

Birla Institute of Technology & Science (BITS), Pilani
Practice School Division
First Semester 2024-2025 (July – December 2024)
PS Chronicles
(A compilation of student experience during PS-II)



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From the Desk of the Editor

It is my great pleasure to bring forth the 18th edition of the PS-II Chronicles. This edition features over 750 plus articles from students (Pilani, K.K. Birla Goa, and Hyderabad) sharing their experiences during I Semester of 2024-2025. This sustained high numbers of experience sharing are a testimony to the usefulness of the PS- II Chronicles and its increasing popularity, especially during the PS preference form filling process..

The primary aim of the PS-II Chronicles is to record the overall PS-II experiences of all the stakeholders – the students, the PS faculty and the Industry mentors. Currently, this version is the compilation of all student experiences. The objectives of this Chronicles are manifold

- Prospective PS-II students can get to know about the experiences of their seniors, currently at PS – thereby increasing awareness in the student community.
- Increasing awareness among faculty about the nature of work happening at various PS-II stations.
- Bring back the experiences gained at PS-II station into academics - making the curriculum more industry relevant.

I would like to thank everyone who has participated in this activity - the students, the industry mentors and the PS faculty for sharing their experiences directly or indirectly.

I would also extend my thanks to Mr. Om Prakash Singh Shekhawat, and for his help in bringing out the edition of PS-II Chronicles. Special thanks to Mr. Shyam Sundar Saini for the follow up with PS faculty regarding the chronicles.

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

S. Murugesan

Associate Dean, Student Counselling Cell
Practice School Division

PS-II Station: (Zomentum) Pactora India Pvt. Ltd., Bengaluru

Faculty

Name: Ramesh Venkatraman

Student

Name: SIDDHANT SHARMA (2021A2PS2133P)

Student Write-up

PS-II Project Title: Optimizing Revenue Growth Operations

Short Summary of work done during PS-II: During my six-month internship at Zomentum as a Business Analyst in the Revenue Operations team, I contributed to optimizing the sales and marketing processes while gaining hands-on experience in CRM management and sales analytics. Collaborating with the sales and marketing leadership, I analyzed the lead funnel across multiple products, identifying key bottlenecks and implementing data-driven strategies to improve conversion rates. I also focused on enhancing operational efficiency by streamlining workflows and creating insightful dashboards that provided actionable metrics for leadership decision-making. Towards the latter half of my internship, I delved into email marketing and product management. I executed targeted email campaigns aimed at improving engagement and retention among Zomentum's primary customer base, Managed Service Providers (MSPs). Additionally, I contributed to refining the product roadmap by conducting user research and analyzing feature performance. This internship allowed me to strengthen my analytical, problem-solving, and communication skills while gaining valuable exposure to revenue operations and product management. My ability to adapt quickly, such as when I transitioned into new responsibilities like email marketing, has been a key highlight of my experience.

Tool used (Development tools - H/w, S/w): HubSpot, ChargeBee, MetaBase, Excel, PowerBI

Objectives of the project: To optimize revenue growth operations in Zomentum

Major Learning Outcomes: CRM and Sales Analytics: Gained hands-on experience in managing CRMs, analyzing sales funnels, and identifying key performance indicators to optimize sales operations.

Data-Driven Decision Making: Learned to use data effectively to identify bottlenecks, design solutions, and drive improvements in the lead funnel and sales processes.

Collaboration and Communication: Worked closely with cross-functional teams, including sales and marketing leadership, to align on goals and deliver actionable insights.

Email Marketing Expertise: Developed skills in designing and executing targeted email campaigns, with a focus on engagement, retention, and understanding customer needs.

Product Management Skills: Gained exposure to product lifecycle management by conducting user research, analyzing product performance, and contributing to the product roadmap.

Operational Efficiency: Improved processes by streamlining workflows and creating dashboards that offered leadership real-time, actionable insights.

Adaptability and Problem-Solving: Demonstrated the ability to learn and adapt quickly to new roles, responsibilities, and challenges, especially when transitioning into email marketing and product management.

Customer-Centric Approach: Deepened understanding of the MSP customer base, their needs, and how to tailor strategies to serve them better.

Details of Papers/patents: NA

Brief Description of working environment, expectations from the company: The working environment at Zomentum was dynamic, collaborative, and growth-oriented. As a hybrid role, I had the opportunity to work closely with sales and marketing leadership at the Bengaluru office, which fostered cross-team collaboration and expedited learning. The culture encouraged open communication, where ideas and feedback were valued, making it an ideal space to learn and contribute meaningfully.

The company set high expectations for interns, emphasizing ownership, proactivity, and delivering tangible results. I was expected to approach challenges analytically, take initiative in optimizing processes, and ensure my work aligned with business objectives. The leadership team provided consistent guidance, ensuring I had clarity on priorities while also giving me the autonomy to explore creative solutions.

Zomentum also emphasized learning and development. I was encouraged to gain a deeper understanding of CRM systems, sales analytics, and email marketing tools. Regular team

discussions, mentorship sessions, and access to relevant resources enabled me to build a robust skill set during my tenure.

Overall, Zomentum's environment was fast-paced yet supportive, motivating me to take on challenges and grow both professionally and personally. The hands-on experience, coupled with clear expectations and constant encouragement, made my internship an enriching and fulfilling journey.

Academic courses relevant to the project: NA (Proficiency in Excel and critical thinking is appreciated).

PS-II Station: 1Clicktech Global Services Pvt. Ltd., Gurugram, Gurgaon

Faculty

Name: Gopalakrishnan Venkiteswaran

Student

Name: VAIBHAV UTTAM (2020B3A70963P)

Student Write-up

PS-II Project Title: Software Development - Front-end

Short Summary of work done during PS-II: I gained valuable experience in frontend development using React and TypeScript. My first project was a Learning Management System (LMS) similar to Nalanda, which I completed in two months. This project helped me understand the fundamentals of designing and building scalable interfaces. Later, I worked on a task management system, where I took the lead on frontend and design, focusing on creating a seamless user experience. Towards the project's final stages, I ventured into backend and database management, working closely with clients to understand their needs and implement requested changes. Using tools like Git, Spring Boot, and MySQL, I broadened my technical skill set and learned the importance of adaptability and collaboration in a project's success.

Tool used (Development tools - H/w, S/w): Git, Typescript, MySQL, Springboot, CSS, tailwind

Objectives of the project: Build LMS and Task Management

Major Learning Outcomes: Git, React, Typescript, CSS, java, springboot, MySQL, Git

Details of Papers/patents: NA

Brief Description of working environment, expectations from the company: The work environment was subpar, to say the least. Unrealistic work hour expectations were the norm, with frequent late-night work and weekend demands without notice. The founder often called at odd hours, creating further disruption. Initially, work-from-home was allowed, but this was revoked after Diwali. Official working hours were Monday to Saturday, 8 hours per day, but staying late to meet the founder's demands became routine.

The office was located in a poorly maintained basement. At the start, many employees were not provided proper laptops and were expected to work on their personal machines. The workspace was unhygienic; coffee from the office machine was often contaminated with cockroaches, and the overall environment was far from professional.

The senior management operated remotely, as most were moonlighting and treating this as a secondary job. Their availability during odd hours created miscommunication and delayed decision-making. They expected employees to adapt to their schedules, further exacerbating the lack of work-life balance.

If it weren't for my mentor, Nitin, it would have been extremely difficult to get through this experience. His guidance and support were invaluable in navigating such a challenging and demoralizing work environment.

The overall experience while gave me a lot of relevant experience in every field but was frustrating and demoralizing. I strongly urge the PSD to ensure future workplaces maintain professional standards. Providing proper equipment, ensuring hygienic conditions, and fostering clear communication are essential to avoid such an ordeal for future employees.

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

PS-II Station: 1Clicktech Global Services Pvt. Ltd., Gurugram, Gurgaon

Faculty

Name: Gopalakrishnan Venkiteswaran

Student

Name: SIDDHARTH KOUNDAL (2020B4A71909G)

Student Write-up

PS-II Project Title: Web Development

Short Summary of work done during PS-II: Developed HRMS

Tool used (Development tools - H/w, S/w): IntelliJ, VS Code, GitHub, Swagger UI

Objectives of the project: Develop HRMS

Major Learning Outcomes: Full Stack Development

Details of Papers/patents: HRMS

Brief Description of working environment, expectations from the company: 1 Click Tech is a very new startup. So working environment is average. It is 6 days working. Monday to Saturday.

Academic courses relevant to the project: DSA, OOP

PS-II Station: Aarrmor Digital Services Pvt. Ltd., (Non-IT), Bengaluru, Bengaluru

Faculty

Name: Bhamidipati Vaishali

Student

Name: ADITYA KASHYAP (2021A8PS3046G)

Student Write-up

PS-II Project Title: Digital Marketing

Short Summary of work done during PS-II: Digital Marketing - Increase the clients social media presence, shoot videos and create reels, Ideation of new content and Implementing them in real-world scenarios.

Tool used (Development tools - H/w, S/w): Canva, Photoshop, Premiere Pro, After Effects

Objectives of the project: To cater to the digital marketing needs of the clients

Major Learning Outcomes: Developing Marketing Strategies, Communication with clients, Producing content and Team Work.

Details of Papers/patents: NA

Brief Description of working environment, expectations from the company: Small office, It is a startup so optimisation is max. Less employees, less hassles and in-touch with the senior management of the company.

Academic courses relevant to the project: Marketing/Management Courses

PS-II Station: Aditya Birla Chemicals, Mumbai

Faculty

Name: Santosh Sopanrao Khandgave

Student

Name: PRANSHU KHARE (2019B5A40518P)

Student Write-up

PS-II Project Title: Maintenance in VAP

Short Summary of work done during PS-II: Studied the Mechanical Maintenance Operations in and identified issues related to the Preventative Maintenance (PM) Health of the Stable Bleaching Powder Plant Updated PM Checklists for all equipment and proposed new PM Schedules for 54% of the plant equipment Proposed measures to reduce downtime by up to 87% for specific critical equipment.

Tool used (Development tools - H/w, S/w): SAP, Word, Excel, Powerpoint

Objectives of the project: To study the Mechanical Maintenance Operations in the SBP Plant and in the VAP Department in general.

Major Learning Outcomes: Learned the Operations of the SBP Plant and the kinds of issues faced by the plant.

Details of Papers/patents: NA

Brief Description of working environment, expectations from the company: The Section Head-Mech. Maintenance (VAP) was my immediate supervisor and he helped me a lot with understanding the working of the plant and the different kinds of maintenance we perform in the plant. etc.

Academic courses relevant to the project: Quality Control Assurance and Reliability, Manufacturing Management.

PS-II Station: Aditya Birla Digital Fashion Ventures – (TMRW House Of Brands) - Frontend, Bengaluru

Faculty

Name: K Venkatasubramanian

Student

Name: KODAM ROHIT KISAN (2020B3A71141G)

Student Write-up

PS-II Project Title: Growth Hacks in Veirdo

Short Summary of work done during PS-II: Worked on and Led development in Fashion Brands like Veirdo, Wrogn, Juneberry which were in shopify stack deployed features from scratch which can also be used in other brands of the company, increased revenue of Veirdo by almost 100% during Black Friday sale because of my Features.

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

Objectives of the project: To work on Growth Hack features in Ecommerce Website

Major Learning Outcomes: End to end Shopify Development.

Details of Papers/patents: No Patents

Brief Description of working environment, expectations from the company: Working Environment was very friendly, with good exposure to learn and present your work, I presented my work to CPTO of the Company in a biweekly review. which got me very good morale boost to work and also got an opportunity to communicate to higher management.

Academic courses relevant to the project: None

PS-II Station: Aditya Birla Digital Fashion Ventures – (TMRW House Of Brands) - Product Manager, Bengaluru

Faculty

Name: Arindam Roy

Student

Name: HARDIK MITTAL (2021A7PS3188H)

Student Write-up

PS-II Project Title: Product Management - Bewakoof and Urbano

Short Summary of work done during PS-I: During my Product Management internship at TMRW House of Brands, I worked on multiple projects aimed at improving user experience and driving business growth. One of the two key projects involved revamping the homepage of Bewakoof.com, where I implemented personalized interventions based on user behaviour and purchase history to enhance engagement and increase conversions. Widgets like the Best-Selling Product Slider, Category Recommendation, and a new Instagram-like Stories feature were tailored to different user cohorts to optimize the shopping experience. The second project focused on increasing the Average Order Value (AOV) for Urbano by improving the visibility of discounts and offers on the Product Detail Page (PDP) in Shopify. This project involved displaying applicable discounts in a clear and compelling way, encouraging users to maximize savings and increase their cart size. Throughout the internship, I collaborated closely with cross-functional teams, contributed to detailed product requirement documentation (PRDs), and tracked key performance metrics such as click-through rates (CTR), conversion rates, and AOV. These experiences helped me develop critical skills in user-centered design, data-driven decision-making, and technical product management.

Tool used (Development tools - H/w, S/w: Jira, Metabase, Sheets, Figma and Shopify

Objectives of the project: The objective of project-1 was to revamp the homepage of Bewakoof.com to improve user engagement, build trust, and increase conversions. By implementing personalized interventions based on user types and their browsing or purchase history, the homepage aimed to create a tailored shopping experience for each visitor. The goal of project-2 was to increase the Average Order Value (AOV) for Urbano from 1050-1100 to over 1200. This was achieved by enhancing the visibility of discounts and offers on the Product Detail Page (PDP), encouraging users to add more products to their cart and make use of available discounts.

Major Learning Outcome : Technical Product Management, Cross-Functional Collaboration, User-Centered Design, Data-Driven Decision Making.

Details of Papers/patent: NA

Brief Description of working environment, expectations from the company: The work environment is highly structured yet dynamic, fostering a balance between organization and adaptability. The company offers lenient work hours and a flexible leave policy, ensuring a supportive atmosphere for employees to maintain a healthy work-life balance. It's an excellent platform for learning, especially for individuals at the start of their careers or those looking to acquire new skills. The company emphasizes growth and development, encouraging a hands-on approach without expecting employees to know everything from the outset. This creates an inclusive and encouraging culture where mistakes are seen as opportunities for growth, making it ideal for continuous learning and professional development.

Academic courses relevant to the project: None

PS-II Station: Advik Hi Tech Pvt. Ltd., Pune, Pune

Faculty

Name: Bandi Venkata Prasad

Student

Name: SHIVAM SAHU (2020B3A31858H)

Student Write-up

PS-II Project Title: Financial Modelling & Equity Research

Short Summary of work done during PS-II: Financial Model Development for a CNG Business in Auto Manufacturing A comprehensive financial model was developed for a CNG-focused auto manufacturing business covering diverse segments, including 3-wheelers, 4wheelers, HCVs, LCVs, and passenger vehicles. The model detailed revenue growth projections, cost structures, capital expenditure (CapEx), EBITDA margins, and cash flow forecasts. Scenario analyses evaluated the impacts of fuel price fluctuations and policy incentives, offering strategic insights for investment and operational planning.

Tool used (Development tools - H/w, S/w: Excel VBA SAP

Objectives of the project: Build a financial model for a new business the company plans to venture into and conduct Equity Research for sector-specific trends

Major Learning Outcome: Advanced Excel, VBA Macro, SAP, Financial Modelling Valuation

Details of Papers/patents: NA

Brief Description of working environment, expectations from the company: Helpful, quick in response, friendly, good guidance

Academic courses relevant to the project: BAV, FOFA, FM

PS-II Station: AECOM - Gurugram, Gurgaon

Faculty

Name: Mahesh Kumar Hamirwasia

Student

Name: KSHITIJ GARG (2021A2PS0144P)

Student Write-up

PS-II Project Title: Integrated Airside and Landside Design for AMD and TRV Airports

Short Summary of work done during PS-II: The primary objective is to enhance operational efficiency by optimizing the flow of aircraft, passengers, and cargo while minimizing delays. The project focuses on improving the passenger experience by reducing congestion and streamlining movement within terminals and access points. Safety and compliance with international aviation standards are central to the design, ensuring secure and efficient operations. Sustainability is also a key focus, incorporating eco-friendly practices and energy-efficient solutions to minimize environmental impact. Additionally, the design emphasizes scalability, allowing for future expansions to accommodate growing demand. By integrating smart technologies for traffic management and operational automation, the project aims to modernize airport infrastructure and improve overall efficiency. Ultimately, the project seeks to transform Ahmedabad (AMD) and Trivandrum (TRV) airports into world-class facilities that support regional economic growth, enhance passenger satisfaction, and meet global aviation standards.

Tool used (Development tools - H/w, S/w): AutoCAD, Excel, Civil3D

Objectives of the project: The project aims to enhance operational efficiency, improve passenger experience, ensure compliance with aviation safety standards, and incorporate sustainability. It focuses on scalable, future-ready designs with smart technology integration to modernize airport infrastructure and meet global standards.

Major Learning Outcomes: It covers aviation safety standards, sustainability practices, and scalable infrastructure planning. Additionally, it highlights the use of software like Civil3D and the importance of collaboration skills in complex, multidisciplinary projects.

Details of Papers/patents: NA

Brief Description of working environment, expectations from the company: AECOM provides a dynamic, collaborative work environment where professionals engage in high-profile, multidisciplinary infrastructure projects. Committed to diversity, inclusion, and sustainability, the company fosters a supportive culture with ample opportunities for professional growth through training and certifications. While project demands can be intense, AECOM promotes work-life balance with flexible arrangements and wellness programs, making it an ideal workplace for those seeking impactful careers in infrastructure consulting.

Academic courses relevant to the project: Highway Engineering.

PS-II Station: AECOM - Pune, Pune

Faculty

Name: Mahesh Kumar Hamirwasia

Student

Name: KRISHNA JOSHI (2021A2PS3058H)

Student Write-up

PS-II Project Title: Assessment of plannin, Alignment and structures

Short Summary of work done during PS-II: The work usually involved from designing tracks to versine. As a part of their team you calculate approximate sea level so that track plinth is laid efficiently. My other works involved working with structures team with classification, transmittal file review (girders, piers) and using staad for analysis. Other works include the design of foundations, slabs, buffer stop and velocity design.

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

Objectives of the project: the design and the implementation of Mega projects

Major Learning Outcomes: Various strategies used for successful delineation of project sprints.

Details of Papers/patents: NA

Brief Description of working environment, expectations from the company: It provides a dynamic, collaborative, multidisciplinary infrastructure projects. Committed to diversity, inclusion, and sustainability. The company fosters a supportive culture with ample opportunities for professional growth through training and certifications. While project demands can be intense, AECOM promotes work-life balance with flexible arrangements and wellness programs, making it an ideal workplace for those seeking impactful careers in infrastructure consulting.

Academic courses relevant to the project: DRC and DSS.

PS-II Station: AECOM, Kolkata, Kolkata

Faculty

Name: Mahesh Kumar Hamirwasia

Student

Name: JITADITYA ROY (2021A2PS2141P)

Student Write-up

PS-II Project Title: Design Workflow of Railway Structures

Short Summary of work done during PS-II: During my PS-2, I worked on two critical infrastructure projects: the design of piles for the Chennai Metro Rail Phase 2 elevated railway and a cast-in-place tunnel for an underground railway. For the elevated railway, the design process involved analyzing critical loads using Influence Line Diagrams and addressing factors such as material properties, bearing arrangements, girder types, and train characteristics. Seismic response, pile behavior, and load combinations were thoroughly assessed, ensuring structural integrity and resilience. The second project focused on designing a cast-in-place tunnel to facilitate efficient train transfers between platforms in underground railway systems.

Configurations for one, two, and three-cell tunnels were analyzed to meet varying operational needs. The design process incorporated comprehensive load calculations, structural analysis in STAAD, flexural and shear design in MS Excel and sustainability principles, ensuring long-term performance and minimal environmental impact.

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

Objectives of the project: To design and analyze a cast-in-place tunnel for high-speed railway track switching and pile foundations for an elevated railway, ensuring sustainability, quality, and efficient urban mobility solutions.

Major Learning Outcomes: Through this project, I enhanced my skills in designing and analyzing railway infrastructure, including cast-in-place tunnels and pile foundations for elevated systems. I learned to integrate sustainability and quality considerations into engineering designs, address practical challenges, and develop efficient solutions for urban and high-speed transportation needs.

Details of Papers/patents: N/A

Brief Description of working environment, expectations from the company: The working environment at my PS-2 company is dynamic and conducive to learning, with a strong focus on delivering innovative engineering solutions. The team fosters a collaborative atmosphere, encouraging active engagement in discussions and problem-solving. A key highlight is their emphasis on teaching concepts thoroughly and guiding interns to apply these principles in real-life applications effectively. They ensure precision, quality, and sustainability in project execution while providing access to industry-standard software and tools for efficient workflow. This approach not only enhances technical understanding but also equips interns with practical skills for handling complex infrastructure projects under the mentorship of experienced professionals.

Academic courses relevant to the project: Mechanics of Solid, Analysis of Structures, Design of Reinforced Concrete System, Structural Dynamics.

PS-II Station: AECOM, Mumbai, Mumbai

Faculty

Name: Mahesh Kumar Hamirwasia

Student

Name: SHREYANSH SINGH (2021A2PS2519P)

Student Write-up

PS-II Project Title: Design Workflow of Mumbai Coastal Road Project and the Chennai Metro Rail Project

Short Summary of work done during PS-II: At AECOM I reviewed designs of structures for the Mumbai Coastal Road Project and the Chennai Metro Rail Project. This involved using Microsoft Excel to review design calculations for various structures. I also worked on modelling a bridge substructure in Midas Civil and made section drawings on AutoCAD for the same. Later I started working on automation and made programs using VBA to automate calculations for structural design in Microsoft Excel, which included creating a program to determine temperature differences in concrete bridge decks.

Tool used (Development tools - H/w, S/w): Midas Civil, AutoCAD, Microsoft Excel, VBA

Objectives of the project: AECOM provides consultancy services to firms for infrastructural projects. The major objectives of the project were to perform analysis and design of structures using software Midas Civil, and to review designs of structures for the clients involved in the Mumbai Coastal Road Project and the Chennai Metro Rail Project.

Major Learning Outcomes: The major learning outcomes are outlined as follows:

1. Learned about structural design from an industrial standpoint and recognized its importance and implications in practical applications.
2. Learned to create structural models on the software Midas Civil, and to perform structural analysis using the same.

3. Learned how to carry out automation of processes. Learned VBA to perform automation for design calculations in Microsoft Excel and use Microsoft Excel to carry out tasks efficiently.

Details of Papers/patents: NA

Brief Description of working environment, expectations from the company: The work environment at the station is very cordial. The employees are very friendly. Work pressure is not too much for interns. We can take up projects aligned with our interests by consulting with the seniors. However, for PPOs postgraduates are preferred.

Academic courses relevant to the project: CE F343 - Design of Steel Structures.

PS-II Station: Aerialborne, Jaipur, Jaipur

Faculty

Name: Febin A Vahab

Student

Name: HARSH MALIK (2021A1PS1661P)

Student Write-up

PS-II Project Title: Product Management

Short Summary of work done during PS-II: At Aerialborne, I contributed as a Product Management Intern by designing app notifications, creating marketing campaigns, setting up a CRM system, and improving UI/UX for the app and website. I streamlined email sequences, managed cross-functional tasks, and supported the successful launch of a drone marketplace connecting pilots with clients.

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

Objectives of the project: Solve problems

Major Learning Outcomes: 1. Learned product life cycle 2. email marketing 3. crm

Details of Papers/patents: NA

Brief Description of working environment, expectations from the company: It's great working environment, good for people looking for more product ownership.

Academic courses relevant to the project: NA

PS-II Station: AlmaConnect, Gurgaon, Gurgaon

Faculty

Name: Sidharth Mishra

Student

Name: YASH HRISHIKESH PHADKE (2021A4PS1942G)

Student Write-up

PS-II Project Title: Business Development and Operations

Short Summary of work done during PS-II: To increase the revenue of the company by adding more clients and ensuring the efficiency and smooth operation of the software. Enrichment of the database of prospects for better information gathering and unmapping incorrect prospects. Publishing news articles and job updates. Making some cold calls to college administrators

Tool used (Development tools - H/w, S/w): Google Sheets, Microsoft Excel, Almaconnect, python

Objectives of the project: To increase the revenue of the company by adding more clients and ensuring the efficiency and smooth operation of the software

Major Learning Outcomes: We learnt about Data Visualisation, Data cleaning, Enrichment of databases, Cold Calling and other soft skills.

Details of Papers/patents: None

Brief Description of working environment, expectations from the company: The Working environment was very good. It was a WFH internship. The tasks were deadline based so working hours were slightly flexible. The mentors and superiors were all very supportive and provided guidance in case of any doubts

Academic courses relevant to the project: None

PS-II Station: AlmaConnect, Gurgaon, Gurgaon

Faculty

Name: Sidharth Mishra

Student

Name: ARNAV SHASHANK THAKUR (2021A4PS2830G)

Student Write-up

PS-II Project Title: Managing Business Operations for the US market

Short Summary of work done during PS-II: Worked on business growth in the US market, handling operations related to business development - client meetings, preparing customized product demos, and handling the back-end for existing clients - to boost user satisfaction.

Tool used (Development tools - H/w, S/w): MS Excel, Neodove, Instantly, Wiza

Objectives of the project: Boosting business growth and enhancing client experience

Major Learning Outcomes: Data Analytics, Communication Skills, Management

Details of Papers/patents: None

Brief Description of working environment, expectations from the company: My PS was entirely remote. The working hours were in the evening and night. Workdays were from Mon-Fri

Academic courses relevant to the project: Computer Programming, TRW

PS-II Station: AlmaConnect, Gurgaon, Gurgaon

Faculty

Name: Sidharth Mishra

Student

Name: REBECCA ELIZABETH GEORGE (2021B4PS2869G)

Student Write-up

PS-II Project Title: Sales analyst

Short Summary of work done during PS-II: I was primarily responsible for collecting data required for the database and then normalizing it to make it easy to understand. I was given an Excel sheet with 40,000+ contacts of people from different universities and was required to create a second sheet arranged by universities, marking the status of a university as a client and how many contacts already existed in the database. I also worked on data cleaning in removing all duplicate universities and making sure any same university marked with two names now appeared with the same name. Along with Excel, I had regular cold calls every night to US universities, analyzing the calls made at the end of every month and reviewing the quality of news articles shared with potential clients. Other than my primary work, I helped with any small tasks that were required by my manager.

Tool used (Development tools - H/w, S/w): Excel, AlmaConnect platform and sales dialer

Objectives of the project: Data normalization

Major Learning Outcomes: Formulas and features of Microsoft Excel and soft skills like communication and teamwork

Details of Papers/patents: NA

Brief Description of working environment, expectations from the company: The company itself operates remotely as there is no existing office in Gurgaon at the moment. It also works in the favor of the employees as the primary clientele is US universities, which makes it easy for us to work from home. The working hours are from 3 pm to midnight, with a daily sync meeting at 7 pm to discuss the cold calls made the night before and to update each other on the status of the other tasks. The company is still very small, and the sales team has 4 members, but the team is very cohesive, and despite all of us being in different cities across India, we worked well as a team.

Academic courses relevant to the project: NA.

PS-II Station: Altair, Pune, Pune

Faculty

Name: Chetana Anoop Gavankar

Student

Name: JAY BARAI (2020B4A41645G)

Student Write-up

PS-II Project Title: Generative Design for Automotives

Short Summary of work done during PS-II: During my internship at Altair, I began by learning various software tools related to structural dynamics. I then transitioned to training CAE/CAD engineers from different automotive companies, helping them adapt to the newer software interfaces. This role also allowed me to deepen my understanding of automotive FEA analysis while addressing engineers' technical questions. Following this, I worked on several small

projects where I had to explore and use multiple software tools to find solutions. These projects helped me develop a problem-solving mindset and broaden my knowledge of Altair's suite of tools. The highlight of my internship was a long-term project focused on applying Generative Design to reduce the carbon footprint in the automotive sector. This project involved regular collaboration with team members and continuous learning, allowing me to explore cutting-edge techniques in design optimization and sustainability. Alongside this, I continued to work on smaller projects, applying the knowledge and skills I gained from both training and hands-on experience. Overall, my internship at Altair provided me with a comprehensive understanding of both the software tools and their application in the automotive industry, especially in the context of sustainability.

Tool used (Development tools - H/w, S/w): Altair Hypermesh, OptiStruct, SimSolid, Altair Inspire, Generative Design

Objectives of the project: To reduce carbon footprint with the help of Generative Design

Major Learning Outcomes: Learned various tools of Altair simulation softwares and applied them into various areas.

Details of Papers/patents: Working on a SAE paper showcasing the use case of Generative Design in automotive sector.

Brief Description of working environment, expectations from the company: The working environment at Altair was highly supportive and collaborative. Everyone was approachable, making it easy to ask questions and seek guidance. The company encourages exploration, allowing interns to explore various Altair software beyond the ones assigned to their tasks. Pitching ideas is welcomed, and concerns about tool efficiency are valued, promoting a culture of improvement. I had the opportunity to visit two OEMs with my manager, gaining valuable real-world experience. The office offers flexibility in working hours, and there is never any pressure to work beyond regular hours. The environment fosters a healthy work-life balance while offering the freedom to pursue your interests.

Academic courses relevant to the project: Finite Element Method, Numerical Techniques for Fluid flow and Heat transfer, Computer Aided Engineering.

PS-II Station: Altair, Pune, Pune

Faculty

Name: Chetana Anoop Gavankar

Student

Name: NANDIGAMA VENKATA KARTHIK (2020B5A41940H)

Student Write-up

PS-II Project Title: Material Modelling for CAE Solvers

Short Summary of work done during PS-II: Work primarily revolved around development of different mathematical models, and curve fitting tools for simulation softwares. It is mostly focused on applying material science to characterize metals, plastics and other polymeric materials. Tools like Altair Compose, Altair AI studio and Python are used for both software development and training ML models. Experience of performing simulation studies for wide variety of design problems is also obtained.

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

Objectives of the project: Develop Mathematical Models and Curve Fitting tools for Material Characterization.

Major Learning Outcomes: Experience in software development (development of simulation software and web based SaaS products). Experience in development procedures in corporate setting. Got to frequently apply concepts of material science in day to day activities.

Details of Papers/patents: None

Brief Description of working environment, expectations from the company: Environment is supportive and easy going. Expectations are flexible.

Academic courses relevant to the project: Mathematics 1, 2, 3, Computer Programming, Mechanics of Solids, Material Science, Finite Element Method.

PS-II Station: Altair, Bengaluru, Bengaluru

Faculty

Name: Prakruthi Hareesh

Student

Name: SHREY SINGHAL (2021A4PS3097H)

Student Write-up

PS-II Project Title: Image classification and Outlier detection using Edge Computing/Camera

Short Summary of work done during PS-II: During my internship at Altair, I contributed to two projects that demonstrated the potential of analytics and edge computing for client requirements. The first project involved descriptive and predictive analysis of automotive data to enhance operational efficiency and minimize machinery downtime. Conducted thorough data preprocessing, univariate and multivariate analyses, and implemented machine learning models to classify the failure points. This briefed on insights to optimize machinery parameters. In the second project, we explored the capabilities of the Altair AI Edge Camera. By integrating it with Altair IoT Studio, I implemented use cases such as real-time drone detection and weld quality classification. Leveraging CNN and deep-CNN models, I developed workflows for object detection and classification, showcasing the device's potential in edge computing. This internship helped me to upskill my technical skills in AI, machine learning, and edge computing, while also providing insights to clients.

Tool used (Development tools - H/w, S/w): Python, SQL, Excel, Altair RapidMiner, Altair IoT Studio, Panopticon

Objectives of the project: Developing POCs for customers and creating new use-cases for AI Edge Camera

Major Learning Outcomes: Object detection using Edge computing and RCAs on industrial data

Details of Papers/patents: Nil

Brief Description of working environment, expectations from the company: Work-life culture is very good, alongwith the work load we experience a lot of team activities/team-bonding sessions. Altair gives interns the opportunity to work on client projects with their mentors/managers, helping them to communicate with clients directly and polish our presentation/verbal skills.

