included developing RESTful APIs using Flask, integrating the Oracle database over SAIL's LAN, and implementing secure login with .NET. I enabled real-time employee data visualization by linking the backend with frontend filters and Chart.js components. Features like export-to-Excel and dynamic chart updates were added to meet HR needs. In the Smart Bill Processing project, we used Tesseract OCR to extract key fields from scanned invoices (vendor name, amount, date, etc.) and matched them with Oracle records for automated validation. A Python-based backend handled data processing, while mismatches were flagged for review. Both projects involved collaboration with mentors and real-time testing in SAIL's internal environment. These projects enhanced my skills in API design, secure system integration, OCR handling, and full-stack coordination in an enterprise setting.

Objectives of the project: To develop enterprise-level modules that enhance HR data monitoring and automate invoice verification at SAIL. The HR Dashboard aimed to provide real-time employee statistics with secure backend logic using Flask, .NET, and Oracle. The Smart Bill

Processing module focused on extracting invoice data using OCR (Tesseract), validating it against Oracle records, and streamlining bill tracking workflows

Tool used: Software: Python (Flask), .NET Framework, Oracle SQL, SQLite, JavaScript, HTML/CSS, Bootstrap, Chart.js, Tesseract OCR, Postman, Git, GitHub, VS Code, Visual Studio
Hardware: Standard office PC with SAIL LAN access (no external hardware required)

Details of Papers/patents: None

Brief description of the working environment: The working environment at SAIL was collaborative, structured, and conducive to learning. Our team was part of the HR Technology wing and worked closely with mentors, project supervisors, and HR officials. Clear expectations were set from the beginning—to build real-time, scalable, and secure web solutions that would enhance internal HR and finance processes.
Daily work involved coordination with multiple departments to gather requirements, iterative feedback from mentors like Ekta Ma'am, and technical guidance on database integration and system deployment. We had access to SAIL's internal LAN for real-time Oracle testing and deployment, ensuring that our modules functioned in a realistic enterprise setting.
The internship provided hands-on exposure to enterprise software development using Python Flask, .NET, Oracle DB, OCR (Tesseract), and RESTful APIs. We learned full-stack development, secure login implementation, dynamic frontend-backend coordination, and the importance of user experience in internal tools.
Overall, the experience strengthened technical, collaborative, and time-management skills while exposing us to real-world use cases, organizational workflow, and stakeholder-oriented development.

Academic courses relevant to the project: •Database Systems

- Web Development
- Software Engineering
- Operating Systems
- Data Structures and Algorithms
- Computer Networks

Learning Outcome: • Gained hands-on experience in Flask, .NET, and Oracle integration for backend development.

- Learned to design RESTful APIs, secure authentication systems, and dynamic frontend bindings.
- Acquired practical knowledge of OCR technologies like Tesseract for invoice data extraction.
- Improved skills in testing with Postman and debugging large-scale web applications.
- Understood agile collaboration and real-time enterprise data handling over internal LAN.

PS-I station: Styx AI (Zarthcorp Tech Pvt Ltd), Noida

Student

Name: AGRIM GUPTA . (2023A2PS0232P)

Student Write-up:

PS-I Project Title: Research on Responsible AI

Short Summary of work done: Wrote 2 research papers to be published directly by STYX AI

Objectives of the project: Write whitepapers and also articles

Tool used: .

Details of Papers/patents:will be published in the future

Brief description of the working environment: Very nice and helpful environment

Academic courses relevant to the project: yes

Learning Outcome: How to write research papers

PS-I station: Styx AI (Zarthcorp Tech Pvt Ltd), Noida

Student

Name: BHARGAV SAI KATIKAM . (2023A7PS0053H)

Student Write-up:

PS-I Project Title: Chaos Testing LLM's

Short Summary of work done: I had to create a testing environment in which I inject synthetic toxics(such as network wide timeouts,simulated server-side errors using toxiproxy client in go which dynamically updates toxics using a shared database file between the agent and proxy service) between an llm agent(powered by langchain and grow API) and the external tools/services it uses/may use(locally running,stateless and persistent backend servers built in flask and ran in isolated environments via docker) to process a user request(calculator,search etc.) which was the core idea of the project on top of which I had to design retry mechanisms(dual layered,i.e tool level + prompt level),fall back mechanism,fault tolerance,handle race conditions and concurrency,ensure ACID transactions on database files,CRUD operations and de-duplication of requests,enable user-defined testing configuration and fall-back to default,comprehensive logging setup for metrics and debugging and extract metrics and visualization charts out of the sophisticated metrics collected(matplotlib,pandas,seaborn) to understand exisiting vulnerabilities and potential issues under unexpected circumstances.

Objectives of the project: Testing llm agents under fault conditions

Tool used: Docker,git,GitHub,VScode,wsl,python,golang,SQLite,flask

Details of Papers/patents: None

Brief description of the working environment: My mentor was a BITSIAN himself and was pretty flexible overall,We had 3 standup meeting per week(mon,wen and fri) at 11 am to discuss progress,outcomes and plan of action for the week and had extra meetings with fellow interns and mentor targeted for the specific project currently working on,I was provided with required learning materials and resources(mentor curated research papers and video lectures)beforehand and given few educational tasks which were to be done in a week(working on technical articles and contributing in reports and white paper) to build up the base before working on the main PS project(took ~25 days to complete),we were allowed to take a break in case of health issues/other emergencies/work being done before deadline,overall it was a good experience.

Academic courses relevant to the project: OOPS,DBMS,DSA(secondary)

Learning Outcome: Responsible AI(RAI) principles,AI ethics,python and go programming,containerisation using docker,CI/CD principles,documentation

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PS-I station: Styx AI (Zarthcorp Tech Pvt Ltd), Noida

Student

Name: GAUTAM SINGHVIE . (2023A7PS0612P)

Student Write-up:

PS-I Project Title: Development and Testing of Agentic Frameworks

Short Summary of work done: During the internship, we designed and implemented four innovative AI-agent projects that demonstrate progress in conversational interfaces, automated testing, and agent observability: Conversational Financial Assistant (RASA): A RASA-powered banking bot capable of querying account balances, transferring funds, and initiating loan applications. The agent showcased solid performance, with future potential unlocked through deeper integration with external APIs. RISK Agent: An LLM-based testing companion that autonomously generates robustness test cases for any AI agent and logs them into CSV—a critical step toward automated test-generation for AI systems. Pilot Logging Framework for Scogo AI: Developed an agent-agnostic logging infrastructure that captures tool invocations and decision-making steps inside a Supabase database, enhancing traceability and debuggability across agent workflows. Autotester with LangWatch: My cornerstone project—an advanced, scenario-driven autotesting pipeline using LangWatch and Azure AI—to simulate multi-turn interactions and evaluate failure modes (context loss, flawed escalations, tool misfires) in an IT-support AI agent with 40% end-to-end accuracy.

Objectives of the project: To develop and test agentic frameworks and provide actionable feedback and solutions

Tool used: Rasa, FastAPI, Azure AI Foundry, Langchain, Langgraph, Langwatch

Details of Papers/patents: Na

Brief description of the working environment: The company was great. They were very transparent about work requirements and were happy to accommodate for any changes due to our plans. The work was fast-paced and interesting and was reviewed regularly.

Academic courses relevant to the project: Intro to LLMs, CP, OOPs

Learning Outcome: I learnt to work in a team in corporate settings. I also gain proficiency in developing and testing Agentic Frameworks and their associated libraries.

PS-I station: Styx AI (Zarthcorp Tech Pvt Ltd), Noida

Student

Name: ARMAAN PEERAN . (2023AAPS0279H)

Student Write-up:

PS-I Project Title: Loan Bias application system

Short Summary of work done: Built a loan bias application system , Done work vetting and gathering information of companies which are dominating the field , helped write documentation for various Tools

Objectives of the project: to analyse and quantify biases in applications of loans depending on gender ,education , age etc using Frameworks

Tool used: Scikit Learn , Chatgpt , Google Collab , Fairlearn , Google Sheets , Jira Kanban

Details of Papers/patents:N/A

Brief description of the working environment: Very good working environment, Remote work , Very Patient mentors , overall great experience and learned a lot

Academic courses relevant to the project: ML , CP

Learning Outcome: Learning ScikitLearn
Learning FairLearn
Learning Numpy , Pandas, Matplotlib
Learning collaboration with others

PS-I station: Styx AI (Zarthcorp Tech Pvt Ltd), Noida

Student

Name: ABINAV KIRAN (2023B4A70887G)

Student Write-up:

PS-I Project Title: MARAS & TANGO

Short Summary of work done: At Styx AI (Zarthcorp Tech Pvt. Ltd.), I worked on MARAS and TANGO, building a multi-agent AI system for automated risk assessment, legal compliance (EU AI Act), and cybersecurity vulnerability detection. The system involved orchestrating specialized agents like CVE Agent, Compliance Agent, Controls Agent, and Reflection Agent using CrewAI and Python, integrating tools like LlamaIndex, Azure AI Search, Supabase, and Qdrant. I also contributed to TANGO, a pre-production traffic simulation framework to stress-test these agents under realistic load conditions. My contributions included architectural design, backend coding, setting up LLM traceability, Docker deployments, and proposing a Self-Healing Agent mechanism. The PS-I allowed me to work on live cloud environments, implement real-time AI governance systems, and participate in architectural and product-level decision-making processes.

Objectives of the project: Build two products namely Multi-Agent Risk Assessment System & Test Automation for N-turn Generative Operations

Tool used: Programming: Python Orchestration: CrewAI Retrieval & Indexing: LlamaIndex, Qdrant Cloud: Azure AI Services, Azure Foundry Frontend: Flask Database: Supabase Traceability: Langflow, LangSmith, Arize, Maxim Automation: Firecrawl, Docker

Details of Papers/patents:NA

Brief description of the working environment: Styx AI provided a high-paced, intellectually stimulating, startup-like environment with a sharp focus on cutting-edge AI safety, risk governance, and enterprise product development. I was fortunate to work under the mentorship of Prakhar Kumar (CTO & Co-Founder), whose guidance, clarity of thought, and technical expertise made a significant impact on my learning. He fostered a culture of autonomy, hands-on problem-solving, and deep engagement with real-world product challenges. The expectations were clear — to contribute to production-ready systems and think

beyond code to scalable, practical AI solutions. Through this experience, I gained industry-level exposure to modular system design, backend engineering, multi-agent architectures, and traceable AI pipelines. It also helped me understand collaborative team dynamics, agile development, and responsible AI deployment in high-stakes environments. I am grateful to Styx AI, Prakhar Kumar, Parth Mukul Gupta, the Practice School Division, and BITS Pilani for offering this transformative, high-value learning opportunity.

Academic courses relevant to the project: Elementary Real Analysis and Math Foundation Courses

Learning Outcome: During my Practice School-I at Styx AI, I developed a deep understanding of modular AI system architecture, specifically multi-agent risk assessment frameworks. I gained practical exposure to real-world AI governance, cybersecurity, and regulatory compliance through building MARAS (Multi-Agent Risk Assessment System) and TANGO (Test Automation for N-turn Generative Operations). I enhanced my skills in backend engineering, LLM orchestration, cloud deployments (Azure), and integrating traceability tools like Langflow and Arize. The experience also sharpened my product thinking, problem-solving skills, and collaborative development abilities, preparing me for scalable AI system design and enterprise deployment.

PS-I station: Styx AI (Zarthcorp Tech Pvt Ltd), Noida

Student

Name: NAYAN KRISHNA M . (2023B4A71020P)

Student Write-up:

PS-I Project Title: Governance Driven Experimentation In Open Source AI Tools and Agentic AI Workflows

Short Summary of work done: In the first phase, as part of the Open Source AI tool experimentation team I worked on two tools Giskard AI and Microsoft Responsible AI Toolbox. I went through the documentation and implemented these tools on real world data and models. In the second phase, I worked on various methods of evaluation of Agentic AI workflows. Specifically, I conducted research into the idea of using Model Context Protocol in AI

governance. I also worked with IntellAgent framework for multiagentic evaluation. In the last phase, I worked with the OS team to develop a comprehensive guard management system, to streamline the daily operations of a security service.

Objectives of the project: Experimenting with Open Source AI tools for governance and explore methods for evaluating Agentic AI workflows

Tool used: Giskard AI, Microsoft Responsible AI Toolbox, Python libraries

Details of Papers/patents: None

Brief description of the working environment: The working evironment was relaxed like most online PS stations. Our mentors were supportive and encouraged us to bring up any roadblocks we faced at the earliest so they could be resolved quickly. Morning meets were held every alternate day starting on Monday, where progress updates were made by the various teams. Most importantly we were encouraged to have meets amongst ourselves to discuss solutions. Overall it provided us great exposure to industry work.

Academic courses relevant to the project: Intro To LLM, Deep Learning

Learning Outcome: AI Governance , Model Context Protocol, Agentic AI, Collaborative web development

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PS-I station: Swecha Telangana - Non Tech, Hyderabad

Student

Name: VISINGIRI SURYA ANJANI POORVI . (2023A5PS1045H)

Student Write-up:

PS-I Project Title: Management of the medical camp , developement of generic medicine app

Short Summary of work done: As we I am from b pharmacy i had been assigned with two task to host a medical camp and to launch of an app . I have sorted the boxes of medicines with the nearest expired date , we have published the event on larger scale posting on instagram ,

meetup. I also went to slum areas to published the event . I made posters, and thank you cards for the doctors . for app build we gave all the data required for the app like providing date of near by jan aushadhi stores along with latitude and longitude, Collected 1300 medicine date along with the alternatives

Objectives of the project: Was to built an app which spread awareness about generic medicines and make it feasible for underprivileged people

Tool used: Gitlab, excel , streamlit

Details of Papers/patents: We have launched on of app called swechaEHRS and other app need to launch which is generic buddy . Conducted two free medical camp

Brief description of the working environment: It was good. The experience helped me understand my strengths and areas to improve.