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

PS-II Station: AMD, Bengaluru, Bangalore

Faculty

Name: Kranthi Kumar Palavalasa

Student

Name: SHRIYANSHI VASHISTH TIWARI (2020B4AA1670G)

Student Write-up

PS-II Project Title: Formal Design Verification

Short Summary of work done during PS-II: During my time, I have made a total of 7 RTL fixes in the upcoming MI400 SOC, My work focus on checking optimal clock gating architecture, and X Propagation checks in the SOC

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

Objectives of the project: To work on the upcoming MI400 SOC

Major Learning Outcomes: Learned to perform clock gating verification, X Propagation Verification and Register Verification

Details of Papers/patents: NA

Brief Description of working environment, expectations from the company: The company environment is good, However it can get hectic. The team expectation is high but major growth curve was there. Also the team was super helpful

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

PS-II Station: AMD, Bengaluru, Bangalore

Faculty

Name: Kranthi Kumar Palavalasa

Student

Name: ANISH KUMAR MISHRA (2020B5AA0690H)

Student Write-up

PS-II Project Title: Delay estimation in DFG using GNN

Short Summary of work done during PS-II: Estimated delay in DFG using GNN

Tool used (Development tools - H/w, S/w): DFG, GNN. What's that? You want me to answer seriously? Alright. I made the testcases in verilog using vivado but you need a heck ton of datapoints to train a model. So, I automated it using bash. Wrote the model in python on Jupyter notebook.

Objectives of the project: Estimating delay in DFG using GNN. Self explanatory from the project title, don't you think?

Major Learning Outcomes: Learned how to estimate delay in DFG using GNN.

Details of Papers/patents: DFG delay estima- Actually, nevermind. There's no papers or patents I made that are associated with this project.

Brief Description of working environment, expectations from the company: Very professional and eventful environment to learn how to estimate delay in DFG using GNN. Did I mention the full forms of these acronyms? No? You should have asked then. They stand for Data Flow Graph(GNN) and Graph Neural Network(DFG). Yeah, I know the bracketed acronyms are switched up. Shut up.

Academic courses relevant to the project: GNN based estimation (If someone is still reading this for some reason and is unironically interested, go for courses like Machine learning, Comp Arch, or just ask ChatGPT to teach you about GNNs, Python, Vivado and Verilog cuz that's mostly I worked with in the organization.

PS-II Station: AMD, Bengaluru, Bangalore

Faculty

Name: Kranthi Kumar Palavalasa

Student

Name: PRIYANSHU AGRAWAL (2020B5AA2044G)

Student Write-up

PS-II Project Title: Implementation of Verification and Scripting Tasks

Short Summary of work done during PS-II: Mostly worked on Automation Scripts to eliminate all the hard coded elements in the in built verilog files

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

Objectives of the project: Automation

Major Learning Outcomes: Scripts writing

Details of Papers/patents: No papers

Brief Description of working environment, expectations from the company: Flexible working hours and great working culture but everything is dependent on the team which is allotted. Unfortunately, all the senior teams don't give proper verification or design work to interns which in turn is way of meaning no ppos. If a good team is allotted then the interns are treated as regular employees and are given live project to work on.

Academic courses relevant to the project: Digital Design, System Verilog, UVM, Computer Architecture.

PS-II Station: AMD, Bengaluru, Bangalore

Faculty

Name: Kranthi Kumar Palavalasa

Student

Name: RISHITH DAMANI (2021A3PS2147H)

Student Write-up

PS-II Project Title: Graphics Power Management - Design Verification

Short Summary of work done during PS-II: My primary responsibility was to study and debug a power management module present in the subsystem aimed at managing the activity levels through techniques like clock gating and clock stretching. I conducted a detailed analysis of this module's documentation and participated in debugging several tests under the coverage and metastable test suites by the means of Synopsys Verdi software to identify errors in the Design Under Test (DUT) post simulation. I supported the bring up of the modified power management module by code development for test sequences and functional coverage. Along with the development work, I provided support in the debugging of test failures as well.

Tool used (Development tools - H/w, S/w): Synopsys Verdi, Linux, Perforce

Objectives of the project: The key objective of the project was to understand the design specifications of the power management modules and contribute to the development and debugging tasks associated with it.

Major Learning Outcomes: I developed technical skills in the field of Design Verification, gaining a grip on Systemverilog and UVM. I was able to correctly verify the RTL code thus enhancing my knowledge of the power management techniques like clock gating and clock stretching.

Details of Papers/patents: N/A

Brief Description of working environment, expectations from the company: The work environment is extremely comfortable and the team members are quite helpful and encouraging. I built a strong rapport with my team members and I was really happy with the work culture. The expectations from the company are reasonable but enough to get the best performance out of you, and I really enjoyed the work.

Academic courses relevant to the project: Computer Architecture, ADVD, Microelectronic circuits, Verilog.

PS-II Station: AMD, Bengaluru, Bangalore

Faculty

Name: Kranthi Kumar Palavalasa

Student

Name: ROHAN KAPUR (2021A3PS2228P)

Student Write-up

PS-II Project Title: Design Verification of AMD Zen Cores

Short Summary of work done during PS-II: I worked as part of the Formal Team in my department to verify specific units of the AMD Zen architecture. More particularly, I employed the DPV methodology to verify various ops in the ALU

Tool used (Development tools - H/w, S/w): Synopsys DPV Formal, SVA

Objectives of the project: The objective of my project was to work hand in hand with the RTL team to fix and verify the various functionalities of an AMD Zen Core

Major Learning Outcomes: I was able to establish a solid foundation on concepts like Computer Architecture, System Verilog Assertions and Formal Techniques

Details of Papers/patents: N/A

Brief Description of working environment, expectations from the company: The working environment was quiet nice. The office had various recreational activities, nice food options. Overall the office had a warm and comfortable vibe to it.

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

PS-II Station: AMD, Bengaluru, Bangalore

Faculty

Name: Kranthi Kumar Palavalasa

Student

Name: ADITYA TIWARY (2021A8PS2005H)

Student Write-up

PS-II Project Title: ZenDNN Library Automation

Short Summary of work done during PS-II: During my internship at Advanced Micro Devices (AMD), I worked with the ZenDNN team to optimize and automate the performance evaluation process of AMD's ZenDNN library. The ZenDNN library enhances machine learning frameworks like TensorFlow, PyTorch, ONNX Runtime, and Hugging Face on AMD CPUs, focusing on metrics such as accuracy, latency, and throughput. My primary contribution was developing an end-to-end automation pipeline using the Robo_Framework. This pipeline integrated execution scripts, automated result generation, and streamlined updates to the Confluence page, reducing manual intervention and errors. The master file I created enabled efficient, single-command automation for testing and performance reporting. Additionally, I focused on ensuring the flexibility and stability of the automation framework through soft-coded designs. This internship provided valuable experience in machine learning, automation workflows, and performance benchmarking, equipping me with skills critical for addressing real-world challenges in the field.

Tool used (Development tools - H/w, S/w): MobaXterm, PuTTY, Linux, Python, BeautifulSoup

Objectives of the project: To automate the ZenDNN Library performance and accuracy execution tests and confluence updation process.

Major Learning Outcomes: Learned how to handle large no. of code files and link them together to create an automation pipeline. also learned how to debug large code snippets.

Details of Papers/patents: NA

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

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

PS-II Station: AMD, Bengaluru, Bangalore

Faculty

Name: Kranthi Kumar Palavalasa

Student

Name: YASH MANOHAR AGARWAL (2021A8PS3120H)

Student Write-up

PS-II Project Title: Performance Verification with LLMs

Short Summary of work done during PS-II: For the first half of PS2, I worked on several minor projects like designing testcases level 2 cache hit/miss in the MI400 arch by AMD, and development of AMD's open-source tool - Omniperf. Post mids, I worked solely on using LLM to automate testcase generation. Had to understand how code in three languages- C++, Python, Ruby was used and then fine-tuned an LLM to generate modified code files as per user requirements.

Tool used (Development tools - H/w, S/w): Python, C++, Ruby, Verdi, RTL, LLM.

Objectives of the project: Level 2 Cache Hit/Miss Test Development, Automate the test writing process using Machine Learning (LLMs).

Major Learning Outcomes: An end-to-end solution implemented for automating the process of testcase generation for the AI data accelerators by AMD. Communication and work ownership are important soft skills I learnt.

Details of Papers/patents: None

Brief Description of working environment, expectations from the company: Working environment is fast paced. Regular meetings and updates can be expected. Can be both hectic and easy going, depending on the work at the moment. Experiences vary a lot across teams- on how tough the work is, how much work is given, and what the expectations are. For some of my friends, they were guided closely by their mentors. For me, it was a lot of independent learning and work, where I was expected to complete a task, no matter how tough or easy, on my own. It gave me a sense of independence and scope for creativity, but it also got very tough sometimes to resolve roadblocks.

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

PS-II Station: AMD, Bengaluru, Bangalore

Faculty

Name: Kranthi Kumar Palavalasa

Student

Name: PRADYUN CHAKRAVARTHY LADE (2021AAPS0565H)

Student Write-up

PS-II Project Title: Enabling ML models on AMD's Internal Hardware

Short Summary of work done during PS-II: Created a few mini applications to try and understand how the ML Frameworks work. To Learn and understand how the ML frameworks like

TensorFlow and ONNX Runtime use the power of Hardware Accelerators to increase compute efficiency.

Tool used (Development tools - H/w, S/w): Linux, Android Studio, TensorFlow, ONNX.

Objectives of the project: To Learn and understand how the ML frameworks like TensorFlow and ONNX Runtime use the power of Hardware Accelerators to increase compute efficiency.

Major Learning Outcomes: TF Lite, ONNX RT

Details of Papers/patents: NA

Brief Description of working environment, expectations from the company: It was great being a part of the Advanced Technology Group with its business units expanded all over the globe. The team was very supporting and understanding towards me. They expected me to continue to work in the team by extending the internship, but was not possible due to academic structure being a single degree student.

Academic courses relevant to the project: Machine Learning

PS-II Station: AMD, Hyderabad, Hyderabad

Faculty

Name: Suparna Chakraborty

Student

Name: SAARTHAK VIJAYVARGIYA (2021A3PS1044P)

Student Write-up

PS-II Project Title: Understanding of x86 Architecture for CPU Debugging and Formal Verification

Short Summary of work done during PS-II: Our work involves a significant amount of theoretical knowledge. Hence, we started by studying AMD manuals, which covered topics such as Paging, Segmentation, Memory Management, Exceptions, and Interrupts. We were then introduced to the microarchitecture units within the core of Zen CPUs. These units include the Front-end (Fetch), Decode, Execute, and Load-Store (L1). After the microarchitecture sessions, we completed two courses on VC Formal DPV, an application developed by Synopsys for Data Path Validation. We also learned about System Verilog Assertions through a course created by Cadence (don't worry, all these courses were funded by the company!). Following the courses, we began formal verification of the Execute and Scheduler units. Formal verification involves a specification file written in C++, an implementation file written in Verilog/SV, and a testbench file written in TCL. The testbench file contains assumptions and assertions for every instruction to verify whether the instruction produces the correct output. If errors are found, we debug them by analyzing the C++ and Verilog codes. At first we resolved the compilation errors, as in every new architecture, some of the signals inside C++/RTL files may get changed. Then if all the properties are not passing, then we need to check if our assumptions are correct or not. Are we missing assumption for any signal? Like that we need to debug the testbench files. There might be a C++/RTL file error also, that we need to check. My work was very relevant to industry standards.

Tool used (Development tools - H/w, S/w): Synopsys VC Formal DPV, Perforce, Exceed TurboX, Linux, System Verilog Assertions, TCL (Tool Command Language).

Objectives of the project: To work towards formal verification of different instructions inside the CPU.

Major Learning Outcomes: We were introduced to the complex implementation of AMD CPUs focusing on Front-end unit, Decode Unit, Execute Unit, Load-Store unit. We also learnt about formal verification techniques and testbench development. Verified 40+ DPL instructions which are the variations of ADD, SUB, Bit-test, Logical and SETcc instructions.

Details of Papers/patents: None

Brief Description of working environment, expectations from the company: The people working here are very nice and helpful. But it may seem initially that you might not be given much importance. At this stage, you should make connections with your team to get recognized.

Company has made all the efforts to keep the employees happy. You will have a very new and good office, free snacks, coffee, access to indoor and outdoor games including a gym. But still you might feel that the facilities given to the interns might be lesser if you compare it with other ET companies. It actually depends a lot on the team you have been allotted when it comes to the work you were doing. Some teams do give the same work to interns which is also expected by their FTEs. But in some teams, the work might be misleading as the team will just give you some compilation tasks, make PPTs etc.

Talking about PPO, decision depends on the team's requirements (especially your manager), kind of work they have given and also the company's financials. These are applicable only when the manager/mentors know that you have done your job well (with proof!).

Academic courses relevant to the project: Digital Design, Microprocessor Programming and Interfacing, Object Oriented Programming, Operating Systems, Computer Architecture

PS-II Station: AMD, Hyderabad, Hyderabad

Faculty

Name: Suparna Chakraborty

Student

Name: HARIKRISHNA V (2021A3PS1662H)

Student Write-up

PS-II Project Title: Formal Verification

Short Summary of work done during PS-II: Sequential Equivalence Checking is one of the formal Verification methods that was used by us to compare a clock gated design to a static clock design and find bugs in RTL based on power and performance. Formal X-propagation checks is where we find some output ports of a design taking X(unknown value) from an early stage in the design and propagating to the said output. Verifying using FXP appmode of VC Formal to make sure X does not get propagated.

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

Objectives of the project: Verification of RTL designs in graphics team, using formal methods.

Major Learning Outcomes: Formal Verification methodologies, different appmodes in VCF Formal such as SEQ, FXP, CC, FRV.

Details of Papers/patents: NA

Brief Description of working environment, expectations from the company: Quite difficult as we were pressed against time during end of a particular project. Otherwise team was v helpful with any doubts and taught well.

Academic courses relevant to the project: Computer Architecture.

PS-II Station: AMD, Hyderabad, Hyderabad

Faculty

Name: Suparna Chakraborty

Student

Name: SOUMYADIP ROY (2021A8PS2549P)

Student Write-up

PS-II Project Title: NoC Router and Floorplan Evaluation Tool

Short Summary of work done during PS-II: The work revolved around building optimization algorithms which could be used to solve routing and congestion issues in the Network on Chip Architecture. After this I had been given the Second project in which I tried to implement better modules in the application and also implemented features which allowed it to be compared with the proprietary software which is run by the company themselves.

Tool used (Development tools - H/w, S/w): S/w: Python, Vivado, C++, Linux.

Objectives of the project: Build A ILP NoC optimizer, and contribute to an ongoing application development which would be released in the upcoming years.

Major Learning Outcomes: Software Development, Mathematical Modelling, System Modelling and Data Science Inference.

Details of Papers/patents: None

Brief Description of working environment, expectations from the company: Very Supportive work environment with the mentors and managers being very helpful in my team. I was given enough time to get accommodated with the technicalities of my workspace, along with getting used to there tech stack. Thus I was able to quickly adapt and fall in line with the team!

Academic courses relevant to the project: Computer Programming, Computer Architecture, Microprocessors and Interfacing.

PS-II Station: AMD, Hyderabad, Hyderabad

Faculty

Name: Suparna Chakraborty

Student

Name: RAKUL CHAUHAN(2021AAPS1971H)

Student Write-up

PS-II Project Title: Adding CNN optimizations for inference on EPYC CPUs

Short Summary of work done during PS-II: In starting spent some time learning about CNN models, its various layers, and PyTorch 2.0 compiler flow. Next implemented our AMD's ZenDNN library plugin support for convolution. Then worked on various optimizations to improve the performance for inference on CNN models, with focus on ResNet50.

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

Objectives of the project: To add support for own library plugin and then optimize CNN models.

Major Learning Outcomes: Gained experience in tech stack: PyTorch, C++, Python. Learned a lot about CNN models, especially convolution layer, how it works and how the PyTorch 2.0 compiler flow works.

Also got some experience in git as the code was pushed to production.

Details of Papers/patents: Nil

Brief Description of working environment, expectations from the company: Team was great, very friendly and supportive, the project was good and the team members always helped whenever I asked. Main thing was that they gave an opportunity to work on a live project and the work was considered important. We had weekly meetings to give updates, never felt much pressure to work and overall good working environment. Only issue was couldn't get a PPO. Also, this working environment depends on team to team, mine was luckily quite good.

Academic courses relevant to the project : Computer Programming, OOP, ML, AI

PS-II Station: American Express - AiDa, Bengaluru, Bengaluru

Faculty

Name: Sidharth Mishra

Student

Name: SOUMIL RAY(2021A7PS2652H)

Student Write-up

PS-II Project Title: Onboarding the Data Preprocessing Tool to GCP

Short Summary of work done during PS-II: Initially, I worked on benchmarking two different hyperparameter tuning algorithms - Gaussian Process based optimization and Tree Parzen

Estimator. I then worked on reimplementing the PySpark based data preprocessing tool using BigQuery on GCP. This helped the company move from on-prem compute infrastructure to GCP.

Tool used (Development tools - H/w, S/w): BigQuery, Optuna, Dask, Python, AmEx internal tools.

Objectives of the project: Reimplementing the current PySpark based data preprocessing tool in BigQuery.

Major Learning Outcomes: Familiarity with hyperparameter tuning, data preprocessing, BigQuery, XGBoost.

Details of Papers/patents: N/A

Brief Description of working environment, expectations from the company: My team was extremely supportive and helped me get familiar with the work environment. I was given enough time to gain the necessary background and skills to be able to work at AmEx. I went to office everyday, but there was an option to work from home two days a week. I frequently held meetings with my manager and coworkers to discuss my progress and resolve any issues I was facing.

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

PS-II Station: American Express - AiDa, Gurugram, Gurgaon

Faculty

Name: Sidharth Mishra

Student

Name: ARYAN RAMESH BARAPATRE (2020B4A70833P)

Student Write-up

PS-II Project Title: ML Template Standardization and Migration Accelerator

Short Summary of work done during PS-II: Framework for Migrating and Standardizing ML Models For migration to cloud, assess models, data pipelines, and dependencies. Refactor models for cloud-native architectures, implement secure data transfer, and automate deployment using CI/CD and containerization tools. Post-deployment, monitor performance and optimize resources. For standardization, establish uniform model metadata, ensure consistent evaluation metrics, and stress-test models. Mandate detailed documentation for reproducibility and enforce governance for compliance and ethical usage. This dual framework ensures efficient cloud migration and consistent management of ML models, enhancing scalability, performance, and reliability.

Tool used (Development tools - H/w, S/w): Google Cloud Platform, Hive, Pyspark, Vigqueyr

Objectives of the project: 1.Devise a framework for migration of models from on premise infrastructure to cloud infrastructure 2. Devise a framework for standardizing ML Models sent for

Major Learning Outcomes: Communication skills, Technical skills, Business Understanding

Details of Papers/patents: N.A

Brief Description of working environment, expectations from the company: I had a great working experience in this environment, which fostered collaboration, respect, and open communication. The positive culture made it easy to share ideas and work effectively as a team. I felt valued and appreciated for my contributions, which motivated me to give my best. The focus on work-life balance, professional development opportunities, and inclusivity was truly commendable. The resources and comfortable workspace enhanced my productivity, and the leadership's support and guidance were invaluable. Overall, this experience empowered me to grow both personally and professionally, making it a truly rewarding journey.

Academic courses relevant to the project: None, Can be learned on the job during the project

PS-II Station: American Express - Products, Gurgaon, Gurgaon

Faculty

Name: Sidharth Mishra

Student

Name: BHASKAR RUTHVIK BIKKINA(2021A7PS1345H)

Student Write-up

PS-II Project Title: Unification of Tree-Based Models

Short Summary of work done during PS-II: My work involved researching various techniques in order to unify multiple tree-based models for both Classification and Regression tasks while maintaining performance of models on their individual datasets or even improving on them. It involved performing case studies on the datasets, experimenting with different parameter optimisations, making modifications to the model algorithm in order to make it better suitable for multiple datasets and introducing new parameters to deal with imbalances caused by combining the datasets. My work established a general set of steps that teams can follow in order to unify their models.

Tool used (Development tools - H/w, S/w): Jupyter Notebooks, Pandas, XGBoost, Numpy, SciPy, Hive, PySpark, Putty

Objectives of the project: Conduct extensive research on the best possible ways to unify multiple tree based models with minimal drop in performance

Major Learning Outcomes: Improved Fundamental understanding of Tree Based models and their intricacies

Improved communication, presentation and documentation skills

Understood the organizational structure and workings of a large Multinational Company

Details of Papers/patents: None

Brief Description of working environment, expectations from the company: Very pleasant working environment. The office building is new and has lots of amenities. The company provides multiple incentives during the internship that are helpful along with a hefty stipend which helps fund living expenses. The work-life balance in the company is truly the best and the employees are extremely friendly and forthcoming. They are also some of the best talents from top universities and as such, you can learn a lot from them. We get to interact with higher level leaders on a regular basis as well. There are also a good amount of fun activities scattered throughout the course of the internship making it a fun experience throughout.

Academic courses relevant to the project: Machine Learning, Foundations of Data Science,

PS-II Station: American Express - Products, Gurgaon, Gurgaon

Faculty

Name: Sidharth Mishra

Student

Name: ANAY MUNDRA (2021A7PS2837G)

Student Write-up

PS-II Project Title: Development of ML based Customer Wallet Size Estimation Models

Short Summary of work done during PS-II: Developed tree-based models to calculate Size of Wallet of Amex's commercial customers.

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

Objectives of the project: To develop models using techniques like Decision Trees, GBDT, Regression and Time Series.

Major Learning Outcomes: Applied ML, Presentation Skills

Details of Papers/patents: Nil

Brief Description of working environment, expectations from the company: The working environment is excellent. Deliverables are expected to be of the highest quality.

Academic courses relevant to the project: ML, PNS

PS-II Station: Ansys Software Pvt. Ltd, Pune, Pune

Faculty

Name: Sameer Gupta

Student

Name: LOKHANDE SALONI (2021ABPS2561P)

Student Write-up

PS-II Project Title: Method Development of Mesh Workflows on APTIV PCB Models Content creation Acoustics and Stacker workflow 24R2 for ALH Customer Demos on complex geometries for Multizone + Stacker, Stacker workflow 25R1 Documentation for Custom workflow on APTIV Model Program.

Short Summary of work done during PS-II: for acoustics: The results showed that, for simple geometries, the solution was largely independent of domain size. The findings aided in efficient solving of the problem statement. The approach will also be employed in all external acoustics problems. for workflow :Mesh Methods □ Mesh workflows led to an 88.88% reduction in mesh time (approx. 45mins□5-10mins) Method developed will be a part of complete automation process for PCBs. Workflow can also be used to mesh similar geometries. For content creation: Content Created will be used for/by: Training Workshops Ansys Employees for learning purposes ALH Content Creation Team Customers for demonstration purposes.

Tool used (Development tools - H/w, S/w): Ansys Discovery, SpaceClaim, Mechanical, Camtasia.

Objectives of the project: developing a robust method for pre processing of solder balls on a pcb model. determining optimum domain size for absorbing boundary conditions. creating content.

Major Learning Outcomes: Gained expertise in pre-processing geometry for simulations.

Developed strong mesh workflow skills, successfully generating meshes in Ansys Mechanical.

Hands-on experience on live projects and the Acoustics study conducted helped gain insights into key acoustics concepts.

Learned to work efficiently under tight deadlines and improved problem-solving and communication skills through collaboration with global, cross-functional teams.

Engaging with experts in pre-processing, acoustics, and automation has significantly broadened my understanding, motivating me to keep growing.

Details of Papers/patents:None

Brief Description of working environment, expectations from the company: The dynamic and inspiring environment of the Ansys MBU Team, with its highly knowledgeable individuals, has helped make my internship more exciting , interesting and enriching.

Academic courses relevant to the project: None

PS-II Station: Argenbright Innovation Lab, Bengaluru, Bengaluru

Faculty

Name: Seetha Parameswaran

Student

Name: JAI BOTHRA (2021A7PS0015P)

Student Write-up

PS-II Project Title: Voicebot

Short Summary of work done during PS-II : Built a voice bot app including frontend, backend and cloud deployment.

Tool used (Development tools - H/w, S/w) : React native, python, rabbit mq, LLM, distilbert, aws services

Objectives of the project : Build a voice assistant

Major Learning Outcomes : LLM NLP React Native AWS

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : It was a modern environment, similar to any other tech startup

Academic courses relevant to the project : CP F111

PS-II Station : Argenbright Innovation Lab,Bengaluru, Bengaluru

Faculty

Name: Seetha Parameswaran .

Student

Name: APRATIM(2021A8PS2639G)

Student Write-up

PS-II Project Title: Voicebot assistant

Short Summary of work done during PS-II : the 5 of us were given different tasks to deal with . I was responsible with the voicebot app that made use of STT engines for translating the query into text and the text goes into the app fetches the required data and speaks it back to the user.

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

Objectives of the project : create a voicebot app that responds to the queries of the blue collar workers

Major Learning Outcomes : Backend engineering and ML

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : A startup therefore workload is quite significant. Their strictness about the punctuality and discipline for the time. A daily update(standup) is a must to gather updates from the employees.

Academic courses relevant to the project : Some courses like OOPS and DSA helped because of the programming and use case of classes in backend

PS-II Station : Bajaj Electricals, Mumbai, Mumbai

Faculty

Name: Sameer Gupta .

Student

Name: MANNAN DHIR(2021A4PS2887G)

Student Write-up

PS-II Project Title: Data-Driven Optimization of Ceiling Fan Blade Design Using Machine Learning and Data Analytics

Short Summary of work done during PS-II : At Bajaj Electricals Limited, my journey began with understanding the broader challenges in ceiling fan design and narrowing them down to the optimization of fan blades, which have a significant impact on performance. I delved into the principles of data analytics and machine learning, gradually acquiring the skills to collect, clean, and organize data from technical reports and experimental results. By experimenting with various ML models, I sought to predict air delivery and optimize blade design parameters effectively. The process involved extensive validation and iterative optimization of the models to ensure accurate and practical predictions. Beyond technical work, I gained valuable industry experience through insightful factory visits and exploring state-of-the-art testing facilities. This exposure helped bridge theoretical knowledge with real-world applications, offering a comprehensive understanding of both engineering challenges and manufacturing intricacies.

Tool used (Development tools - H/w, S/w) : Microsoft Excel, Python, MySQL, Overleaf, Jupyter Notebook, Air Delivery Room, Rotating Vane Anemometer, scikit-learn, SQLAlchemy, RobustScaler

Objectives of the project : The primary objective of the project was to optimize ceiling fan blade design using data analytics and machine learning to predict air delivery performance. This aimed to minimize design iterations, reduce reliance on physical prototypes, and improve airflow efficiency, cost-effectiveness, and time-to-market.

Major Learning Outcomes : Data Analysis: Using data to improve designs.

Machine Learning: Building models to predict outcomes.

Database Skills: Managing and organizing data efficiently.

Feature Optimization: Refining key design parameters.

Industry Exposure: Learning through factory visits and hands-on experience.

Problem Solving: Tackling real-world engineering challenges.

Team Collaboration: Working with mentors and professionals.

Project Execution: Planning and completing tasks on time.

Manufacturing Insights: Understanding production and quality control.

Adaptability: Learning new tools and skills quickly.

Details of Papers/patents : Company would be checking for any patents, not any at the moment.

Brief Description of working environment, expectations from the company : The working environment was really welcoming, although a big suggestion to all the new comers would be to take initiative and explore the company on the own accord, the expectations are fairly reasonable, sticking to the deadlines leads to a good reputation of yourself and your college, the seniors were really helpful in guiding and mentoring me, everyone had a separate cubicle along with their teams, social skills will take you where technical skills fail, sometimes the answer to your problem would be in the mind of the person next to you, however it will never click to you if you don't talk to them, the recreational activities, such as carrom and table tennis along with cultural events were a great refresher, would highly recommend this station to someone who would like industry experience with a healthy work life balance.

Academic courses relevant to the project : Machine Learning, Database Systems, Fluid Mechanics, Engineering Optimization, Machine Design

**PS-II Station : Bhanix Finance and Investment Ltd.(CASHe - Non Tech),
Hyderabad, Hyderabad**

Faculty

Name: Bhamidipati Vaishali .

Student

Name: ROHAN GUPTA(2021A4PS2661G)

Student Write-up

PS-II Project Title: Cashe Green Finance

Short Summary of work done during PS-II : During my PS-II internship at CASHe, I worked as a Business Analyst focusing on enhancing the EV loan program. My responsibilities included market research, customer acquisition strategies, and product optimization. I conducted a competitive landscape analysis to understand the strengths and weaknesses of CASHe's offerings compared to competitors. Through targeted research, I gathered insights into customer preferences and fleet operators' financing needs, enabling me to tailor financial products for specific segments. I also explored potential collaborations with travel and education aggregators, analyzing their business models and identifying strategic opportunities for partnerships. Another significant aspect of my work was developing an EV recovery framework, which focused on mitigating loan default risks and improving repayment rates through structured and customer-centric strategies. This internship allowed me to engage directly with stakeholders, refine my analytical and communication skills, and contribute meaningful insights to CASHe's business growth.

Tool used (Development tools - H/w, S/w) : Excel, Power BI, Power Point

Objectives of the project : The objective of the project was to analyze market opportunities and improve CASHe's financial product offerings in the EV loan segment. The focus was on conducting market research, understanding customer needs, engaging with stakeholders, and optimizing product offerings to align with industry demands.

Major Learning Outcomes : During the PS-II, I developed a deep understanding of market dynamics, customer behavior, and operational challenges in the financial sector. I enhanced my skills in stakeholder engagement, market analysis, strategic decision-making, and risk management. Additionally, I gained practical experience in creating customer-centric solutions and optimizing recovery frameworks.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The working environment at CASHe was collaborative and dynamic. The team fostered open communication, encouraging innovative problem-solving and the sharing of ideas. My mentor provided consistent guidance, helping me navigate challenges and refine my approach to problem-solving.

The company's expectation was for interns to take ownership of their projects and deliver actionable recommendations. Autonomy was balanced with support, as the management encouraged creativity while ensuring that the project objectives aligned with organizational goals. The experience was both challenging and enriching, as it allowed me to explore multiple facets of business growth in a fast-paced industry. I gained exposure to real-world problems and was able to contribute to strategic decision-making processes.

Academic courses relevant to the project : Excel, Power BI, Slides

PS-II Station : Bhanix Finance and Investment Ltd.(CASHe - Tech),Hyderabad, Hyderabad

Faculty

Name: Chennupati Rakesh Prasanna .

Student

Name: ANANT SHARMA(2020B1A82400H)

Student Write-up

PS-II Project Title: Development of a Co-Lending Platform as SaaS

Short Summary of work done during PS-II : During my five-month internship at CASHe, I worked as a backend developer, contributing to several key projects aimed at enhancing the company's fintech applications. I utilized a range of technologies such as Java, Spring Boot, MongoDB, MySQL, and AWS. My work involved implementing secure KYC-Aadhaar verification methods involving JWT authentication protocols. I also focused on optimizing API performance, including load testing and reducing response times through pagination, caching, and query optimization. Additionally, I created a fraud detection system based on geoSpatial Data, I created an AWS Dms pipeline to securely enhance DB migration through streamlined process. Throughout the internship, I used tools like Postman for testing, Redis for caching, and Python for automating tasks. This experience allowed me to deepen my skills in backend development, API design, and system optimization, equipping me with practical knowledge for future challenges in the tech industry.

Tool used (Development tools - H/w, S/w) : Postman, Git, JWT, AWS, Apache Kafka, SQS, MySQL, MongoDB, Hibernate, Maven

Objectives of the project : The objective of this project was to develop and optimize backend systems for CASHe's fintech applications, focusing on creating efficient APIs, ensuring secure data handling, improving system performance, and implementing key features such as fraud detection based on geospatial data, and automated reporting.

Major Learning Outcomes : The major learning outcomes of this project include gaining hands-on experience in backend development using Java and Spring Boot, mastering API design and optimization techniques, enhancing skills in database management with MySQL and MongoDB, implementing secure data handling practices, improving system performance through load testing and caching, and integrating cloud services like AWS. Additionally, I developed a deeper understanding of fraud detection systems, KYC processes, and automated workflows, while refining my problem-solving and debugging skills in real-world applications.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : During my internship at CASHe, I worked in a dynamic and collaborative environment, closely integrated with the backend development team. The team was highly supportive, and there was a constant

exchange of ideas, which fostered both personal and professional growth. As a backend developer, I was responsible for developing key server-side features and ensuring the scalability and security of various applications, which were central to the company's fintech operations. The work culture at CASHe encouraged innovation and problem-solving, allowing me to work on challenging projects such as fraud detection, KYC verification, and optimizing API performance. My expectations from the company were centered around gaining practical experience and exposure to the latest industry technologies. I aimed to enhance my technical skills, particularly in backend development and cloud computing, and contribute to meaningful projects that aligned with CASHe's mission to provide seamless digital lending solutions. The company met these expectations by offering a diverse set of projects, allowing me to apply my academic knowledge in real-world scenarios. Additionally, the opportunity to work with a variety of tools like Spring Boot, MongoDB, and AWS helped me expand my technical expertise and gain a deeper understanding of how large-scale fintech systems operate. CASHe's mentorship and guidance provided the perfect environment to learn, grow, and contribute to the company's success.

Academic courses relevant to the project : OOPs, DBMS

PS-II Station : Bharat Forge Ltd.,Pune, Pune

Faculty

Name: Naga Vamsi Krishna Jasti .

Student

Name: HANSIDDH THAKUR(2021A4PS1815G)

Student Write-up

PS-II Project Title: 1. SA 8000 certification 2. Estimation Tool Development

Short Summary of work done during PS-II : 1. I was working in the ESG department of Bharat Forge. I was assigned the task of preparing for SA 8000 certification for the company. My work included going through the standard, understanding and gathering requirements, identifying gaps in the organisation's practices and preparing checklists and timelines. I was reporting directly to the department head and had to present my work regularly. Following this, I had to delegate tasks to the other team members to prepare for the audit. My second project was the development of an automated estimation tool to process customer RFQs received by the sales team. I was working directly under the product manager of the tool and was responsible for gathering requirements from users, planning the design and infrastructure of the software, and coordinating with the IT team and vendor to ensure the quality of work was maintained and timelines were met. I also had to design wireframes, give presentations, conduct meetings, and prepare the budget for the project.

Tool used (Development tools - H/w, S/w) : PPT (wireframes and presentations), Excel (calculations, financial documents, analyses), in-house softwares, ChatGPT

Objectives of the project : 1. Obtain SA 8000 certification for Bharat Forge Ltd's plants 2. Develop an automated Estimation Tool to process customer RFQs

Major Learning Outcomes : 1. I understood the purpose and importance of ESG in the industry
2. I learnt about the industry certifications like ISO standards - how they are developed and how the audit is conducted
3. I had a first-hand experience of product management in a tech-based project - requirement gathering, stakeholder management, project strategy, coordinating with multiple departments (sales, finance, IT) to ensure timelines are met, wireframing
4. Corporate soft skills - working with members of my own team and other departments and vendors, presentation skills, conducting meetings

Details of Papers/patents : na

Brief Description of working environment, expectations from the company : 1. My experience in ESG was quite poor. I was working in isolation and did not have enough work

allotted. There was little interest from my supervisor and there did not seem to be much enthusiasm in the entire office.

2. My experience in the second project was much better. I was working in the AI and data lab under a great manager, who was very helpful and motivated me to push myself. It was a challenging project and I had to work with a lot of information. It was a good learning experience overall

Academic courses relevant to the project : Manufacturing Management, Engineering optimisation

PS-II Station : Bharat Forge Ltd.,Pune, Pune

Faculty

Name: Naga Vamsi Krishna Jasti .

Student

Name: NINAD WALDE(2021A4PS3082H)

Student Write-up

PS-II Project Title: CAE Analysis of Gearbox for Different Sub-systems

Short Summary of work done during PS-II : 1D analysis of subsystems of various engines and stress analysis of various components related to powertrain. New concept designs of new parts. Market research to compare products that are being developed at bharat forge

Tool used (Development tools - H/w, S/w) : 1D simulation software, creo, excel, PPT, matlab, FEA simulation

Objectives of the project : Multiple projects, all of them revolving around gearboxes

Major Learning Outcomes : 1D simulation, Deeper understanding of powertrains

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Fast paced, results oriented environment. Marathi was the dominant language of conversation. Team was extremely supportive and helpful, always there to help and guide.

Academic courses relevant to the project : All core mechanical CDCs

PS-II Station : Bharat Petroleum Corporation Limited, Greater Noida, Greater Noida

Faculty

Name: Pavan Kumar Potdar .

Student

Name: CHETAN RATHAUR .(2021A1PS1579P)

Student Write-up

PS-II Project Title: Production and Process Simulation of Methacrylic Acid

Short Summary of work done during PS-II : a) Literature Review- Researching about the production methods of Methacrylic Acid and recent developments in the field. b) Simulation-

Simulating the whole process flow sheet in ASPEN HYSYS. c) Optimization- Finding out optimum parameters for the process. d) It was supposed to be implementation of whole process by working on the plant but that was not possible due to the energy issues BPCL was facing.

Tool used (Development tools - H/w, S/w) : ASPEN-HYSYS, MS Excel

Objectives of the project : To simulate the production methods of Methacrylic Acid

Major Learning Outcomes : ASPEN-HYSYS

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Pace is a bit slow there. Although the environment is good.

Academic courses relevant to the project : PDP-1, PDP-2, CET, KRD

PS-II Station : BIGTEC PRIVATE LIMITED, Bengaluru, Bengaluru

Faculty

Name: Glynn John .

Student

Name: CHIRAG R HARITHSA .(2021A1PS2585P)

Student Write-up

PS-II Project Title: Production scale lyophilizer and vacuum tray drying, reagent preparation and its associated Quality control process understanding for Diagnostics product.

Short Summary of work done during PS-II : Worked on scale up of production of a reagent, improvement in quality control methods. Process optimization of VTD and Lyophilizer.

Tool used (Development tools - H/w, S/w) : Excel, Vacugraph, Shimatzu FTIR and HPLC, Lyomaster,

Objectives of the project : Optimization of the process and reduction of rejection

Major Learning Outcomes : Learnt about Diagnostics industry and the new age products

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : great environment , friendly environment with the team , focused team, they value the inputs from each member of the team incl interns

Academic courses relevant to the project : None

PS-II Station : Binocs Labs Private Limited, Bengaluru, Bengaluru

Faculty

Name: Anjani Srikanth Koka .

Student

Name: PRANAV KUMAR MALAIYA .(2021A4PS1059P)

Student Write-up

PS-II Project Title: Building generative AI based Financial Statement Analyser and Loan Management Software

Short Summary of work done during PS-II : Sales and BD were integral part of job and assissting founder and team was major part of the job description.

Tool used (Development tools - H/w, S/w) : Multiple softwares used in product and BD

Objectives of the project : Building generative AI based Financial Statement Analyser and Loan Management Software

Major Learning Outcomes : Learned workings of an early stage startup and the journey of zero-to-one in the startup ecosystem

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Good environment, super friendly and helpful colleagues and managers.

Academic courses relevant to the project : Finance Minor would be super helpful since it is a Fintech Startup

PS-II Station : Binocs Labs Private Limited, Bengaluru, Bengaluru

Faculty

Name: Anjani Srikanth Koka .

Student

Name: ANUSHKA SHUKLA .(2021A5PS0380P)

Student Write-up

PS-II Project Title: Development of Ai based loan monitoring system

Short Summary of work done during PS-II : Worked on writing PRDs, creating database and qualitative testing of the system (manual testing)

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

Objectives of the project : Release features as per the product roadmap with as low bugs as possible

Major Learning Outcomes : Ownership

Details of Papers/patents : _

Brief Description of working environment, expectations from the company : Small but cooperative team of friendly colleagues with valuable experience in the industry

Academic courses relevant to the project : Finance minor

PS-II Station : Birla Polyfibers,Harihar, Haveri

Faculty

Name: Arun Maity .

Student

Name: PRAKHAR CHAUDHARY(2020B3A11034G)

Student Write-up

PS-II Project Title: Optimisation of HPA process

Short Summary of work done during PS-II : Collected information on functioning of the plant. Understood how the HPA process is carried out in the pulp section of plant. Did acidity and hardness checks of reactants and water used in the process. Did graphical analysis of chlorate used vs passed out as waste, chlorate used vs overflow etc. Find out how to recycle sulphuric acid and purify hydrogen peroxide.

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

Objectives of the project : Find ways to minimise waste acid formed after HPA process at plant

Major Learning Outcomes : High pressure and pH need to be at optimum level. Reactants should mix evenly. pH depends on sulphuric acid level. Reactants need to be pure for reaction to occur efficiently. Metal catalysts enhance reaction process.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Enjoyable environment. The guide and people are helpful. Location is remote. 8:30 am to 5:30 pm working time. Sundays off. 10000 stipend monthly.

Academic courses relevant to the project : Engineering Chemistry, Separation Processes

PS-II Station : Bitespeed - Business Development, Bengaluru, Bengaluru

Faculty

Name: Sidharth Mishra .

Student

Name: KARMAN SINGH SETHI .(2020B1A71896P)

Student Write-up

PS-II Project Title: Sales Engineering

Short Summary of work done during PS-II : During my internship at Bitespeed, I worked on enhancing the outreach strategy to drive discovery calls for a new offering targeting marketing teams. This involved using CRM tools to streamline prospect engagement, experimenting with messaging across LinkedIn, email, and Slack communities, and landing over 30 discovery calls. Additionally, I contributed to product development by defining user personas and creating user stories for potential customers. This involved conducting market research, analyzing customer pain points, and leveraging AI tools such as v0 by Vercel for prototyping workflows. I also familiarized myself with UX design tools like Figma to create intuitive workflows. My role required balancing sales and product development responsibilities, which enhanced my time management and multitasking abilities. Collaborating with supervisors and team members, I adapted to challenges, refined strategies, and ensured timely delivery of tasks, gaining valuable experience in B2B SaaS operations and AI-driven marketing solutions.

Tool used (Development tools - H/w, S/w) : HubSpot (CRM), Figma, v0 by Vercel, Cursor, Google Workspace, Slack Other Tools: LinkedIn Sales Navigator, Email campaign tools (e.g., Mailchimp), Microsoft Excel

Objectives of the project : Defining and executing outreach strategy and building the blueprint of a new AI product

Major Learning Outcomes : Proficiency in CRM and sales analytics tools to monitor outreach effectiveness.

Development of a structured approach to creating user personas and mapping customer journeys.

Hands-on experience with UX tools like Figma and v0 by Vercel for designing workflows.

Enhanced problem-solving skills by overcoming outreach challenges and refining messaging.

Improved communication and collaboration through interactions with internal and external stakeholders.

Familiarity with leveraging AI tools in product development and user story creation.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Bitespeed fosters a dynamic and collaborative working environment, ideal for interns to learn and contribute meaningfully. The team operates in a startup culture, emphasizing ownership, creativity, and adaptability. As an intern, I had the flexibility to experiment with outreach strategies and provide input into product development. My supervisors, Vinayak and Mehul, offered valuable mentorship, encouraging open communication and a proactive attitude.

Expectations from the company were well-defined: delivering measurable results in outreach, collaborating effectively with product teams, and leveraging AI tools for innovative solutions. The culture supported learning and skill enhancement, making it a rewarding experience to contribute to cutting-edge marketing solutions for Shopify brands.

Academic courses relevant to the project : Computer Programming, DBMS, OOP, Selected Topics in CS (DEL)

PS-II Station : BookMyXperience Pvt Ltd-Associate Consultant, New Delhi

Faculty

Name: Anjani Srikanth Koka .

Student

Name: SHISHIR KUNDU .(2021A1PS2586P)

Student Write-up

PS-II Project Title: Delhi Launchpad & Analyzing Buisness operations in Udaipur

Short Summary of work done during PS-II : We first of all onboarded the experiences for Delhi and prepared an experience launchpad for Delhi and then we carried business operations in Udaipur from scratch. We tested several on ground models to generate revenue for our company.

Tool used (Development tools - H/w, S/w) : Excel & Google Analytics

Objectives of the project : Creating Experience Launchpad for Delhi & building business from scratch in Udaipur

Major Learning Outcomes : Business building from scratch, appropriate conversation with clients

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Since being a startup don't expect any clear limits here. Earlier we were given sunday as holiday but later as the time progressed we were made to do overtime and later in october since we were on ground We were working even on Sundays ! The working environment depends but mostly the pressure

is on higher side since we are building everything from scratch. So won't recommend it to someone who wants life to go easy!

Academic courses relevant to the project : Global business and knowledge sharing (GBT-KS), Business communication

PS-II Station : Brakes India Private Limited, Chennai, Chennai

Faculty

Name: Suparna Chakraborty .

Student

Name: ANANT NARAYAN ACHARYA(2020B5A42351H)

Student Write-up

PS-II Project Title: Analysis and Design of Torsional springs, Analysis and Design of Circlip and Mandrel

Short Summary of work done during PS-II : During PS-2, my work revolved around caliper brakes . I needed to solve the problem of spring failure before the simulated results analytically. So I needed to find out the complete selection and design process of a torsional spring and then I tried to find the root cause for increased failure and fatigue which gave the solution and helped the company to design better springs according to requirements.

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

Objectives of the project : To find out the designing of the components from scratch and help in the transformation from a manufacturing company to designing company

Major Learning Outcomes : Understood the working of caliper brakes and components , my work also helped in learning about the working of springs and how they are designed for specific components

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : It's a decent workplace with jovial people and knowledgeable people. But it's a bit antic in terms of working procedure.

Academic courses relevant to the project : Solid Mechanics
CAD

PS-II Station : Brakes India Private Limited, Chennai, Chennai

Faculty

Name: Suparna Chakraborty .

Student

Name: CHAMARTHI POOJITH VARMA(2021A4PS2203G)

Student Write-up

PS-II Project Title: Analysis of master cylinder backseal using ansys

Short Summary of work done during PS-II : I was doing finite element analysis of various designs.

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

Objectives of the project : Learning Ansys , performing finite element analysis

Major Learning Outcomes : ANSYS , FEA

Details of Papers/patents :

Brief Description of working environment, expectations from the company : The accomodation is very good, people in CAE team are good but some people in other teams like actuation are very dumb and also work timing are 8-6.

Academic courses relevant to the project : Engineering mechanics, Strength of materials

PS-II Station : Bread Financial, Bengaluru, Bengaluru

Faculty

Name: Anjani Srikanth Koka .

Student

Name: RIDDHI PRAVIN ZANTYE(2020B3A30559G)

Student Write-up

PS-II Project Title: Flash Reporting: Regression Analysis

Short Summary of work done during PS-II : Performed statistical modelling to identify key drivers of credit card metrics like applications, sales etc. and created a regression model to predict their values. Created an end to end python pipeline to automate the process of data ingestion, cleaning, fitting the model and data visualisation.

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

Objectives of the project : Identify the key drivers of credit card metrics, predict their future values

Major Learning Outcomes : Data visualisation and modelling, regression analysis

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Work environment is supportive. We get enough independence to work on our projects while having a mentor guide us when required. It is expected for us to be punctual

Academic courses relevant to the project : Econometrics, Mathematics and Statistical Methods

PS-II Station : Bread Financial, Bengaluru, Bengaluru

Faculty

Name: Anjani Srikanth Koka .

Student

Name: AVIK VIPIN JOSHI(2020B4A31681G)

Student Write-up

PS-II Project Title: Advanced Analytical Modeling and Automation for Financial Insights: Survival Analysis and Macroeconomic Trend Evaluation in Next-Generation Capital Development at Bread Financial

Short Summary of work done during PS-II : During my PS-II internship at Bread Financial, I worked on enhancing the accuracy and efficiency of capital model development using data analysis tools. I developed a Python-based tool to automate the extraction and analysis of nearly 3,000 macroeconomic variables (MEVs) from Moody's database, significantly reducing manual effort and time required for analysis. This tool allowed us to perform detailed trend analysis of target and independent variables, improving the insights into economic trends influencing financial models. Additionally, I focused on survival analysis to assess the charge-off patterns of accounts based on their months-on-books (MOB). Using this approach, I contributed to identifying key factors impacting account charge-offs and customer behavior. I also worked on segment-level survival analysis for five different product categories to understand the specific dynamics driving account closures or defaults. One of my key contributions was the development of an Aalen-Johansen model to analyze the timing of charge-off events with censoring, providing more accurate predictions for capital model calibration. The models and tools I created were implemented in live projects, directly impacting US operations and optimizing decision-making processes related to financial risk management. Through this internship, I gained hands-on experience in data-driven analysis, modeling, and automation, while significantly improving the workflow of capital model development at Bread Financial.

Tool used (Development tools - H/w, S/w) : During my PS-II internship at Bread Financial, I used the following tools: 1. **Python**: For developing automation scripts to extract, clean, and analyze macroeconomic variables (MEVs) from Moody's database, and for implementing survival analysis models

Objectives of the project : The project aims to automate macroeconomic variable analysis using Python, SQL, and Excel tools, enhancing efficiency and accuracy in financial modeling. It focuses on trend and survival analysis to study account transitions and segment-specific patterns,

contributing to next-generation capital model development. The tools and insights are directly implemented in live projects to support strategic decision-making.

Major Learning Outcomes : The project provided hands-on experience in automating macroeconomic variable analysis using Python, SQL, and Excel, significantly improving data processing efficiency. It enhanced understanding of trend and survival analysis techniques, including advanced models like Aalen-Johansen, and their application in studying account transitions and segment-specific patterns. Additionally, it offered valuable insights into capital modeling processes and their strategic impact. The experience also developed skills in interpreting financial data, delivering actionable insights, and implementing solutions in live projects to support operational and strategic decision-making.

Details of Papers/patents : As of now, I have not published any papers or filed any patents. However, during my academic and internship experiences.

Brief Description of working environment, expectations from the company : During my PS-II internship at Bread Financial, I worked in a collaborative, data-driven environment focused on financial risk modeling. The team was supportive and encouraged independent problem-solving, with an emphasis on using analytics and automation to optimize processes. I was expected to develop tools and models that directly impacted the company's capital model development, while also clearly communicating my findings. The company provided a dynamic, fast-paced environment where innovation was encouraged, and fresh ideas were welcomed. My experience helped me enhance my technical skills and gain valuable insights into real-world applications of data science in finance.

Academic courses relevant to the project : The following academic courses were particularly relevant to my PS-II internship project at Bread Financial:

1. Advanced Statistics and Probability: This course provided the foundational knowledge required for conducting survival analysis, including conc

PS-II Station : Bread Financial, Bengaluru, Bengaluru

Faculty

Name: Anjani Srikanth Koka .

Student

Name: DIKSHIT SHREYAS SANDEEP(2020B4A82329H)

Student Write-up

PS-II Project Title: Automation of Actuals Deck

Short Summary of work done during PS-II : Work was good and the projects were important and relevant for the company. The financial tools are essential for the company and hence are deployed at bread financial level

Tool used (Development tools - H/w, S/w) : Excel python power BI

Objectives of the project : Time reduction and standardisation of process

Major Learning Outcomes : Python applications Power BI and excel

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Good supportive environment chance of PPO better than other companies but not amazing still

Academic courses relevant to the project : Msc math

PS-II Station : Bread Financial, Bengaluru, Bengaluru

Faculty

Name: Anjani Srikanth Koka .

Student

Name: ARPITA .(2021B3PS2051P)

Student Write-up

PS-II Project Title: Financial control and process optimization

Short Summary of work done during PS-II : During my internship at Bread Financial, I worked in the Controllershship and Tax Department to enhance financial control and optimize processes. My responsibilities included resolving outstanding SVB checks, managing daily BreadPay payment and refund operations, and reconciling suspense accounts. I also developed and maintained dashboards using Power BI, transforming financial data into actionable insights to support strategic decision-making by senior leadership. Key contributions included ensuring accuracy in month-end close processes, managing journal postings (AR Import and TSYS), and balancing accounts to maintain compliance. I focused on automating tasks to reduce discrepancies, improving operational efficiency, and enhancing overall financial transparency. This project offered valuable experience in integrating technology and data analytics into financial operations, emphasizing the importance of collaboration, compliance, and continuous improvement.

Tool used (Development tools - H/w, S/w) : Software: Power BI, SQL, Excel (Macro-enabled), Bread Min, Servicing Portal, Wells Fargo Systems.

Objectives of the project : Optimize financial processes within the Controllershship and Tax Department. Ensure accuracy in BreadPay's payment and refund operations. Enhance month-

end financial reporting through dashboard analytics. Reconcile suspense accounts to maintain financial transparency and compliance. Manage journal postings for accurate financial records.

Major Learning Outcomes : Proficiency in financial operations, including reconciliation and payment processing.

Gained advanced analytical skills using Power BI, SQL, and Excel.

Enhanced ability to create dashboards for performance insights.

Learned the importance of compliance and risk management in financial processes.

Improved problem-solving and variance analysis skills.

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

Brief Description of working environment, expectations from the company : The working environment at Bread Financial was dynamic and collaborative, with the Controllershship and Tax Department emphasizing accuracy, compliance, and innovation. Open communication and strong mentorship supported the management of complex financial operations.

I collaborated with mentors and team members to address challenges in payment processing, reconciliation, and dashboard management, utilizing advanced tools like Power BI and SQL. Regular discussions and knowledge-sharing sessions further enriched my learning experience. Overall, the environment fostered growth, offering technical challenges alongside robust support for skill development.

Academic courses relevant to the project : Financial Managerment

Funda of finance and accounting

Business Analytics and Valuation

PS-II Station : Bugbase Security Private Limited, Delhi, Delhi

Faculty

Name: Sugata Ghosal .

Student

Name: KULKARNI AYUSH SUDHIR .(2020B1A40606P)

Student Write-up

PS-II Project Title: Integrated Platform Enhancement

Short Summary of work done during PS-II : The project comprehensively enhanced client engagement by developing an advanced dashboard with real-time vulnerability tracking, predictive analytics, and seamless third-party integrations. By implementing sophisticated data analysis tools and streamlining project submission processes, the initiative aimed to elevate operational efficiency and market positioning. Key objectives included reducing manual tasks by 60%, increasing dashboard usage by 40%, and creating a robust ecosystem that positions BugBase as a leader in the competitive cybersecurity services landscape. The approach balanced technical innovation with strategic business growth.

Tool used (Development tools - H/w, S/w) : Figma, Mixpanel, Excel, Internal Tools

Objectives of the project : Client-facing Dashboard Enhancement, Growth Team Analysis Tool

Major Learning Outcomes : The project demonstrated the value of an interdisciplinary approach to solving complex technological challenges. The team learned to integrate expertise from various domains including Data Science, Information Security, Legal and Compliance, etc.

The team explored cutting-edge technological possibilities like AI and machine learning integration, microservices architecture, real-time data processing, and potential blockchain applications. They developed sophisticated risk management strategies, mastering proactive identification and mitigation of potential project challenges.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The team is lean, made of recent graduates who give tremendous responsibility and ownership but also do not shy away from sharing essential feedback. They also give you full leeway to experiment and try new things but with extreme accountability.

Academic courses relevant to the project : Computer Programming, TRW and Mass Media & Communication (Huel)

PS-II Station : Bugbase Security Private Limited, Delhi, Delhi

Faculty

Name: Sugata Ghosal .

Student

Name: SIDDHANT ATRISH .(2020B1A40621P)

Student Write-up

PS-II Project Title: Integrated Platform Enhancement

Short Summary of work done during PS-II : Focused on the development of the BugBase.ai Internal Project Management Platform. The platform was designed to improve the company's internal operations by providing secure and seamless project management, task tracking, team collaboration, client data management, and HR functionalities. My contribution primarily involved defining product requirements, implementing key security features, and developing the team

collaboration tools. The project addresses critical issues such as data security, scalability, and user experience, positioning BugBase.ai for future growth.

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

Objectives of the project : To build an 2 Internal Tools : (1) Employee Dashboard and (2) Product Progress Dashboard

Major Learning Outcomes : (1) Simplistic products are likely to be adopted quickly, thus specifically for the internal tools try to build products that are not complex and solve the purpose with minimum possible number of features.

(2) A/B testing is very essential. We often rely on customer interviews for tech solutions. But in reality we should just rely on customer interviews for problem understanding and build solutions based on our own understanding.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Fairly young team, so you get the ownership essential for getting the confidence. Loved how the team is more focused on results and less particular about process, so worked well with respect to experimenting.

Academic courses relevant to the project : CP (First Year)

PS-II Station : BureauID India Private Limited - Fintech, Bengaluru, Bangalore

Faculty

Name: Reddy Rani Vangimalla

Student

Name: ATISHAY JAIN .(2020B3A71083P)

Student Write-up

PS-II Project Title: Creating a Self-Serve Identity Verification Platform

Short Summary of work done during PS-II : Throughout my internship at Bureau, I focused on enhancing platform efficiency and user experience. Key projects included implementing a Test/Prod toggle to streamline workflows, developing an API discovery and documentation system to improve integration success rates, and integrating custom risk models in the bulk query feature to provide flexible risk assessment. I also worked on platform analytics to gain insights into user behavior and performance optimization initiatives to enhance system reliability.

Tool used (Development tools - H/w, S/w) : I utilized various development tools and technologies, including: Software Tools: Jira for project management, Git for version control, Docker for containerization, Postman for API testing, and Google Analytics for data analysis. Programming Languages an

Objectives of the project : Enable onboarding journeys for Fintechs and banks, where they can do financial fraud checks, identity verification and risk scoring of their user through a no code platform

Major Learning Outcomes : During my internship at Bureau, I developed a comprehensive skill set that included proficiency in product management tools, expertise in analytics and data analysis, and an in-depth understanding of API integration. Additionally, I enhanced my communication, leadership, and problem-solving skills, while gaining valuable industry knowledge in identity verification, fraud prevention, and financial technology.

Details of Papers/patents : There were no papers or patents generated during the internship.

Brief Description of working environment, expectations from the company : The working environment at Bureau was dynamic, collaborative, and supportive. The company fostered a culture of innovation and continuous learning, encouraging interns to take ownership of projects and contribute meaningfully to the team. My expectations were to gain hands-on experience in product management and to work on impactful projects, both of which were met through real-world challenges and opportunities to lead initiatives. The team was approachable, offering guidance and feedback, which was instrumental in my professional growth.

Academic courses relevant to the project : OOP, DSA, Management related courses

PS-II Station : Cadence Design Systems,Bengaluru, Bengaluru

Faculty

Name: Sanjay Vidhyadharan .

Student

Name: ABHINAV MAHESHWAR JOSHI(2020B2A31621H)

Student Write-up

PS-II Project Title: AE Debug Tool Kit

Short Summary of work done during PS-II : I was assigned Logical Equivalence Checking which is a signoff process in functional verification. I analysed the changes that happens during the synthesis and implementation process and verify if they have introduced logical bugs. Worked on the tool Genus Synthesis Solution, Conformal Equivalence Checker and Conformal Low Power to conduct the signoff process. Supported customers like Intel and Samsung on live projects.

Tool used (Development tools - H/w, S/w) : Genus Synthesis Solution, Innovus Implementation System, Conformal Equivalence Checker, Conformal Low Power, Tempus Timing Signoff

Objectives of the project : To understand the process of chip design and the tools which help in the process. Debug the errors which occur in the process.

Major Learning Outcomes : 1) Learnt Cadence Tools - Genus, Innovus, Conformal and Tempus.
2) The RTL to GDS II flow
3) The synthesis process and optimizations that happens during the process.
4) Debugging Errors

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment is very good, nurturing and challenging at the same time. The team is very supportive and helpful you upskill yourself. There is one weekday in a month where they give a holiday called global recharge day which can either be a Friday or a Monday. The office is quite beautiful and comfortable. Food is available at very subsidized prices. There is a amazing gym and for recreation they have table tennis,carrom and foosball. There isn't a dress code as such but it's expected to come in casual formals. The company deals with top tier companies in electronics such as Nvidia, Google Hardware, Samsung Semiconductors, Intel and AMD. We get to have some customer interaction as well while debugging their errors.

Academic courses relevant to the project : Digital Design, ED, MEC, ADVD, FPGA based systems design, Analog Electronics and Computer Architecture.

PS-II Station : Cadence Design Systems,Bengaluru, Bengaluru

Faculty

Name: Sanjay Vidhyadharan .

Student

Name: SATYAM KUMAR .(2021A3PS2657P)

Student Write-up

PS-II Project Title: Calculation of Insertion Loss using Step Response and it's Automation

Short Summary of work done during PS-II : My work in PS-2 spans over 2 projects-
1.Calculation of Insertion Loss using Step Response and it's Automation,2.Post-Si Validation of Advanced Package UCle Phy

Tool used (Development tools - H/w, S/w) : High Speed Oscilloscopes,Bert,Network Analyzers,VISA Communication API

Objectives of the project : To calculate the insertion loss when signal passes from chipset solder BGA(ball grid array) to cem connecter of motherboard

Major Learning Outcomes : Python Scripting,Using high speed Oscilloscope,Bert &Network Analyzers,High Speed signal processing

Details of Papers/patents : No papers published as such

Brief Description of working environment, expectations from the company : Working environment is supportive, and other team mates were very supportive to solve our doubts.

Academic courses relevant to the project : Digital Signal Processing, Electromagnetic Theory, Digital Design

PS-II Station : Carbon Impact Capital Pvt Ltd, Singapore, Singapore

Faculty

Name: Samir Ramdas Kale .

Student

Name: ISHITA MOHILE(2021A4PS2316H)

Student Write-up

PS-II Project Title: Understanding and assisting in project management

Short Summary of work done during PS-II : I did baseline research for an upcoming project, did data analysis for an existing project, identified problems and suggested solutions. I managed 4 other interns who were working on data review.

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

Objectives of the project : To assist with planning and implementation of projects

Major Learning Outcomes : Understanding how projects are formed, how to do basic data analysis, workings of the carbon sector, problems faced during project implementation

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The work environment is okay. Due to the less number of employees, everyone is very approachable.

Academic courses relevant to the project : NA

PS-II Station : Carbon Impact Capital Pvt Ltd, Singapore, Singapore

Faculty

Name: Samir Ramdas Kale .

Student

Name: ABHISHEK KOCHAR(2021A4PS2495H)

Student Write-up

PS-II Project Title: Data Integration and Validation for Survey Data Management

Short Summary of work done during PS-II : This project focused on optimizing data management workflows and ensuring data quality through advanced Python scripting and integration with SurveyCTO. The core tasks involved data cleaning, validation, integration, and transformation to create standardized and reliable datasets for analysis. Python libraries, primarily pandas, were utilized to handle missing values, inconsistencies, and errors in the raw data. Custom functions were developed to automate repetitive tasks like standardizing date formats, detecting invalid characters, and ensuring consistency across datasets. These efforts streamlined the preparation of data for further analysis. Automated pipelines were implemented for real-time error detection and monitoring. These pipelines flagged issues such as discrepancies, missing fields, and unusual patterns, ensuring continuous quality validation. Integration with SurveyCTO enabled immediate validation of collected data against pre-defined rules, enhancing the reliability of data directly at the point of collection. Data merging and transformation were performed using Python's robust capabilities to combine multiple datasets from various sources. The data was reshaped for efficient querying and reporting, facilitating comprehensive analysis across projects. To maintain uniformity, data quality assurance frameworks were employed to standardize column names, formats, and data units across

timelines and sources. Extensive documentation ensured that processes were reproducible, workflows were auditable, and knowledge sharing was seamless among team members. The project successfully demonstrated the value of automated data quality management, Python-based scripting, and integration with external systems like SurveyCTO to deliver efficient and scalable solutions for large-scale data operations.