Academic courses relevant to the project: yes

Learning Outcome: Learn how manage a crowd , how to published and run an event , learned the steps to build an app.

PS-I station: Swecha Telangana - Tech, Hyderabad

Student

Name: VANSH SETH . (2023A3PS1130H)

Student Write-up:

PS-I Project Title: AI Poster Generator

Short Summary of work done: We made a AI poster generator project using models run locally and gave it a gradio ui

Objectives of the project: To make a poster generator for an open source project called penai as a part of penpot's open source ai capabilities project

Tool used: Used pytorch

Details of Papers/patents: None

Brief description of the working environment: The company environment was very supportive, and I gained practical knowledge.

Academic courses relevant to the project: yes

Learning Outcome: Learnt how to use Ai and vibe coding

PS-I station: Swecha Telangana - Tech, Hyderabad

Student

Name: REVANTH SAI SRINIVAS AKULA . (2023A7PS0008H)

Student Write-up:

PS-I Project Title: Indic Image Annotator

Short Summary of work done: During my PS-I internship, I was assigned to [Company/Organization Name], where I worked on [brief project or department name, e.g., "AI-Powered Image Annotation" or "Data Analysis in Retail"]. My primary objective was to [state core goal, e.g., "develop a prototype for automatic image captioning in Indic languages" or "analyze customer behavior using sales data"]. I contributed to the development and enhancement of [mention tools, models, or platforms—e.g., "a Streamlit-based web application integrated with YOLO and BLIP models for object detection and captioning"]. My responsibilities included [e.g., data preprocessing, model training, backend logic implementation, testing, and UI design], ensuring end-to-end functionality and performance. Additionally, I collaborated with my mentors to understand [domain-specific knowledge, e.g., computer vision pipelines, multilingual text processing, user interaction]. I participated in regular review meetings and presented updates to incorporate feedback into iterative development.

Objectives of the project: Learning field work

Tool used: Programming Languages: Python • Web Framework: Streamlit • Machine Learning & AI Models: • BLIP (Bootstrapped Language-Image Pretraining) for image captioning • YOLO (You Only Look Once) for object detection • Libraries & Packages: • OpenCV (for ima

Details of Papers/patents: None

Brief description of the working environment: The working environment during PS-I was collaborative, intellectually stimulating, and professionally structured. I was assigned to a team that emphasized open communication, regular feedback, and task ownership. Though the internship was primarily virtual/in-person [choose accordingly], the mentors ensured that we remained actively engaged through regular meetings, progress reviews, and brainstorming sessions.

The company had clear expectations from us: to understand the problem domain, actively contribute to the assigned project, maintain consistent documentation, and demonstrate professionalism in all tasks. We were encouraged to be proactive, seek clarity when required, and meet deadlines responsibly. This not only instilled accountability but also simulated a real-world corporate setting.

Through this internship, I gained hands-on experience in integrating AI models into practical applications, writing clean and modular code, and building end-to-end workflows using tools like Python, Streamlit, and OpenCV. I also developed soft skills like effective communication, task prioritization, and adapting to feedback—skills essential in any professional environment.

PS-I offered a bridge between academic concepts and industry applications. The guidance from mentors and the structured framework of PS-I contributed significantly to both my technical learning and personal growth.

Academic courses relevant to the project: yes

Learning Outcome:

PS-I station: Swecha Telangana - Tech, Hyderabad

Student

Name: PRANAVI PENUMETCHA (2023A7PS0019G)

Student Write-up:

PS-I Project Title: ASR app

Short Summary of work done: Chatbot using Hugging face. Multipages app using Streamlit and python. HTML, CSS, JavaScript for front end.

Objectives of the project: Create An Indic ASR app which works offline and is opensource.

Tool used: VS code, Android Studio,

Details of Papers/patents: None

Brief description of the working environment: I learnt about working in a professional workspace. I was thankful with all that I learnt in the internship.
Academic courses relevant to the project: Oops
dsa

Learning Outcome: Creating web and mobile apps and using pythomg and Streamlit for web dev.

PS-I station: Swecha Telangana - Tech, Hyderabad

Student

Name: SOHAM VINAY DESHMUKH . (2023A7PS0025P)

Student Write-up:

PS-I Project Title: Intern monitoring dashboard and gitlab wrapper

Short Summary of work done: Built an Intern Monitoring Dashboard, in order to view the activity of students from various colleges enrolled for internships at Swecha Telangana. The

Dashboard includes log-in features, individual intern analysis, project analysis and AI based resume analysis.Built a GitLab Wrapper in python. Added UI and multiple functionalities in order to reduce the manual, redundant steps to view large amounts of data in GitLab, as a part of my internship at Swecha Telangana

Objectives of the project: Built an Intern Monitoring Dashboard, in order to view the activity of students from various colleges enrolled for internships at Swecha Telangana. The Dashboard includes log-in features, individual intern analysis, project analysis and AI based resume analysis.Built a GitLab Wrapper in python. Added UI and multiple functionalities in order to reduce the manual, redundant steps to view large amounts of data in GitLab, as a part of my internship at Swecha Telangana

Tool used: Python, streamlit, html, css, Gitlab APIs

Details of Papers/patents:N/A

Brief description of the working environment: The company is an open-source company. Collaboration and teamwork is highly encouraged. Active participation is encouraged. The company is not strict at all , if the intern shows interest and participation in projects.

Academic courses relevant to the project: Computer Programming

Learning Outcome: API integration, python, building UI using streamlit, html , css , app deployment

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PS-I station: Swecha Telangana - Tech, Hyderabad

Student

Name: LALITHYA MUNIGALA . (2023A7PS0026H)

Student Write-up:

PS-I Project Title: Wikiflix OTT

Short Summary of work done: I have work done on wikiflix OTT platform it have many indic languages movies nd subtitles etc...

Objectives of the project: Wikiflix OTT,

Tool used: Stream lit,hugging face,git lab

Details of Papers/patents: Nil

Brief description of the working environment: It was good and helped us to gain knowledge on Tools like hugging face,gitlab etc...

Academic courses relevant to the project: Nil

Learning Outcome: LLM

PS-I station: Swecha Telangana - Tech, Hyderabad

Student

Name: GURSIDAK SINGH BASSI . (2023A7PS0033H)

Student Write-up:

PS-I Project Title: SwechaEHRS , GenericBro

Short Summary of work done: During my Internship, I worked on two major healthcare technology projects – SwechaEHRS and GenericBro. SwechaEHRS is an electronic health record system designed to digitize patient data and make medical camps paperless. I contributed to improving its data management modules, optimizing the user interface, and ensuring smooth functionality for doctors and volunteers. The system was successfully deployed during the 41st Medical Camp at Sundarayya Vignana Kendram, Hyderabad, on 6th July 2025, where over 435 patients were registered digitally, eliminating manual paperwork. GenericBro is a Streamlit-powered platform that helps users find affordable generic alternatives to branded medicines and locate nearby pharmacies. I implemented branded-to-generic drug comparisons, dosage and type-based filters, price comparison features, and improved its mobile-friendly UI with

light/dark modes. Apart from these projects, I contributed 1035 commits to the Swecha Corpus initiative, supporting open-source healthcare and language technology development. This experience significantly enhanced my technical expertise and gave me an opportunity to contribute to impactful community healthcare initiatives.

Objectives of the project: The objective of the project was to develop open-source healthcare solutions that enhance accessibility and affordability. SwechaEHRS aimed to streamline electronic health record management by digitizing patient registration, consultation, and medicine distribution, enabling paperless medical camps. GenericBro was developed to help users compare branded and generic medicines, locate nearby pharmacies, and promote the use of affordable alternatives. Both projects focused on improving community healthcare through technology-driven, user-friendly platforms.

Tool used: The development involved Python, Streamlit, Flutter, Dart.Git, GitHub, and GitLab were used for version control. Testing and deployment were carried out using laptops and Android smartphones.

Details of Papers/patents: None

Brief description of the working environment: The working environment was highly task-oriented, with a strong emphasis on completing deliverables within strict timelines. We were assigned a considerable amount of work and were expected to complete it independently, often without prior mentoring or structured guidance. There was minimal introduction to the basic tools or processes, and we had to learn and adapt on our own while meeting project requirements.

Interaction with mentors was limited, and our concerns or suggestions were not always addressed, which sometimes made it challenging to align with the expectations set. Greater cooperation and a more open feedback mechanism would have made the experience more supportive and collaborative.

Despite these challenges, the PS-I provided me with valuable learning opportunities. It pushed me to explore new technologies, understand project requirements independently, and improve my problem-solving and research skills. Working in such an unstructured environment enhanced my ability to adapt quickly, take initiative, and handle responsibilities without relying heavily on supervision. Overall, while the experience was demanding, it helped me build resilience and strengthen my technical self-learning abilities, which are essential for handling real-world projects.

Academic courses relevant to the project: DBMS for database building and other CS courses were helpful not directly but were useful in logic building

Learning Outcome: The project provided hands-on experience in full-stack development, including Python, Streamlit, and Flutter-based applications. I learned database design and management, worked on mobile-friendly UI/UX design, and gained exposure to integrating AI and open-source tools in healthcare solutions. The experience also enhanced my understanding

of collaborative software development, open-source contribution practices, and improved my problem-solving, teamwork, and real-world application development skills.

PS-I station: Swecha Telangana - Tech, Hyderabad

Student

Name: VARUN CHIRUNAGULA (2023A7PS0325G)

Student Write-up:

PS-I Project Title: OCR DIGITIZATION

Short Summary of work done: Developed an app which Extracts text from the uploaded image or ay file

Objectives of the project: Extract text from the uploaded image or ay file

Tool used: Flutter, VS Code, Supabase for database, Surya OCR, APIs

Details of Papers/patents: None

Brief description of the working environment: They want us to create the world's first Telugu Ai foundation model

Academic courses relevant to the project: N/A

Learning Outcome: App development

PS-I station: Swecha Telangana - Tech, Hyderabad

Student

Name: KOTRA KESHAV GUPTA . (2023A7PS0534P)

Student Write-up:

PS-I Project Title: Medicine demand forecaster for retail shops

Short Summary of work done: I am working on a medicines forecasting model for retail shops. Which uses 3 historical sales data and analysis the sales using arima time series model.

Objectives of the project: Forecasting the sales and predict next month sales

Tool used: Python, arima, streamlit

Details of Papers/patents: Na

Brief description of the working environment: I request to provide mentor for each and every project. Provide proper internet service.

Academic courses relevant to the project: Analytics for supply chain management

Learning Outcome: No wastage of medicine also financial losses for owners.

PS-I station: Swecha Telangana - Tech, Hyderabad

Student

Name: SOHAN MUTRA (2023A7PS1023G)

Student Write-up:

PS-I Project Title: Development of Streamlit applications

Short Summary of work done: Learned front end and how to make and implement AI features into applications. Using Hugging Face interface for development of chatbots.

Objectives of the project: Front end for StreamFlix, Implimenting AI chatbots.

Tool used: Streamlit, Hugging Face, python, Linux,

Details of Papers/patents: None

Brief description of the working environment: We did not have a proper office or a workspace for all of the bitsiains, We had to work in a seminar hall in iiit hyderabad. We were called for medical camps for volunteer work which was good.

Academic courses relevant to the project: DSA, AI, HCI

Learning Outcome: Front end using python

PS-I station: Swecha Telangana - Tech, Hyderabad

Student

Name: JAYASSIMHA REDDY CHALLA . (2023A8PS0446H)

Student Write-up:

PS-I Project Title: A Duolingo replica for indic languages.

Short Summary of work done: Used flutter and dart programming to make an app using chatgpt and sonnet. We collected data of different languages used it in the app.

Objectives of the project: To make a language learning app like Duolingo for indic languages.

Tool used: Flutter, dart, python, fastapi

Details of Papers/patents: None

Brief description of the working environment: It was friendly and fun.

Academic courses relevant to the project: Not sure.

Learning Outcome: Learnt how to use GITLAB, flutter, linux

PS-I station: Swecha Telangana - Tech, Hyderabad

Student

Name: SAAHITI ROTTE . (2023AAPS0181H)

Student Write-up:

PS-I Project Title: Insight wallet(finance managing AI)

Short Summary of work done: Created a chatbot using hugging face. Created a single page and multipage app using streamlit. Developed an app to manage finance.

Objectives of the project: To manage expenses and go through their financial details

Tool used: Streamlit

Details of Papers/patents: No

Brief description of the working environment: It was good working in swecha. The mentors very friendly and helpful while clearing out doubts.

Academic courses relevant to the project: Finance minor

Learning Outcome: To create apps using streamlit

PS-I station: Swecha Telangana - Tech, Hyderabad

Student

Name: JEEVANRAJ THOUTI (2023B1A40686G)

Student Write-up:

PS-I Project Title: Development of Streamlit Applications and AI-Powered Systems

Short Summary of work done: During my PS-I at Swecha Tech, I developed a suite of AI-powered web applications focused on real-world usability and open-source contributions. The projects included BookExpertBot for book recommendations using NLP, Mood Tracker to monitor emotional well-being using sentiment analysis, a Rough Route Planner with custom map logic, Indic Game Generator to create culturally rooted games in multiple Indian languages, and an Org Chart Visualizer that renders data hierarchies from spreadsheets. I worked extensively with Streamlit for frontend design, integrated Hugging Face transformer models for language tasks, and used Google Sheets API for dynamic data handling. Agile methodologies, Git workflows, and continuous feedback cycles enabled iterative development. The internship significantly improved my technical skills and broadened my exposure to collaborative software engineering.

Objectives of the project: Design and deploy AI-driven applications using Streamlit and Python. Utilize Hugging Face Transformers for NLP tasks. Visualize hierarchical data through interactive dashboards. Promote open-source culture through meaningful contributions.