Tool used (Development tools - H/w, S/w) : Python (pandas, NumPy, Matplotlib for data manipulation). SurveyCTO (data collection and validation). Jupyter Notebook (coding and visualization). Excel/Google Sheets (manual data reviews). GitHub (version control). SQL (data extraction).

Objectives of the project : The primary objective of this project is to design and implement efficient data management and quality assurance workflows for large-scale projects. This involves: Streamlining Data Collection: Leveraging tools like SurveyCTO to ensure accurate and consistent data entry. Data Validation and Cleaning: Developing robust Python-based scripts for detecting and rectifying errors in datasets. Automating Data Pipelines: Creating scalable ETL processes to minimize manual intervention and improve data reliability. Integrating and Standardizing Data: Merging datasets from multiple timelines and formats while ensuring uniformity and accuracy. Knowledge Sharing and Documentation: Establishing clear guidelines and training materials to enhance team efficiency and collaboration.

Major Learning Outcomes : Data Handling and Analysis: Proficient in Python libraries (pandas, NumPy) for data cleaning, validation, and merging multi-source datasets.

Documentation and Collaboration: Enhanced skills in workflow documentation, training, and knowledge sharing.

Problem-Solving: Tackled challenges in large-scale, diverse data environments with innovative solutions.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment during this project was collaborative, with a focus on efficient data management and analysis. The company, Carbon Impact Capital Pvt Ltd, provided a professional setting with a strong emphasis on data-driven decision-making. The team worked remotely, Regular virtual

meetings ensured seamless communication, where team members shared insights, updates, and challenges. Expectations from the company included providing guidance on best practices for data management, supporting the implementation of automated data pipelines, and ensuring the accuracy and quality of data. The company encouraged proactive problem-solving, allowing flexibility for proposing innovative solutions. As an intern, I was expected to assist in automating data cleaning, validation, and transformation processes, while also gaining hands-on experience with real-world data challenges.

Academic courses relevant to the project : DATA MINING

PS-II Station : Carbon Reduction Capital, LLC (CRC-IB), Mumbai, Mumbai

Faculty

Name: Uma Nagarajan .

Student

Name: AKSHUN JAIN .(2020B3A80780P)

Student Write-up

PS-II Project Title: Project Finance in Renewable Energy

Short Summary of work done during PS-II : Involved in multiple live/pre-closed deals in assisting senior bankers in their day-to-day work streams. Later was responsible for managing the funding of a pre-closed deal alone with very little assistance. Got an opportunity to observe how a deal is closed from start to end, involving multiple parties. Helped on any other ad-hoc tasks required.

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

Objectives of the project : The objective behind this project is to generate financial models, structure debt and partnership allocations for two live deals. The process involves updating proforma, finalizing the terms with the concerned parties and then running various sorts of analytics and sensitivities over the base model. In Project finance, the debt is sized based upon the cashflow of the project alone, being usually negative during the construction phase. These projects require massive capital and involve a higher risk. This project assist clients, predict and measure project and stakeholder economic and accounting earnings, to help quantify risks to stakeholders and to serve as a structuring tool for determining a project's capital stack.

Major Learning Outcomes : Substantial improvement in communication skills. Understood how live deals are structured and maintained post-closing by providing any kind of deal assistance to client. Going the extra mile to ensure every number is correct because of its profound monetary impact.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The work environment is very conducive for learning and growth. Not just the India office but the offshore office in NYC is also very considerate of our timings and give ample guidance wherever needed.

Academic courses relevant to the project : Financial Management, Fundamental of Financial Accounting, Derivative and Risk Management.

PS-II Station : Cascadestar India Pvt. Ltd, Mumbai, Mumbai

Faculty

Name: Benu Madhab Gedam .

Student

Name: DHRUV DEEPAK KAMAT .(2021ABPS2467P)

Student Write-up

PS-II Project Title: Partnership Growth (India and AEC)

Short Summary of work done during PS-II : Solved customer problems, created e-commerce details for products and tutorial playlist for softwares

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

Objectives of the project : To solve problems for three products -MIRA, ALO, PowerResins

Major Learning Outcomes : customer conversation

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : The working environment was good, but there was no appreciation for any good work.

Academic courses relevant to the project : NTMP, PS-1, MMT

PS-II Station : CBAI TECHNOLOGIES PRIVATE LIMITED, Hyderabad, Hyderabad

Faculty

Name: Pavan Kumar Potdar .

Student

Name: KOUSTAV PAUL(2021A4PS2900G)

Student Write-up

PS-II Project Title: AI-driven approach for bench analytics, toe and crest classification, highwall generation for open-pit mines and log automation.

Short Summary of work done during PS-II : I majorly worked with the GIS analytics team along with some cross functional projects. Projects involved use of machine learning techniques and use of GIS software APIs to create solutions for open pit mines.

Tool used (Development tools - H/w, S/w) : H/w - Raspberry Pi, 5G hat for communication; S/w - Python, QGIS, QGround Controller

Objectives of the project : To develop an all around AI driven solution for open pit mine operators.

Major Learning Outcomes : Machine Learning, python, technical management.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Good working environment, supportive mentors and interesting problem statements.

Academic courses relevant to the project : N/A

PS-II Station : Centre for Effective Governance of Indian States - Karnataka State Team, Bengaluru, Bangalore

Faculty

Name: Ramesh Venkatraman .

Student

Name: UDDAYA GUPTA .(2021A2PS2621P)

Student Write-up

PS-II Project Title: Inventory Management System

Short Summary of work done during PS-II : The Inventory Management System developed during the five-month internship at the Centre for Effective Governance of Indian States (CEGIS) is a comprehensive web-based solution designed to streamline the distribution of food supplies to Anganwadis under the Assam State Government. The system targets both the CHD office (state-level) and Project Managers overseeing multiple Anganwadis. By integrating modern web technologies—React and Bootstrap on the frontend, Node.js and Express.js on the backend, and a PostgreSQL database—the platform ensures efficient order creation, real-time inventory tracking, and secure user authentication through JWT-based access controls. The CHD office can generate new orders detailing financial sanctions, vendor selections, and meal types, alongside generating issue and stock reports to maintain oversight of operations across various districts. Meanwhile, Project Managers can view receipt registers, update order statuses, record issues to individual Anganwadis, and track overall stock levels. These functionalities not only enhance transparency and accountability but also foster quicker decision-making, significantly reducing the administrative burden and resource wastage previously associated with manual record-keeping.

Tool used (Development tools - H/w, S/w) : Tech stack - Frontend: React-Bootstrap Backend: Node, Express Database: Postgres

Objectives of the project : To digitize the process of order creation and inventory management

Major Learning Outcomes : Learnt how to develop systems which have real world use cases

Details of Papers/patents : N.A

Brief Description of working environment, expectations from the company : The working environment at the Centre for Effective Governance of Indian States (CEGIS) was both dynamic and supportive. As an intern, I found myself collaborating with a diverse group of individuals, including policy experts, data analysts, and fellow developers. The culture emphasized open communication, where questions and constructive feedback were encouraged. Regular team meetings, one-on-one sessions with mentors, and organized discussions helped me align my efforts with the organization's goals.

Academic courses relevant to the project : N.A

PS-II Station : Centre for Effective Governance of Indian States - OM Team, Hyderabad, Bengaluru

Faculty

Name: Ramesh Venkatraman .

Student

Name: GURJOT SINGH BINDRA(2021A4PS2373H)

Student Write-up

PS-II Project Title: Outcome management and analysis of indian health and nutritional facilities

Short Summary of work done during PS-II : During PS-II, I worked on projects focused on patient satisfaction surveys and health facility analysis. The primary tasks included designing surveys to assess service quality, collecting and analyzing data, and identifying gaps in healthcare delivery. Additionally, I studied facility infrastructure, resource allocation, and operational efficiency to provide actionable recommendations. The work emphasized using data-driven insights to support evidence-based decision-making and improve healthcare outcomes. These activities enhanced my technical skills, domain knowledge, and ability to address real-world challenges in the public health sector.

Tool used (Development tools - H/w, S/w) : Tools Used: Software Tools: Excel (data analysis), SPSS (statistical analysis), Tableau (visualization), and Google Forms (survey design and data collection). Hardware: Standard computing devices for analysis and documentation. Other Resources: Online da

Objectives of the project : Assess Patient Satisfaction: To evaluate the experiences and satisfaction levels of patients with healthcare services. Health Facility Analysis: To study the infrastructure, service delivery, and efficiency of health facilities. Identify Gaps: To pinpoint areas needing improvement in healthcare delivery and facility operations. Enhance Service Quality: To provide actionable insights for enhancing patient care and facility performance. Data-Driven Decision-Making: To support evidence-based policy and management in the healthcare sector.

Major Learning Outcomes : Gaining hands-on experience in designing and conducting patient satisfaction surveys.

Developing skills in analyzing health facility performance using data-driven approaches.

Enhancing knowledge of public health systems and their operational dynamics.

Improving proficiency in using analytical tools and methodologies relevant to healthcare research.

Building the ability to identify gaps and propose actionable recommendations for quality improvement in health services.

Details of Papers/patents : No papers or patents were developed during the internship period

Brief Description of working environment, expectations from the company : The working environment during PS-II was professional and collaborative, fostering both independent problem-solving and teamwork. Regular mentorship and feedback helped refine technical and analytical skills. The company maintained a supportive atmosphere, offering access to resources and tools necessary for project completion. Expectations included delivering high-quality work, adhering to deadlines, and actively contributing to ongoing projects. These expectations encouraged a proactive approach and accountability, allowing for a well-rounded learning experience while aligning academic knowledge with practical applications in the industry.

Academic courses relevant to the project : Research Methodology: Provided the foundation for designing and conducting surveys.

Biostatistics and Data Analysis: Essential for analyzing survey data and interpreting results.

Health Systems Management: Helped understand healthcare infrastructure and o

PS-II Station : CHT (INDIA) PVT.LTD, Raigad, Raigad

Faculty

Name: Santosh Sopanrao Khandgave

Student

Name: PILLAI AYYAPPAN RAJESH(2021A1PS2370P)

Student Write-up

PS-II Project Title: A Comprehensive Analysis of Utilities, Reactors, and Product Applications in Textile Chemicals Manufacturing

Short Summary of work done during PS-II : This project involved a comprehensive analysis of utility systems (Cooling Tower, Boiler, Chiller, ETP), reactor design and performance, and product applications at CHT (India) Pvt. Ltd. Data analysis, efficiency calculations, and comparisons with recommended values were performed for each utility system. The study also analyzed various reactor types (GLR, SSR) based on their dimensions, operating parameters, and material of construction. Mixing patterns, product viscosity considerations, and impeller selection were evaluated for optimizing reactor performance. The project concluded with recommendations for enhancing efficiency, sustainability, and cost-effectiveness across these systems.

Tool used (Development tools - H/w, S/w) : It was more of on-ground exposure. Nevertheless, MS Excel was used for few calculations

Objectives of the project : Analyze the efficiency and operational characteristics of key utility systems (Cooling Tower, Boiler, Chiller, ETP) in a textile chemicals production facility. Evaluate the design and performance of reactors used in the manufacturing process. Investigate product applications and their impact on the overall production process. Identify opportunities for improvement in efficiency, sustainability, and cost-effectiveness.

Major Learning Outcomes : Gained practical experience in analyzing and evaluating industrial utility systems.

Developed a deeper understanding of reactor design principles and their influence on chemical processes.

Learned about the various types of textile chemicals, their applications, and their role in textile manufacturing.

Enhanced problem-solving skills by identifying and proposing solutions for optimizing utility performance and reactor efficiency.

Improved technical communication skills through report writing and presentation.

Details of Papers/patents : None published

Brief Description of working environment, expectations from the company : Working environment is positive. All staff present are supportive.

Academic courses relevant to the project : Separation Process - 1 & 2, Kinetics and Reactor Design, Fluid Mechanics, Heat Transfer

PS-II Station : CIRT- CENTRAL INSTITUTE OF ROAD TRANSPORT, PUNE, Pune

Faculty

Name: Samata Satish Mujumdar .

Student

Name: NAINAR SURAJ MANIVANNAN(2020B2A41993G)

Student Write-up

PS-II Project Title: Research work on Hydrogen

Short Summary of work done during PS-II : Worked on writing a research paper on blending hydrogen with compressed natural gas, helping prepare a call for proposal.

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

Objectives of the project : Prepare research paper on Hydrogen, Assist Institute with upgrading to testing and reearching on hydrogen

Major Learning Outcomes : Current Hydrogen developments in India, Professional etiquette, writing research papers

Details of Papers/patents : Advancing Urban Transportation with Hydrogen-Compressed Natural Gas Blends: Environmental and Economic Insights

Brief Description of working environment, expectations from the company : Healthy working environment, Freedom to work at our own pace as long as we get our work done, Very good environment to learn and understand research work

Academic courses relevant to the project : Technical report writing

PS-II Station : CLEAREYE.AI, Pune, Thiruvananthapuram

Faculty

Name: Sindhu S .

Student

Name: MEGH KUMAR BAFNA(2021A8PS2992G)

Student Write-up

PS-II Project Title: Document Information Extraction (IE)

Short Summary of work done during PS-II : 1) Inferencing with various Vision Language Models. 2) Data Prep for fine-tuning Traditional models and VLMs 3) Whole Process flow of Documents Information Extraction 4) Various Python libraries such as pytorch, transformers, pandas, numpy, openCV

Tool used (Development tools - H/w, S/w) : python and related libraries for ML such as Various Python libraries such as pytorch, transformers, pandas, numpy, openCV.

Objectives of the project : Information extraction from documents using Traditional models as well as VLMs(Vision Language Models)

Major Learning Outcomes : 1) Inferencing with various Vision Language Models.

2) Data Prep for fine-tuning Traditional models and VLMs

3) Whole Process flow of Documents Information Extraction

4) Various Python libraries such as pytorch, transformers, pandas, numpy, openCV

Details of Papers/patents : N.A.

Brief Description of working environment, expectations from the company : Supportive, encouraging, U can take up new challenges and work on them. U need to know python basics. Basics of ML highly recommended but not necessary.

Academic courses relevant to the project : OOP

PS-II Station : CloudFiles Technologies Inc.,Bengaluru, Bengaluru

Faculty

Name: Shreyas Suresh Rao .

Student

Name: VITTHAL BAJPAI(2020B1A12082G)

Student Write-up

PS-II Project Title: Product Development

Short Summary of work done during PS-II : I have done feature development for the product on salesforce appExchange. My work focused on frontend development and API integrations. I have worked majorly on Javascript, HTML and CSS on LWC framework during my internship.

Tool used (Development tools - H/w, S/w) : VS Code | Salesforce Developer Experience (SFDX) | Salesforce CLI | Lightning Web Components (LWC) | Salesforce Lightning Design System (SLDS) | Git | GitHub

Objectives of the project : Frontend development for company's product.

Major Learning Outcomes :

1. Got an understanding on salesforce and its platform.
2. Gained skills on technologies like LWC, Git, Javascript, restAPIs to develop efficient applications on salesforce.
3. Learnt best practices to code.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Working environment is great, people working in the company are supportive and help you grow in whatever you aspire.

Academic courses relevant to the project : Nothing is mandatory, but OOP and FODSA were of great help to me in fulfilling the needs of my work.

PS-II Station : CloudFiles Technologies Inc.,Bengaluru, Bengaluru

Faculty

Name: Shreyas Suresh Rao .

Student

Name: PARAMESWARAN SARAVANAN(2021A1PS2371H)

Student Write-up

PS-II Project Title: STRATEGIC SOCIAL MEDIA MARKETING INITIATIVE FOR BRAND GROWTH AND ENGAGEMENT

Short Summary of work done during PS-II : During my internship as a Digital Marketing Intern at CloudFiles, I helped develop and execute social media strategies to increase the brand's visibility and engagement. I was responsible for creating and scheduling content, monitoring performance across various platforms. I also kept up with trends, collaborated with the marketing team on digital initiatives, and supported efforts to grow CloudFiles online presence.

Tool used (Development tools - H/w, S/w) : Figma, DaVinci Resolve and Notion

Objectives of the project : 1. Gain hands-on experience in content creation and social media management. 2. Boost brand awareness and engagement through targeted campaigns. 3. Analyze campaign performance and optimize strategies using data insights.

Major Learning Outcomes : I gained hands-on experience in managing social media campaigns and creating engaging content. I developed skills in analyzing performance metrics and optimizing strategies for better audience engagement.

Details of Papers/patents : NIL

Brief Description of working environment, expectations from the company : At CloudFiles, I find a work environment that emphasizes innovation, collaboration, and flexibility. The company

is committed to providing cutting-edge solutions while encouraging a culture of creativity and continuous learning. Expectations are clear, with a strong focus on quality, teamwork, and customer satisfaction. CloudFiles supports professional growth through ongoing development opportunities, and there's a real sense of community here, where open communication is encouraged, and everyone's ideas are valued. The leadership is transparent and approachable, which fosters a positive and motivating atmosphere for everyone.

Academic courses relevant to the project : NIL

PS-II Station : CloudFiles Technologies Inc.,Bengaluru, Bengaluru

Faculty

Name: Shreyas Suresh Rao .

Student

Name: ARYAN RAVEENDRAN MENON(2021A4PS2771H)

Student Write-up

PS-II Project Title: Integrating Flow Actions, Innovations in Document Management and Web Revitalisation

Short Summary of work done during PS-II : During my PS-II internship, I contributed to the development of a dynamic website for **CloudFiles** using **Next.js** and **Payload CMS**. I migrated the site from a **Page Router** to an **App Router** in Next.js, improving site performance and load times. I integrated **Payload CMS** for efficient content management, allowing the team to update content without technical expertise. I also revamped key sections like the **legal page**, **blogs**, and **pricing**, enhancing user engagement and clarity. I built an

interactive **ROI calculator** and integrated a **Zendesk support portal** using **Handlebars (HBS)** templates for efficient ticket management and customer service analytics. The project also involved optimizing performance, improving **SEO**, and ensuring mobile responsiveness for a seamless user experience. Throughout, I collaborated with the design team using **Figma**, handled **version control** with **GitHub**, and applied modern web development practices. This experience strengthened my skills in full-stack development, content management, and API integration, preparing me for future web development challenges.

Tool used (Development tools - H/w, S/w) : Next.js, Payload CMS, React, Handlebars (HBS), Zendesk API, Figma, Google Analytics, GitHub, Vercel, Postman, Developer Machines (PCs/Macs), Cloud Servers (AWS/DigitalOcean), and Mobile Devices/Emulators.

Objectives of the project : Revamping the website to latest version for more traction of users.

Major Learning Outcomes : The major learning outcomes from this project include gaining practical experience with tools like Next.js, Payload CMS, and React, enhancing my skills in dynamic content management and API integration. I also improved my understanding of UI/UX design with Figma, version control using GitHub, and continuous deployment through Vercel. Additionally, I learned about performance optimization, SEO, and the importance of collaborative development, which has strengthened my web development expertise.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment at CloudFiles has been highly supportive and collaborative. The company fosters a positive work culture where everyone is approachable and willing to help, making it easy to seek guidance whenever needed. There is an emphasis on teamwork, and knowledge sharing is encouraged, which contributes to a great learning experience. Additionally, the company offers flexibility with work-from-home options, allowing employees to manage their work-life balance as needed.

Expectations from the company are clear and realistic. While there are hard deadlines that need to be met, the workload is manageable, especially considering it's a startup. The company ensures that tasks are well-defined, and there's a strong focus on delivering quality work within

the given timeframes. This balance between autonomy and accountability allows for both personal growth and efficient project completion.

Overall, CloudFiles provides a supportive and flexible working environment where employees can thrive, learn, and contribute to the company's success while maintaining a healthy work-life balance.

Academic courses relevant to the project : OOPS, FDSA

PS-II Station : Colorjet India Limited, Noida

Faculty

Name: Rajesh Kumar Tiwary .

Student

Name: SHREYA SAI PANDLOORE(2020AAPS1036G)

Student Write-up

PS-II Project Title: Chanakya Printer

Short Summary of work done during PS-II : The work done focused on the motion system and printing resolution code for the printer using embedded c programming concepts. Since there wasn't a prior major project when we came, we started work on how we can increase the efficiency of the motion system and printing process.

Tool used (Development tools - H/w, S/w) : M4 microcontroller, Visual Studio, Kinetis Design Studio, Delta motor driver, A7 microprocessor

Objectives of the project : Working on the code for the company's Chanakya printer

Major Learning Outcomes : Embedded programming in C, using hardware such as microcontrollers

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The PS station was a first time PS station, so they didn't have a prior process in place regarding the project expectations. We were able to report directly with our mentor and other employees in the department.

Academic courses relevant to the project : Embedded Systems, Microprocessors and Interfacing

PS-II Station : Colorjet India Limited, Noida

Faculty

Name: Rajesh Kumar Tiwary .

Student

Name: AASHEEL DAVE(2021A4PS3094H)

Student Write-up

PS-II Project Title: Implementation of Lean Manufacturing

Short Summary of work done during PS-II : Created a Value Stream Map highlighting various bottlenecks within the factory supply chain, created a dashboard showing data for each department

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

Objectives of the project : To Implement Lean Manufacturing i.e reduce non-value adding/wasteful activities within the company factory

Major Learning Outcomes : Gained a clearer understanding of processes followed in a factory and the various departments' working and procedures. Learnt more about the Lean Manufacturing Process, Learnt 3D Design using CAD software for various factory fixtures

Details of Papers/patents : n/a

Brief Description of working environment, expectations from the company : An important thing to keep in mind is that the manufacturing industry requires employees to come 6 days a week for 9 hours a day which makes the work environment very hectic, COLORJET itself is a growing company therefore things can be more confusing than they are with a full-fledged MNC.

Academic courses relevant to the project : Manufacturing Management, Lean Manufacturing

PS-II Station : Colorjet India Limited, Noida

Faculty

Name: Rajesh Kumar Tiwary .

Student

Name: NISHESH NAMAN .(2021A7PS2009P)

Student Write-up

PS-II Project Title: CHANAKYA PRINTER : GUI DEVELOPMENT

Short Summary of work done during PS-II : During my five-month internship at ColorJet Noida as an R&D Software Developer, I worked extensively on enhancing their printer software. My primary task was implementing a grayscale printing feature enabling 2-bit PRT/PRN processing. This involved decoding PRT/PRN file headers, updating the data pipeline, and ensuring accurate handling of 2-bit grayscale data. I also added a toggle for grayscale printing (later discarded) and contributed to frontend enhancements such as adding a GUI version identifier. Additionally, I documented the Git repository setup process, learned about flashing embedded code on the System on Module (SoM), and familiarized myself with pre- and post-printing operations like nozzle cleaning and media adjustment. The project improved my understanding of software-hardware interactions and refined my technical and problem-solving skills.

Tool used (Development tools - H/w, S/w) : Visual Studio, Hex Editor, Kinetis, Onyx RIP, SoM

Objectives of the project : To implement a grayscale printing feature enabling 2-bit PRT/PRN printing for ColorJet's wide-format printers. Enhance the image quality by enabling ink nozzles to fire two drops of ink per pixel, improving image intensity and clarity. Update the existing software pipeline to process 2-bit data accurately and integrate it with the printer's hardware. Decode and handle PRT/PRN file headers for enhanced processing capabilities. Contribute to software optimization and feature expansion while ensuring compatibility with current systems.

Major Learning Outcomes : ->In-depth understanding of software systems for industrial-grade printers.

->Hands-on experience in decoding and processing proprietary file formats (PRT/PRN).

->Improved programming skills in C#, C++, and XAML.

->Proficiency in debugging and using tools like Visual Studio, Hex Editor, and RIP software.

->Insight into hardware-software integration in embedded systems.

->Enhanced problem-solving, time management, and documentation skills.

->Learned the importance of collaboration and clear communication in a professional setting.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at ColorJet Noida was both challenging and supportive, fostering innovation. As part of the R&D team, I was encouraged to explore and understand the intricacies of the printer software system. My mentors provided valuable guidance, helping me navigate the complexities of the codebase while allowing me the freedom to research and implement solutions independently.

Academic courses relevant to the project : COMPUTER PROGRAMMING, OOP, DSA

PS-II Station : Colorjet India Limited, Noida

Faculty

Name: Rajesh Kumar Tiwary .

Student

Name: SUCHITRA SAHU(2021A8PS2210H)

Student Write-up

PS-II Project Title: Software embedded in Chanakya Printer

Short Summary of work done during PS-II : The project revolved around improving the efficiency of Colorjet's printing systems by optimizing printer motion and speed. The primary goal was to address existing speed limitations while ensuring that print quality and system stability remained uncompromised. One key area of focus was adjusting the DPI settings to modify the

printer's motion resolution. This was complemented by changes to the motor driver gear ratios, which enabled higher speeds. To ensure smooth operation, we refined the acceleration and deceleration profiles and made incremental changes to the lookup tables, which balanced speed improvements with motion stability. Additionally, we implemented multi-DPI functionality, integrating settings for 360, 540, and 720 DPI using customized lookup tables for each. This allowed precise motion and speed adjustments tailored to the requirements of different DPI settings. However, the project was not without its challenges—calibration mismatches, hardware constraints, and difficulties in achieving smooth transitions at higher speeds were encountered and carefully addressed. Through extensive testing and debugging, we identified the limitations of fixed FPGA pulse counts and addressed inconsistencies in motion behavior. These efforts culminated in notable improvements in carriage speed and operational stability. While certain constraints limited the scope of enhancements, this work lays the groundwork for future developments in industrial printer motion control and speed optimization.

Tool used (Development tools - H/w, S/w) : Visual Studio Code, Kinetis, Excel, M4 core, A7 core, FPGA's, etc

Objectives of the project : To work on the motion system and printing of the chanakya printer

Major Learning Outcomes : Embedded systems working
C++, C usage in industry

Details of Papers/patents : n/a

Brief Description of working environment, expectations from the company : The working environment was kind of fine but was strict and restrictive. And expectations were too much, like the work given was work that could be done by someone with good amount of experience but we were very new to the concept itself.

Academic courses relevant to the project : Diggital Design, OS, C++

PS-II Station : Cosmofeed, Gurugram,, Gurgaon

Faculty

Name: Gaurav Nagpal .

Student

Name: NIKHIL ACHUTHAN MENON(2021A8PS1657G)

Student Write-up

PS-II Project Title: INTERNATIONAL CREATOR ONBOARDING

Short Summary of work done during PS-II : I successfully reached out to over 3000 individual entrepreneurs and creators through targeted strategies across various social media platforms. Several of these creators were onboarded onto SuperProfile, leading to increased awareness and engagement within their communities. Notably, the clients we onboarded have begun monetizing their content using SuperProfile's features.

Tool used (Development tools - H/w, S/w) : Social media platforms, loom and Superprofile.

Objectives of the project : Onboarding of foreign independent entrepreneurs and creators onto the SuperProfile platform.

Major Learning Outcomes : I developed essential marketing skills focused on onboarding and user engagement. I learned to conduct market research to identify target audiences and tailor outreach efforts effectively.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : As an intern, I was given the autonomy to explore innovative approaches to creator onboarding while receiving constructive feedback from mentors.

Academic courses relevant to the project : MGTs-F211

PS-II Station : CricClubs India Private Limited, Hyderabad, Hyderabad

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: MEDHANSH DASARI(2021A4PS2399H)

Student Write-up

PS-II Project Title: League Management Software Development

Short Summary of work done during PS-II : During my internship at CricClubs, I contributed to developing and improving cricket management software by designing API contracts, creating wireframes, and designing intuitive screens to enhance user experience. I identified functional and error scenarios, wrote automated test scripts, and validated APIs to ensure system reliability and performance. Collaborating with cross-functional teams, I focused on delivering a professional and user-friendly platform for cricket leagues, strengthening my skills in API development, UI/UX design, and test automation.

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

Objectives of the project : Project Planning

Major Learning Outcomes : Project planning and management.

Postman API testing automation.

Product design.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The work environment at CricClubs is highly supportive and collaborative. The CEO and higher authorities are approachable, fostering open communication and guidance. There's ample scope for learning and skill development, with the team being friendly and encouraging, especially toward new initiatives. It's a place where innovation and personal growth are actively nurtured.

Academic courses relevant to the project : OOP

PS-II Station : Critical Path Technologies Private Limited ("SalarySe) - Non Tech, Gurgaon

Faculty

Name: Sidharth Mishra .

Student

Name: HARSH KHANDELWAL .(2020B1A40601P)

Student Write-up

PS-II Project Title: Product Dropoff Journeys using Data Analysis

Short Summary of work done during PS-II : I deploy a multi-channel communication strategy using tools such as Clevertap, Gupshup, and Metabase. Platforms like Amplitude are further utilized to analyze user behavior and visualize drop-off funnels, helping pinpoint where users are disengaging. By combining automated journeys with ad-hoc communications, I ensure timely interventions and personalized nudges that are contextual to the user's journey stage.

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

Objectives of the project : The primary objective of designing Product Drop-off Journeys is to ensure that users successfully complete the intended tasks or goals at every stage of app onboarding or product onboarding.

Major Learning Outcomes : Over the course of my internship, I successfully utilized platforms like Clevertap, Gupshup, and Metabase to drive user engagement, analyze performance metrics, and identify actionable insights. By combining automated journeys with ad-hoc campaigns, I effectively addressed drop-offs and encouraged users to complete critical tasks on the app.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : It was quite chill there. Everyone was focused on their task but also enjoy in their free time. Sometimes it was quite heavy during few launches but otherwise it was quite a learning and exciting experience

Academic courses relevant to the project : NA

PS-II Station : Critical Path Technologies Private Limited ("SalarySe) - Tech, Gurgaon

Faculty

Name: Ankur Pachauri

Student

Name: SANCHIT KALRA(2020B4A32298H)

Student Write-up

PS-II Project Title: Backend Development

Short Summary of work done during PS-II : I worked in various backend development tasks using Java and Spring Boot. My work was primarily concerned with writing backend apis to power our frontend application. I worked on developing various features like a financial literacy module, credit card marketplace platform, UPI lucky draw. Apart from these I also worked on internal tools like pre deployment script to get a birds eye view of our deployment, and various dashboards to support various teams in our organisation to streamline processes and reduce their dependence on the technology team. I also worked on creating a unified interface to implement asynchronous messaging accross various microservices in our system using Amazon SQS

Tool used (Development tools - H/w, S/w) : Java, SpringBoot, Retool, Metabase, AppSmith, IntelliJ Idea

Objectives of the project : Participate in various backend development tasks as assigned by the team

Major Learning Outcomes : Software engineering in an enterprise setting, how startups work, putting features into production, maintaining code and enchancing product with feedback from customers and working with various stakeholders

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The work culture in the company was excellent, with everyone being very friendly and helpful. The expectations were high, as we were expected to work on production features as soon as we joined the company, but we never felt abandoned and always had the support to deliver. We were both expected to work independently and as a team on various backend features. Although we were given time to learn at the starting 2-3 weeks of the internship, the pace of the work we did was much higher, and the time given might not have been enough to keep up with it without prior experience. But, this was in itself an excellent experience in how to handle a fast-paced environment. Overall this was an excellent opportunity to learn both technical and nontechnical skills.

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

PS-II Station : Critical Path Technologies Private Limited (“SalarySe) - Tech, Gurgaon

Faculty

Name: Ankur Pachauri

Student

Name: YASHVARDHAN SHARMA .(2021A3PS2645P)

Student Write-up

PS-II Project Title: Backend Development At SalarySe

Short Summary of work done during PS-II : Worked as a core backend developer working on various features for the Backend of SalarySe app. This includes working on APIs for the front end,

writing unit tests, and integrating third-party features in our app, which included Bank APIs, third party platforms for giving credit cards to our users. Also worked on designing a system for and writing using it, various Rule Engines for checking the eligibility of a user for our products such as Loans Credit Cards, etc. I also worked on creating multiple internal dashboards for the smooth functioning of the business. I also designed some systems that were not directly related a feature but helped ease their development, like an SQS Messaging System.

Tool used (Development tools - H/w, S/w) : Java, SpringBoot, Retool, Metabase, AppSmith.

Objectives of the project : Develop and Maintain new and existing features and microservices for the Backend for SalarySe App.

Major Learning Outcomes : Java, SpringBoot, Microservices, Backend Development.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The work culture in the company was excellent, with everyone being very friendly and helpful. The expectations were high, as we were expected to work on production features as soon as we joined the company, but we never felt abandoned and always had the support to deliver. We were both expected to work independently and as a team on various backend features. Although we were given time to learn at the starting 2-3 weeks of the internship, the pace of the work we did was much higher, and the time given might not have been enough to keep up with it without prior experience. But, this was in itself an excellent experience in how to handle a fast-paced environment. Overall this was an excellent opportunity to learn both technical and nontechnical skills.

Academic courses relevant to the project : OOP, DBS, CP, DSA.

PS-II Station : CriticalRiver Technologies Pvt Ltd, IT, Hyderabad

Faculty

Name: Sai Kishor Jangiti .

Student

Name: VAIBHAV RATAN(2020B1A30862G)

Student Write-up

PS-II Project Title: ONDC-based Dark Store Aggregator Platform Development

Short Summary of work done during PS-II : During my internship, I contributed to the development of QuantumStore, a decentralized platform for inventory and logistics management using the ONDC framework. My work involved frontend development using React and React Native, focusing on modular and reusable components. I integrated APIs for real-time data handling and implemented user authentication using JWT. On the backend, I built scalable server architectures with Express.js and MongoDB, supporting secure CRUD operations and middleware for error handling. Additionally, I created a Form Builder application with drag-and-drop functionality, enhancing contract and workflow management. This experience provided hands-on exposure to full-stack development and improved my problem-solving abilities in e-commerce logistics.

Tool used (Development tools - H/w, S/w) : React, React Native, MongoDB, Express.js, Node.js, Firebase, Tailwind CSS, Expo, Figma

Objectives of the project : To conceptualize, design, and develop a decentralized platform leveraging the ONDC framework, enabling small business owners and storage providers to efficiently manage inventory and logistics.

Major Learning Outcomes : During my internship, I gained an in-depth understanding of the ONDC framework and decentralized e-commerce logistics. I enhanced my skills in full-stack development by working on modular and scalable applications using React, React Native,

Express.js, and MongoDB. I learned to design and implement secure user authentication systems, integrate APIs for real-time data handling, and manage databases effectively. Additionally, I developed a Form Builder application with drag-and-drop functionality, which honed my problem-solving abilities and understanding of workflow automation. This experience significantly improved my technical expertise, project management capabilities, and adaptability to real-world challenges.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment at CriticalRiver Technologies was collaborative and dynamic, with ample opportunities for learning and skill enhancement. I received consistent guidance from my mentor, Mr. Enayathulla Shaik, and faculty mentor, Dr. Saikishore Jangiti. The company maintained a structured workflow, emphasizing the importance of deadlines and quality. Expectations were clear: to actively contribute to the project while learning modern development practices. The internship provided exposure to practical challenges in decentralized e-commerce and fostered a culture of innovation and teamwork.

Academic courses relevant to the project : OOP

PS-II Station : CriticalRiver Technologies Pvt Ltd, IT, Hyderabad

Faculty

Name: Sai Kishor Jangiti .

Student

Name: AMIT MOHAPATRA(2021AAPS1780G)

Student Write-up

PS-II Project Title: Technology and Product Development in ONDC Domain

Short Summary of work done during PS-II : During my 20-week internship at CriticalRiver Technologies, I contributed to three impactful projects within the ONDC domain. I developed a Darkstore Aggregator to optimize decentralized logistics by transforming underutilized spaces into dark stores. The Form Builder project enabled dynamic drag-and-drop form creation with integrated workflow automation for single-level approval processes. Lastly, I worked on a Contract Authoring Tool featuring advanced text editing, customizable templates, and seamless PDF export functionality. My responsibilities included full-stack development, UI/UX design, and workflow optimization using React.js, React Native, Firebase, React Flow, and Draft.js. Weekly tasks ranged from research and prototyping to feature implementation and final testing. This internship provided hands-on experience with modern tools and technologies while fostering analytical and collaborative skills.

Tool used (Development tools - H/w, S/w) : React, React Native, React Flow, Firebase, Draft.js, MongoDB, Express.js, GitHub, Vite, Canva, Figma

Objectives of the project : Develop scalable solutions for decentralized logistics, streamline form creation and workflow automation, and build a robust contract authoring tool with advanced editing and export features.

Major Learning Outcomes : Gained experience in scalable architecture for decentralized systems.

Enhanced skills in UI/UX design and workflow automation tools.

Improved project management capabilities for delivering quality solutions.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment at CriticalRiver Technologies was highly collaborative and engaging. I was guided by my mentor, who provided invaluable insights into product development and e-commerce logistics. Teamwork played a pivotal role, with colleagues offering support and feedback

throughout the projects. The company emphasized innovation, scalability, and quality deliverables, which aligned with my professional growth aspirations.

The expectations from the company included delivering technically sound solutions within stipulated deadlines while ensuring alignment with the ONDC framework. The practical exposure to real-world challenges was enriching and offered opportunities for learning and self-improvement.

Academic courses relevant to the project : FoDSA, OOP.

PS-II Station : CRRI - FINANCE, Delhi

Faculty

Name: Uma Nagarajan .

Student

Name: ADITYA DIBYADARSHAN MOHANTY(2021A4PS2419H)

Student Write-up

PS-II Project Title: Comprehensive SWOT analysis of CRRI

Short Summary of work done during PS-II : During the Practice School-II at CSIR-CRRI, a comprehensive SWOT analysis was conducted on the organization's revenue model to assess its financial structure and sustainability. The work focused on identifying internal strengths, such as advanced R&D capabilities and a strong national reputation, as well as weaknesses, including heavy reliance on government funding and operational inefficiencies. External opportunities, such as potential collaborations in public-private partnerships (PPPs) and the growing demand for consultancy services, were explored, alongside threats like economic instability and increasing

competition from private sector firms. The analysis involved reviewing institutional reports, studying funding patterns, and benchmarking CRRRI's financial practices against similar organizations. Strategic recommendations were proposed to diversify revenue streams, improve operational efficiency, expand global collaborations, and integrate advanced technologies like AI and IoT in research and financial management. These recommendations aimed to reduce dependency on government funding and enhance the institute's long-term financial and operational resilience. The project emphasized the alignment of CRRRI's strategies with emerging market trends and sustainable practices, reinforcing its position as a leader in transportation and infrastructure research. This work provided valuable insights into public sector financial models, strategic planning, and the application of theoretical concepts to real-world challenges, contributing to a deeper understanding of financial sustainability in research institutions.

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

Objectives of the project : The objective of the project is to evaluate CRRRI's internal strengths and weaknesses affecting its revenue model while identifying external opportunities and threats to financial sustainability. The project aims to provide strategic recommendations for diversifying revenue streams and optimizing financial management practices. Additionally, it seeks to align CRRRI's financial strategies with its institutional mission and emerging market trends to ensure long-term operational resilience and growth.

Major Learning Outcomes : The project provided valuable learning outcomes, including proficiency in conducting SWOT analysis to assess organizational strengths, weaknesses, opportunities, and threats. It enhanced understanding of public sector revenue models and financial management practices, while also developing skills in strategic planning and formulating actionable recommendations. The project offered insights into diversifying revenue streams for research institutions and highlighted the importance of integrating advanced technologies like AI and IoT into financial and operational strategies. Additionally, it underscored the significance of aligning institutional goals with national and global trends to ensure long-term sustainability and resilience.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment at CSIR-CRRI was dynamic and intellectually stimulating, fostering a culture of collaboration and innovation. As a premier research institute, CRRI provided access to advanced resources and expertise in the field of transportation and infrastructure research. The Finance and Accounts Division, under which the project was undertaken, maintained a professional yet approachable atmosphere, encouraging open communication and knowledge sharing. Regular interactions with mentors and domain experts ensured clarity of objectives and alignment with the organization's strategic goals.

The expectations from the company included providing a comprehensive understanding of its revenue model and financial practices to effectively conduct the SWOT analysis. This required access to key reports, financial data, and insights into ongoing and past projects. The company was expected to guide the process by offering mentorship and constructive feedback at various stages of the project. Additionally, exposure to real-world challenges in public sector financial management and strategic planning was anticipated to bridge the gap between theoretical knowledge and practical application.

The supportive environment and structured workflow at CRRI facilitated a productive internship experience, offering opportunities to develop skills in financial analysis, strategic planning, and operational optimization. This enabled the creation of actionable recommendations to enhance the institute's financial sustainability and align with its broader mission of advancing transportation research and infrastructure development.

Academic courses relevant to the project : Financial Management, Engineering Optimisation

PS-II Station : CRRI - FINANCE, Delhi

Faculty

Name: Uma Nagarajan .

Student

Name: ABHINAV SATISH(2021AAPS1525H)

Student Write-up

PS-II Project Title: Projection and Analysis of the ECF of CRRl

Short Summary of work done during PS-II : Throughout the course of this report, an in-depth financial analysis and valuation of CRRl and its divisions were conducted. Using the Discounted Cash Flow (DCF) method, the Estimated Cash Flows (ECFs) for the next 10 years were projected based on historical data and reasonable assumptions. The Weighted Average Cost of Capital (WACC) was calculated and adjusted for each division to reflect varying risk levels, enabling a division-specific valuation. Key findings include insights into the economic standing of CRRl, the contributions of individual divisions, and the factors influencing the divergence between organizational and divisional valuations. Challenges such as data constraints and dependency on assumptions were acknowledged, emphasizing the need for cautious interpretation of the results. This analysis serves as a comprehensive assessment of CRRl's financial performance and risk dynamics, providing a foundation for strategic decision-making.

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

Objectives of the project : This project projects the ECF of CRRl over the next 10 years using the Discounted Cash flow (DCF) method. It also involves the projection of every department of CRRl individually to understand its financial security better. Based on these projections, an analysis of the numbers and possible implications are noted. The study aims to provide valuable insights into CRRl's long-term financial planning.

Major Learning Outcomes : This project provided the perfect platform for me to build on the basics of one of the most fundamental aspects of Finance. The analysis of data not only helped me understand ECF better but also helped me apply my theoretical knowledge in a practical setting.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : My mentor and the head of the department were very welcoming. They made sure I chose a project I liked and was comfortable with and were ready to provide whatever data I required to finish the work. Deadlines were flexible, and my mentor was always ready to help me whenever I was stuck on a problem. The company expected us to give regular updates and to be careful of sensitive company data.

Academic courses relevant to the project : BAV, FM, SAPM, FOFA

PS-II Station : CRRI-DATA ANALYTICS, Delhi

Faculty

Name: Mohammad Saleem Bagewadi .

Student

Name: DHARM PRATAP SINGH .(2020B3A40927P)

Student Write-up

PS-II Project Title: Improving Transport Systems Using Data Analytics

Short Summary of work done during PS-II : The project explored the use of Big Data and machine learning to enhance Intelligent Transportation Systems (ITS) by analyzing traffic-related tweets for predictive insights. The study leveraged Apache Spark's capabilities to collect, preprocess, and process large datasets from Twitter. The methodology included filtering relevant tweets, tokenizing the text, and using Term Frequency-Inverse Document Frequency (TF-IDF) for feature extraction. Four machine learning models—K-Nearest Neighbors (KNN), Support Vector

Machine (SVM), Decision Tree, and Naïve Bayes—were evaluated for accuracy, recall, and precision. KNN emerged as the most effective algorithm for classifying traffic-related tweets. Geospatial insights were derived using Google Maps Geocoding API, providing actionable intelligence on traffic congestion and accident hotspots. The outcomes highlighted the potential of social media data in real-time traffic management and accident prediction.

Tool used (Development tools - H/w, S/w) : Apache Spark (including MLlib), MongoDB, Google Maps, Geocoding, API Programming in Python

Objectives of the project : The project aimed to leverage Big Data analytics and machine learning techniques to improve Intelligent Transportation Systems by analyzing real-time data from social media (Twitter) to predict traffic accidents and enhance road safety measures.

Major Learning Outcomes : Proficient use of Apache Spark for Big Data processing. Understanding and applying machine learning algorithms like K-Nearest Neighbors, SVM, and Decision Trees for classification tasks. Integration of social media data into predictive models for real-time traffic management.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at CSIR-CRRI provided a robust foundation for applying data science and machine learning to real-world transportation challenges. The company fostered a collaborative atmosphere, encouraging innovative solutions to pressing traffic safety issues. It provided access to cutting-edge tools like Apache Spark, enabling efficient data processing and real-time analytics. The expectations included creating predictive models, integrating diverse data sources, and delivering insights to enhance transportation safety and efficiency.

Academic courses relevant to the project : Data Analytics

Machine Learning

Big Data Technologies

Transportation Systems Analysis

PS-II Station : CRRI-DATA ANALYTICS, Delhi

Faculty

Name: Mohammad Saleem Bagewadi .

Student

Name: HIREMATH NIRANJAN VEERANNA .(2021A1PS2583P)

Student Write-up

PS-II Project Title: Data Analytics in civil eng

Short Summary of work done during PS-II : Collected confidential data from the institution, cleaned and combined different datas for ease. Used Microsoft Excel to find correlations between different parameters, used statistical tools to reduce errors, used ML tools to predict one value based to different input parameters

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

Objectives of the project : Analyzing datas conducting by the institution and use excel and ML tools to predict the values, find correlations, etc.

Major Learning Outcomes : Learnt the hard skills required for corporate jobs, managing time, communicating with the mentor

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Very helping and supporting environment from the mentor and the peers

Academic courses relevant to the project : NA

PS-II Station : CRR-Data Analytics, Delhi

Faculty

Name: Mohammad Saleem Bagewadi .

Student

Name: YASH MOONDRA(2021A4PS2301G)

Student Write-up

PS-II Project Title: Data Driven Prediction of Road Accidents across India: A Machine Learning approach

Short Summary of work done during PS-II : During my internship, I worked on analyzing road accident trends across India using a machine learning approach. The project leveraged historical data from the Ministry of Road Transport and Highways (MoRTH) reports to predict fatalities and identify high-risk factors. Two models were developed: a State/UT-Wise Fatality Analysis, highlighting regional risk factors, and a Year-Wise Fatality Trend Analysis, providing insights into temporal trends from 2016 to 2022. Techniques such as Random Forest and Ridge Regression were employed to identify key contributors like overspeeding, helmet non-compliance, and seatbelt violations. Findings emphasized the dominance of overspeeding as a fatality factor and recommended stricter enforcement and targeted awareness campaigns. This study showcased the potential of data-driven policymaking in enhancing road safety measures across India.

Tool used (Development tools - H/w, S/w) : Python language (Pycharm Professional, Matplotlib, Seaborn, Pandas, Numpy, Scikit Learn, Statsmodels), SQL

Objectives of the project : To analyze and predict road accident fatalities in India using machine learning. To identify critical factors influencing road safety and provide actionable insights. To aid policymakers in reducing fatalities through data-driven recommendations.

Major Learning Outcomes : Proficiency in data extraction and preprocessing using tools like Camelot, Pandas, and NumPy.

Hands-on experience in building and evaluating machine learning models like Random Forest, Gradient Boosting, and Ridge Regression.

Improved understanding of data visualization and insight derivation using Seaborn and Matplotlib.

In-depth knowledge of road safety challenges in India and the role of behavioral factors in accident trends.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at CSIR-CRRI was collaborative and research-focused, fostering a deep engagement with real-world problems. Under the mentorship of experienced scientists, I was encouraged to take initiative in exploring innovative solutions to road safety issues. Expectations were clearly defined, with a focus on applying analytical and technical skills to derive meaningful insights.

Academic courses relevant to the project : NA

PS-II Station : CRRI-DATA ANALYTICS, Delhi

Faculty

Name: Mohammad Saleem Bagewadi .

Student

Name: MANUSHREE SAINI .(2021B5PS2065P)

Student Write-up

PS-II Project Title: Cost-Benefit Analysis of Noise Barrier Installation: Evaluating Health Problems and Economic Impacts

Short Summary of work done during PS-II : During my PS-II internship, I focused on evaluating the cost-effectiveness of noise barriers and their impact on noise reduction using Python for data analysis. I conducted comparative studies on scenarios with and without barriers, quantified health-related cost savings, and assessed their feasibility in urban settings. Additionally, I contributed to ongoing projects at CRRI, attending multiple meetings with the Director and other scientists working on these projects to discuss progress and findings. I also developed tailored noise guidelines for India's conditions, inspired by European models, and gained hands-on experience with QGIS. This experience honed my technical, analytical, and collaborative skills in real-world projects.

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

Objectives of the project : This study evaluates the cost-effectiveness of noise barriers in India and their impact on noise reduction. It also develops tailored noise guidelines, inspired by European models, to suit India's unique environmental and socio-economic needs, offering a framework for urban planners and policymakers.

Major Learning Outcomes : Performed data analysis using advanced Excel and Python, gaining expertise in data manipulation and visualization for transportation-related projects. Contributed to traffic planning and environmental noise analysis, enhancing problem-solving and teamwork skills.

Details of Papers/patents : Currently working on a research paper titled "Comparative Study on Health Effects of Vibration on Drivers with Long and Short Trips." The paper focuses on analyzing the impact of vehicle vibrations on driver health during long and short trips.

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

The working environment at CSIR CRRI was collaborative and dynamic, with a focus on research and data-driven decision-making in transportation and infrastructure projects. I had the opportunity to work with experienced professionals in a supportive, team-oriented atmosphere.

Expectations from the Company:

I expected to gain practical experience in data analysis, improve my technical skills in Python and Excel, and contribute to ongoing research projects. I also sought exposure to real-world challenges and opportunities to learn from experts in the field.

Academic courses relevant to the project : My minor in Data Science helped me a lot. (FoDS, ML, AI, ASM, Data Mining)

PS-II Station : CSIR - Central Road Research Institute (CRRI), New Delhi

Faculty

Name: Mahesh Kumar Hamirwasia .

Student

Name: NAGULAPALLI SANKEERTI .(2021A2PS2154P)

Student Write-up

PS-II Project Title: Planning, Budgeting and Mapping of roads in Meghalaya

Short Summary of work done during PS-II : We planned village roads using QGIS, ranked the priority of construction of these roads, made a budget plan spanning over 20 years, made maps of the districts and made the proposals to be submitted to the government.

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

Objectives of the project : To connect the unconnected villages in Meghalaya

Major Learning Outcomes : We learnt how the government handles infrastructure development projects. How the consultation works and also how the budget is divided and estimated.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment was really good. Flexible timings and good natured colleagues.

Academic courses relevant to the project : Construction Planning and Technology

PS-II Station : CSIR - Central Road Research Institute (CRRI), New Delhi

Faculty

Name: Mahesh Kumar Hamirwasia .

Student

Name: MUDUNURI SUBRAMANYA VARAHA ABHIRAM VARMA(2021A2PS2361P)

Student Write-up

PS-II Project Title: Biochar modified Bituminous binder

Short Summary of work done during PS-II : The report is about running tests on virgin binder that is VG30 in this case and adding Biochar as a modifier to check its performance and how economical and eco-friendly it can be. It consists of tests like softening point, penetration, Absolute and Kinematic viscosity testing, and different blending techniques for proper blending and also phase separation checks to ensure proper blending once again.

Tool used (Development tools - H/w, S/w) : Binder testing equipment.

Objectives of the project : To identify and compare the properties of VG30 bitumen which is a binder for the flexible pavements construction with the Biochar modified VG30 bitumen and how it is cost effective and how it is less temperature susceptible.

Major Learning Outcomes : Some concepts of highway engineering, Bitumen or binder testing, and some mix performance testing equipment and procedures

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : The working environment is friendly and flexible in terms of approaching for doubts and understanding. This experience is great as it helped me brush up my concepts of highway engineering and getting the idea of how a testing is a sort of replica of real life conditions and loading.

Academic courses relevant to the project : Highway Engineering,
Some core concepts of Soil mechanics,
Some core concepts of Fluid mechanics,
Some basic Mechanics of solids concepts.



PS-II Station : CSIR - Central Road Research Institute (CRRI), New Delhi

Faculty

Name: Mahesh Kumar Hamirwasia .

Student

Name: HASIT GARG .(2021A2PS2382P)

Student Write-up

PS-II Project Title: Addressing design flaws in the major black spots of Delhi

Short Summary of work done during PS-II : During my PS-II internship at CRRI, I worked in the Traffic Engineering and Safety Division under the mentorship of Dr. S. Padma, Senior Principal Scientist. My primary focus was conducting road safety audits and analyzing black spots in Delhi based on data from the Delhi Crash Report 2022. The work began with identifying major accident-prone intersections, selecting specific sites such as Ashram Chowk and Hindu Ekta Golchakkar, and analyzing their geometric design and crash data. Due to the absence of traffic volume and survey data, I relied on publicly available data, Google Earth satellite images, and AutoCAD for 2D geometric analysis. At Ashram Chowk, I identified issues like insufficient turning radius, missing signages, inadequate bus stop infrastructure, and pedestrian safety concerns. Recommendations included improving road geometry, adding markings, and upgrading pedestrian and bus stop facilities. For Hindu Ekta Golchakkar, I created a 3D model in SketchUp to visualize design issues and propose safety improvements. This internship helped me bridge the gap between theoretical knowledge and practical applications in road safety and traffic engineering, emphasizing analytical thinking and problem-solving.

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

Objectives of the project : The primary objective of this study is to conduct a comprehensive road safety audit of Hindu Ekta Golchakkar, identifying potential safety concerns and minimizing the risk of fatalities and crashes. By analyzing this critical intersection, the study aims to improve road safety through actionable recommendations tailored to its unique challenges.

Major Learning Outcomes : Gained knowledge of road safety audits, enhanced skills in analyzing intersection designs using AutoCAD, improved problem-solving abilities for proposing safety measures, and learned to apply theoretical concepts to real-world traffic engineering challenges.

Details of Papers/patents : did not publish any papers

Brief Description of working environment, expectations from the company : The working environment during my internship at CRRI was a mix of challenges and opportunities. there were vague instructions and limited communication, This lack of consistent communication sometimes made it difficult to align with expectations.

Despite the lack of access to survey data and traffic volume counts, the organization encouraged innovative problem-solving by utilizing available tools such as AutoCAD and Google Earth for analysis. The environment was conducive to learning, with discussions about road safety principles, best practices, and case studies. I also gained exposure to key aspects of traffic engineering and road safety, which expanded my understanding of infrastructure design and crash analysis.

Academic courses relevant to the project : highway engineering

PS-II Station : CSIR - Central Road Research Institute (CRRI), New Delhi

Faculty

Name: Mahesh Kumar Hamirwasia .

Student

Name: DARSHIT AGRAWAL .(2021A2PS2612P)

Student Write-up

PS-II Project Title: Development of machine learning models for estimating elastic moduli of pavement layers

Short Summary of work done during PS-II : I worked on developing a predictive model to back-calculate the elastic layer moduli of flexible pavement layers using Falling Weight Deflectometer data during my PS-II internship at the Central Road Research Institute (CRRI). The project involved the analysis of a dataset containing moduli values (E1, E2, E3), layer thicknesses (H1, H2), and deflections (D0 to D1800) measured at various offsets from the load centre. I compared regression techniques such as ANN, Random Forest, and SVR to find the best model to produce good predictions. The dataset was preprocessed by splitting it into 80% training and 20% validation subsets, along with tuning hyperparameters for optimal performance. Error metrics such as RMSE, MAE, MPE, RMSLE, and Huber Loss were used to evaluate model performance to ensure accuracy and reliability. A central concern was minimising prediction errors and iteratively improving the model with each run. I analysed model outputs to identify the closest matches without explicitly linking them to their source datasets for an unbiased performance evaluation. Results provided critical insights into the suitability of different regression techniques for pavement engineering applications. The internship improved my machine learning skills, error analysis, and practical application of data-driven approaches to civil engineering, which set me up for advanced work in pavement research and predictive modelling.

Tool used (Development tools - H/w, S/w) : Jupyter Notebook, Python, Pandas and NumPy: For efficient data manipulation and numerical computations. Scikit-learn and TensorFlow/Keras: For building, training, and evaluating machine learning models. Matplotlib and Seaborn: For data visualization and r

Objectives of the project : Using FWD data, develop a model to back-calculate elastic moduli of flexible pavement layers—Analyse regression techniques like ANN, Random Forest, and SVM. Minimise errors (RMSE, MAE, MPE, RMSLE, Huber Loss) for reliable predictions. Validate performance with training-validation split and identify the most effective model for accuracy and consistency.

Major Learning Outcomes : The project gave essential learning outcomes that include detailed learning of back-calculation techniques to estimate the elastic moduli of flexible pavement layers using FWD data. It improved my skills in developing and implementing regression models such as ANN, Random Forest, and SVR while developing expertise in error analysis through metrics like RMSE, MAE, MPE, RMSLE, and Huber Loss. It helped enhance knowledge about data preprocessing, involving training-validation splits and constant input-output relationships. Besides, it enabled the critical ability to analyse a model and identify the one with the highest accuracy and robustness among the different approaches. The fusion of theoretical learning and practice gives a better understanding of solving real-world challenges in pavement engineering.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : During my PS-II internship, the intellectually stimulating nature and research-oriented infrastructure at CRRRI encouraged innovative solutions to real-world pavement engineering problems. In remote work, flexibility in managing tasks was always maintained with good communication with my supervisor, Dr Abhishek Mittal. Advanced tools like Python, Jupyter Notebook, and machine learning frameworks created a dynamic and technology-driven environment. I had the goal of delivering a robust model that could accurately reverse-calibrate elastic moduli in pavement layers from FWD data from the company. My assignment involved analysing and pre-processing extensive data and making effective use of that with a suite of various machine learning techniques, including ANN, Random Forest, and SVR, and implementing multiple versions with comparison. A heavy focus was on minimising the error in predictions, optimally enhancing the performance of models and interpretation of results in pursuit of meaningful engineering insights. The role emphasised self-motivation, critical thinking, and adaptability to handle complex datasets and achieve the desired outcome within the given timeframe. This supportive and collaborative environment significantly contributed to my technical and professional growth.

Academic courses relevant to the project : Transportation Engineering, Soil Mechanics and Foundation Engineering, Structural Analysis, Materials Science and Pavement Materials, Applied Statistics and Probability, Surveying and Geotechnical Engineering, Finite Element Analysis (FEA).

PS-II Station : CSIR - Central Road Research Institute (CRRI), New Delhi

Faculty

Name: Mahesh Kumar Hamirwasia .

Student

Name: ISHA APURVA .(2021A2PS2635P)

Student Write-up

PS-II Project Title: Speed and delay analysis study and data analysis

Short Summary of work done during PS-II : During my PS-II, I worked on the project “Speed and Delay Study and Data Analysis”, focusing on evaluating traffic flow efficiency. The work involved collecting and analyzing data to measure travel time, average journey speed, and delays across selected road segments. Using Indian Roads Congress (IRC) standards, I assessed road performance and identified areas for improvement. This experience enhanced my analytical, data interpretation, and reporting skills while providing valuable insights into traffic analysis methodologies.

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

Objectives of the project : The primary objective of this project is to analyze traffic flow efficiency through a detailed speed and delay study. This involves measuring travel time, average journey speed, and running speed for selected road segments, identifying delays and their causes, and evaluating the overall performance of the road network. The study aims to provide actionable insights for improving traffic efficiency, reducing delays, and aligning findings with Indian Roads Congress (IRC) standards to enhance road performance and user experience.

Major Learning Outcomes : This project enhanced my understanding of speed and delay analysis, improved my data collection and analytical skills, and enabled me to evaluate road performance using IRC standards. It also strengthened my problem-solving abilities and professional reporting skills.

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : The working environment during my PS-II was professional, supportive, and conducive to learning. I was assigned to a core civil role where I worked closely with my supervisor and team members, who were approachable and provided guidance throughout the project. The team encouraged collaboration, which helped me adapt to the role and better understand the tasks assigned.

My initial expectation from the company was to gain exposure to skills and work relevant to my career goals, particularly in areas beyond core civil engineering. While the nature of the work was focused on speed and delay studies, which primarily aligned with civil engineering practices, I was able to enhance my analytical, data interpretation, and problem-solving skills through the project.

Although the tasks differed from the specific skills I had hoped to learn for my placement, the company's supportive environment allowed me to make the most of the opportunity. My supervisor went above and beyond to help me gain insights into the project, ensuring a valuable learning experience. Overall, while the role was not entirely aligned with my expectations, the positive working environment and the willingness of my team to guide me enabled me to acquire new skills and practical knowledge.

Academic courses relevant to the project : Highway Engineering

PS-II Station : CSIR - Central Road Research Institute (CRRI), New Delhi

Faculty

Name: Mahesh Kumar Hamirwasia .

Student

Name: SHREYA NAG .(2021A2PS2636P)

Student Write-up

PS-II Project Title: A Machine Learning Framework for Predicting Pavement Layer Moduli from Deflection Basin Parameters

Short Summary of work done during PS-II : I worked on developing a machine learning framework for predicting pavement layer moduli using Deflection Basin Parameters (DBPs) derived from Falling Weight Deflectometer (FWD) tests. The project involved analyzing data from 750 test points, focusing on parameters like Surface Curvature Index (SCI), Base Damage Index (BDI), and Radius of Curvature (Rc). I conducted comprehensive data preprocessing, including cleaning and outlier removal using methods like Z-score and IQR. Statistical analyses and feature selection techniques such as Random Forest, LassoCV, and correlation heatmaps were applied to identify significant DBPs. Regression models were developed, and machine learning algorithms, including XGBoost, Support Vector Machines (SVM), and Random Forest, were trained and evaluated. Performance metrics like R^2 , RMSE, and MAE were used to compare traditional regression equations with ML models, with XGBoost emerging as the most effective, particularly for handling non-linear relationships and variability in subgrade layers. Visualizations, including scatter plots and error histograms, were created to validate model performance. The findings emphasized the potential of data-driven approaches to improve pavement evaluation,

surpassing the accuracy of traditional methods. This research contributes to informed decision-making in pavement maintenance and design, highlighting the importance of machine learning in civil engineering applications.

Tool used (Development tools - H/w, S/w) : 1. Python Libraries: NumPy, Pandas, Scikit-learn, Matplotlib, Seaborn 2. Jupyter Notebook for model development and analysis 3. SPSS for statistical analysis and regression modelling 4. KGPBACK for backcalculation of elastic modulus 5. Microsoft Excel for

Objectives of the project : 1. Develop a machine learning framework to predict pavement layer moduli using Deflection Basin Parameters (DBPs) derived from Falling Weight Deflectometer (FWD) tests. 2. Enhance the accuracy of pavement performance evaluation by leveraging advanced regression models and ML techniques, including XGBoost, Support Vector Machines (SVM), and Random Forest.

Major Learning Outcomes : 1. Gained expertise in utilizing machine learning techniques like XGBoost, Support Vector Machines (SVM), and Random Forest for predicting pavement layer moduli.

2. Developed skills in analyzing and interpreting Deflection Basin Parameters (DBPs) from Falling Weight Deflectometer (FWD) tests.

3. Enhanced understanding of advanced regression analysis and feature selection methods to model non-linear relationships.

4. Acquired proficiency in data cleaning, visualization, and processing using tools like Python (NumPy, Pandas, Scikit-learn) and SPSS.

5. Learned to address limitations of traditional backcalculation methods through data-driven approaches.

6. Improved technical documentation and report-writing abilities for research projects.

7. Understood the practical implications of machine learning in optimizing pavement evaluation and maintenance strategies.

Details of Papers/patents : 1. Conference paper (Accepted): "Predictive Modeling of Pavement Structural Capacity using Falling Weight Deflectometer Data", accepted at ASCE International Conference (CISSC - 2025).

2. Research Paper (In Progress): "A Machine Learning Framework for Pre

Brief Description of working environment, expectations from the company : At CSIR-CRRI, the work environment is collaborative and research-driven, offering a dynamic space for learning and innovation. I work alongside experts in pavement engineering, applying data science techniques like machine learning and regression analysis to real-world problems. The company fosters a culture of curiosity, where interns are encouraged to contribute actively while owning their learning. Expectations include developing technical skills, contributing to research papers, and applying statistical tools like SPSS and Excel.