Tool used: Software: Streamlit, Python, Hugging Face Transformers, Google Sheets API, GitHub, Plotly, NetworkX, Firebase Hardware: Personal development machine (Linux-based setup)

Details of Papers/patents:none

Brief description of the working environment: The working environment at Swecha Tech was open, collaborative, and innovation-driven, with strong emphasis on open-source values. I was encouraged to explore ideas independently while receiving timely guidance from mentors. The culture fostered knowledge sharing through regular discussions and peer reviews. The expectations included building practical tools with real-world relevance, ensuring code readability and reusability, and actively participating in the open-source community. Through this, I learned not just technical implementation, but also the value of user feedback, UI/UX design thinking, version control, and documentation. The experience honed my problem-solving skills and deepened my understanding of how impactful AI applications are built in lean, agile environments.

Academic courses relevant to the project: yes

Learning Outcome: Gained practical experience in building and deploying AI-based web applications.
Strengthened proficiency in Python, Streamlit, and Hugging Face NLP models.
Learned integration of APIs like Google Sheets and Firebase for real-time data processing.
Improved understanding of UI/UX design, agile development, and open-source collaboration.

PS-I station: Swecha Telangana - Tech, Hyderabad

Student

Name: GOLI SRI VARSHINI . (2023B1A41227H)

Student Write-up:

PS-I Project Title: AI-Powered Healthcare Solutions Using Full-Stack and Open-Source Platforms

Short Summary of work done: During my PS-I internship at Swecha Technologies (May 26 – July 15, 2025), I developed nine software projects in the healthcare and wellness domains. Early-stage projects included MediPredict (disease forecasting and inventory analytics), Swasthya (biometric wellness dashboard), and Akhyana (AI storytelling chatbot). In the later phase, I focused on full-stack apps like GenericBro (Flutter app for generic medicine and pharmacy location), GenericBuddy (Streamlit web dashboard), SwechaEHRS (medical camp management system), GearUP (AI vehicle servicing advisor), Jan Aushadhi Geocoder (batch geocoder for pharmacy addresses), and Multi-Omics Data Analyzer (bioinformatics visual tool). I worked across the stack—frontend (Flutter/Streamlit), backend (FastAPI/Node.js), database (MongoDB/Supabase), visualization (Plotly), AI/ML (Hugging Face, Prophet), geolocation APIs, and cloud deployment.

Objectives of the project: To develop scalable, socially impactful health-tech solutions integrating AI, geolocation, OCR, and full-stack technologies. To design and implement mobile and web applications to improve access to wellness, medicine, and medical infrastructure. To gain real-world experience with APIs, UI/UX, ML models, and cloud deployment platforms.

Tool used: Software: Python, Flutter, Dart, FastAPI, Node.js, MongoDB, PostgreSQL (Supabase), Streamlit, Git, GitHub, GitLab, Hugging Face, Google Maps API, Plotly, OpenCV, Tesseract, Prophet Hardware: Personal laptop for development; test deployment on Android phon

Details of Papers/patents: None submitted yet. Plans for technical blog publications in progress.

Brief description of the working environment: Swecha provided an open, innovation-focused working environment emphasizing free software and social good. I worked with experienced developers and mentors in a hybrid model, using GitLab for project tracking and Discord/Meet for communication. Daily check-ins and collaborative debugging sessions enhanced team-based learning. The company encouraged initiative, open-source values, and rapid prototyping.
Expectations were aligned with creativity, autonomy, and outcome-driven development. I was encouraged to build, test, fail, and iterate quickly. This enabled me to work across tech stacks and take ownership of full applications—from UI to backend API to deployment. The environment empowered independent thinking while ensuring continuous mentorship.

Academic courses relevant to the project: Artificial Intelligence
Database Systems
Software Engineering
Data Science and ML
Computational Biology
Mobile App Development
Computer Programming

Learning Outcome: Full-stack app development using Flutter, FastAPI, Node.js, MongoDB, Supabase.
AI integration using Hugging Face Transformers and Prophet forecasting.
OCR and geolocation-based services using Tesseract, Geopy, and Google Maps API.
Deployment on Streamlit Cloud, Render, and GitHub Pages.
Version control and team collaboration using GitLab and GitHub.

PS-I station: Swecha Telangana - Tech, Hyderabad

Student

Name: VENKATA KOHENA REDDY SANIKOMMU . (2023B3A40550H)

Student Write-up:

PS-I Project Title: Geo-tagging

Short Summary of work done: During my PS-I, I developed a navigation chatbot, Streamlit apps (single and multi-page), and a React-based hackathon quiz app. I geo-tagged engineering colleges, interns, and cultural sites across India on interactive maps, and implemented multilingual support to enhance accessibility, focusing on user engagement, data visualization, and inclusive design.

Objectives of the project: Ai map Visuals

Tool used: Python, gitlab , streamlit, react

Details of Papers/patents: None

Brief description of the working environment: The working environment was collaborative and growth-oriented, with supportive mentors and clear guidance. The company encouraged innovation and continuous learning. I gained hands-on experience in full-stack development, geospatial mapping, and UI/UX design, enhancing both technical and soft skills through real-world projects, teamwork, and exposure to professional development practices.

Academic courses relevant to the project: None

Learning Outcome: Python and gitlab

PS-I station: Swecha Telangana - Tech, Hyderabad

Student

Name: CHARITESH PERAMBUDOORU . (2023B5A11392H)

Student Write-up:

PS-I Project Title: OCR DIGITIZATION PLATFORM

Short Summary of work done: Mobile dev , Web development, App launching

Objectives of the project: To build mobile application of optical character recognition for indic languages

Tool used: Vs code , Huggingface, Python , Flutter

Details of Papers/patents: None

Brief description of the working environment: I learnt so many new things. I enjoyed very much.

Academic courses relevant to the project: Machine Learning , Artificial intelligence

Learning Outcome: Machine learning

PS-I station: SYSSTRA by Convergence Futuristic Solution Enterprise Pvt. Ltd., Bangalore

Student

Name: ANISH SAIKIA . (2023B4A71133P)

Student Write-up:

PS-I Project Title: Backtesting of Trading Strategies Using Real Market Data

Short Summary of work done: During the internship, the main focus was on backtesting trading strategies using real market data across asset classes like crypto and stock indices. We got hands-on experience with the full backtesting process—starting from collecting data, applying strategies, running simulations, and then evaluating performance. Most of our work involved studying and modifying real trading code written by the SYSSTRA team. We used Python along with libraries like pandas, numpy, and matplotlib, as well as SYSSTRA's custom backtesting library to simulate trading conditions and record results. Price data was collected through APIs like the ICICI Direct Breeze API and Binance, then stored in MongoDB. We also used Redis for handling fast, real-time data. TradingView and broker platforms were used to visualize and

verify strategies. We tested strategy performance by changing key inputs like stop-loss (sl_percent), take-profit (t1_percent), time intervals (granularity), and indicator settings. This helped us understand how backtesting helps build strong and reliable trading systems.

Objectives of the project: Development, Optimization and Automation of trading strategies for better risk management and strategy reliability.

Tool used: MongoDB, Redis, Python, TwelveAPI,Polygon.io

Details of Papers/patents: None

Brief description of the working environment: I would like to express my sincere gratitude to Mr. Anurag Kushwah (Senior Technical
Architect) and Mr. Vikrant Kumar (Senior Project Manager) at SYSSTRA by
Convergence Futuristic Solution Enterprise Pvt. Ltd., Bangalore, for their expert
mentorship and valuable guidance throughout the course of this project. Their technical
insights and encouragement were instrumental in shaping my learning experience during
the internship.
I also extend my heartfelt thanks to the entire SYSSTRA team for providing access to
professional tools, datasets, and real-time trading infrastructure that enabled me to gain
hands-on exposure to industry-grade systems and workflows.

Academic courses relevant to the project: ML

Learning Outcome: This project helped me learn how to backtest trading strategies using real market data and Python tools. I worked with important parts of an algorithmic trading system—like using MongoDB to store data, Redis for fast updates, and Python code to run strategies.
By changing and testing different parameters, I understood how trades are planned,
tested, and improved before using them in real trading.

PS-I station: Talent-Trek E-Learning Pvt Ltd, Bengaluru

Student

Name: MANOJ KUMAR REDDY REDDYPALLI (2023A4PS1103G)

Student Write-up:

PS-I Project Title: PREDICTING STUDENT ENGAGEMENT ON AN EDTECH PLATFORM USING BASIC MACHINE LEARNING

Short Summary of work done: During my PS-I at TalentTrek eLearning, I worked on a project focused on predicting student engagement on an educational platform using basic ML techniques. My role included cleaning and preparing data, performing exploratory data analysis, and building classification models to predict engagement levels based on user activity. I collaborated with a team to interpret results and suggest improvements for content delivery. Weekly tasks involved data collection, Python scripting, visualization using libraries like matplotlib and seaborn, and working with tools like Excel and Jupyter Notebook. This experience helped me bridge theoretical ML knowledge with real-world applications.

Objectives of the project: To analyze and predict student engagement levels on an EdTech platform using basic machine learning techniques. The aim is to identify patterns in user interaction data, understand engagement factors, and create predictive models to enhance personalized learning experiences.

Tool used: Software: Python, Jupyter Notebook, MS Excel, Google Colab Libraries: pandas, numpy, matplotlib, seaborn, scikit-learn Platforms: EdTech student interaction dataset (internal)

Details of Papers/patents: None

Brief description of the working environment: The working environment at Talent Trek eLearning was structured, collaborative, and conducive to learning. Regular interactions with mentors and weekly progress reviews created a professional atmosphere that encouraged accountability and continuous improvement. We worked in a hybrid format, with scheduled virtual check-ins and constant communication through collaborative tools. The company maintained a clear expectation for interns to be proactive, take initiative, and approach tasks with analytical thinking and technical accuracy.
My primary responsibilities revolved around analyzing student interaction data to predict engagement using basic machine learning techniques. The weekly tasks included cleaning and preprocessing data, performing exploratory data analysis, applying classification models such as logistic regression and decision trees, and visualizing patterns using Python libraries like matplotlib and seaborn. We also tracked performance metrics and proposed improvements to enhance platform engagement.

Academic courses relevant to the project: Data Structures and Algorithms
Probability and Statistics

Learning Outcome: Gained practical experience in data preprocessing and feature engineering.

Understood how to apply basic ML algorithms (like logistic regression and decision trees) to real-world datasets.
Learned how to use data analytics tools for visualization and interpretation.
Improved teamwork, communication, and project documentation skills.

PS-I station: Talent-Trek E-Learning Pvt Ltd, Bengaluru

Student

Name: SHASHANTH VENKATESAN (2023A4PS1215G)

Student Write-up:

PS-I Project Title: PREDICTING STUDENT ENGAGEMENT ON AN EDTECH PLATFORM USING BASIC MACHINE LEARNING

Short Summary of work done: This project focuses on predicting student engagement on the Talent Trek EdTech platform using logistic regression. Engagement is quantified through metrics including session duration, number of clicks, quiz attempts, and content completion rate. An anonymized dataset of 2,000 user sessions collected between January 1 and June 30, 2025, was used for feature engineering and model training. The model achieved an accuracy of 67 percent, with session duration and content completion emerging as the strongest predictors. While moderate precision indicates some false positives, the findings provide actionable insights for identifying students at risk of disengagement. The project demonstrates that even a lightweight machine learning approach can support timely interventions and improve learning outcomes. Future improvements include expanding the dataset, adding features such as forum participation, and exploring more advanced models to enhance predictive performance and enable more personalized support for learners.

Objectives of the project: This project develops a simple logistic regression model to predict student engagement on the Talent Trek EdTech platform. Engagement is measured using metrics such as session duration, click count, quiz attempts, and content completion rate

Tool used: Python, Pandas, NumPy, Scikit-learn

Details of Papers/patents: none

Brief description of the working environment: I improved my communication and teamwork skills during this internship.
Academic courses relevant to the project: fundamentals of data science, statistics

Learning Outcome: : Student Engagement, Machine Learning, Logistic Regression,ski-kit

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PS-I station: Talent-Trek E-Learning Pvt Ltd, Bengaluru

Student

Name: UTKARSH ANAND . (2023AAPS0195H)

Student Write-up:

PS-I Project Title: Sales Edge ai

Short Summary of work done: "cutting-edge": At Talent Trek, I worked on Sales Edge AI, a project focused on leveraging artificial intelligence to provide performance analytics from user MP3 sales call recordings. My role encompassed developing a model that could process these audio files, extract relevant data, and translate it into clear, actionable performance metrics for users. The initiative aimed to help sales teams and professionals receive detailed, objective feedback on their communication and sales effectiveness. I handled core phases of the data pipeline, starting with data preprocessing and feature extraction from audio. This involved using signal processing techniques to identify aspects such as speech clarity, pacing, sentiment, engagement cues, and key conversational markers. I collaborated with teammates to integrate these features into a performance analytics framework, informed by industry benchmarks and best practices in sales enablement.

Objectives of the project: To help with the sales calling performance

Tool used: Grok,perplexity pro,flask,sql,powerbi,hugging face transformers

Details of Papers/patents:-

Brief description of the working environment: Very good clean and healthy working hours and environment.

Academic courses relevant to the project: Dsa

Learning Outcome: Data science

PS-I station: Talent-Trek E-Learning Pvt Ltd, Bengaluru

Student

Name: K SAMEEKSHA (2023B2A40739G)

Student Write-up:

PS-I Project Title: Data analytics

Short Summary of work done: Data analytics

Objectives of the project: -

Tool used: Google classroom,numpys,Node JS

Details of Papers/patents:-

Brief description of the working environment: -

Academic courses relevant to the project: -

Learning Outcome: -

PS-I station: TCG Centres for Research and Education in Science and Technology (TCG CREST), Kolkata

Student

Name: DIPTANJAN SENGUPTA . (2023A3PS0388P)

Student Write-up:

PS-I Project Title: Quantum Communication

Short Summary of work done: Research and study project on QKD

Objectives of the project: Learnt about quantum cryptography

Tool used: None needed but could use Qisket/Cirq for simulations

Details of Papers/patents:NA

Brief description of the working environment: Very flexible people and very helpful, gave us free lunch and all necessary things ere provided.

Academic courses relevant to the project: NA

Learning Outcome: QKD and BB84

PS-I station: TECHGEEKZ SERVICES PRIVATE LIMITED, Surat

Student

Name: ABHINAV CHAUHAN . (2023A3PS0389P)

Student Write-up:

PS-I Project Title: Ed tech full stack website

Short Summary of work done: During the internship, I developed a full-stack web application that allows students to explore and filter college options based on their exam ranks or marks. I worked on both the frontend and backend, implemented database integration for storing college data, and ensured the platform was responsive and user-friendly.

Objectives of the project: The objective of the project was to develop a full-stack web application that helps students explore and choose suitable colleges based on their competitive exam ranks or marks. It aimed to simplify the college selection process by providing accurate, filtered information and a user-friendly interface while also allowing me to apply and strengthen my web development skills.

Tool used: Git GitHub , MERN stack

Details of Papers/patents:NA

Brief description of the working environment: The working environment was collaborative and fast-paced, with a focus on practical learning and meeting project deadlines. The company expected me to take initiative, write clean code, and deliver functional features on time. Through this, I gained valuable insights into professional development workflows, teamwork, and effective communication within a tech agency.

Academic courses relevant to the project: computer programming

Learning Outcome: The major learning outcomes included gaining practical experience in full-stack web development, improving my understanding of frontend and backend integration, working with databases, handling user inputs securely, and building a responsive and dynamic user interface. I also learned how to manage a project lifecycle, from planning to deployment, and improved my problem-solving and debugging skills.

PS-I station: TECHGEEKZ SERVICES PRIVATE LIMITED, Surat

Student

Name: AMAY ABHIJIT DEODHAR . (2023A7PS0155H)

Student Write-up:

PS-I Project Title: Development of a Web-Based College Admission Counseling Platform

Short Summary of work done: We had to make a website similar to CollegePravesh using React and Tailwind CSS. It needed to be fully functional with the user able to search for colleges by JEE cutoff rank, NIRF Ranking, college type and location. We also used Github for version control and MongoDB to host the images and information about the college.

Objectives of the project: Making a website which shows the cutoff ranks and additional information of various colleges (IITs, IIITs, NITs, BITs)

Tool used: React, Tailwind CSS, MongoDB, Express.js, Node.js

Details of Papers/patents:NA

Brief description of the working environment: We were given 10 days to learn about JavaScript and React as the majority of us were not familiar with full stack development before this. We had hourly progress meetings with our mentor about twice a week where we were instructed on how to handle the problems we were facing. Our daily timings were from about 11 a.m. to 5 p.m. Our team consisted of 11 people who were given the task of completing the College Finder website.

Academic courses relevant to the project: DBMS, OOPs

Learning Outcome: I learnt the basics of JavaScript and React. I also learnt Tailwind CSS and how to use Git for version control.

PS-I station: TECHGEEKZ SERVICES PRIVATE LIMITED, Surat

Student

Name: SAURABH KUMAR (2023B4A70872G)

Student Write-up:

PS-I Project Title: DEVELOPMENT OF A COLLEGE INFORMATION PORTAL USING REACT

Short Summary of work done: During my Practice School-I at Techgeekz Services Pvt. Ltd., Surat, I worked on the development of a modern, responsive College Information Portal named ShikshaSaathi. The portal is designed to help students access relevant data on colleges, entrance exams, and cutoffs with a focus on user experience and accessibility. The primary focus of my work was on building the homepage of the portal using ReactJS and Vite. I followed a component-based development approach, breaking the page into reusable modules such as the header, showcase section, carousel, updates, top colleges, and footer. I studied and adapted UI/UX best practices from popular education templates (e.g., UDEMA, Acadia, Edumim) to implement a clean, student-friendly interface. To enhance the UI, I introduced a custom black-and-golden theme, responsive layout adjustments via media queries, and smooth navigation features like a fullscreen hamburger menu. I also contributed to the early stages of the portal's Content Management System (CMS) for dynamic college data display and internal linking. Throughout the project, I maintained detailed daily diaries, documented technical decisions, and learned to work collaboratively in a professional setting. The project laid a strong foundation for future full-stack development using the MERN stack. This experience significantly improved my skills in frontend development, design thinking, problem-solving, and project structuring in a real-world software environment.

Objectives of the project: To design and develop a responsive, user-friendly homepage for a College Information Portal named ShikshaSaathi, aimed at simplifying access to educational data for students.

Tool used: JavaScript, HTML, CSS,ReactJS,Git & GitHub,Figma

Details of Papers/patents: Personalized educational platforms using MERN stack
UI/UX optimization for college discovery portals
Scalable architecture for educational content management systems

Brief description of the working environment: My Practice School-I internship at Techgeekz Services Pvt. Ltd., Surat offered a collaborative and learning-centric environment that bridged the gap between academic knowledge and real-world application. The company maintained a friendly and supportive atmosphere where interns were encouraged to ask questions, explore new tools, and actively contribute to live projects.
From the beginning, the expectations were clear: deliver a clean, responsive, and functional user interface for a College Information Portal using modern frontend technologies. I was expected to follow industry-standard practices, meet regular milestones, and document my progress effectively.
The mentorship provided by Mr. Aditya Chauhan, my industry guide, played a crucial role in shaping my learning curve. He emphasized the importance of performance optimization, clean

UI/UX design, and modular coding practices. Regular feedback and code reviews helped me refine my approach and align with professional standards.
Throughout the internship, I gained hands-on experience in ReactJS, Vite, Git, and responsive design principles. I also learned how to adapt pre-designed templates, implement SEO strategies using React Helmet, and manage code efficiently with version control tools. The collaborative nature of the workplace allowed me to interact with teammates, understand the full development workflow, and appreciate the importance of good communication in software teams.
Overall, the experience was enriching and significantly boosted my confidence in web development, project planning, and professional collaboration.

Academic courses relevant to the project: CP

Learning Outcome: 1.Proficiency in ReactJS & Component-Based Development
Developed modular and reusable React components (e.g., Header, Carousel, College Cards), enhancing scalability and maintainability of the portal.
2.UI/UX Design and Customization
Gained practical experience in adapting and customizing premium templates (UDEMA, Acadia, Edumim) to create a clean, intuitive, and responsive user interface.

PS-I station: Technology Enabling Centre, BITS Pilani, Pilani campus, Pilani

Student

Name: AKSHANSH SINGH CHANDEL . (2023A2PS1367H)

Student Write-up:

PS-I Project Title: GREEN HORIZONS: MAPPING INDIA'S SUSTAINABLE TECHNOLOGY REVOLUTION

Short Summary of work done: During PS-I, our team worked on identifying and evaluating sustainable technologies in India's green innovation sectors. The project titled "Green Horizons: Mapping India's Sustainable Technology Revolution" focused on 10 companies across bioenergy, EV, battery swapping, and circular economy domains. I contributed to building innovation landscape reports that analyzed patent activity, product portfolios, startup trends,

and value chains. A key part of my work involved conducting qualitative evaluations of technology readiness levels, SWOT analysis, and preparing visual tools for technology benchmarking. I also worked on an industry case study to understand business models and R&D strategies. We studied global and national innovation indices to contextualize India's progress, and made policy-focused recommendations. This project helped bridge the gap between academic understanding and real-world innovation scenarios.

Objectives of the project: To identify and analyze emerging sustainable technologies in India with a focus on high-impact sectors such as bioenergy, electric mobility, energy storage, and recycling. To evaluate the innovation landscape of selected companies and technologies using qualitative tools such as Technology Readiness Level (TRL), SWOT analysis, and ecosystem mapping. To compare India's innovation ecosystem with global leaders by examining patent activity, startup trends, and institutional support for clean technologies. To recommend promising technologies based on strategic evaluation parameters for future policy focus, investments, and scalability in the Indian context. To build visual and analytical reports (Innovation Landscape Reports) that showcase the R&D focus, partnerships, and market potential of selected Indian companies. To develop a technology assessment framework that can support decision-making for policymakers, researchers, and industry stakeholders in the sustainable development domain.

Tool used: Google Workspace (Docs, Sheets, Slides) ChatGPT, DeepSeek, Gemini Canva, PowerPoint Microsoft Excel Internet databases (WIPO, Global Innovation Index, company websites)

Details of Papers/patents: None (as this was a research and evaluation-focused project)

Brief description of the working environment: The working environment was fully virtual, flexible, and research-oriented. We worked in a collaborative group of 2-3 students, guided by a faculty mentor. The project promoted self-learning, timely coordination, and effective communication. We were expected to produce high-quality analytical outputs and visual representations of our findings. Through this experience, I learned to conduct industry-specific research, understand TRL frameworks, interpret patent databases, and convert technical insights into actionable recommendations. The exposure to clean tech sectors gave me a broader understanding of India's sustainability roadmap and challenges in green innovation adoption. I also learned to work within deadlines, prepare presentations, and contribute meaningfully to group assignments. Overall, PS-I helped me align my academic learning with real-world research and policy implications.

Academic courses relevant to the project: Environmental Studies
Engineering Management
Innovation and Entrepreneurship
Data Analytics / Technical Report Writing (if applicable)
Policy and Governance (optional inclusion based on curriculum)

Learning Outcome: Gained an in-depth understanding of India's clean technology landscape across bioenergy, EVs, recycling, and energy storage.
Learned to evaluate emerging technologies using tools like TRL analysis, SWOT, and innovation mapping.
Improved skills in qualitative research, data analysis, and technical documentation.
Understood the role of policy, R&D, and startups in sustainable tech ecosystems.
Developed structured visual innovation reports and industry case studies.

PS-I station: Technology Enabling Centre, BITS Pilani, Pilani campus, Pilani

Student

Name: KAVYA SONI (2023A3PS0206G)

Student Write-up:

PS-I Project Title: Analysis of Medical and Surgical Robotics Landscape with Case Study

Short Summary of work done: During my PS-I, I explored the medical and surgical robotics domain, focusing on SS Innovations International, an Indian surgical robotics company. The work involved collecting and analyzing industry data, identifying market trends, and mapping the competitive landscape. I performed a detailed patent analysis, categorizing intellectual property using IPC codes and extracting insights on technology focus areas. I also assessed market size (TAM, SAM, SOM) for selected medical technologies and prepared structured reports using a 12-point industry case study format. In addition, I designed and implemented interactive dashboards to visualize company profiles, market segments, and patent data. The role demanded strong research, analytical, and presentation skills, as well as the ability to synthesize complex technical and business information into concise, visually appealing formats.

Objectives of the project: To study the current landscape of medical and surgical robotics in India and globally. To conduct an in-depth industry case study on SS Innovations International. To analyze patents, products, and market potential in the surgical robotics domain. To develop interactive dashboards for data visualization and insights.

Tool used: Software: Microsoft Excel, PowerPoint, Google Sheets, Google Apps Script Visualization: Interactive dashboards (Google Data Studio/Tableau concepts)

Details of Papers/patents: Patent analysis included IN556554, IN562327, IN550067, IN318648, and others related to medical and healthcare technology.

Brief description of the working environment: The working environment was highly research-oriented, collaborative, and flexible. My role involved independent research as well as regular interactions with the mentor to refine outputs. Expectations included delivering detailed case study reports, accurate market analysis, and visually appealing presentations. I learned how to evaluate technology readiness, identify market opportunities, and communicate findings in a business-friendly manner. This experience deepened my understanding of the medical robotics industry and improved my skills in data analysis, visualization, and technical reporting.

Academic courses relevant to the project: Technology Valuation and Management Concepts.

Learning Outcome: Gained industry understanding of surgical robotics technologies and their applications.
Learned to analyze patents using IPC codes and extract relevant technology trends.
Developed skills in creating data-driven dashboards for presenting market and company data.
Enhanced ability to connect academic knowledge with real-world healthcare technology analysis.

PS-I station: Technology Enabling Centre, BITS Pilani, Pilani campus, Pilani

Student

Name: DEVYANI TATHOD . (2023A3PS0411H)

Student Write-up:

PS-I Project Title: Green Horizon: Mapping India's Sustainable Technology Revolution

Short Summary of work done: The extensive research project created a solid system for assessing sustainable technology landscapes for Water Sustainability, Sustainable Manufacturing, electric vehicles, renewable energy, and bio-based technologies. Clever,

practical solutions to domestic challenges are being created nationwide: micro-scale bioenergy systems that work even in villages, heat- and dust-resistant solar panels, and electric cars suited for packed cities. Such innovations might be helpful for other countries facing similar issues, including India. The multi-pronged approach of mapping industry groups, patent analysis, developing tools, and reviewing policies has provided actionable intelligence to advance BITS-TEC's technology transfer agenda.

Objectives of the project: To comprehensively assess India's sustainable technology landscape across selected domains, identify gaps, evaluate technology readiness, and recommend suggestions supporting the commercialisation of academic innovations, providing actionable intelligence for BITS-TEC's technology transfer and industry-academia collaboration mission.

Tool used: Espacenet, WIPO Patentscope, INPASS, Google Patents, MS PowerPoint, MS Excel, Adobe Illustrator (for visuals), Canva (for making infographics), patent databases for FTO and claim breadth analysis, Google Trends and Statista (for market research)

Details of Papers/patents:-

Brief description of the working environment: -

Academic courses relevant to the project: -

Learning Outcome: Learnt about how to valuate technologies, patent analysis using different tools and IPRs.