Academic courses relevant to the project : Probability and Statistics

PS-II Station : CSIR - Central Road Research Institute (CRRI), New Delhi

Faculty

Name: Mahesh Kumar Hamirwasia .

Student

Name: VAIBHAV KRISHNA(2021A2PS3214H)

Student Write-up

PS-II Project Title: Traffic assignment model:A case study of Bharatpur city

Short Summary of work done during PS-II : During my PS-II internship, I worked on developing a Traffic Assignment Model for Bharatpur City, contributing to the Comprehensive Mobility Plan (CMP) report by CRRI. The work involved creating and refining a detailed GIS-based road network using QGIS and ArcGIS, classifying roads, and updating attributes such as lanes, hierarchy, and divided/undivided status using satellite imagery and Google Maps. I digitized zone

boundaries, integrated census data, and prepared the network for simulation in PTV Visum. Key tasks included connecting unlinked nodes, correcting node-link discrepancies, and entering arm-wise traffic volume data for major intersections. I incorporated ongoing road development projects, added missing roads, and expanded the network by digitizing additional collector roads. I also updated the network with bus stop locations and external zones for improved simulation accuracy. The final stages involved preparing a comprehensive report and presentation on the four-stage model, summarizing the work done. The internship provided hands-on experience with GIS, transportation modeling, and data integration, enhancing my technical skills and understanding of urban transportation systems.

Tool used (Development tools - H/w, S/w) : Qgis , PTV Visum , Excel , Arcgis

Objectives of the project : To develop a comprehensive mobility plan

Major Learning Outcomes : The internship enhanced my skills in GIS tools like QGIS , enabling me to create and refine maps, digitize boundaries, and integrate population and traffic data. I also gained hands-on experience with PTV Visum, working on network connectivity, volume data entry, and traffic simulation preparation. Overall, it strengthened my understanding of transportation planning and the four-stage modeling process.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at CRRRI was supportive and focused on research and collaboration. My team in the Transportation Planning and Environmental Division provided regular guidance and feedback, helping me learn and improve throughout the internship. I had access to tools like QGIS, and PTV Visum, which made it easier to handle tasks such as data integration and traffic network simulation.

The supervisors expected accuracy, attention to detail, and a structured approach to problem-solving. Tasks like refining the road network, adding missing data, and preparing simulations required careful work and a good understanding of transportation planning. Regular meetings and reviews ensured my work aligned with the project goals.

Overall, the environment encouraged learning and provided valuable experience in transportation planning and traffic modeling.

Academic courses relevant to the project : Surveying , highway engineering

PS-II Station : CSIR - Central Road Research Institute (CRRI), New Delhi

Faculty

Name: Mahesh Kumar Hamirwasia .

Student

Name: ARNAV VERMA .(2021AAPS0273P)

Student Write-up

PS-II Project Title: Intent Prediction in Drivers during Lane-Change

Short Summary of work done during PS-II : We collected ECG and Gyroscopic data of vehicles using sensor attached to test-vehicle. We also attaches several cameras to capture footage of driver face, lane-changes etc. We then worked on deriving true-lane changes using the gyroscopic data and validating it with ground truth. an eye-tracker was also used to measure the driver's distraction levels whlle driving. ECG data was used to calculate driver drowsiness. All this data collectively helps us to determine the driver's intent prediction while changing lanes.

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

Objectives of the project : To improve the efficiency of ADAS systems using real-world data and enhance driver-safety

Major Learning Outcomes : Hidden Markov Model, Gaussian Mixture Model, Support Vector Machines

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Working environment was very conducive to our working. I was assigned to work with a PhD scholar who helped with my discrepancies. We had regular discussions and necessary technical help was provided.

Academic courses relevant to the project : AI/ML

PS-II Station : CSIR- BISAG -Bhaskaracharya National Institute for Space Applications and Geo-informatics, Gandhinagar

Faculty

Name: A Michael Alphonse .

Student

Name: RUDRANSH VYAS(2020B5A32389H)

Student Write-up

PS-II Project Title: Real-Time Speech Synthesis and Emotion Detection System Using Flowise AI, NVIDIA Parakeet, and Mistral

Short Summary of work done during PS-II : The project focuses on creating a real-time speech synthesis and emotion detection system. Initially, the groundwork involved understanding the

capabilities of tools like NVIDIA Parakeet and Mistral. The next phase included integrating these tools into Flowise AI to build workflows that support efficient real-time processing. Further work is ongoing to refine emotion detection capabilities and ensure seamless integration for practical applications.

Tool used (Development tools - H/w, S/w) : • Software: Flowise AI, NVIDIA Parakeet, Mistral, Python • Hardware: High-performance GPU workstation

Objectives of the project : • Develop a system for real-time speech synthesis with accurate emotion detection. • Integrate tools like NVIDIA Parakeet and Mistral for efficient processing. • Create a user-friendly interface using Flowise AI for smooth operation and testing.

Major Learning Outcomes : • Enhanced understanding of generative AI models like Mistral and Parakeet.

- Practical experience with Flowise AI for building AI workflows.
- Gained insights into real-time speech processing and emotion detection techniques.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment is dynamic and collaborative, with access to high-performance hardware and cutting-edge tools. The expectations from the company include proactive learning, consistent contribution to project milestones, and effective communication with the team. Regular discussions with mentors help refine the project's objectives, ensuring alignment with industrial standards.

Academic courses relevant to the project : Artificial Intelligence

Machine Learning

Digital Signal Processing

Natural Language Processing

PS-II Station : CSIR- BISAG -Bhaskaracharya National Institute for Space Applications and Geo-informatics, Gandhinagar

Faculty

Name: A Michael Alphonse .

Student

Name: AKSHAT SHARMA(2020B5A42373H)

Student Write-up

PS-II Project Title: Open Source Video Conferencing Solution

Short Summary of work done during PS-II : For my PS-II project, the goal was to establish and integrate BigBlueButton and Moodle hosted on a Linux localhost to form a complete video conferencing. This also involved setting up system dependencies, creating databases, and integration of both platforms. The project also improved my technical abilities related to server management and software integration as well as reinforced my awareness of the advantages of using open-source software in reducing expenses and improving flexibility of customization. The successful integration of these platforms indicates their prospects in terms of substituting proprietary systems in education and business contexts in an inexpensive, extensible and elastic way.

Tool used (Development tools - H/w, S/w) : Hardware: Linux servers Software: BigBlueButton, Moodle, Linux OS, Nginx, PHP, MySQL, Redis, Docker, FreeSWITCH

Objectives of the project : Implement and integrate an open-source video conferencing solution to enhance virtual collaboration in educational and professional environments. Address challenges related to high costs and limited customizability of proprietary systems by leveraging open-source software.

Major Learning Outcomes : Gained proficiency in configuring and integrating complex software systems like BigBlueButton and Moodle on Linux servers.

Developed skills in managing server dependencies, optimizing database and web server configurations, and ensuring system security and reliability.

Details of Papers/patents : No papers or patents were filed as part of this project; the focus was on practical implementation and deployment.

Brief Description of working environment, expectations from the company : The project was carried out at BISAG-N, where the ambience was highly cooperative and technically stimulating. I was mentored by experts who provided guidance and helped keep the project to the standards and expectations of the industry. The training gave me a chance to solve real-world problems with the latest technologies. An encouraging atmosphere to learn and experiment with all their possible solutions. The expectation was to develop a stable working system and contemplate the scalability and adaptability of open-source solutions in a professional context.

Academic courses relevant to the project : DBMS

PS-II Station : CSIR- BISAG -Bhaskaracharya National Institute for Space Applications and Geo-informatics, Gandhinagar

Faculty

Name: A Michael Alphonse .

Student

Name: PIYUSH AWASTHI .(2021A2PS1376P)

Student Write-up

PS-II Project Title: Open Source Video Conferencing Solution

Short Summary of work done during PS-II : During my PS-II, I worked on integrating BigBlueButton with Moodle to create a seamless virtual learning platform. The project involved configuring the BigBlueButton server, deploying Moodle plugins, and establishing API-level communication for real-time functionalities like video conferencing, screen sharing, and interactive whiteboards. I ensured scalability and optimized the server for multiple concurrent sessions. Key tasks included troubleshooting integration issues, customizing the user interface, and enabling advanced features like attendance tracking and session recording. The integration enhanced the functionality of Moodle, providing a comprehensive solution for online education. My contributions improved platform reliability and user engagement, supporting the organization's mission to deliver robust e-learning solutions.

Tool used (Development tools - H/w, S/w) : Moodle LMS, BigBlueButton API, PostgreSQL, Linux Server (Ubuntu), Visual Studio studio

Objectives of the project : Integration of bigbluebutton with moodle on linux local host.

Major Learning Outcomes :

- 1.Acquired proficiency in configuring and deploying BigBlueButton with Moodle.
- 2.Strengthened skills in troubleshooting server configurations, plugin management, and API integrations.
- 3.Developed a deeper understanding of real-time communication protocols and database management

Details of Papers/patents : No papers or patents were directly published as part of this project. However, the integration methodology and optimizations could serve as a foundation for future academic or professional research.

Brief Description of working environment, expectations from the company : The working environment was dynamic and encouraged self-motivation and innovation. I collaborated with cross-functional teams, which fostered a culture of knowledge sharing and skill enhancement.

The company provided access to cutting-edge tools and platforms, enabling me to learn and contribute effectively

Academic courses relevant to the project : Database Management Systems (DBMS)

Web Development and Internet Technologies

Object-Oriented Programming (OOP)

Operating Systems

Software Engineering

Networking and Security

PS-II Station : CSIR- BISAG -Bhaskaracharya National Institute for Space Applications and Geo-informatics, Gandhinagar

Faculty

Name: A Michael Alphonse .

Student

Name: AARYAN SINHA .(2021A3PS0098P)

Student Write-up

PS-II Project Title: Software management for managing compliance to standardization

Short Summary of work done during PS-II : Had to create a software for project management using MERN stack

Tool used (Development tools - H/w, S/w) : Vs code,thunderclient,postman,MERN stack

Objectives of the project : Software development

Major Learning Outcomes : Full stack Web development

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : It's was nice everyone was supportive

Academic courses relevant to the project : Oops,OS,DSA

PS-II Station : CSIR- BISAG -Bhaskaracharya National Institute for Space Applications and Geo-informatics, Gandhinagar

Faculty

Name: A Michael Alphonse .

Student

Name: ARPAN RAJVANSHI(2021A3PS0810G)

Student Write-up

PS-II Project Title: SOFTWARE DEVELOPMENT FOR DATA QUALITY METRICS USING MERN STACK

Short Summary of work done during PS-II : During PS-II, I worked on developing a machine learning model to analyze and classify satellite imagery for terrain demarcation and land coverage calculation. The project involved implementing advanced techniques like Holistically-Nested Edge

Detection (HED) for edge detection and U-Net for semantic segmentation. The work began with data preprocessing, including satellite image collection and labeling, followed by model training and evaluation to classify various land terrains such as water bodies, farmland, and industrial areas. I focused on combining HED and semantic segmentation to enhance accuracy in detecting terrain boundaries and land classification. Challenges such as noise and complex image features were addressed through iterative model optimization and thorough evaluation using metrics like accuracy and RMSE. The final output included a comprehensive analysis and creation of vector files representing classified terrains. This project not only allowed me to bridge theoretical concepts with real-world applications but also helped me develop technical expertise in deep learning, data processing, and model evaluation. Additionally, I gained valuable insights into time management, problem-solving, and collaboration, contributing to a productive and enriching learning experience.

Tool used (Development tools - H/w, S/w) : MERN stack technologies , Github , VS code

Objectives of the project : Automate Positional Accuracy Assessment

Major Learning Outcomes :

The major learning outcomes from my project were both technical and professional, providing a comprehensive skill set for future roles. Technically, I gained hands-on experience in machine learning and deep learning techniques, particularly in data preprocessing, model training, and evaluation. Implementing algorithms like U-Net and HED for semantic segmentation deepened my understanding of terrain classification and image processing workflows. I also learned to handle real-world datasets, overcoming challenges such as noise and complex boundaries, and improved my ability to evaluate model performance using metrics like accuracy and RMSE.

On a professional level, I honed my problem-solving and critical thinking skills by tackling project-specific challenges. Effective time management and task prioritization were essential in meeting project deadlines. Additionally, collaborating with mentors and integrating feedback enhanced my communication skills and adaptability. Overall, the project provided practical insights into using machine learning for real-world applications, preparing me for future development and research roles.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment during PS-II was both collaborative and intellectually stimulating, fostering a balance between independence and guided learning. The company provided a professional atmosphere that encouraged innovation and problem-solving. The team dynamics were inclusive, promoting open communication and the exchange of ideas, which enhanced both individual and collective productivity. Regular interactions with mentors and team members created a supportive environment that motivated me to meet project milestones efficiently.

The company set clear expectations, emphasizing professionalism, punctuality, and the application of technical skills to real-world problems. Delivering high-quality results within deadlines was prioritized, along with maintaining attention to detail and accuracy. Adapting to industry-standard tools, technologies, and workflows was an integral part of the learning experience, bridging the gap between academic knowledge and practical application.

The overall experience aligned with my professional aspirations, offering hands-on exposure to projects that were challenging yet achievable with dedicated effort. The blend of technical rigor, creative freedom, and collaborative support made the working environment enriching and instrumental in preparing me for future development roles.

Academic courses relevant to the project : computer programming(CP)

PS-II Station : CSIR- BISAG -Bhaskaracharya National Institute for Space Applications and Geo-informatics, Gandhinagar

Faculty

Name: A Michael Alphonse .

Student

Name: HARSH RAKESH BHANUSHALI(2021A3PS1154G)

Student Write-up

PS-II Project Title: Building a Machine learning model to demarcate various terrains and to calculate the land coverage.

Short Summary of work done during PS-II : During my PS-II at Bhaskaracharya Institute for Space Applications and Geoinformatics (BISAG), I worked on a project titled "Building a Machine Learning Model to Demarcate Various Terrains and Calculate Land Coverage." The objective was to develop a system that classifies terrain types such as farmland, water bodies, and urban areas using satellite imagery and calculates their respective land coverage. The project was divided into multiple modules. First, I implemented Holistically-Nested Edge Detection (HED) to detect terrain boundaries with high precision. Then, I utilized the U-Net model for semantic segmentation to classify each pixel in satellite images into predefined terrain types. The integration of these models ensured accurate terrain demarcation. Using the classified data, I created vector files representing farmland regions, including metadata such as area and confidence scores, stored in Shapefile format for GIS compatibility. I developed a Gradio-based frontend for user interaction, enabling visualization of terrain maps, uploading segmented images or Shapefiles, and downloading processed Shapefiles in ZIP format. The interface allowed seamless exploration and analysis of geospatial data. Key challenges included handling noise in satellite imagery, ensuring data scalability, and maintaining high accuracy across diverse terrains. By leveraging Python-based libraries like GeoPandas, Shapely, and GDAL, I ensured efficient data processing and visualization. The project provided hands-on experience in deep learning, computer vision, geospatial analysis, and frontend integration, contributing significantly to my technical and problem-solving skills.

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

Objectives of the project : Make a vector file on tif images of entire gujarat using Machine learning and python scripting.

Major Learning Outcomes : Machine Learning, Computer vision

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Bhaskaracharya Institute for Space Applications and Geoinformatics (BISAG) was dynamic and conducive to learning. It combined a structured approach with the flexibility to explore innovative solutions. The organization fostered an open and collaborative culture, encouraging interns to ask questions, seek feedback, and engage with experienced professionals.

I was given the autonomy to take ownership of my project while receiving regular guidance from mentors. The supportive environment helped in addressing challenges and motivated me to explore advanced tools and techniques. Access to resources, including high-resolution satellite imagery and computational infrastructure, facilitated the smooth execution of tasks. The workplace emphasized teamwork, innovation, and practical applications, aligning well with my academic foundation and career aspirations.

My expectations from the company included exposure to real-world challenges, hands-on experience with geospatial and machine learning technologies, and mentorship from domain experts. BISAG exceeded these expectations by offering a well-rounded experience that combined technical rigor with opportunities for personal and professional growth. The mentorship provided was insightful, enabling me to navigate technical complexities effectively. Additionally, working on impactful projects aimed at solving real-world problems gave me a strong sense of purpose and practical relevance.

Overall, the working environment at BISAG was instrumental in developing both my technical and soft skills, providing an invaluable experience that has enriched my academic and professional journey.

Academic courses relevant to the project : Machine Learning, Computer Programming, Operating system, Object oriented programming

PS-II Station : CSIR- BISAG -Bhaskaracharya National Institute for Space Applications and Geo-informatics, Gandhinagar

Faculty

Name: A Michael Alphonse .

Student

Name: PRATYUSH GUNI(2021A3PS2690G)

Student Write-up

PS-II Project Title: Building A Machine Learning Model To Demarcate And Classify Various Terrains And To Calculate Their Respective Land Coverage

Short Summary of work done during PS-II : This project focused on classifying and demarcating land terrains such as water bodies, farmlands, and industrial areas using satellite imagery. Two machine learning techniques were employed: Holistically-Nested Edge Detection (HED) for identifying terrain boundaries and U-Net for semantic segmentation. The workflow began with preprocessing satellite images to enhance quality and reduce noise. HED was applied to detect precise edges, while U-Net was trained to classify pixels into specific terrain categories. The results from HED and U-Net were combined to achieve improved accuracy in terrain classification and boundary delineation. Additionally, the project involved generating vector files for spatial data representation, enabling detailed mapping and analysis. Challenges like handling complex terrain boundaries and noise were addressed during the process. The final output provided high-precision classification and boundary detection, contributing to applications in land management and environmental monitoring. This work demonstrates the potential of deep learning techniques in geospatial analysis and supports decision-making for urban planning and agricultural resource management.

Tool used (Development tools - H/w, S/w) : Tools Used in the Project: 1. Deep Learning Frameworks: • TensorFlow • PyTorch 2. Image Processing Libraries: • OpenCV • Scikit-Image 3. Geospatial Tools: • QGIS (for vector file generation and visualization) 4. Programming Languages: • Python

Objectives of the project : To develop a machine learning system for classifying and demarcating land terrains (e.g., water, farmland, industrial) from satellite images using semantic

segmentation and edge detection techniques. The project aims to create accurate spatial data for land management and environmental monitoring.

Major Learning Outcomes : 1. Implemented semantic segmentation with U-Net for terrain classification.

2. Applied HED for accurate boundary detection.
3. Preprocessed satellite images for machine learning tasks.
4. Combined HED and U-Net for improved accuracy.
5. Generated vector files for GIS applications.
6. Enhanced understanding of geospatial analysis and environmental monitoring.
7. Strengthened deep learning and image processing skills.

Details of Papers/patents : Nil

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

The project was conducted in the BISAG (Bhaskaracharya Institute for Space Applications and Geoinformatics) building, located in Gandhinagar, Gujarat. The workspace provided a collaborative and research-oriented environment equipped with advanced computational resources, including GPU-enabled systems for efficient model training and testing.

The facility supported geospatial analysis with access to tools like QGIS for vector file generation and visualization. The team utilized Python-based frameworks such as TensorFlow, PyTorch, and OpenCV for deep learning and image processing tasks. The setup encouraged a structured workflow, starting from satellite image preprocessing to implementing and optimizing machine learning models.

The BISAG environment promoted a blend of technical rigor and practical application, facilitating experimentation with innovative solutions to real-world challenges in terrain classification and environmental monitoring.

Academic courses relevant to the project : Academic Courses Relevant to the Project:

1. Machine Learning
 - Supervised and unsupervised learning
 - Neural networks and deep learning
2. Deep Learning

- Semantic segmentation models like U-Net
 - Advanced techniques for image processing
3. Image

PS-II Station : CSIR- BISAG -Bhaskaracharya National Institute for Space Applications and Geo-informatics, Gandhinagar

Faculty

Name: A Michael Alphonse .

Student

Name: ARJUN SAINI(2021A7PS1132G)

Student Write-up

PS-II Project Title: Configuration of Machine Learning Operations on AWS cloud

Short Summary of work done during PS-II : Over 18 weeks, the project focused on developing, optimizing, and deploying machine learning pipelines in a cloud environment. Initial weeks involved securing multi-user access using IAM roles and policies, followed by automating ML training and inference pipelines on AWS SageMaker. CI/CD pipelines were created using AWS CodePipeline, CodeBuild, and CodeDeploy to automate workflows for training, inference, and deployment. Later stages emphasized containerizing the application using Docker and deploying it on AWS using ECS, EC2, and Lightsail. Challenges such as build errors, large image sizes, and deployment incompatibilities were resolved through iterative refinements. The final solution automated deployments using EC2, Systems Manager, and public ECR repositories. All unused resources were cleaned, and comprehensive project documentation was initiated.

Tool used (Development tools - H/w, S/w) : Hardware: AWS EC2 Instances (T4 GPU for ML Training) Elastic Beanstalk, Lightsail Software: AWS Services (S3, CodeBuild, CodeDeploy, ECS, IAM, SageMaker, Systems Manager) Docker (for containerization) Python (for ML and pipeline scr

Objectives of the project : To automate and deploy secure, scalable machine learning pipelines using AWS services and CI/CD workflows.

Major Learning Outcomes : CI/CD Expertise: Learned end-to-end CI/CD pipeline creation and integration with AWS services.

Cloud Resource Management: Gained practical knowledge of deploying applications using ECS, EC2, Lightsail, and Elastic Beanstalk.

Containerization: Acquired proficiency in Docker for creating and managing images, including troubleshooting large image sizes.

Pipeline Security: Developed and implemented IAM roles and policies to secure multi-user access.

Error Handling and Optimization: Troubleshot deployment issues, optimized resource allocation, and enhanced pipeline performance.

Documentation and Team Collaboration: Improved documentation skills and experienced collaborative development in a professional environment.

Details of Papers/patents : <https://sainiarjun.github.io/garden/Weather-Prediction-using-LSTM>

Brief Description of working environment, expectations from the company : The working environment was dynamic, emphasizing hands-on experience with AWS tools and cloud deployment. Mentorship provided valuable insights into best practices, debugging, and resource optimization. The company encouraged innovation and provided the necessary infrastructure to experiment with various deployment solutions. Expectations of delivering a scalable, secure, and efficient ML deployment pipeline aligned with the company's goals. Collaborative tasks, frequent testing, and robust feedback mechanisms ensured project success while fostering professional growth.

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

PS-II Station : CSIR- BISAG -Bhaskaracharya National Institute for Space Applications and Geo-informatics, Gandhinagar

Faculty

Name: A Michael Alphonse .

Student

Name: PRABH PREET SINGH AJMANI(2021AAPS1046G)

Student Write-up

PS-II Project Title: Real-Time Speech Synthesis and Emotion Detection System

Short Summary of work done during PS-II : The project focuses on creating a real-time speech synthesis and emotion detection system. Initially, the groundwork involved understanding the capabilities of tools like NVIDIA Parakeet and Mistral. The next phase included integrating these tools into Flowise AI to build workflows that support efficient real-time processing. Further work is ongoing to refine emotion detection capabilities and ensure seamless integration for practical applications.

Tool used (Development tools - H/w, S/w) : Flowise AI, Mistral, Nvidia Parakeet

Objectives of the project : To Automate custom tasks

Major Learning Outcomes : Finetuning, TTS Conversion

Details of Papers/patents : N.A.

Brief Description of working environment, expectations from the company : The working environment is dynamic and collaborative, with access to high-performance hardware and cutting-edge tools. The expectations from the company include proactive learning, consistent contribution to project milestones, and effective communication with the team. Regular discussions with mentors help refine the project's objectives, ensuring alignment with industrial standards.

Academic courses relevant to the project : N.A.

PS-II Station : CSIR-IICT Hyderabad, Hyderabad

Faculty

Name: Santosh Sopanrao Khandgave

Student

Name: A.SAI PUVIYARASU .(2021A1PS2594P)

Student Write-up

PS-II Project Title: Modelling and Simulation Studies for Efficient Conversion of Multi-Feedstock Biomass to H₂: Integrated Aspen and Machine Learning Framework

Short Summary of work done during PS-II : Developed a working simulation model for biomass gasification. Later, researched on shift reactions and determined optimal catalyst combination with machine learning

Tool used (Development tools - H/w, S/w) : Aspen Plus, Google Colab, MATLAB,

Objectives of the project : Create a model for predicting biomass flow rates in Aspen for fixed-bed gasifier considering catalytic shift reaction

Major Learning Outcomes : Learnt the pipeline of machine learning, process modelling in Aspen, analysis in MATLAB

Details of Papers/patents : -

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

Academic courses relevant to the project : Modelling and Simulation for Chemical Engineering, Process Design and Principles, Chemical Process Technology

PS-II Station : CSIR-NAL, Bangalore

Faculty

Name: Amar Singh .

Student

Name: RISHAB MANJUNATH SRIVATSA(2020A1PS1202G)

Student Write-up

PS-II Project Title: Al-Doped ZnO Nanocrystalline Thin Film Temperature Sensor Coatings by Sol Gel Spray Pyrolysis

Short Summary of work done during PS-II : I designed, fabricated and tested semiconductor temperature sensors of AlZnO composition using the Spray Pyrolysis method. I handled lab equipment and worked with lab personnel to perform all the required operations.

Tool used (Development tools - H/w, S/w) : Spray Gun, 1 Horsepower Air Pump, Oven, Furnace, Multimeter

Objectives of the project : Synthesis of Aluminium-doped Zinc Oxide (AZO) nanoparticles by wet chemical process. Sketching and fabrication of sensor junctions. Coating of AZO on Alumina substrate by spray pyrolysis and heat treatment. Testing of the sensor in a high temperature environment. Characterisation of produced thin films using XRD and SEM.

Major Learning Outcomes : In conclusion, the development of aluminum-doped zinc oxide (AlZnO) temperature sensor coatings via spray pyrolysis has proven to be an effective method for fabricating sensitive and reliable thermocouples. The process of using zinc nitrate and aluminum nitrate precursors, combined with controlled pyrolysis and annealing, allows for the creation of uniform and highly responsive thin films. These coatings exhibit excellent thermoelectric properties, making them suitable for temperature sensing applications across a wide range of industrial environments.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Work environment is relaxed and productive. The company expects you to be punctual and self driven, and to think dynamically as challenges present themselves.

Academic courses relevant to the project : Materials Science, Stoichiometry, Process Dynamics and Control

PS-II Station : CSIR-NAL, Bangalore

Faculty

Name: Amar Singh .

Student

Name: ADITYA KARANTH(2020B4A41614G)

Student Write-up

PS-II Project Title: Manufacturing and Optimization of Reversible Solid oxide Fuel Cells.

Short Summary of work done during PS-II : During my PS-II at CSIR-NAL, Bangalore, I worked on the fabrication and optimization of electrolyte-supported Reversible Solid Oxide Fuel Cells (RSOCs) using the tape casting method. The project primarily focused on developing ceramic electrolytes made from Yttria-Stabilized Zirconia (YSZ) and Scandia-Stabilized Zirconia (ScSZ). The process involved preparing a ceramic slurry, ensuring its homogeneity through ball milling, and precisely casting it into thin layers using a doctor blade. Post casting, the green tape was carefully sintered through a two-stage firing process to achieve dense, defect-free electrolytes with optimal mechanical strength and ionic conductivity. Challenges such as cracking, poor adhesion, and uneven thickness were addressed by fine-tuning parameters like slurry composition, drying conditions, and sintering profiles. Additionally, laser machining and screen printing were employed for structuring the electrolyte and depositing the anode and cathode materials, respectively. The resulting samples were successfully fabricated with adequate structural integrity and prepared for electrochemical testing. This work not only optimized the manufacturing process but also contributed to enhancing the durability and performance of RSOCs, which are critical for clean energy applications. The insights gained lay the groundwork for further studies into the electrochemical performance of these fuel cells and their potential for large-scale production. This project reinforced my understanding of material science, fuel cell technology, and precision manufacturing processes while aligning with the global transition toward sustainable energy solutions.

Tool used (Development tools - H/w, S/w) : Tape Casting apparatus, Electrochemical analyser, Chamber furnace, SOFC testing apparatus, Ionic conductance testing apparatus.

Objectives of the project : The project aims to explore and optimize the tape casting method for fabricating ceramic layers in Solid Oxide Fuel Cells (SOFCs), specifically using Yttria-Stabilized Zirconia (YSZ) and Scandia-Stabilized Zirconia (ScSZ) electrolytes. The focus is on addressing manufacturing challenges, such as cracking and low laminar adhesion, to produce high-quality, dense ceramic layers. This work contributes to improving SOFC performance, durability, and efficiency, advancing clean energy technologies

Major Learning Outcomes : I gained hands-on experience in fabricating ceramic layers using the tape casting method and optimizing process parameters for Solid Oxide Fuel Cells (SOFCs). This project enhanced my understanding of material science and improved my problem-solving skills in addressing manufacturing challenges like cracking and adhesion issues.

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : Requires a lot of self-research, process planning, timeline-based tasks.

Academic courses relevant to the project : Fuel Cell Science and Technology, Material Science

PS-II Station : CSIR-NAL, Bangalore

Faculty

Name: Amar Singh .

Student

Name: DAIDA SRIKAR REDDY(2020B4A42007H)

Student Write-up

PS-II Project Title: Thermal Performance Evaluation of the E-Hansa Oil Cooler and Thermal Performance Evaluation of the Thermostatic Pressure Bypass Valve

Short Summary of work done during PS-II : With the dimensions of the oil cooler and the thermostatic bypass valve in mind, leakproof test setups were designed with ports for temperature and pressure sensors and then their thermal performance was evaluated.

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

Objectives of the project : Design the test setup and evaluation of aerospace grade oil cooler and thermostatic pressure bypass valve

Major Learning Outcomes : Understanding the design aspects of the testing infrastructure and the amount of detail that goes into it. Understanding the intricate details of aircraft cooling system.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The scientists were very welcoming to students, understanding the fact that we are B.E. students and assigning the projects according to our level of education.

Academic courses relevant to the project : Heat Transfer, Fluid Mechanics, Manufacturing Management, Advanced Manufacturing processes

PS-II Station : CSIR-NAL, Bangalore

Faculty

Name: Amar Singh .

Student

Name: ANSH MAHAPATRA .(2020B5A30945P)

Student Write-up

PS-II Project Title: GENERATIVE ADVERSARIAL NETWORKS FOR DESIGN OF FREQUENCY SELECTIVE SURFACES

Short Summary of work done during PS-II : My work was to come up with different GAN architectures and do hyperparameter training for our use case. I was provided a High-Performance Computing nodes to train the model on the training set and understand the impact of different hyperparameters on the quality if results, sampling time, mode coverage and loss functions.

Tool used (Development tools - H/w, S/w) : PyTorch, HPC, CST Suite

Objectives of the project : The scope of the project is to come up with different generative models for the design of Frequency Selective Surfaces (FSSs) for a given electromagnetic response. This will significantly reduce the computational burden and iterative nature of the work.

Major Learning Outcomes : Implementation and Hyperparameter Tuning of different GAN architectures

Details of Papers/patents : 3 project reports finished and copyrighted, 2 research papers in process

Brief Description of working environment, expectations from the company : I worked directly under Mrs. Vineetha Joy, Sr. Scientist at CEM department, CSIR-NAL. She provided me with constant guidance and an environment to be creative. The academic approach to solve the problem helped me with reading and understanding a lot of research papers and implementing the concepts and principles to the devised model. The project associates are very supportive and friendly and the only expectation the guides have is efficiency and honesty.

Academic courses relevant to the project : Deep Learning Specialization by Andrew NG

PS-II Station : CSIR-NAL, Bangalore

Faculty

Name: Amar Singh .