PS-I station: Technology Enabling Centre, BITS Pilani, Pilani campus, Pilani

Student

Name: AISHWARYA . (2023A5PS1163P)

Student Write-up:

PS-I Project Title: Exploring the innovation landscape of healthcare technologies in the Indian context

Short Summary of work done: During PS-I, the project focused on systematically mapping and analyzing the healthcare innovation landscape in India, examining the roles of leading startups, established companies, and government initiatives in driving technological advancement and improved healthcare delivery. Activities included collecting and profiling data on healthcare-focused enterprises, evaluating patent trends, assessing technology readiness, and reviewing the impact of major policy frameworks like Ayushman Bharat and the National Biopharma Mission. The analysis highlighted India's emergence as a global leader in vaccine development and digital health solutions, rapid startup expansion, and robust public-private partnerships, while also identifying persistent challenges such as regulatory complexity, funding gaps for late-stage innovation, and variable access to advanced healthcare infrastructure. The work provides a concise overview of sector achievements, ongoing challenges, and practical recommendations to enhance innovation translation and equitable healthcare impact nationwide.

Objectives of the project: Mapping the industry landscape of India in the domain of Healthcare and finding possible technology transfer scope and academic - industry relations.

Tool used: Google app script, Excel, WIPO, IPsearch, ESPACENET

Details of Papers/patents: None

Brief description of the working environment: The working environment during PS-I was collaborative and intellectually stimulating, with a strong focus on research, data analysis, and critical thinking. The company encouraged independent initiative while providing regular guidance and feedback, setting clear expectations for high-quality work, proactive learning, and effective communication. Throughout the internship, I gained hands-on experience in mapping innovation landscapes, applying business analysis frameworks, and refining project documentation skills—developing a deeper understanding of industry dynamics and the analytical rigor required for impactful professional work

Academic courses relevant to the project: Yes the project was very much related to my acad.

Learning Outcome: The process of protection and IP using various methods like Patent, design registration etc. also understanding various factors which can help to increase technology transfer in this domain so that it can reach more people and improve the life standards.

PS-I station: Technology Enabling Centre, BITS Pilani, Pilani campus, Pilani

Student

Name: RAGHAV BISHT . (2023A7PS0484P)

Student Write-up:

PS-I Project Title: GREEN HORIZONS: MAPPING INDIA'S SUSTAINABLE TECHNOLOGY REVOLUTION

Short Summary of work done: Our team studied India's clean technology landscape by profiling over 100 companies, analyzing five promising patents, and evaluating each through a structured TRL and IP lens. We created a custom TRL calculator, explored national policies like the Solar Mission and PM-KUSUM, and benchmarked India's innovation capabilities against countries like the US and Switzerland. The final output was a set of commercialization-ready insights and tools designed to help bridge the gap between research, startups, and policy , making sustainable technologies more deployable in the Indian context.

Objectives of the project: To evaluate the readiness and commercialization potential of Indian sustainable technologies through patent landscaping, TRL analysis, and industry-academia mapping , focusing on bridging the gap between innovation and real-world deployment.

Tool used: Word, Powerpoint, Canvas, Notion, WIPO, IPR search india, etc

Details of Papers/patents: None

Brief description of the working environment: The staff at TEC was very approachable and friendly. They all guided us in all the tasks given to us and also cleared any doubts that we had.

Academic courses relevant to the project: yes

Learning Outcome: Over the course of the project, we developed a deep understanding of how sustainable technologies move from lab to market. We learned how to read and analyze patents, assess the maturity of technologies using TRL frameworks, and connect those insights with real companies and policy environments. Beyond the technical skills, we also gained perspective on how innovation ecosystems function , both in India and globally and how collaborative models can support faster, more impactful deployment.

PS-I station: Technology Enabling Centre, BITS Pilani, Pilani campus, Pilani

Student

Name: CHANDRANSHU SHARMA . (2023AAPS0271H)

Student Write-up:

PS-I Project Title: smart manufacturing and Industry 4.0

Short Summary of work done: Attended PS Orientation , Grouped data of RCCI MSME Industry , Developed TRL calculator for patents related to my project , Done basic IP analysis on 5 patents and then made a detailed report on them , Designed a UI/UX on 10 companies that listed in previous weeks and made Visual landscape report on them , made word cloud on product lines and subdomains of my field , attended lectures on basics of investment , IP analysis , Policy mapping and analysis , Real world Technology check list , also presented presentation on stock market , sustainable development , design , patents , copyright etc, attended group discussion I , II , seminar I, II , midsem report and final report , abstract report on industry 4.0 and smart manufacturing .

Objectives of the project: Study about existing technologies and patent related to oud domain and check the market potential of these technologies .

Tool used: 1.)Google Trends - trends.google.com 2.)Statista (Free Tier) - statista.com 3.)Yahoo Finance - finance.yahoo.com 4.)Similarweb - similarweb.com 5.)Crunchbase - crunchbase.com 6.)CB Insights Newsletter & Free Reports - cbinsights.com 7.)OECD iLibrary & W

Details of Papers/patents:IN201911028124 - A method of high level synthesis in integrated circuit design using application specific bit widths ,IN561936 - Brake drum manufacturing device IN202411036889 - A deep learning-adaptive system for removing noise from audio signals IN51131

Brief description of the working environment: Working Environment of PS station was very good , mentors were very helpful and guided us well throughout the entire PS course.

Academic courses relevant to the project: IN201911028124 - A method of high level synthesis in integrated circuit design using application specific bit widths ,IN561936 - Brake drum manufacturing device
IN202411036889 - A deep learning-adaptive system for removing noise from audio signals

Learning Outcome: Studied about various policies and schemes of Indian Govt. , studies about patents, companies and technologies related to smart manufacturing and Industry 4.0

PS-I station: Technology Enabling Centre, BITS Pilani, Pilani campus, Pilani

Student

Name: ASTHA SHARMA (2023B2TS1242P)

Student Write-up:

PS-I Project Title: Evolving Landscape of Biotechnology in India

Short Summary of work done: During PS-I, the project focused on systematically mapping and analyzing the innovation landscape of India's biotechnology sector, with insights applied to healthcare, agriculture, industrial processes, environment, bioinformatics, and synthetic biology. Key activities included collecting and profiling data on leading and emerging biotech companies, analyzing patent activity and technology readiness, and evaluating policy frameworks and regional innovation hubs. The initiative highlighted India's rapid growth in startups, strong policy support, and emerging global leadership in vaccines and biosimilars, while also identifying gaps in late-stage funding, technology transfer, and regulatory efficiency. The work provides a concise overview of sector strengths, challenges, and actionable recommendations for fostering innovation and translating research to commercial and societal impact.

Objectives of the project: To map and analyze the evolving innovation ecosystem of biotechnology in India, highlighting key initiatives, startup growth, policy advancements, and translational gaps from research to commercialization

Tool used: Google app script, Excel, WIPO, IPsearch, ESPACENET

Details of Papers/patents:none

Brief description of the working environment: The working environment during PS-I was collaborative and intellectually stimulating, with a strong focus on research, data analysis, and critical thinking. The company encouraged independent initiative while providing regular

guidance and feedback, setting clear expectations for high-quality work, proactive learning, and effective communication. Throughout the internship, I gained hands-on experience in mapping innovation landscapes, applying business analysis frameworks, and refining project documentation skills—developing a deeper understanding of industry dynamics and the analytical rigor required for impactful professional work

Academic courses relevant to the project: Yes it is highly relevant to academic courses

Learning Outcome: Learners will understand India's biotech strengths—like strong incubation infrastructure, increasing startup formation, and successful public-private collaborations—while identifying ongoing challenges in regulatory streamlining, late-stage funding, and technology transfer

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PS-I station: Technology Enabling Centre, BITS Pilani, Pilani campus, Pilani

Student

Name: NIKHIL SINGH BHATI (2023D2TS1238P)

Student Write-up:

PS-I Project Title: Exploring the innovation landscape of healthcare technologies in the Indian context

Short Summary of work done: During Practice School-I, the project "Exploring the Innovation Landscape of Healthcare Technologies in the Indian Context" was undertaken at BITS Technology Enabling Centre, Pilani. The work focused on mapping and analyzing major domains in healthcare innovation such as Digital Health & AI, Telemedicine, Medical Devices, Assistive & Rehabilitation Technologies, Public Health Tech, and Health Data Systems. A multi-step methodology was applied: Domain Mapping identified key subdomains and companies in each innovation area. Patent & IP Analysis assessed trends, dominant IPC codes, legal strength, novelty, and commercialization potential. Technology Readiness Level (TRL) Assessment evaluated maturity of selected technologies from concept stage (TRL 1) to real-world use (TRL 9). IP Valuation Framework rated innovations on legal, technological, market, risk, and strategic parameters. Industry Landscaping profiled leading Indian healthtech organizations and benchmarked them against global innovation leaders such as the US, UK, and Singapore. Ten

patents across diverse technologies were studied in detail, covering their problem statements, solutions, TRL scores, market potential, SWOT/TOWS analyses, and recommendations for commercialization. Comparative benchmarking revealed India's strengths in frugal innovation and digital infrastructure, alongside challenges in late-stage funding, IP enforcement, and academia–industry collaboration. The study concluded with strategic recommendations for strengthening healthcare innovation in India, including enhancing technology transfer systems, expanding IP protection internationally, improving funding mechanisms, and promoting cross-sector collaboration. Overall, the PS-1 engagement provided exposure to policy analysis, IP strategy, market research, and technology evaluation, integrating academic rigor with practical industry insights.

Objectives of the project: Identify the key sectors and sub-sectors within India's healthcare technology innovation landscape and systematically map and analyze them. Evaluate innovations for their maturity, market readiness, and alignment using standardized methods such as Technology Readiness Levels (TRLs). Conduct both qualitative and quantitative intellectual property (IP) and patent analysis to assess legal strength, technological merit, and commercialization potential. Benchmark India's healthcare innovation ecosystem against global leaders to identify strengths, weaknesses, and opportunities. Integrate perspectives from industry, academia, and policy to generate actionable recommendations for accelerating the translation of research into real-world healthcare solutions.

Tool used: MS Word, MS Excel, Google Docs, WIPO patent database, Espacenet.

Details of Papers/patents:N/A

Brief description of the working environment: The Practice School-I was carried out at BITS Technology Enabling Centre (BITS-TEC), Pilani, which provided a collaborative, research-driven, and innovation-focused working environment. The centre operated at the intersection of academia, industry, and policy, offering access to specialized patent databases, policy archives, and industry reports. The workplace fostered open communication, teamwork, and problem-solving, with constant guidance from mentors and subject experts.

From the company's perspective, the expectation was to perform a comprehensive mapping and analysis of India's healthcare innovation ecosystem. This involved identifying major domains and subdomains, evaluating technological maturity using Technology Readiness Levels (TRLs), performing Intellectual Property (IP) and patent portfolio analysis, benchmarking Indian innovations against global leaders, and providing strategic recommendations. High-quality, data-backed, and actionable insights were expected, along with clear documentation and professional presentation of findings.

The learning experience during PS-1 was multifaceted. It included technical learning in domains like healthcare technologies, biomedical devices, and digital health solutions; analytical skills through patent landscaping, TRL scoring, and qualitative IP valuation; and strategic thinking through industry benchmarking and policy analysis. Additionally, soft skills such as team collaboration, professional communication, time management, and report writing were strengthened. Exposure to real-world datasets, stakeholder interactions, and case studies of

patents provided practical insight into how innovations transition from concept to commercialization.
Overall, the PS-1 experience enhanced both domain expertise and industry-oriented problem-solving skills, aligning academic knowledge with the requirements of the healthcare innovation ecosystem.

Academic courses relevant to the project: N/A

Learning Outcome: 1. Understanding Core Concepts – Gaining strong knowledge of fundamental principles relevant to the subject area.
2. Analytical and Problem-Solving Skills – Developing the ability to critically analyze situations and apply logical reasoning to solve complex problems.
3. Practical Application – Applying theoretical knowledge to real-world scenarios, experiments, or case studies.
4. Effective Communication – Improving skills in presenting ideas clearly through written, oral, and visual formats.
5. Teamwork and Collaboration – Learning to work effectively in group settings and contribute meaningfully to team objectives.
6. Ethical and Professional Awareness – Recognizing the importance of ethical conduct, social responsibility, and professionalism in practice.
7. Continuous Learning – Building a habit of self-learning and staying updated with advancements in the field.

PS-I station: Teraforge Digital Lab LLP, Thane

Student

Name: HARSH SHAH . (2023A2PS0236P)

Student Write-up:

PS-I Project Title: Outreach and Sales

Short Summary of work done: The core objective of this project was to address the critical business need of a pre-launch startup: to create a clear, compelling, and actionable plan to acquire its first clients and establish a strong market foothold. The project began with an in-depth analysis of the technology services industry, identifying significant client pain points related to project failures, budget overruns, communication gaps, and the inherent risks of engaging with freelance developers and traditional agencies. This analysis formed the bedrock of the strategy, which positions Project Mela as a unique "Zero-Risk Tech Partner."

Objectives of the project: Product understanding

Tool used: Clay , Linkedin , Google docs

Details of Papers/patents:NA

Brief description of the working environment: Supportive and friendly

Academic courses relevant to the project: NA

Learning Outcome: Sales , contact scraping

PS-I station: Teraforge Digital Lab LLP, Thane

Student

Name: ABHEEK ARORA . (2023A7PS0508P)

Student Write-up:

PS-I Project Title: Development of a Blog Platform with Rich Text Editor Integration

Short Summary of work done: I added a Blog section for one of their websites using ReactJS and Firebase for the backend

Objectives of the project: user-friendly blog platform using React.js. To implement a rich text editor (Quill) for creating and editing blog posts with formatting options like bold, italic, headings, and image insertion. To integrate the blog platform with Firebase for real-time data

storage and retrieval, enabling smooth content management. To ensure responsive design and seamless user experience across devices. To gain hands-on experience with frontend and backend integration and version control using Git. To understand and apply web development best practices and industry standards within a collaborative team environment.

Tool used: ReactJs, Firebase, Cursor

Details of Papers/patents:N/A

Brief description of the working environment: The working environment at Teraforge Digital Labs LLP has been collaborative, professional, and growth-oriented. As an intern, I was welcomed into the web development team and encouraged to actively contribute to ongoing projects. The atmosphere is both supportive and challenging, striking a balance between guidance and independence. Weekly meetings with the Faculty in Charge (FIC) and progress reviews with the industry mentor, Mr. Swastik Mukherjee, helped maintain accountability and ensured that learning goals were met consistently.
The expectations from the company were clear: to deliver quality work on assigned tasks, meet weekly deadlines, and pick up new skills while adapting to industry practices. I was encouraged to take initiative, ask questions, and approach projects with problem-solving mindsets.
Through this experience, I have not only strengthened my technical knowledge in web development but also developed professional skills such as reporting, time management, collaboration, and adaptability.

Academic courses relevant to the project: N/A

Learning Outcome: During my PS1 internship, I gained hands-on experience in React.js development, integrating the Quill rich text editor, and managing real-time data with Firebase. I improved my version control skills with Git and learned to work effectively in a professional team, enhancing both my technical and communication abilities.

PS-I station: The Barabari Collective, Hyderabad

Student

Name: ANJALI SINGH . (2023B5A10759H)

Student Write-up:

PS-I Project Title: Design and Development of the barabari playbook website

Short Summary of work done: At Barabari Collective, I was responsible for building the front-end of the Barabari Playbook website—an educational resource platform for students. I worked on translating Figma mockups into HTML and TailwindCSS, structuring UI components, and ensuring mobile responsiveness. I implemented sections like the hero banner, curriculum grids, and project listings, and handled regular reviews and bug fixes based on mentor feedback. I also contributed to testing, documentation, and deployment previews through GitHub and Netlify. The experience helped me apply academic knowledge in a real-world context and sharpened my skills in user interface design, web structuring, and independent problem-solving.

Objectives of the project: The main objective of my project was to design and develop the front-end of the Barabari Playbook website—a centralized learning platform curated by and for students. The goal was to convert Figma design mockups into responsive HTML and TailwindCSS code, structure reusable UI components for curriculum sections, and build a scalable, accessible interface that could later be integrated with a backend.

Tool used: I worked with HTML5, TailwindCSS, and GitHub for development and version control. Figma was used for UI design reference, and Netlify/Vercel for deployment testing. Developer tools in Chrome and Firefox were used for responsiveness checks.

Details of Papers/patents: No papers or patents were produced during the course of this internship.

Brief description of the working environment: The working environment at Barabari Collective was remote but highly collaborative, with a strong emphasis on student ownership and impact. I had the flexibility to work at my own pace while receiving timely guidance from mentors. Expectations were clear: to deliver a functional, polished front-end that met Barabari's design standards. My learning extended beyond technical tools—I developed a deep understanding of user-centric design, iterative development, and version-controlled collaboration. I also learned how to balance design fidelity with practical execution while managing feedback, timelines, and documentation independently. This experience gave me valuable exposure to real-world product development in an open, mentor-driven setup.

Academic courses relevant to the project: Object-Oriented Programming, Web Programming, Human-Computer Interaction, UI/UX Design, and Software Engineering were particularly relevant to the project.

Learning Outcome: Through this internship, I gained hands-on experience in modern front-end development, particularly using TailwindCSS, Figma, and GitHub. I learned how to structure modular, responsive layouts and manage iterative feedback from mentors. I also improved my

ability to work independently, translate design to code with pixel-level precision, and think from the perspective of real users.

PS-I station: TWI GROUP OF COMPANIES - Non Tech, Pitampura

Student

Name: DISHA . (2023A7PS0516P)

Student Write-up:

PS-I Project Title: Marketing strategies for pure prakruti startup

Short Summary of work done: During my two-month PS-I at TWI Group of Companies, I worked on marketing strategies for Pure Prakruti, a startup offering carbon footprint measurement solutions for the logistics industry. My role involved both direct outreach and digital promotion. Initially, I identified potential clients through business cards and online research, followed by structured cold calls and personalized sales pitches. I also attended client meetings, negotiated subscription terms, and recorded all interactions for future follow-ups. Parallelly, I focused on enhancing the company's online presence. This included creating Instagram Reels, Canva-based designs, and updating the official pitch presentations to be more visually engaging. I also researched sustainability and logistics events where Pure Prakruti could participate, along with budget estimates for these activities. By combining direct marketing, social media engagement, and event-based promotional planning, I contributed to building awareness and potential leads for Pure Prakruti. The project gave me practical exposure to end-to-end marketing processes in a niche sustainability space and helped refine my communication, design, and analytical skills.

Objectives of the project: The project aimed to strengthen Pure Prakruti's visibility in the sustainability and logistics sector, attract potential clients, and improve its marketing materials. Key goals included: Expanding brand awareness in the Indian market. Implementing a systematic cold calling and outreach process to acquire new clients. Producing engaging digital content (Instagram Reels, Canva designs). Researching and shortlisting relevant industry events for brand promotion. Maintaining organized records of client interactions for strategic follow-ups. Enhancing company presentations to make pitches more compelling.

Tool used: Canva, Instagram, Microsoft Word, Microsoft Excel, Google Sheets

Details of Papers/patents: No research papers or patents were produced during this project.

Brief description of the working environment: The work environment at TWI Group of Companies was collaborative, supportive, and professional. My mentor and team members encouraged creativity, guided me through marketing strategies, and provided constructive feedback. The culture was startup-driven – fast-paced, adaptive, and open to experimentation – which allowed me to explore multiple marketing approaches.

Academic courses relevant to the project: DATABASE MANAGEMENT SYSTEM, ENVIRONMENTAL STUDIES

Learning Outcome:
Direct B2B marketing – from cold calling to negotiating client subscriptions.
Digital marketing skills – creating impactful content on Canva and Instagram.
Event marketing research – identifying and budgeting for potential promotional opportunities.
Client relationship management – tracking interactions systematically in Excel for better follow-ups.
Presentation design – refining pitch materials to better engage potential clients.
Understanding how sustainability-focused products are marketed in a competitive and awareness-deficient market.

PS-I station: TWI GROUP OF COMPANIES - Tech, Pitampura

Student

Name: UTKARSH GANGWAR . (2023B2A10911P)

Student Write-up:

PS-I Project Title: Website development and integration for Twigroups

Short Summary of work done: I had to make a website for twigroups.in from the figma design given by the company using react.js

Objectives of the project: Making a responsive and full functional website

Tool used: HTML, CSS, React.js, Github

Details of Papers/patents:none

Brief description of the working environment: It was good and competitive. My teammates and colleagues were really cooperative and professional.

Academic courses relevant to the project: C Programming

Learning Outcome: Frontend and routing

PS-I station: TWI GROUP OF COMPANIES - Tech, Pitampura

Student

Name: SHRESHTH SINGHAL (2023B2A80743G)

Student Write-up:

PS-I Project Title: Modular 3D Modeling and Design Optimization of a Hybrid Electric Motorcycle with Variant Integration

Short Summary of work done: During my Practice School-I at KGVL (under TWI Group of Companies), I was involved in the 3D modeling and visual development of a hybrid electric motorcycle using Blender. Initially assigned to create an animated model, the project scope evolved to include the design of three structural variants, each with distinct layouts and multiple color configurations. My responsibilities included modeling the chassis, integrating critical components like the battery pack, fuel tank, sine wave controller, and rear-wheel hub motor, and optimizing part placements based on real-world dimensional constraints. A user survey was also conducted to guide design decisions based on aesthetic and functional preferences, and its results were incorporated into the fairing style, dashboard design, and color palette. I designed a digital dashboard interface, enclosed battery compartments with transparent isolation, and placed all internal components ergonomically. I collaborated closely

with mentors during review meetings, made changes based on their feedback, and rendered high-quality visuals for internal documentation. The experience provided exposure to modular design thinking, user-centered development, professional reporting, and working under practical limitations. It gave me a deep understanding of how concept-level design evolves into a visual prototype aligned with industry requirements.

Objectives of the project: To design and develop accurate 3D models of a hybrid electric motorcycle using Blender, with a focus on modular component integration, dimensional feasibility, and aesthetic appeal. The project aimed to create three functional design variants with multiple visual configurations, guided by user feedback and internal technical reviews. The objective also includes optimizing the spatial layout of components such as the battery pack, controller, fuel tank, and digital dashboard, thereby delivering a scalable design solution aligned with real-world manufacturing potential.

Tool used: The primary software tools used during the project were Blender 3D for modeling and rendering, Google Forms for survey creation, and Microsoft Excel and PowerPoint for data handling and presentations. The work was carried out using a personal laptop and a

Details of Papers/patents: The work carried out during the internship is confidential and proprietary to the company, and therefore, no public papers or patents have been filed or disclosed.

Brief description of the working environment: The internship at KGVL (TWI Group of Companies) provided a structured and high-pressure working environment with a fixed 10 AM to 6 PM schedule, six days a week. Although the station lacked essential infrastructure like ergonomic seating and dedicated workstations, the experience offered a strong sense of industrial discipline and exposure to real-world challenges.

The company maintained high expectations in terms of accountability, time-bound execution, and adaptability. Under the direct leadership of the CEO and Managing Director, Mr. Purshottam Sir and Mr. Uttam Sir, tasks were reviewed regularly, and feedback was delivered promptly. This encouraged a continuous learning cycle and emphasized the importance of quality, consistency, and self-discipline.

Throughout the internship, I enhanced my technical skills by extensively working on 3D modeling using Blender, developing multiple bike variants with functional component integration. I also learned to respond to feedback constructively, document my progress professionally, and think from a product and user perspective. The strict working conditions, while challenging, helped me grow into a more efficient, responsible, and detail-oriented individual — prepared for real-world industry environments.

Academic courses relevant to the project: The project closely aligned with several academic courses undertaken during my program. Courses such as Computer-Aided Design (CAD) and Engineering Graphics provided foundational skills in visualizing and interpreting 3D structures, which directly support.

Learning Outcome: During the course of this project, I developed advanced 3D modeling skills using Blender, particularly in the context of mechanical and structural design. I gained a practical understanding of how to create dimensionally accurate, production-feasible models by integrating components such as batteries, sine wave controllers, fuel tanks, and digital dashboards within a hybrid electric motorcycle layout. The project also enhanced my ability to design modular structures and develop multiple design variants based on technical requirements and user preferences. Through the analysis of survey data and internal review feedback, I learned to apply user-centered design principles to both aesthetic and functional aspects. Additionally, I strengthened my professional communication skills through regular reporting, collaborative discussions, and presentations. Working within a strict schedule and limited infrastructure taught me how to manage resources efficiently, troubleshoot challenges proactively, and maintain consistent output under real-world project conditions.

PS-I station: United Paramount Pvt Ltd, Hyderabad

Student

Name: ANISH KUMAR PIDUGU . (2023A3PS0317H)

Student Write-up:

PS-I Project Title: Building an Objective Key Results application using Power Apps

Short Summary of work done: The main aim of the project is to create an OKR application using Power Apps, a low to no- code tool of Microsoft which helps in developing business applications. This apps acts as a communication dashboard between the admin and the employees where the admin sets objectives for the employees and tracks the progress, thus making it efficient for the company to carry out it's operations

Objectives of the project: To build an OKR application using Power Apps

Tool used: Microsoft Power Apps

Details of Papers/patents: None

Brief description of the working environment: The work was mostly online. We had to visit the place once in a week. The workplace was very efficient. Our meetings with SMEs were very productive and helpful as we were clarified of our doubts and given inputs of work.

Academic courses relevant to the project: yes

Learning Outcome: About an efficient way of developing an OKR application, which aids in reaching company's targets and learn about Power Apps, a very efficient tool in making business applications

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PS-I station: United Paramount Pvt Ltd, Hyderabad

Student

Name: AKHILESH VENKAT NAKKA . (2023A7PS0105H)

Student Write-up:

PS-I Project Title: CUSTOMER COLLABORATION PORTAL

Short Summary of work done: During my PS1 at United Paramount Pvt. Ltd., I contributed to the development of a Customer Collaboration Portal for Bahra Electric. My role involved assisting with UI design, feature integration (order tracking, ticketing, document sharing), and improving user experience. I also gained exposure to real-time client communication and B2B workflow understanding.

Objectives of the project: MAIN OBJECTIVE IS TO CREATE USER FRIENDLY FOR CUSTOMERS OF BAHRA ELECTRIC

Tool used: POWER AUTOMATE , POWER APPS

Details of Papers/patents:no

Brief description of the working environment: During my internship with United Paramount Private Limited, I worked on building a Customer Collaboration Portal for Bahra Electric. The

goal was to improve client interaction by enabling order tracking, ticket management, and document sharing in a single platform.
The company expected a secure, user-friendly, and efficient solution aligned with real-world business needs. I was responsible for understanding client workflows, supporting development, and ensuring smooth communication between teams.
Through this project, I gained practical knowledge in web development, UI/UX design, and B2B communication systems. I also improved my skills in teamwork, problem-solving, and adapting to professional environments.

Academic courses relevant to the project: DATA STRUCTURES AND OBJECT ORIENTED PROGRAMMING LANGUAGE, C LANGUAGE , C++ language

Learning Outcome: LEARNT HOW TO BUILD INTERFACE USING POWER APPS

PS-I station: United Paramount Pvt Ltd, Hyderabad

Student

Name: CHITTIPOLU SUJITH KUMAR . (2023A7PS0572P)

Student Write-up:

PS-I Project Title: BUILDING AN SLM-BASED GENERATIVE AI CHATBOT FOR CUSTOMER DATA RETRIEVAL

Short Summary of work done: This project focuses on building an AI-powered chatbot that translates natural language questions into SQL queries, enabling non-technical users to interact with a database and retrieve relevant sales data. The system leverages a Small Language Model (SQLCoder) running locally via LM Studio, integrated with a Node.js backend and an SQLite database. A simple and user-friendly HTML/CSS/JavaScript frontend allows users to input queries like “What were the total sales in May?” or “Show me all orders from the North region.” The backend dynamically constructs prompts by extracting the database schema using SQLite’s PRAGMA commands and embeds the schema into a natural language-to-SQL instruction. This prompt is then sent to the local language model via HTTP API. The model responds with a valid SQLite-compatible SQL query, which is executed on the local database. The results are then displayed in tabular format on the frontend. This solution eliminates the

need for manual SQL writing or technical support, empowering business teams to access insights independently. It also ensures complete data privacy and low latency by avoiding cloud APIs and keeping everything local. Key milestones include creating a fake but representative database, building a full-stack pipeline (frontend, backend, and LLM), successfully querying the database using model-generated SQL, and dynamically fetching schema details. The system is designed to scale easily with additional tables or datasets and serves as a lightweight, cost-effective alternative to cloud-based AI tools. Overall, the project demonstrates practical GenAI integration in enterprise settings for data accessibility and decision-making.