Student

Name: MATHAI MATHEW PULICKEN .(2021A3PS0328P)

Student Write-up

PS-II Project Title: Sensor Array for Meteorological Drone

Short Summary of work done during PS-II : This project focuses on the development of a meteorological drone equipped with an advanced sensor array designed to enhance atmospheric data collection. Traditional ground-based meteorological stations and weather balloons provide critical but spatially limited data, often lacking high-resolution coverage over diverse terrains. The introduction of a drone-based system addresses this gap, offering a dynamic and flexible approach to real-time environmental monitoring. Key objectives of the project include designing

a lightweight, energy-efficient drone sensor array capable of prolonged operation in various weather conditions, optimizing sensor placement for accuracy, and developing a robust data transmission system to relay real-time information to ground stations.

Tool used (Development tools - H/w, S/w) : Arduino, Ardupilot, soldering, c++

Objectives of the project : Make a sensor array design for a drone which is low cost, and easily modified such that it can be equipped on any generic drone.

Major Learning Outcomes : Learnt more about equipment design, drones, flight control software, Arduino and other microcontrollers

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Work in the lab, good working conditions, lots of components available. The mentors and other faculty were very helpful and constructive.

Academic courses relevant to the project : None

PS-II Station : CSIR-NAL, Bangalore

Faculty

Name: Amar Singh .

Student

Name: PRIYAM KUMAR PAUL(2021A3PS2973H)

Student Write-up

PS-II Project Title: Automated Visual Inspection for Aircraft Maintenance

Short Summary of work done during PS-II : The project focused on designing a depth detection system for dents on aircraft surfaces using 3D imaging. A Creality Ferrite 3D scanner was employed to collect point cloud data, which was processed using Python and PyVista. A RANSAC-based algorithm was developed to measure the depth of dents, achieving an 80% accuracy rate. Significant challenges included managing noise in the data and addressing the geometrical complexity of conical dents, which were resolved using advanced noise-removal techniques and surface fitting. This system contributes to improving the precision of automated visual inspection for aircraft maintenance.

Tool used (Development tools - H/w, S/w) : Software: Python, PyVista, TensorFlow Hardware: Creality Ferrite 3D Scanner

Objectives of the project : The primary objective was to develop a system for depth detection in dents on aircraft surfaces using 3D imaging-based machine learning techniques. This involved accurately detecting dents, computing their depth, and predicting unknown dent locations to enhance maintenance efficiency.

Major Learning Outcomes : Developed expertise in processing 3D point cloud data for depth detection.

Enhanced understanding of depth estimation techniques, including RANSAC-based algorithms.

Gained practical knowledge of machine learning and 3D imaging tools.

Improved skills in coding, noise removal, and technical documentation.

Details of Papers/patents : No papers or patents were produced during this internship.

Brief Description of working environment, expectations from the company : The working environment was research-focused, with ample support from mentors and access to high-quality hardware tools. Expectations involved delivering an accurate depth detection algorithm and documenting findings systematically. Collaboration with peers and mentors provided valuable insights and helped in overcoming project challenges.

Academic courses relevant to the project : Machine Learning

Computer Vision

Matrix Algebra

Projective Geometry

PS-II Station : CSIR-NAL, Bangalore

Faculty

Name: Amar Singh .

Student

Name: VIPANCHI DIXIT(2021A3PS2983H)

Student Write-up

PS-II Project Title: Hybrid CNN Classifier Framework for SAR Image Classification

Short Summary of work done during PS-II : At CSIR-NAL, I focused on improving SAR image classification by combining CNNs for feature extraction with traditional classifiers such as Support Vector Machines (SVM) and k-Nearest Neighbors (k-NN) for image classification. The study solved computational challenges in SAR image processing while ensuring high accuracy. I used CNNs to automatically extract features from SAR pictures and compared the performance of Quadratic SVM, Cubic SVM, Gaussian SVMs, and k-NN classifiers in the classification challenge. The MSTAR dataset was processed and separated into three sets: training, validation, and testing. Key improvements were lowering CNN training epochs to increase computing efficiency and using MATLAB for image augmentation, training progress display, and confusion

matrix analysis. The experiment proved the effectiveness of CNN-based feature extraction paired with classical classifiers for accurate and time-efficient SAR image categorization. The research found that CNNs, even with fewer epochs, efficiently retrieved features while retaining high accuracy, using models such as Cubic k-NN. This hybrid technique has potential for applications that require quick processing, balancing accuracy with decreased calculation time.

Tool used (Development tools - H/w, S/w) : Hardware: Workstations equipped with high-performance GPUs for computational tasks. Software: MATLAB for data preprocessing, CNN training, testing, and evaluation; tools for visualization of training metrics, confusion matrices, and feature extraction.

Objectives of the project : The objective of the project was to optimize SAR image classification performance through advanced deep learning techniques. The project aims to achieve greater accuracy and efficiency in real-world applications.

Major Learning Outcomes : The primary learning outcomes include proficiency in deep learning approaches for SAR (Synthetic Aperture Radar) image classification, hybrid CNN-classifier model creation, and critical assessment of classification algorithms. I also obtained expertise working with datasets such as the MSTAR dataset, improving models for time and accuracy trade-offs, and combining conventional machine learning classifiers with CNN to provide robust feature extraction and classification.

Details of Papers/patents : A Project Document has been published in CSIR-NAL and a conference paper titled Integrated Framework of CNNs and Machine Learning for Enhanced SAR Image Classification, has been submitted for review at the 4th International Conference on Range Technology

Brief Description of working environment, expectations from the company : CSIR-NAL provided an enriching and collaborative research environment with access to high-end computational resources. The station emphasized innovation and encouraged a structured approach to problem-solving. The open and interactive culture at CSIR-NAL enabled frequent discussions with peers and mentors, enhancing both technical and analytical skills. The expectation was to explore novel solutions for SAR image classification, focusing on integrating advanced deep learning methodologies with traditional machine learning classifiers. CSIR-NAL

also encouraged thorough documentation of results and insights for publication. The station's balanced work-life approach allowed me to effectively meet deadlines while fostering professional development. Overall, the internship provided a platform for independent and collaborative learning, preparing me for real-world challenges in machine learning and image classification.

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

PS-II Station : CSIR-NAL, Bangalore

Faculty

Name: Amar Singh .

Student

Name: GAURAV DURAPHE(2021A4PS2525H)

Student Write-up

PS-II Project Title: Design and Simulation of High-Altitude Weather Drones: A feasibility study for replacing Weather Balloons in Meteorological Applications

Short Summary of work done during PS-II : Made a survey to explore possibility of replacing weather balloons with drones and corresponding simulation of attitude tracking.

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

Objectives of the project : Survey

Major Learning Outcomes : MATLAB application

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Supportive mentors and colleagues

Academic courses relevant to the project : General Mechanics

PS-II Station : CSIR-NAL, Bangalore

Faculty

Name: Amar Singh .

Student

Name: ABHISYANTH REDDY DONTI REDDY(2021A4PS2772H)

Student Write-up

PS-II Project Title: Development of Fe₃Al based coatings for improved wear resistance by HVOF process

Short Summary of work done during PS-II : I have prepared compositions of Fe₃Al with different chemicals and coated them with HVOF process upon which a multitude of experiments were conducted such as XRD, FESEM/EDAX, Pin on Disc, et . Parallel to this a Simulation Model was developed to simulate the HVOF process helping to reduce the no of Experiments.

Tool used (Development tools - H/w, S/w) : ANSYS Fluent, Expert HighScore , Origin

Objectives of the project : Enhance the wear resistance of Fe₃Al surface coatings at room temperature

Major Learning Outcomes : I got to learn how to properly plan the work assigned to me and combat unexpected challenges like equipment failure, Delay in the working of Technicians, etc. I have also learnt how to operate different software like Ansys Fluent, Origin, etc.

Details of Papers/patents : Working on a paper that is to be submitted later for publication

Brief Description of working environment, expectations from the company : The working environment was very government office-esque, where one is expected to fulfil one's duties even though there is a lot of delay due to bureaucracy. Mentors and Fellow Interns around are very helpful and supportive which help you get to speed and not feel alone. I was expected to reach a level where i could publish my research as a journal article

Academic courses relevant to the project : Material Science(V imp), Numerical Techniques of Fluid Flow and Heat Transfer, Manufacturing Process, Fluid Mechanics, Heat Transfer

PS-II Station : CSIR-NAL, Bangalore

Faculty

Name: Amar Singh .

Student

Name: KARTIK PARAMESHWARAN(2021A4PS2901H)

Student Write-up

PS-II Project Title: Study of 6 DoF Flight Dynamics model from Urban Air Mobility perspective

Short Summary of work done during PS-II : Learning Flight dynamics and control from reference books provided to me. Post that utilisation of the concepts into a 6 DoF model of a twin jet aircraft (plant dynamics), learning MATLAB as well as Simulink for programming and Dynamic Simulation. Understanding OOPS so as to understand Helicopter dynamics repository by TUM. Doing basic simulations by NASA GUAM for Urban Air Mobility.

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

Objectives of the project : Understanding of 6 DoF model

Major Learning Outcomes : Understood Flight Dynamics and Control, Helicopter Dynamics and Control, OOPS in Python as well as MATLAB, Simulink learning.

Details of Papers/patents : nil

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

Academic courses relevant to the project : Mechanisms and Machines, Fluid Mechanics

PS-II Station : CSIR-NAL, Bangalore

Faculty

Name: Amar Singh .

Student

Name: ANMOL AGARWAL(2021A4PS3068H)

Student Write-up

PS-II Project Title: Composite Design Optimization for Liquid Hydrogen Storage Tank

Short Summary of work done during PS-II : 1) Obtaining an optimized lay-up sequence with equal CTE values in longitudinal and transverse directions which matches with flange material CTE to reduce stress concentration 2) Optimize the lay-up sequence further based on strength, weight and fatigue life 3) Develop a script to obtain stress distribution for a pressure vessel (specifically liquid hydrogen tank) without doing FEA

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

Objectives of the project : 1) Obtaining an optimized lay-up sequence with equal CTE values in longitudinal and transverse directions which matches with flange material CTE to reduce stress concentration 2) Optimize the lay-up sequence further based on strength, weight and fatigue life 3) Develop a script to obtain stress distribution for a pressure vessel (specifically liquid hydrogen tank) without doing FEA

Major Learning Outcomes : 1) Mechanics of Composites
2) Optimization Algorithms (Used NSGA-II)
3) Pressure Vessel Analysis
4) Python programming

Details of Papers/patents : Work is still being done on papers (None as of now)

Brief Description of working environment, expectations from the company : The work environment at NAL largely depends on the mentor you're assigned to. Most mentors won't micromanage, so it's up to you to take initiative and stay motivated to achieve meaningful results. As for the organization's expectations, quality research has a strong potential for publication, and

NAL is well-regarded for its research contributions. If you're proactive, you'll likely be involved in significant research, which can be beneficial for your future academic pursuits.

Academic courses relevant to the project : 1) Mechanics of Solids

2) Heat Transfer

3) Artificial Intelligence

PS-II Station : CSIR-NAL, Bangalore

Faculty

Name: Amar Singh .

Student

Name: VARAD VIVEK SHINDE(2021A8PS1826G)

Student Write-up

PS-II Project Title: Embedded Projects for safety critical applications

Short Summary of work done during PS-II : Write 2 conference papers, worked on an unmanned aerial vehicle, worked on improving existing logic for their programs.

Tool used (Development tools - H/w, S/w) : STM32,MKR1010,RM57Lx,T2080,Embedded Wizard, IMXRT1050,SCADe

Objectives of the project : Contribution and research in ongoing projects

Major Learning Outcomes : Majorly in Avionics

Details of Papers/patents : IEEE SYSCON 2025

Brief Description of working environment, expectations from the company : Expected to complete work and publish papers

Academic courses relevant to the project : Embedded Systems if there is a course

PS-II Station : CSIR-NAL, Bangalore

Faculty

Name: Amar Singh .

Student

Name: AAYUSH KUMAR SINGH(2021A8PS2751G)

Student Write-up

PS-II Project Title: AI & ML Based Automation of System Testing for Safety Critical Systems

Short Summary of work done during PS-II : I worked on automating the process of System Testing for Safety-Critical Systems. First I looked into ML algorithms used in LabVIEW AML Toolkit to get a good understanding of ML algorithms used in industry-standard softwares, then I wrote a script for automating self-testing through NI MAX using its python library called NIDAQMX. Then I worked on automating Test Execution using NIVERISTAND python library for NI VeriStand models. Then I developed a Rule-based NLP and Pattern Matching framework for generating test cases automatically by parsing System Requirement Document. Then I did a comparative study to determine whether NLP or GenAI based models would be better for test case generation. Then

I developed a GenAI based automatic test case generator and wrote a research paper about the same. Then finally I developed an end to end test generation and execution unit by integrating pre-generated model based test cases with GenAI test case generator and the NI VeriStand Automatic Test Execution Script.

Tool used (Development tools - H/w, S/w) : RTTS System (H/W) (the Iron Bird System at CSIR-NAL), NI MAX, NI VeriStand, Python Libraries - NIDAQMX, NIVERISTAND, Pandas Numpy, Spacy, NLTK, transformers, bitsandbytes, accelerate, trl, etc.

Objectives of the project : Automate the process of Test Case Generation and Test Execution by using AI & ML techniques for better efficiency and reliability of Safety Critical Systems

Major Learning Outcomes : Learned how to model a Generative AI based solution for System Testing and otherwise. Developed understanding of System Design for GenAI systems and how to integrate them into existing workflows.

Details of Papers/patents : Wrote paper titled - Generative AI-based Automated Test Case Generation for Safety-Critical Systems

Brief Description of working environment, expectations from the company : The working environment was warm and welcoming. There are several restrictions at this station - cannot take any electronic items inside, very limited internet access on specific systems, etc. These have been out in place to safeguard highly confidential information about the aircrafts and other technologies from leaking but they pose serious challenges during research and development delaying several steps along the way.

Academic courses relevant to the project : Machine Learning, Deep Learning, Generative AI, System Design.

PS-II Station : CSIR-National Metallurgical Laboratory (NML) Madras Centre, Chennai

Faculty

Name: Shashank Mohan Tiwari .

Student

Name: VINNAKOTA VENKATA SAI MADHAV(2020B2A42005H)

Student Write-up

PS-II Project Title: Recovery of Carbon from black mass

Short Summary of work done during PS-II : Literature survey to figure out the backlogs in contemporary research, fixing experimental procedure and performing experiments in accordance with the presented backlogs.

Tool used (Development tools - H/w, S/w) : Flotation cell and column, Minitab

Objectives of the project : To recover carbon from black mass sourced from Lithium-ion battery waste

Major Learning Outcomes : Froth flotation procedure, Literature Survey, Design of Experiments, Taguchi Methodology

Details of Papers/patents : Papers to be published in future.

Brief Description of working environment, expectations from the company : Expectations from company were to start work on one part of big project being pursued for publication.

Academic courses relevant to the project : Instrumental Methods of Analysis, Inorganic Chemistry - 1, Chemical Experimentation - 1, Chemical Experimentation - 2

PS-II Station : CSIR-NML, Jamshedpur

Faculty

Name: Shashank Mohan Tiwari .

Student

Name: MANAS MANMOHAN KALYANPAD .(2020B1A10617P)

Student Write-up

PS-II Project Title: Impurity removal for extraction of metals from spent Lithium Ion batteries

Short Summary of work done during PS-II : I have mainly worked on 1) Extraction of acid (H₂SO₄) from head leach liquor 2) pH variation experiments 3) Solvent extraction using D2EHPA at optimal pH 4) Solvent extraction using D2EHPA at optimal pH and O:A-5:1 5) Ammonia purging of head leach liquor 6) Counter current extraction using D2EHPA

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

Objectives of the project : Removal of critical metals from spent Lithium Ion batteries, by removing impurities like iron, copper, manganese and aluminium

Major Learning Outcomes : Importance of recycling spent LIBs
Learnt about extracting metals using solvent extraction from spent LIBs

Details of Papers/patents : Meshram, P., Mishra, A., Abhilash, N., Sahu, R. (2019).
Environmental impact of spent
lithium-ion batteries and green recycling perspectives by organic acids – A review.
Chemosphere, 242, 125291. <https://doi.org/10.1016/j.chemosphere.2019.125291>
Meshr

Brief Description of working environment, expectations from the company : Performed the
experiments assigned to me weekly using appropriate safety gear.
Coordinated with other division like analytical chemistry for ICP-OES analysis
I was expected to do literature review on more than 20 research papers on Solvent extraction,
Ion exchange and precipitation

Academic courses relevant to the project : Separation process -1

PS-II Station : CSIR-NML, Jamshedpur

Faculty

Name: Shashank Mohan Tiwari .

Student

Name: DEVRAJ SINGH SANDHU .(2021A1PS1589P)

Student Write-up

PS-II Project Title: Recovery of high purity chromium from waste chromite tailings

Short Summary of work done during PS-II : CSIR NML had been sent a chromite tailings sample from Sukinda, Jajpur, Odisha. Firstly, we had to find out the percentage composition of the sample. So we used XRD, SEM, EDS etc. to do so. I verified the results of it with traditional laboratory analysis also, using roasting, digestion, leaching, and titration. After that we attempted to find ways to extract the chromium. We first alkali roasted it, dissolved it, then removed the impurities, recrystallised it, leached it and carbon roasted it then dried it again to get our final product, high purity chromium oxide. Then we had to find the optimal process parameters, like temperature, reactant ratio, and duration. After that we got our final process with >99% recovery.

Tool used (Development tools - H/w, S/w) : Origin for graphing, Bruker XRD, Hitachi SEM, Velocity EDS, MS word, powerpoint,

Objectives of the project : to find a new way to extract waste chromium to reduce reuse recycle the waste tailings

Major Learning Outcomes : process optimization, extractive metallurgy, electromagnetic analysis methods

Details of Papers/patents : nil

Brief Description of working environment, expectations from the company : the working environment was calm and stress-free. the rooms were spacious and colleagues were respectful. the expectations of an enjoyable work environment were met, if not exceeded.

Academic courses relevant to the project : Business communication, Process design principles, chemical process calculations, numerical methods for chemical engineers, engineering chemistry, separation processes

PS-II Station : CSIR-NML, Jamshedpur

Faculty

Name: Shashank Mohan Tiwari .

Student

Name: AAYUSH ALOK KUMAR(2021A4PS2612G)

Student Write-up

PS-II Project Title: FEM study of impact test simulation using Johnson cook material model

Short Summary of work done during PS-II : modeling and simulation of 3 point beam bending test and charpy impact test and found out the results and also studied the method to find the johnson cook model coefficients

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

Objectives of the project : make the simulation , have the correct result

Major Learning Outcomes : Learned new softwares like Abaqus cae and code_aster

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Quite good working environment for me atleast. As for the expectations , just the work is expected , honestly nothing much was expected from us because we are btech (havent even finished it) and they all have completed their phds some 5 years ago at the very least . So its chill

Academic courses relevant to the project : cad , engg drawing , numerical techniques for flow and heat transfer

PS-II Station : CSIR-NML, Jamshedpur

Faculty

Name: Shashank Mohan Tiwari .

Student

Name: GAUTHAM R(2021A4PS2773H)

Student Write-up

PS-II Project Title: Strain driven phase transformation in Aluminum during uniaxial deformation using Molecular Dynamics (MD) Simulation.

Short Summary of work done during PS-II : This study employed molecular dynamics (MD) simulation to examine the strain-induced phase transitions in single crystal aluminum (Al) crystal structure under uniaxial tensile deformation at room temperature and a constant strain rate. The analysis focuses on phase transformations, stacking fault formation, and dislocation behaviors. The findings indicated that, under identical simulation conditions, the stress-strain curves for uniaxial tensile deformation are asymmetric and exhibit significant differences beyond the elastic region. This disparity is attributed to the work done by the surroundings being converted into the strain energy of Al during the deformation process. This study investigates strain- driven phase transformations in single-crystal aluminum under uniaxial tensile deformation using molecular dynamics (MD) simulations. Aluminum, widely used in aerospace, automotive, and electronics industries due to its high strength-to-weight ratio and corrosion resistance, exhibits complex mechanical behavior at the atomic scale. Employing MD simulations with the embedded atom method (EAM) potential, we examine the structural and mechanical responses of aluminum across various sample sizes and strain rates at room temperature. Stress-strain analysis reveals a consistent elastic region with a Young's Modulus of 48–50 GPa, followed by plastic deformation

characterized by strain hardening and stress relaxation. Common Neighbor Analysis highlights a significant reduction in FCC structures and the formation of HCP phases due to stacking faults during plastic deformation. Additionally, an artificial neural network (ANN) model was developed to predict stress-strain behavior using simulation parameters as inputs. The ANN, incorporating three hidden layers and trained on MD data, achieved high accuracy, with a deviation of 1.21% in yield strength predictions and a coefficient of determination (R^2) of 0.8437. This integration of MD simulations and machine learning offers a robust framework for understanding deformation mechanisms and designing advanced aluminum alloys, paving the way for accelerated material innovation in engineering applications.

Tool used (Development tools - H/w, S/w) : LAMMPS (Large-scale Atomic/Molecular Massively Parallel Simulator) , OVITO (Open Visualization Tool), Excel, Python, Scikit-Learn, TensorFlow, MS Word

Objectives of the project : To investigate the formation of defects, such as stacking faults and grain boundaries, during the uniaxial tension of aluminum using molecular dynamics simulations performed in LAMMPS. The study aims to analyze the atomic-scale mechanisms contributing to defect formation and evolution, utilizing Ovito for visualization and characterization of the structural changes. After that as well used Machine learning approaches like Artificial Neural Network for the prediction of material properties using the simulation data.

Major Learning Outcomes :

Through this project, I gained valuable experience in conducting molecular dynamics simulations using LAMMPS to study the uniaxial tension of aluminum and investigate the formation of defects like stacking faults and grain boundaries. I also learned to utilize Ovito to visualize and analyze atomic-scale structural changes, providing critical insights into the material's behavior under stress. Additionally, I expanded my knowledge in machine learning by exploring various regression models and successfully implementing an Artificial Neural Network (ANN) to model and predict material properties

Details of Papers/patents : Since NIT Jamshedpur is closer to CSIR, the best and feasible way to share the outcomes of the research would be by submitting a paper at a conference hosted there. Conferences held at NIT Jamshedpur also provide a great platform to present work, particu

Brief Description of working environment, expectations from the company : During the Practice School (PS) period, you will be assigned to a mentor who will guide you through all aspects of your project. Your mentor will give you in-depth insights into the project objectives and train you on the software and scientific tools necessary to perform the tasks efficiently. Most mentors are approachable, friendly, and interactive to ensure that the learning process is as supportive as it can be. Lab officials are also cooperative and assistive throughout the process. It offers a vast number of laboratories with advanced facilities, for mineral processing purposes, and India's largest creep testing facility is also under this institute.

Academic courses relevant to the project : There are no prerequisites, while knowledge of Material Science, Mechanics of Solids, Advanced Mechanics of Solids, and Fluid Mechanics can be helpful

PS-II Station : CSIR-NML, Jamshedpur

Faculty

Name: Shashank Mohan Tiwari .

Student

Name: KRUSHI BEZAWADA(2021A4PS3069H)

Student Write-up

PS-II Project Title: Automation of Non-Linear Ultrasonic Testing

Short Summary of work done during PS-II : I was first given some papers and was told to study about NDT and NLUT. Then, We have performed a literature review on AI/ML in NDT and NLUT fields, we then created a 3D prototype model, took multiple scans of samples, worked on

processing the signal data collected, explored various methods to process the signal data and made multiple working python scripts that automate the whole process of scanning and signal processing.

Tool used (Development tools - H/w, S/w) : 3D Axis Manipulator, Ultrasonic Transceiver and pulser, LattePanda Computer, Creo Parametric, Python

Objectives of the project : To Create an automated system that performs NonLinear Ultrasonic Testing to a sample

Major Learning Outcomes : Scripting in Python, Usage of ML Models like FCNN, knowledge about NLUT and NDT research, Creo Parametric.

Details of Papers/patents : I have made an extensive literature survey and a final report of my project, which we plan on presenting in some conference.

Brief Description of working environment, expectations from the company : We arrive at the station at 9:30AM and have our breakfast. Work starts at 10AM and we have multiple breaks, two tea breaks one at 11:00AM and the other at 3:30PM. There is a lunch break for an hour from 1:00PM to 2:00PM. Our Guides expect us to show up everyday and complete the work they have provided us. Once we finish the given work, we are expected to report to them and take on next set of work.

Academic courses relevant to the project : Courses relating to Waves, Signal Processing, Engineering Graphics and Material Nature

PS-II Station : CSIR-NML, Jamshedpur, Jamshedpur

Faculty

Name: Shashank Mohan Tiwari .

Student

Name: ADHIRAJ GUPTA(2020B2A11998G)

Student Write-up

PS-II Project Title: Theoretical and experimental investigation of the GFA of the Fe based multicomponent alloys.

Short Summary of work done during PS-II : Prepared and analysed Fe multicomponent alloys and tested their wear and corrosion resistance.

Tool used (Development tools - H/w, S/w) : Nanoindenter , Fretting wear and friction monitor

Objectives of the project : Create wear and corrosion resistant coating

Major Learning Outcomes : Alloy making

Details of Papers/patents : -

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

Academic courses relevant to the project : Separation Processes

PS-II Station : DBOI - Business Finance,Mumbai, Mumbai

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: KOTTAKOTA ADARSH(2021A3PS1568H)

Student Write-up

PS-II Project Title: Financial Controller and Process Automation

Short Summary of work done during PS-II : As a Financial Controller, I was responsible for ensuring the integrity of financial data by reconciling ledgers between the front office and back office. This involves investigating and resolving breaks to align sub-ledger downstream data, ensuring seamless integration into the Balance Sheet and Profit & Loss (P&L) statements. My work plays a critical role in maintaining the accuracy of the financial statements the company publishes quarterly and annually. I oversee listed derivatives and clearing products, focusing on futures and options for the London entity. This entails daily substantiation and reconciliation of financial data, guaranteeing accurate reporting and compliance with financial standards. Any discrepancies identified are addressed promptly to ensure data accuracy and reliability across systems. Additionally, I focused on process automation, implementing algorithms to streamline tasks, save time, and improve efficiency.

Tool used (Development tools - H/w, S/w) : MS Excel, VBA, Sledge and many other internal software applications.

Objectives of the project : 1. Perform daily data reconciliation between front office and back office to ensure accuracy. 2. Maintain seamless and precise data integration into the Balance Sheet and P&L. 3. Deliver accurate financial reporting aligned with banking standards. 4. Enhance efficiency through process automation and task optimization.

Major Learning Outcomes : 1. Gained valuable insights into investment banking operations and financial reporting.

2. Interacted with industry professionals, broadening my understanding of financial sector dynamics.

3. Managed various processes, requiring daily collaboration and problem-solving.

4. Improved communication skills through regular interaction with colleagues and teams.

5. Enhanced confidence by addressing challenges and resolving issues effectively.

6. Utilized Excel VBA to automate tasks, deepening knowledge of automation tools and workflow optimization.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The work environment was supportive and encouraging. My team was consistently helpful, polite, and respectful. It was a people-oriented place to work which encouraged everyone's growth. The company also organized regular social events, creating a positive and enjoyable work experience.

Academic courses relevant to the project : FOFA, DRM, FRAM, FM

PS-II Station : DBOI - Business Finance,Mumbai, Mumbai

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: AAYUSH PATRA(2021A3PS2754H)

Student Write-up

PS-II Project Title: Process Optimization and Automation

Short Summary of work done during PS-II : Part of Rates, Automation Team specializing in tools like Power Automate, Excel VBA, Python, and in-house solutions. Focus on using VBA and Python with arrays/dictionaries to optimize code and process large files. Collaborate with process owners to deliver data in the required format.

Tool used (Development tools - H/w, S/w) : Visual Basic for Applications (VBA), Python, SQL, In-house Excel Addins

Objectives of the project : To streamline workflows, enhance accuracy, and reduce manual effort through automation

Major Learning Outcomes : Functionality of Investment Banks, Problem Solving via automation

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment has been highly supportive and collaborative. My mentors are understanding and approachable, always willing to guide me through any challenges I face. They are considerate of work-life balance, making it easier to adapt during my internship. Members from other departments are equally kind and friendly, fostering a positive and inclusive atmosphere. The lack of undue pressure made the experience feel more like a learning opportunity than a demanding job, allowing me to focus on developing my skills and contributing effectively. Expectations : Reliable Automation.

Academic courses relevant to the project : FOFA, FRAM, C Programming

PS-II Station : DBOI - Credit Risk Data Unit (CRDU),Pune, Pune

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: LAWANYA SHARMA .(2021B5PS2061P)

Student Write-up

PS-II Project Title: DWS

Short Summary of work done during PS-II : During my internship at Deutsche Bank, Pune, I worked as a Credit Risk Analyst in the Credit Risk Data Unit (CRDU) on the DWS project. I evaluated the financial health of counterparties using metrics like RWA and EAD. I automated data processing tasks using Python, reducing manual efforts and improving accuracy. Additionally, I performed month-on-month delta analysis and contributed to reporting, sharing insights with the DWS team in Germany. My work improved risk assessment workflows and provided significant operational efficiencies.

Tool used (Development tools - H/w, S/w) : Software: Python, FDW MicroStrategy, Excel, PowerPoint Hardware: Standard office hardware for development and analysis

Objectives of the project : Assess and analyze credit risk associated with financial counterparties. Perform data-driven evaluations of financial health and creditworthiness. Automate data consolidation and reporting processes to improve operational efficiency. Identify fluctuations in key risk metrics like Risk-Weighted Assets (RWA) and Exposure at Default (EAD). Enhance reporting accuracy and streamline workflows through Python-based automation

Major Learning Outcomes : Gained hands-on experience in credit risk analysis and financial data handling.

Enhanced Python programming skills, focusing on automation and efficiency improvement.

Learned the practical application of key financial metrics (RWA and EAD) in risk assessment.

Developed corporate communication and teamwork skills while collaborating with global teams.
Understood the workings of a global asset management firm and its operational processes

Details of Papers/patents : None produced during the project.

Brief Description of working environment, expectations from the company : The internship offered a collaborative environment with opportunities to work closely with experienced professionals in risk management. Tools like MicroStrategy and Python were used extensively, and teamwork was integral in achieving project objectives. Regular interactions with the global team provided exposure to cross-cultural corporate practices. Deutsche Bank provided an excellent platform for learning and professional growth. The mentorship and support from senior members helped me gain insights into risk management and technical applications in finance. The structured workflow and focus on innovation aligned well with my academic and professional aspirations.

Academic courses relevant to the project : Computational Economics

PS-II Station : DBOI - GCAF,Mumbai, Mumbai

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: RAGVENDRA PARTAP SINGH(2020B4A41850H)

Student Write-up

PS-II Project Title: Rating various types of entities involved in business with Deutsche Bank

Short Summary of work done during PS-II : During my internship at Deutsche Bank, I worked on credit rating assessments for various counterparties, primarily within the Leveraged and Structured Finance (LSF) and Commercial Real Estate (CRE) portfolios. This experience allowed me to engage deeply with complex financial analysis and risk evaluation processes, which are critical in determining the creditworthiness of borrowers and counterparties. In the LSF portfolio, my responsibilities included analyzing entities involved in high-yield, leveraged transactions. This required a keen understanding of debt structures, cash flow projections, and market conditions that could impact the borrowers' ability to meet their obligations. I evaluated various financial metrics and qualitative factors to assess the potential risks and their implications for the bank. The CRE portfolio presented a different set of challenges, involving the assessment of credit risks tied to real estate-backed loans. I examined factors like property valuations, market trends, tenant credit quality, and geographic diversification. My analysis contributed to determining the likelihood of default and the bank's exposure to real estate market fluctuations. Throughout the internship, I collaborated closely with senior analysts and credit officers, gaining insights into how credit decisions are made in a high-stakes environment. I also improved my skills in using financial modeling tools and databases, enhancing my ability to synthesize complex information into concise credit reports.