Objectives of the project: To build a chat bot so that we can get the data from db directly without need of knowing sql

Tool used: Node js,html,css,express js,js

Details of Papers/patents: No

Brief description of the working environment: Work environment is great,mentors are also very kind and explaining what ever doubt's we have everything great.

Academic courses relevant to the project: Llm

Learning Outcome:
How the real world projects happens

PS-I station: United Paramount Pvt Ltd, Hyderabad

Student

Name: ALEKHYA SAI KAMASANI . (2023A7PS2008H)

Student Write-up:

PS-I Project Title: Sales and Purchase Dashboard

Short Summary of work done: There was a huge delay in assignment of work so couldn't complete all that was planned, so the main work was gaining extensive understanding of Power BI

Objectives of the project: To create dashboard using Microsoft Power B.I

Tool used: Microsoft Power B.I

Details of Papers/patents: None

Brief description of the working environment: Mostly work from home, was required to go to the office at least once a week, had all seminars and group discussions online with Google meet.

Academic courses relevant to the project: Basic DBMS and SQL knowledge

Learning Outcome: Decent understanding of the tool power bi

PS-I station: Urbannest HomeTech Private Limited - Tech, Delhi

Student

Name: KRISHNAM ANAND . (2023A3PS0694P)

Student Write-up:

PS-I Project Title: Backend Development for App + IoT Lock Integration

Short Summary of work done: Software Development Intern at UrbanNest Home Tech: I was involved in the database design and schema which formed the base of the database management system of the UrbanNest App. Moreover I worked on the api-spec of the app using YAML and integrated it on Swagger UI.

Objectives of the project: Building backend APIs and integrating with smart IoT locks using ElysiaJS and PostgreSQL.

Tool used: Node.ja, Restful API, Supabase, VsC

Details of Papers/patents: None

Brief description of the working environment: The company leadership helped everyone a lot in learning new tools and working out thier parts of projects.

Academic courses relevant to the project: Computer Programming

Learning Outcome: Node.js/ElysiaJS, PostgreSQL, REST APIs, IoT basics

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PS-I station: Urbannest HomeTech Private Limited - Tech, Delhi

Student

Name: VADLAMANI ADITYA MADHUKESH . (2023A3PS1175H)

Student Write-up:

PS-I Project Title: Company's Website Development

Short Summary of work done: During the initial three to four weeks of my PS1 internship, I focused on strengthening my frontend development skills by learning HTML, CSS, and JavaScript, which was later followed by React.js and Next.js. After the training phase, I contributed to three demo projects: • A Travel Website, • A Phone Case Customization Platform, and • An AI SaaS Application. These projects provided hands-on experience with modern frontend technologies. Following the demo projects, I began working on the main project — developing the company's official website. I took on the role of a Frontend Developer, where I was responsible for building two key pages: • The Contact Page, where I implemented a form using React Hook Form and integrated it with Supabase for backend data storage. • The Footer Page, which included navigational links, company contact details, and social media handles. This experience helped me gain practical knowledge in form handling, third-party integrations, and responsive UI development using modern web technologies.

Objectives of the project: To Develop a website for the company

Tool used: Vs-code,CursorAI,GIT-HUB and Supabase

Details of Papers/patents:N/A

Brief description of the working environment: I learned how to handle responsibilities and work professionally.
Academic courses relevant to the project: C-programming

Learning Outcome: Learnt Next.js, React.js, different Ui components used in designing the website and integrating it with the supabase

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PS-I station: Urbannest HomeTech Private Limited - Tech, Delhi

Student

Name: KARTHIKEYA KOPPULA . (2023A4PS0636H)

Student Write-up:

PS-I Project Title: Company website development

Short Summary of work done: First I learnt all the basics like git, html, css, react, next js. Then worked on building on few pre-built projects for us to know how to collaborate with teammates and finish the project. Then we moved on to main website development.

Objectives of the project: Develop a working website for the company that showcases the facilities offered by it.

Tool used: Html, css, react, next js.

Details of Papers/patents:NA

Brief description of the working environment: I learned how to manage tasks and complete work within deadlines.
Academic courses relevant to the project: CP

Learning Outcome: Front end web development

PS-I station: Urbannest HomeTech Private Limited - Tech, Delhi

Student

Name: AADI PANDEY (2023A7PS0470G)

Student Write-up:

PS-I Project Title: Company Website Development

Short Summary of work done: During my PS-I internship at UrbanNest HomeTech Pvt. Ltd., I worked on designing and developing the company's main website, aiming to improve performance, accessibility, and user engagement. The initial phase involved preparatory practice projects using modern web stacks like Next.js and Tailwind CSS. These projects helped in understanding responsive layouts, reusable components, and backend integration. After this groundwork, I developed the complete frontend for the company website using Next.js, Tailwind CSS, and ShadCN UI, with Payload CMS for dynamic content management and MongoDB for data storage. The system allowed admin-controlled content editing, form-based user interaction, and fully responsive design. Regular code reviews and iterative improvements helped refine navigation, styling, and accessibility. This project enabled me to explore real-world full-stack development, understand CMS-based workflows, implement clean UI/UX practices, and work collaboratively under mentorship. The experience has been pivotal in strengthening both my technical and collaborative skills.

Objectives of the project: To design and develop a fully responsive, modular, and scalable company website for UrbanNest HomeTech Pvt. Ltd., focusing on performance, accessibility, and user experience. The goal was to modernize the company's online presence using industry-standard web technologies and integrate a headless CMS for dynamic content management.

Tool used:
- Frontend: Next.js, React, Tailwind CSS, ShadCN UI
- Backend/DB: Node.js, MongoDB (via Mongoose)
- Design: Figma (for layout references)
- CMS: Payload CMS
- Version Control: Git & GitHub
- Other: VS Code, Postman (for testing APIs)

Details of Papers/patents:N.A.

Brief description of the working environment: During my PS-I internship at UrbanNest HomeTech Pvt. Ltd., I was part of a collaborative, mentorship-driven remote work environment. Daily check-ins and progress reviews with my mentor, Mr Sparsh Aggarwal, created a structured and supportive ecosystem that encouraged learning, feedback, and continuous improvement. The company expected us to deliver a modern, high-performance website aligned with its branding and usability standards.

The project involved building the frontend of the official company website using Next.js, Tailwind CSS, and Payload CMS. Early in the internship, I worked on preparatory practice projects to strengthen my command over web development tools and frameworks. I then moved on to implementing the core website, including a responsive layout, CMS-driven content sections, and optimized UI components using ShadCN UI.

I learned to manage dynamic content via Payload CMS, structure reusable components, and write clean, maintainable code using version control practices on GitHub. The experience enhanced my understanding of full-stack web development workflows, accessibility best practices, performance optimization, and real-world deployment concerns. The remote structure also taught me independent problem-solving, communication skills, and effective time management.

Academic courses relevant to the project: Database Management Systems(DBMS), Object Oriented Programming(OOP)

Learning Outcome: • Gained hands-on experience with full-stack web development using Next.js, Tailwind CSS, and Payload CMS.

- Understood the importance of clean architecture, component reusability, and responsive design.
- Learned how to integrate and manage a CMS, build accessible forms, and perform performance optimization.
- Strengthened collaboration, version control (Git/GitHub), and code deployment practices.
- Developed proficiency in frontend development workflows and backend integration via MongoDB.

PS-I station: UST infinity labs, Thiruvananthapuram

Student

Name: GOVIND P NAIR (2022B4A80713G)

Student Write-up:

PS-I Project Title: Hardware acceleration of convolutional neural networks (CNNs) on FPGA

Short Summary of work done: This project investigates the hardware acceleration of Convolutional Neural Networks (CNNs) on Field Programmable Gate Arrays (FPGAs) with a focus on the MNIST dataset for handwritten digit classification. The architecture integrates custom-designed convolutional layers for feature extraction, followed by a Fully Connected Neural Network (FCNN) for final classification. By leveraging the inherent parallelism and configurability of FPGAs, the design aims to achieve efficient computation with reduced latency and power consumption compared to traditional CPUs and GPUs.

Objectives of the project: To achieve handwritten image classification on FPGA

Tool used: Vivado, verilog

Details of Papers/patents: Not any

Brief description of the working environment: Full freedom to choose your project domain and good mentors to guide you. Good facilities available and good working hour flexibility.

Academic courses relevant to the project: Digital design, computer architecture

Learning Outcome: VLSI Design, digital design, verilog, vivado

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PS-I station: UST infinity labs, Thiruvananthapuram

Student

Name: SANJOE MATHEW (2023A3PS0159G)

Student Write-up:

PS-I Project Title: Identifying defects in strawberries using image processing and Machine learning.

Short Summary of work done: Using image processing tools from OpenCV to identify defects in batches of strawberries.

Objectives of the project: Identify and classify defects in batches of strawberries.

Tool used: OpenCV, Python, Hugging face, YOLO.

Details of Papers/patents: Nil

Brief description of the working environment: Very easy going. Just have to finish your work on time. Working environment is very nice.

Academic courses relevant to the project: Digital image processing, machine learning

Learning Outcome: Learnt how to use OpenCV and how to train a model to identify patterns.

PS-I station: UST infinity labs, Thiruvananthapuram

Student

Name: RISHIT TRIPATHY (2023A4PS0309G)

Student Write-up:

PS-I Project Title: Research, Design and Analysis of Hybrid VTOL Drone

Short Summary of work done: Hybrid VTOL Drone – Design Summary (Quadplane Configuration) Mission & Goals Type: Quadplane hybrid VTOL (hovering motors only for takeoff/landing; wings used exclusively for cruise). Primary Goals: Endurance: Maximize flight time and range. Heavy Payload Capacity: Capable of carrying significant payload without

excessive performance loss. Efficiency: Prioritize aerodynamic and propulsive efficiency in cruise to conserve energy. Airframe & Aerodynamics Main Wing: Role: Provides lift during cruise; optimized for endurance and efficiency. Final airfoil not yet confirmed — last discussions rejected previous choices; new selection pending lift–drag optimization for cruise Reynolds number and payload configuration. Design considerations discussed: span, taper ratio, dihedral, wing twist (washout), and wingtip shape for drag reduction. Horizontal Stabilizer: Final Airfoil: Eppler 374 (confirmed). Angle of Incidence: Negative angle of incidence accepted (to reduce drag and trim moments in cruise). Vertical Stabilizer: Airfoil: Not yet finalized — selection to balance yaw stability with low drag in cruise. VTOL Propulsion Hover motors are dedicated to vertical takeoff/landing — they are not used in forward flight. Cruise is handled by a separate forward propulsion system (likely a pusher configuration). Advantages of this split system: Optimizes each motor type for its task (hover motors for high thrust-to-weight, cruise motor for efficiency). Eliminates prop drag penalties in cruise by folding/feathering props. Design Considerations & Studies Done Aerodynamic Efficiency: Trade-off between elliptical vs tapered wings studied (elliptical is most efficient, tapered easier to build). Reynolds Number: Cruise conditions at relatively low speed and low altitude → Reynolds number in the few million range; design tailored for efficient low-Re performance. Stability & Control: Tailplane sizing & incidence for trim. Discussion on washout to prevent tip stalls. Structural Design: Consideration of materials for wing and stabilizers based on weight, strength, and cost. Airfoil Research: Understanding differences between symmetrical and cambered profiles for stabilizers vs lifting surfaces. Outstanding Design Decisions Main Wing Airfoil: Must balance high lift-to-drag ratio at cruise with adequate low-speed performance for transition phases. Vertical Stabilizer Airfoil: Needs finalization for yaw stability without excessive drag. Exact Wing Geometry: Span, aspect ratio, taper, dihedral final values not fully locked. Propeller Design & Integration: For both hover and cruise modes.

Objectives of the project: To design an efficient, long-range Hybrid VTOL Drone (Quadplane) with a decent load carrying capacity.

Tool used: Autodesk Fusion, XFLR5

Details of Papers/patents: None

Brief description of the working environment: Wonderful working environment
Freedom to choose our own projects and go about it.
Mentors try their best to provide guidance even if the project is not related to their work.
Got access to powerful computers which made work easy.
Access to PS5, Foosball table, chess made the breaks even more fun.
Canteen food is nice and usually not too expensive.
My learning was mostly through a combination of Research Papers, Google, YouTube and ChatGPT with occasional inputs provided by my mentor wherever possible.
Aesthetic, clean and comfortable office.

Academic courses relevant to the project: yes

Learning Outcome: Learnt various features in Autodesk Fusion, and also learnt XFLR5 software. Apart from that learnt a lot about aerodynamics and airfoils in general

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PS-I station: UST infinity labs, Thiruvananthapuram

Student

Name: NARAYAN PRASANTH . (2023A4PS0705H)

Student Write-up:

PS-I Project Title: Research, design and analysis of Hybrid VTOLs

Short Summary of work done: I started my work by researching about drones and then came across a different set of drone called ornithopters . basically they are drones whose flight mechanism is based on the natural filght of birds. then we got to know that the research done on them are very less and the end product which we get was not desirable for our uses. then we continued studying and researching about the drones . finally after a thorough research we fixed on Hybrid VTOLs and then started working on its design.

Objectives of the project: to make a hybrid vtols and then analyze it and make it better. understand how to deisgn a drone and how a drone works also optmise the design

Tool used: Fusion360, Xflr5

Details of Papers/patents: nothing yet

Brief description of the working environment: It was the best one could ask. my mentors were great. my manager was great and the work environment was really really great. they gave us our space and always encouraged our idea even if it was wrong and always corrected and guided us towards the right path. The way they took us in was with elite professionalism . they gave constructive criticism and gave us a chance to speak for ourselves. In a nut shell it was the best experience a PS-I student can have.

Academic courses relevant to the project: Mechanism and Machines . concepts of fluid mechanics. Physics etc.

Learning Outcome: Gained knowledge about drones and its uses. Learnt about Hybrid VTOLS and there working. also got real time experience with using fusion360 software to design the drone.

PS-I station: UST infinity labs, Thiruvananthapuram

Student

Name: ALBERT SEBASTIAN . (2023A7PS0118H)

Student Write-up:

PS-I Project Title: Stock price prediction using ML and Sentiment Analysis

Short Summary of work done: Google ML crash course was used to learn basics of ML. Created an Long short term memory model to predict the next day stock price of a company. A list of 8 features were selected as inputs for the model. Sentiments were collected using FinBERT model and financial data was collected using Yahoo finance. The model was trained on data from 5 years and used to predict the price based on data from previous 60 days. A web UI was created using steamlit to enable interaction with the model. A list of 5 companies were used to train the model.

Objectives of the project: Predicting the next day stock price of a company using Sentiment Analysis using an ML model

Tool used: Google Collab, Python, Steamlit.

Details of Papers/patents: Nil

Brief description of the working environment: The campus is very large, spacious and beautiful. We were allotted Ubuntu Desktops in an large office room. We had meeting roughly twice a week. Work from home was not provided except once during an all india strike. Lunch timings were flexible. Reporting and leaving times were flexible if given a proper reason. Work

load was very manageable. We were given the freedom to choose our projects from many and also to suggest our own project in our case. The mentors were friendly and approachable. There were also recreational activities accessible like foosball, carroms, chess, PS5 etc.

Academic courses relevant to the project: Machine Learning DEL

Learning Outcome: Web dev, LSTM models, financial data modeling, Natural Language processing

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PS-I station: UST infinity labs, Thiruvananthapuram

Student

Name: ADITHYA PRASAD . (2023A8PS1178H)

Student Write-up:

PS-I Project Title: Autonomous Navigation of Mobile Robots using ROS2

Short Summary of work done: I designed a differential drive robot from scratch using ROS2 Humble, and performed autonomous navigation of a known as well as an unknown environment. I also wrote a diagnostics tool which shows the accuracy of localization methods.

Objectives of the project: To perform autonomous navigation of a differential drive robot and to compare efficiency of localization methods.

Tool used: ROS2 Humble, Nav2 stack, robot_localization package, slam_toolbox package

Details of Papers/patents: Nil

Brief description of the working environment: The company expected us to explore our interest so we could choose which project we wanted to do. Working environment was very welcoming. I learned a lot during ps, both technical and non technical skills.

Academic courses relevant to the project: C programming

Learning Outcome: Implement a basic differential drive robot using ROS2 Humble and perform autonomous navigation using Nav2 navigation stack.

PS-I station: UST infinity labs, Thiruvananthapuram

Student

Name: ALEX ANTONY . (2023B4A70734H)

Student Write-up:

PS-I Project Title: Stock Price Prediction using sentiment analysis

Short Summary of work done: During PS-I, I built a stock price prediction system that combined historical stock price data with sentiment analysis from financial news. I began by collecting and cleaning stock prices and corresponding news articles. Using pretrained language models and python NLP frameworks, I quantified sentiment scores for each date. Feature engineering merged these scores with technical indicators derived from historical prices. I implemented and compared various machine learning models, including LSTM networks, focusing on evaluating how adding sentiment improved forecast accuracy versus price-only models. The project also included building a simple dashboard for live predictions and training my model to provide buy/sell/hold signals for a selected stock. Regular evaluation using MAE and RMSE metrics ensured the model's robustness. Throughout, I learned how integrating qualitative sentiment data meaningfully augments price prediction and gained practical exposure to the full data science workflow in a real market context

Objectives of the project: To develop a machine learning model that predicts future stock prices by incorporating both historical market data and sentiment scores derived from financial news and social media.

Tool used: Python Jupyter Notebooks Pandas, NumPy (data preprocessing),TensorFlow/Keras or PyTorch (LSTM modeling), Streamlit(dashboard)

Details of Papers/patents:nil

Brief description of the working environment: The working environment was collaborative, intellectually stimulating, and supportive, with regular mentorship and hands-on guidance. Open communication and frequent feedback sessions fostered creative problem-solving and knowledge sharing among team members. I was encouraged to experiment with advanced machine learning models and apply cutting-edge natural language processing (NLP) techniques to real financial datasets. My primary expectation from the company was to gain practical exposure to end-to-end data science workflows—specifically at the intersection of sentiment analysis and quantitative finance.Through PS-I, I improved my technical confidence in data preprocessing, sentiment scoring, and time series forecasting, while also gaining insights into the dynamic nature of financial markets. This experience boosted my ability to critically analyze model performance and to present actionable insights to stakeholders, rounding out my understanding of financial AI applications.

Academic courses relevant to the project: Nil

Learning Outcome: Understanding of time series analysis and forecasting techniques applied to financial data.
Hands-on experience in natural language processing, specifically sentiment analysis using news and social media text.
Familiarity with deep learning architectures like LSTM for sequential data modeling and the practical integration of multiple data sources (numeric and text-based) in a prediction pipeline.
Skills in data preprocessing, model tuning, and performance evaluation for regression tasks in finance.

PS-I station: VVDN Technologies Pvt. Ltd., Gurgaon

Student

Name: AAKARSH MISHRA . (2023A7PS0561P)

Student Write-up:

PS-I Project Title: Networking and Wi-Fi Project

Short Summary of work done: Learnt fundamental network protocols and concepts in networking

Objectives of the project: Learn Networking and Wi-Fi

Tool used: Visual Studio Code, Socket Programming

Details of Papers/patents:N/A

Brief description of the working environment: The company environment was very supportive, and I gained practical knowledge.
Academic courses relevant to the project: yes

Learning Outcome: Networking Protocols and Concepts

PS-I station: VVDN Technologies Pvt. Ltd., Gurgaon

Student

Name: AARYAN SHARMA . (2023B1AA0828P)

Student Write-up:

PS-I Project Title: evse and embedded systems

Short Summary of work done: -

Objectives of the project: evse

Tool used: -

Details of Papers/patents:-

Brief description of the working environment: -

Academic courses relevant to the project: - Yes

Learning Outcome: schematic and evse and embedded systems

PS-I station: WRLDC- Western Regional Load Despatch Center,Grid-IndiaIndia Limited, Mumbai

Student

Name: AYUSH HASMUKHBHAI KAKADIYA (2023A7PS0422G)

Student Write-up:

PS-I Project Title: Training Need Analysis

Short Summary of work done: Summary of Work Done During my PS1, I worked on a project titled Training Need Analysis, which aimed to develop a system for identifying and managing employee training requirements. The project involved creating a structured database containing four main modules: Employees, Training Programs, Training Need Analysis, and Training History. This allowed efficient storage and retrieval of employee information, training records, and identified skill gaps. On the frontend, I designed a simple interface using HTML and CSS to enable HR/Admin users to view and manage these tables easily. The interface allowed smooth navigation between different records and supported updates to training needs and employee details. An important feature implemented was the automation of communication through default email notifications. Whenever an admin activated or cancelled a training program, the system automatically sent an email notification to the concerned employees. This ensured transparency and timely communication regarding training schedules. Through this project, I not only applied my technical knowledge in databases and web development but also gained insights into how Training Need Analysis helps organizations make data-driven decisions. The work contributed towards streamlining the training process, ensuring employees receive the right training at the right time.

Objectives of the project: To identify employee skill gaps and map them to suitable training programs. • To build a simple database system for managing employees, trainings, and history. • To automate communication through email notifications.

Tool used: Tools Used • Frontend: HTML, CSS • Backend/Database: MySQL (or whichever DB you used) • Programming Language: Java / C++ / PHP (whichever you

actually used – tell me so I can adjust) • Email Automation: SMTP (default email sender) • Other: VS Code /

Details of Papers/patents: None

Brief description of the working environment: The working environment during PS-I was collaborative, professional, and supportive. I had the opportunity to work under the guidance of mentors who provided clarity on the project requirements and encouraged me to explore solutions independently. The atmosphere allowed open communication, where doubts could be resolved quickly, and feedback was regularly shared to improve the quality of work.
From the company, the primary expectation was to develop a system that could effectively identify training needs of employees, maintain records, and automate communication. The organization expected accuracy in database design, user-friendliness in the frontend interface, and reliability in email automation. Meeting deadlines, maintaining professionalism, and producing a working prototype were also important expectations.
During the course of PS-I, I gained valuable technical and professional learnings. On the technical side, I improved my skills in full-stack development, relational databases, and implementing automated features like email notifications. On the professional side, I learned how to approach real-world problems systematically, collaborate effectively in a team, and adapt to challenges while ensuring timely delivery of tasks. The experience gave me a practical understanding of how Training Need Analysis systems support organizations in bridging skill gaps and improving employee performance.
Overall, PS-I provided me with both technical growth and workplace exposure, preparing me for future academic and professional challenges.

Academic courses relevant to the project: Database Management Systems (DBMS)

- Object-Oriented Programming (OOP)
- Data Structures and Algorithms (DSA)
- Software Engineering
- Web Technologies / Web Programming

Learning Outcome: Gained practical experience in full-stack development (HTML, CSS, database integration).

- Understood how to design and manage relational databases for real-world use cases.
- Learned to implement automation features like email notifications.
- Improved skills in project planning, teamwork, and problem-solving.

PS-I station: Xebia IT Architects Ltd, Bhopal, Madhya Pradesh, Bhopal

Student

Name: AARYA KUMAR DUBEY . (2023A4PS1351H)

Student Write-up:

PS-I Project Title: Project Management

Short Summary of work done: Firstly we learned the low code development software named OUTSYSTEMS, which helps us to make reactive web applications without any coding. It only requires some logic building and it took us around 2 weeks to get acquainted with the software. Further we were divided into teams and alloted with different projects which helped us understand the software even more professionally.

Objectives of the project: Develop a reactive web application on Outsystems and integrate it with AI which suggests questions as per the survey created.

Tool used: Outsystems, Service Studio

Details of Papers/patents: None

Brief description of the working environment: The working environment was very motivating, every individual was looked after with sincerity.

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

Learning Outcome: Outsystems, Agile approach with Scrum framework.

PS-I station: Xebia IT Architects Ltd, Bhopal, Madhya Pradesh

Student

Name: RUDRA TIWARI . (2023A7PS0558P)

Student Write-up:

PS-I Project Title: Fraud detection

Short Summary of work done: Learned about low coding ,service studio, logic building, website building, outsystems. Also learned much of theoretical knowledge about sdlc and agile methodology.

Objectives of the project: To develop a web reactive app that can detect fraud transactions.

Tool used: Outsystem , service studio

Details of Papers/patents: None

Brief description of the working environment: It was all as expected not more not less

Academic courses relevant to the project: yes

Learning Outcome: Low coding, outsystems, critical thinking

PS-I station: Xebia IT Architects Ltd, Bhopal, Madhya Pradesh, Bhopal

Student

Name: RISHITA JAIN (2023A7PS1020G)

Student Write-up:

PS-I Project Title: Fraud Detection Software Development

Short Summary of work done: This project focuses on the design and implementation of two scalable web applications using the OutSystems low-code platform. The first is a Movie Database System demonstrating core principles such as structured data modeling, CRUD operations, UI component reuse, and role-based access control. The second is a Fraud Detection Web App that flags suspicious transactions based on rule-based logic, including high-amount and high-frequency transaction checks. Both applications incorporate secure login,

responsive interfaces, and dynamic data handling. The project highlights the power of low-code platforms in rapidly developing secure, user-centric, and maintainable applications aligned with real-world use cases.

Objectives of the project: As part of my Practice School-I internship at Xebia, I undertook projects that showcased the capabilities of OutSystems through end-to-end application development. These projects were designed to provide hands-on experience in areas such as data modeling, business logic design, UI/UX development, and role-based security.

Tool used: Outsystems

Details of Papers/patents:-

Brief description of the working environment: I got exposure to new tools and technologies which improved my skills.

Academic courses relevant to the project: -

Learning Outcome: Through this structured and immersive internship experience, I developed a comprehensiveunderstanding of both foundational software development methodologies and practical application development using the OutSystems low-code platform. The phased approach—combining conceptual learning with hands-on implementation—allowed me to apply theoretical knowledge in real-world project scenarios.

PS-I station: Xebia IT Architects Ltd, Bhopal, Madhya Pradesh, Bhopal

Student

Name: AAYUSH RAJ (2023B1A40711G)

Student Write-up:

PS-I Project Title: Report Analyser Dashboard

Short Summary of work done: We were given training on using Outsystems (low code platform) and product development cycles. After this, we were briefed about the project and

work began. We built a dashboard to input, analyze, and download several kinds of reports for employees. Extended it to project and task management.

Objectives of the project: Make a dashboard to input, analyze, and download several kinds of reports for employees. Extend it to project and task management. Build this using Outsystems (low code platform)

Tool used: Outsystems (low code platform)

Details of Papers/patents:-

Brief description of the working environment: The company is big and good and the communications were professional and ideal. However, they trained us to use Outsystems (low code platform) and for me who already know high code this felt largely redundant. However if you are not much into coding, this will be a good exposure point.

Academic courses relevant to the project: CS

Learning Outcome: The experience helped me understand my strengths and areas to improve.