Tool used (Development tools - H/w, S/w) : Company's internal Software

Objectives of the project : Maintaining the credit ratings of various clients of the Bank

Major Learning Outcomes : Development of thinking process as a credit risk analysis, soft skills

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The work culture at Deutsche Bank strikes a balance between a relaxed atmosphere and a strong sense of responsibility. While the environment is generally supportive and fosters open communication, there is a clear expectation to meet specific obligations and maintain high standards of

performance. Collaboration is encouraged, with team members and senior analysts readily available to provide guidance, making it an ideal setting for learning and professional growth. Despite the laid-back nature of the office, deadlines and accuracy are paramount, especially in tasks like credit risk assessments for complex portfolios such as Leveraged and Structured Finance (LSF) and Commercial Real Estate (CRE). The bank values precision and thoroughness, ensuring that every report and analysis meets rigorous internal and regulatory standards. This balance of autonomy and accountability fosters a culture where employees can thrive, developing both technical skills and professional discipline. The work environment encourages proactive problem-solving and continuous learning, while also emphasizing the importance of meeting commitments.

Academic courses relevant to the project : FOFA, BAV, FM

PS-II Station : DBOI - GCAF,Mumbai, Mumbai

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: GARG ACHINTYA JITENDRA .(2021A1PS2373P)

Student Write-up

PS-II Project Title: Credit Risk Analysis for COunterparties in the EM-APAC Region

Short Summary of work done during PS-II : Completed various rating reports as per internal guidance and requirements on a monthly basis for corporates and financial institutions using internal softwares

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

Objectives of the project : Perform credit risk analysis based on internal guidance and softwares and generate rating reports on a monthly basis

Major Learning Outcomes : Credit Risk Analysis, Financial Statements analysis and spreading

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Very calm and supportive environment. Patient with my learning curve, very reasonable expectations.

Academic courses relevant to the project : Fundamentals of Finance and Accounting, Derivates and Risk Management, Financial Risk Analysis and Management

PS-II Station : DBOI - GCAF,Mumbai, Mumbai

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: MANDAVGANE AKSHAT ABHIJIT .(2021A4PS2187P)

Student Write-up

PS-II Project Title: Rating analysis of Developed Market counterparties

Short Summary of work done during PS-II : If one wants a core finance role, this is the place for the respective person. One goes through understanding the policies for writing reports to adhere to the regulatory requirements and learn the fundamentals of rating reports. You are exposed to various companies (called counterparties) for whom you evaluate and assess based on financials, SNL, Bloomberg data and keeping all this in mind structure your reports. You get to learn about the different scorecards for different institutions and using your analysis try to come up with a rating for the respective counterparty. This is basically documentation of the report and it eventually goes to the Credit team who assign limits to the counterparty (basically how much will you be able to lend to the respective counterparty)

Tool used (Development tools - H/w, S/w) : Company specific financial spreading softwares

Objectives of the project : To ascertain the full fledged rating analysis of developed market counterparties with a deep understanding of the counterparty's financials via its annual reports, interim reports, external rating reports and using a already designed model by the company, figuring out an appropriate grade on a rating scale.

Major Learning Outcomes : - Had a hands-on experience working with seasoned professionals on internal rating reports

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : First of all, working environment is well maintained; both keeping you on your toes at certain times and having fun with each other. You can walk up to any rating analysts for doubts and they'll cater to them which really shows their approachability. Also, party culture is a bit less prevalent but they do nurture a sports culture. Secondly, you can expect to work on more than one project because the company is not tech savvy and there is a large scope of automation.

Academic courses relevant to the project : Fundamentals of Finance and Accounting

PS-II Station : DBOI - GCAF,Mumbai, Mumbai

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: ABHIRAM K NITIN .(2021A5PS0393P)

Student Write-up

PS-II Project Title: Credit Risk & Analytics & Management for Developed Markets of US & Europe

Short Summary of work done during PS-II : My work included performing Credit Rating Analysis of all kinds of clients (or counterparties) of Deutsche Bank. This involves conducting financial analysis, then business analysis, then making a qualitative writeup of the counterparty, and then giving quantitative inputs or assessments, all of which together give rise to ratings of the clients (AAA, BB+, CCC-. etc). Note that this is a very sensitive process, high accuracy in financial analysis & business understanding from a risk perspective is expected. In short, you will be answering the question "What is the probability that this counterparty will default on its loans or investments from Deutsche Bank?"

Tool used (Development tools - H/w, S/w) : MS Excel, Bloomberg Terminal (was taught at the station)

Objectives of the project : Understanding credit risk, and hence providing accurate ratings to global clients of Deutsche Bank, which helps in determining the probability of default of the credit facilities or investments made by DB to said Clients/Corporates/Financial Institutions

Major Learning Outcomes : Financial Statement Analysis, Business Analysis

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Very good working environment, very flexible in terms on working hours (you're only expected to turn in your work on time with minimal errors). The people are very approachable, from the mentor to the VP & Global Head. The bank expects you to come forward and showcase your clear interest in their field on work, do the assigned work on time and more than your turnaround of reports, emphasis is given to how much you really understand the concepts they're trying to teach you.

Academic courses relevant to the project : Financial Risk Analytics & Management, Business Analysis & Valuation, Fundamentals of Finance & Accounting, Security Analysis & Portfolio Management

PS-II Station : DBOI - GCAF,Mumbai, Mumbai

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: RAVULAPALLI JUHI(2021A8PS3121H)

Student Write-up

PS-II Project Title: Credit Risk Assessment and Rating Report Preparation in the Global Credit Analytics Function department at Deutsche Bank

Short Summary of work done during PS-II : During PS-II, the primary focus was on assigning credit ratings and preparing rating reports for counterparties within GCAF. The work involved analyzing financial statements, evaluating key ratios like profitability and asset quality, and reviewing demographic and industry data. By combining qualitative insights, such as management strategy, with quantitative data like financial ratios, comprehensive and detailed credit rating reports were prepared. This process provided valuable experience in integrating diverse data points for a thorough assessment of counterparty creditworthiness.

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

Objectives of the project : To prepare credit rating reports for different types of counterparties.

Major Learning Outcomes : Credit Risk Analysis: Gained in-depth knowledge of credit risk evaluation through financial statement analysis, counterparty assessment, and rating report preparation.

Financial Statement Proficiency: Developed expertise in interpreting income statements, balance sheets, and key financial ratios such as profitability and debt ratios.

Research and Market Insights: Enhanced ability to assess market, economic, and demographic factors affecting credit ratings.

Report Drafting Skills: Improved technical writing by preparing detailed credit rating reports integrating financial data and qualitative insights.

Professional Collaboration: Strengthened teamwork and collaboration through interaction with colleagues and mentors.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Deutsche Bank's GCAF is highly supportive, collaborative, and conducive to learning, with no formal hierarchy. As the only intern in a team comprising AVPs and led by a VP, I had the unique opportunity to learn directly from senior and experienced professionals.

I was included in all team meetings and although I wasn't directly involved in complex cases, these discussions offered valuable exposure to challenging projects, significantly enhancing my understanding of credit risk management.

Academic courses relevant to the project : Fundamentals of Finance and Accounting (FOFA), Financial Risk Analytics and Management (FRAM), Financial Management (FM)

PS-II Station : DBOI - IB CFO,Mumbai, Mumbai

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: DEVANSH DHADDA(2021A4PS3209H)

Student Write-up

PS-II Project Title: Financial Planning and Analysis

Short Summary of work done during PS-II : Prepared plans, forecast, analysis like variance analysis, profitability analysis and making reports and presentations

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

Objectives of the project : Analyse and prepare financials for Investment Banking Division, to identify opportunities and risks

Major Learning Outcomes : Understanding of Investment Banking industry, learnt making financial reports and presentations

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : It was great, everyone is really supportive and good environment. People are friendly

Academic courses relevant to the project : Financial Management

PS-II Station : DBOI - MRAC,Mumbai, Mumbai

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: SHAURYA JAIN(2020B2A82407H)

Student Write-up

PS-II Project Title: Reporting, analyses and automation of Market Risk metrics.

Short Summary of work done during PS-II : My work involves sending daily, weekly and monthly reports to front office. I have to do analyses in case front office raise some request or analyse to fixed any problems that arise. In the latter part of my internship I also undertook automation of a report through python and tableau.

Tool used (Development tools - H/w, S/w) : Python, excel, tableau, internal softwares.

Objectives of the project : To provide daily, weekly and monthly reports. Provide analyses on risk metrics and ad-hoc queries.

Major Learning Outcomes : 1. Risk management

2. Improve analytical, technical and soft skills.
3. Python, advances Excel

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment here is very relaxed as compared to other places that I heard. Most people here is very encouraging and will help you out with anything in initial stages but will expect you to pick work yourself in later stages.

Academic courses relevant to the project : 1. FRAM
2. DRM

PS-II Station : DBOI - MRAC,Mumbai, Mumbai

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: AARJAV MEHTA .(2020B3A41970P)

Student Write-up

PS-II Project Title: OVERVIEW OF THE WORK AT PS STATION: DEUTSCHE BANK

Short Summary of work done during PS-II : Firstly, MRM= Market Risk Management. MRAC= Market Risk Analysis and Control. MVRM Ex Vals is also same(ish) role. I did not have a semester-long project but instead carried out multiple processes. Some of the processes were

handed over to me from other team members and some processes were started by me. Some ad-hoc jobs of analysis of changes in VaR were given, which primarily used Excel to drill down the reason for such changes. One can contact me for further details.

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

Objectives of the project : To get an overview of market risk and how industry analyses it to make decisions

Major Learning Outcomes : The outcomes of the internship would be understanding the concepts of VaR and SVaR in an industrial setting, with real financial data. You understand the reasoning behind using these metrics and how everyday changes to these metrics are analysed and decisions taken to control them.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment is good, everyone from the Directors to interns sit on the same floor around each other. The people are helpful and open to discussions. As for the work, it is not very happening, there is always a chance that you get disillusioned with finance entirely (lol). In the beginning, you might have to actively seek out some work to do or some process that you could take over.

Academic courses relevant to the project : FRAM mainly. Honestly, just knowing the concept of VaR is enough.

PS-II Station : DBOI - MRAC, Mumbai, Mumbai

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: AMAN AGARWAL(2021A3PS2844H)

Student Write-up

PS-II Project Title: Risk Management

Short Summary of work done during PS-II : During my PS-II, I focused on risk management, automation, and data visualization. My primary responsibilities included risk validation, ensuring accurate identification and quantification of financial risks through advanced analytical techniques. I conducted detailed risk analysis, including Value-at-Risk (VaR) assessments, while exploring its benefits and limitations. To enhance efficiency, I implemented automation solutions using Python, Excel Macros, and VBA. These tools streamlined data extraction, validation, and analysis processes, significantly reducing manual effort and improving accuracy. Python was utilized for data processing, statistical modeling, and creating insightful visualizations, while Excel Macros and VBA were employed for automating repetitive tasks and integrating workflows seamlessly. In addition, I leveraged Tableau for creating interactive dashboards and reports, enabling clear and concise communication of insights to stakeholders. These dashboards provided a dynamic view of key risk metrics, making it easier to monitor and analyze data trends. I also contributed to building comprehensive risk validation frameworks, incorporating both quantitative and qualitative approaches to assess portfolio risks effectively. This involved verifying methodologies, cross-checking results with historical data, and preparing detailed reports with actionable insights. My contributions enhanced the accuracy, speed, and visualization of risk management processes while improving data-driven decision-making. The experience strengthened my skills in automation, risk validation, and reporting, preparing me for challenges in financial risk management.

Tool used (Development tools - H/w, S/w) : python, MS Access, Tableau

Objectives of the project : Conduct VaR analysis on Indian companies, explore benefits/limitations, and present findings independently.

Major Learning Outcomes : The project enhances understanding of Value-at-Risk (VaR) for portfolio risk assessment, provides practical experience with Bloomberg Terminal data, and develops skills in Excel-based financial modeling. It offers insights into the benefits and limitations of VaR, strengthens knowledge of historical and variance-covariance methods, and improves analytical, research, and reporting abilities.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : At Deutsche Bank in Mumbai, I experienced a dynamic and professional working environment that emphasized precision, efficiency, and collaboration. The work culture encouraged innovation and accountability, providing ample opportunities to learn and contribute to key financial processes. The team was highly supportive, fostering open communication and knowledge sharing, which created an ideal setting for professional growth.

The company's expectations were centered on delivering high-quality work with a strong focus on accuracy, timeliness, and adherence to compliance standards. As part of the risk management team, I was expected to validate and analyze complex financial data, ensuring the accuracy of risk metrics and methodologies. Meeting deadlines and maintaining confidentiality were critical aspects of the role. Additionally, I was encouraged to proactively identify inefficiencies in workflows and propose automation solutions.

Deutsche Bank placed a strong emphasis on leveraging technology for efficiency, and I was expected to utilize tools like Python, Excel, VBA, and Tableau to automate processes, validate risk models, and create insightful reports. My work involved aligning with the company's global standards while adhering to local market regulations.

Overall, the environment at Deutsche Bank was fast-paced yet structured, with clear deliverables and access to resources for skill enhancement. The role offered a perfect balance of challenges and learning opportunities, allowing me to contribute meaningfully while developing technical expertise and a deeper understanding of financial risk management.

Academic courses relevant to the project : FRAM, FOFA, DRM, SAPM, BAV, FM

PS-II Station : DBOI - MRAC,Mumbai, Mumbai

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: DHRUVIT JAIN .(2021A4PS0916P)

Student Write-up

PS-II Project Title: Daily Analysis & Automation

Short Summary of work done during PS-II : I was working in the MRAC Division. My work here majorly revolved around the analysis of various market risk metrics at different levels of the bank, analysing the change in these metrics on different periods (day on day, week on week, month on month) and providing an explanation for the same. This also included some ad hoc requests depending on what the management needs at any given point.

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

Objectives of the project : Provide insights on day to day moves in market metrics and automate one existing file.

Major Learning Outcomes : Learnt the analysis of various market metrics, how to interpret the changes in these metrics and how various market events would affect the values in these metrics.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Possibly the best thing about DB. The working environment is very encouraging, your team would help you at each and every step no matter how big or small the issue is. One can learn a lot outside of his day to day work about this field and how to excel in it. all one needs to show is intent, genuine interest. The team as such do not generally have much expectations from the interns, they just expect intent and willingness to learn.

Academic courses relevant to the project : DRM, FRAM

PS-II Station : DBOI - MRAC,Mumbai, Mumbai

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: AISHWARYA SINGH .(2021B4PS2089P)

Student Write-up

PS-II Project Title: INVESTMENT BANK: MARKET RISK ANALYSIS AND CONTROL

Short Summary of work done during PS-II : During my PS2 at Deutsche Bank, I was involved in critical activities related to risk analysis, data processing, and reporting. The use of Python and SQL for efficient data handling, along with the triggering of VAR runs and the preparation of detailed weekly and monthly reports, were integral in maintaining a transparent and effective risk management framework. These tasks not only provided realtime insights into potential risks but also ensured compliance with regulatory standards. Furthermore, they played a key role in helping the bank prepare for and mitigate the impact of adverse market conditions.

Tool used (Development tools - H/w, S/w) : Laptop, headphone, In-house softwares, Excel, Teams, Outlook, Python, Sql

Objectives of the project : The objective of this report is to provide a comprehensive summary of my internship experience at Deutsche Bank, highlighting my contributions, the practical application of academic concepts, and the key lessons learned. It aims to showcase the development of my technical skills in financial modeling and analysis, as well as my enhanced understanding of banking operations and regulatory frameworks within a professional setting.

Major Learning Outcomes : During my experience, I gained proficiency in risk assessment and regulatory compliance while enhancing my ability to collaborate with cross-functional and international teams. I developed a strong understanding of corporate culture and operations within a global financial institution and deepened my knowledge of global banking regulations and their practical applications. Additionally, I strengthened my problem-solving skills by addressing real-world challenges.

Details of Papers/patents : https://www.db.com/index?language_id=1&kid=sl.redirect-en.shortcut

Brief Description of working environment, expectations from the company : The working environment at Deutsche Bank in the Market Risk Analysis and Control (MRAC) team was dynamic and collaborative. Tasks like VAR runs, PVD Status Reports, and PC Runs Reports were key to maintaining regulatory compliance and managing risk effectively. Expectations included timely execution, attention to detail, and effective use of tools like Python, SQL, Excel, and in-house software. The company fostered a supportive environment for learning and growth, offering opportunities to develop technical skills, gain process knowledge, and enhance analytical abilities. The overall experience was challenging yet rewarding, contributing to both personal and professional development.

Academic courses relevant to the project : Derivatives and Risk Management, Financial Management, Fundamentals of finance and accounting.

PS-II Station : DBOI - OPS, Bengaluru, Bengaluru

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: ANIRUDHA TONGE(2020B1A11967G)

Student Write-up

PS-II Project Title: F2B Transformation

Short Summary of work done during PS-II : End to End Process Discovery of processes across different divisions in banks, analysing them in detail to identify in-scope areas for automation. Developing strategic or tactical solutions using Workflow Automation , BOT Automation , Transformation strategies to automate the processes and reduce Manual input.

Tool used (Development tools - H/w, S/w) : Alteryx , Power Automate , Power Apps , Excel , Javascript , Typescript , Python

Objectives of the project : Transformation of Processes across Front to Back in Investment Banking and Corporate Banking division

Major Learning Outcomes : Business Analysis , Process Scoping , Automation , Process Engineering , Solution Engineering

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Great work environment , all senior management people are very friendly and helpful. Company needs to you to be present in office for all working days , do your work promptly and sincerely,

Academic courses relevant to the project : Finance minor courses and programming

PS-II Station : DBOI - OPS, Bengaluru, Bengaluru

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: SARVAGYA GARG .(2020B5A41336P)

Student Write-up

PS-II Project Title: F2B Transformations

Short Summary of work done during PS-II : Worked on automating various BAUs and automating reconciliations.

Tool used (Development tools - H/w, S/w) : Internal DB Softwares used along with Excel & Visio.

Objectives of the project : To contribute to the F2B Transformations Team

Major Learning Outcomes : Learnt about Banking Principles

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Good Working environment with proper tasks being assigned to interns.

Academic courses relevant to the project : None

PS-II Station : DBOI - OPS, Bengaluru, Bengaluru

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: VATSAL DHANUKA .(2021A1PS2156P)

Student Write-up

PS-II Project Title: F2B TRANSFORMATION

Short Summary of work done during PS-II : During my internship at Deutsche Bank Bengaluru in the Investment Banking Operations division, I focused on driving operational efficiency in Investment and Commercial banking processes. Key contributions included: Enhancing workflow automation and implementing Straight-Through Processing (STP) to reduce manual intervention. Identifying transformation opportunities through interactions with Subject Matter Experts (SMEs). Utilizing Python for data analysis to optimize processes, resulting in cost reductions and improved transaction turnaround times. These initiatives significantly streamlined operations and contributed to overall process improvement.

Tool used (Development tools - H/w, S/w) : Alteryx,Power Automate,Power App

Objectives of the project : Automate manual processes

Major Learning Outcomes : Learned power apps platform

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Deutsche Bank offers a professional and formal working environment that emphasizes efficiency and collaboration. The work culture fosters teamwork through a structured, team-based approach. Tools like Power Automate, Power BI, Alteryx are integral to the operations, facilitating workflow automation and data-driven decision-making.

During my internship, I experienced a five-day in-office work schedule, which post-conversion will transition to a hybrid model with two days of work-from-home flexibility. This blend of remote and on-site work reflects the company's adaptability to modern work practices.

I value Deutsche Bank's commitment to innovation and creativity, which aligns with my professional aspirations. I expect to find significant opportunities for growth, skill enhancement, and contributing to transformative projects. A supportive environment that encourages learning and fosters innovation makes Deutsche Bank an ideal place to build a rewarding career.

Academic courses relevant to the project : Finman,ML for chemical engineering

PS-II Station : DBOI - OPS, Bengaluru, Bengaluru

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: GADICHARLA SAI SHRIJA SRIVALLI(2021A4PS3096H)

Student Write-up

PS-II Project Title: F2B Transformation

Short Summary of work done during PS-II : Process mapping of different processes performed by operations team, and deciding which tools are the best to automate it and implementing the automation. Some process required streamlining also, automated all those processes during my PS II.

Tool used (Development tools - H/w, S/w) : Power apps, power automate, alteryx, tableau

Objectives of the project : Automation of daily tasks performed by teams across the organ

Major Learning Outcomes : Power tools, alteryx, tableau,

Details of Papers/patents : None

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

Academic courses relevant to the project : Fin minor

PS-II Station : DBOI - Valuations, Mumbai, Mumbai

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: RITIK YADAV .(2020B2A21940P)

Student Write-up

PS-II Project Title: Valuations

Short Summary of work done during PS-II : Mostly the tasks revolved around assessing the Day One PnL for different Businesses for different risk parameters and input parameters.

Tool used (Development tools - H/w, S/w) : Python Libraries, excel, powerpoint, other in house tools

Objectives of the project : To asses the Day one PnL and carry out quarter end controls

Major Learning Outcomes : Deep understanding of the backdrop of any trade taken and IPV processes and their implications

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Work environment is pretty cool with lot of learnings involved to make yourself used to with the corporate knowhows.

Academic courses relevant to the project : Finance minor courses particularly, DRM , FRAM and FinE

PS-II Station : DBOI - Valuations, Mumbai, Mumbai

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: SMRUTIRANJAN MISHRA .(2020B3A10167P)

Student Write-up

PS-II Project Title: MVRM Valuations

Short Summary of work done during PS-II : I was responsible for managing the Independent Price Verification (IPV) process for fixed income products, with a primary focus on U.S. loans. This role involved conducting comprehensive daily and weekly analyses of trades executed by Deutsche Bank, ensuring accuracy in valuations and adherence to market prices. A significant aspect of my responsibilities included performing detailed investigations into high-risk trades to identify potential discrepancies or issues. Upon completing these analyses and investigations, I was tasked with preparing and communicating the findings to stakeholders, including teams based in Mumbai and New York, to ensure alignment and address any concerns effectively.

Tool used (Development tools - H/w, S/w) : Microsoft Excel, VBA, SQL and proprietary softwares

Objectives of the project : To oversee risk management by ensuring that the bank's trading positions are accurately marked to market.

Major Learning Outcomes : Risk management by investment banks, learning about different asset classes traded by the bank, Fair value of assets, Price verification

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : Overall, the environment and work culture at Deutsche Bank is very relaxed and supportive. The people working here are approachable and always ready to help with any issues. They have connectivity events almost every month, which provides a great opportunity to engage with seasoned professionals across various other departments as well. Overall, it's a great atmosphere as long as one delivers the work on time as per the deadlines.

Academic courses relevant to the project : DRM, FRAM, Macroeconomics, Money Banking and Financial Markets.

PS-II Station : DBOI - Valuations, Mumbai, Mumbai

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: AARYAN RAJ .(2020B3A70781P)

Student Write-up

PS-II Project Title: Valuations

Short Summary of work done during PS-II : The work involved conducting Daily Independent Price Verification for GFX and CPM classes. Numerous cyclical processes were assigned and I was given the task to optimise them. In addition to this various automation projects were completed.

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

Objectives of the project : Optimization and Enhancement in IPV

Major Learning Outcomes : Risk Management at Global Level with IPV.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The team members were really helpful and helped us get accustomed to the work to be done by us. Everyone was approachable and helped their best.

Academic courses relevant to the project : FRAM

PS-II Station : Delightful Gourmet Private Limited, Licious, Bengaluru

Faculty

Name: Ankur Pachauri

Student

Name: SAHAJ TANDI.(2020B1A31904P)

Student Write-up

PS-II Project Title: Licious Infiniti and User Reactivation

Short Summary of work done during PS-II : The project focused on optimizing the performance of Licious Infiniti, a premium loyalty program, by increasing user engagement, reactivating dormant users, and driving revenue growth. Key initiatives included conducting daily revenue root cause analysis (RCA) to identify performance gaps across categories (poultry, seafood, ready-to-cook), cities, and user cohorts. These insights enabled targeted interventions to resolve inventory issues and improve conversions. To enhance efficiency, I automated the daily revenue reporting process using Python and SQL, reducing manual effort and ensuring accurate, timely reporting. I also developed dynamic dashboards to monitor critical metrics like Average Order Value (AOV), revenue, and conversion rates at granular levels, enabling better decision-making. A key focus area was user segmentation and reactivation. By analyzing user behavior, I designed personalized coupon strategies and targeted campaigns to boost engagement, particularly addressing weekend revenue dips. These efforts resulted in measurable improvements, such as a 12% increase in weekend orders and faster revenue recovery. The project successfully combined data-driven analysis, automation, and strategic decision-making to deliver actionable solutions. It provided valuable insights into user behavior, operational challenges, and revenue opportunities, laying a strong foundation for scaling reactivation efforts, refining loyalty offerings, and driving long-term platform growth.

Tool used (Development tools - H/w, S/w) : Software Tools: SQL, Python, Tableau, Metabase, Jupyter Notebook, Excel, Segment, Appsflyer

Objectives of the project : To optimize Licious Infiniti's revenue, reactivate dormant users, automate reporting, and enhance user engagement through data-driven strategies.

Major Learning Outcomes : -Gained proficiency in data analysis using SQL, Python, Metabase, and Tableau.

- Learned root cause analysis (RCA) for revenue optimization and performance tracking.
- Developed skills in automating workflows to improve reporting efficiency.
- Understood user segmentation and behavior analysis for targeted campaigns.
- Learned to design and implement data-driven strategies for user engagement and retention.
- Enhanced problem-solving, decision-making, and cross-functional collaboration skills.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment at Licious was dynamic, collaborative, and data-driven, providing a professional yet supportive atmosphere. As part of the Growth Team, I had access to tools, data platforms, and mentorship, which allowed me to work on critical business challenges. The team encouraged autonomy, which helped me take ownership of tasks such as automating workflows, analyzing revenue trends, and designing targeted campaigns. Cross-functional collaboration with operations, marketing, and product teams enabled me to implement solutions effectively, such as addressing inventory issues and launching personalized user engagement strategies.

The expectations from the company were to contribute meaningfully to the Infiniti loyalty program by optimizing revenue performance and improving user retention. This involved conducting daily Root Cause Analysis (RCA), automating reporting systems, and delivering actionable insights through dashboards. The organization provided the required tools (SQL, Python, Tableau) and data access to support my tasks, while regular feedback ensured my work remained aligned with company goals.

The environment fostered learning and experimentation, allowing me to conduct A/B tests and implement strategies that directly impacted revenue and user engagement. The exposure to real-time problem-solving, decision-making, and high-quality data analysis helped me grow both technically and professionally. Overall, Licious provided a challenging yet rewarding space where I could apply my skills to deliver measurable results while gaining valuable industry experience.

Academic courses relevant to the project : None Undertaken

PS-II Station : Delightful Gourmet Private Limited, Licious, Bengaluru

Faculty

Name: Ankur Pachauri

Student

Name: PATIL MANAS SUDHIR(2020B2A32020G)

Student Write-up

PS-II Project Title: DKD, Comprehensive Supply Chain Performance Management

Short Summary of work done during PS-II : During my PS-II internship at Licious, I worked as part of the operations team, focusing on enhancing supply chain efficiency and improving key operational metrics. My primary responsibilities included managing the ****P0 sheet**** and ****core operations health tracker****, ensuring data accuracy and delivering actionable insights for decision-making. I streamlined processes like ****roster adherence tracking****, ****batching automation for deliveries****, and monitored ****service degradation durations**** to maintain operational continuity. Additionally, I played a significant role in the ****CX tracker**** to analyze customer satisfaction trends and in ****daily revenue calls****, contributing to revenue optimization strategies. By collaborating with cross-functional teams, I optimized the ****dispatch process**** and ****manpower allocation****, reducing costs and improving on-time delivery rates. I also worked on special projects like ****Das Ka Dam (DKD)****, which involved executing initiatives to lower supply chain costs and boost productivity. My efforts in ****breakshift approvals****, ****batching dashboard updates****, and integrating ****new hubs and cities**** into the system ensured scalability and operational stability. Through these experiences, I honed my skills in ****data visualization****, ****root cause analysis****, and ****process improvement****, contributing to a smoother and more cost-effective supply chain at Licious.

Tool used (Development tools - H/w, S/w) : SQL, G-Sheets, tableau

Objectives of the project : The objective of my projects was to optimize operational efficiency, reduce costs, enhance customer experience, and enable scalable, data-driven, and automated processes for seamless expansion and performance.

Major Learning Outcomes : The major learning outcome was developing a deep understanding of operational optimization through data analysis, process automation, and cross-functional collaboration to achieve cost reduction, efficiency improvement, and enhanced customer satisfaction.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment at Licious was dynamic, fast-paced, and collaborative, with a strong focus on operational excellence and customer satisfaction. The company fostered a culture of innovation, encouraging employees to contribute ideas for process optimization and efficiency improvements. My role as an intern in the operations team involved working closely with cross-functional teams, including logistics, data analytics, and customer experience. This provided a great learning opportunity as I was exposed to various facets of the business, from supply chain management to performance tracking.

Academic courses relevant to the project : Professional Ethics

PS-II Station : Delightful Gourmet Private Limited, Licious, Bengaluru

Faculty

Name: Ankur Pachauri

Student

Name: KUSUMITA PAL(2021A1PS3053H)

Student Write-up

PS-II Project Title: Service Issues Linkage to Customer Retention

Short Summary of work done during PS-II : I worked in the Customer Experience Department of Licious. In this department, we focused on enhancing customer satisfaction. My role in this department was to solve the problem statements assigned to me. The problem statements were

solved using SQL and Excel. I had to find trends in the data, reasons why such a problem is occurring, and use analytical skills to reach conclusions. Also, I had to make live dashboards on Google Sheets. I was assigned one minor and one major project. The major project involved finding an equation using regression analysis. In the second project, I had to make a model to automate a process.

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

Objectives of the project : To find an equation linking all the service issues with customer retention. The retention was calculated for each month. A customer is considered retained if they have ordered within the next 90 days from the last day of order of the month.

Major Learning Outcomes :

1. SQL and excel improved.
2. This project involved working with large data sets, plotting graphs and finding trends, doing regression analysis to find the equation. So, learnt data analytics skills
3. Communication and presentation skills improved.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment is good. My mentor was very helpful and gave me continuous feedback on my work. The work culture of the company is good.

Academic courses relevant to the project : Database courses, Marketing

PS-II Station : Delightful Gourmet Private Limited, Licious, Bengaluru

Faculty

Name: Ankur Pachauri

Student

Name: RAVISHA GAMBHIR .(2021A2PS2623P)

Student Write-up

PS-II Project Title: Dashboard creation and maintenance

Short Summary of work done during PS-II : Created 4 tableau dashboard and 3 gsheet dashboard for the growth team for revenue metrics.

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

Objectives of the project : Writing queries for other department and dashboard creation and maintenance in tableau and gsheets both

Major Learning Outcomes : Learnt end to end dashboard creation about revenue metrics in tableau

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment was very good all the other team members were very helpful.

Academic courses relevant to the project : Machine learning, foundation of data science

PS-II Station : Delightful Gourmet Private Limited, Licious, Bengaluru

Faculty

Name: Ankur Pachauri

Student

Name: NIRBHAY MITTAL .(2021A4PS2323P)

Student Write-up

PS-II Project Title: Linking temperature compliance to Customer Feedback

Short Summary of work done during PS-II : My PS - II was structured in a way that my first half was learning process where I get to familiarise with the tools and data with which I have to work with and second half was where I work on my main project. Along with this many ad-hoc task were handed to me , which helped the team.

Tool used (Development tools - H/w, S/w) : SQL , Tableau , Excel , Microsoft suite , Google workspace

Objectives of the project : To call out hubs with low temperature compliance which further affect the product quality

Major Learning Outcomes : Learned a working of a organisation . How different teams collaborate to bring the final output . Also it helped me to brush up my both soft skills and technical skills.

Details of Papers/patents : No paper published

Brief Description of working environment, expectations from the company : Work environment is where supportive and productive. Everyone is very helpful. If you just ask anyone a normal question , everyone try to explain in depth so that person understand . All in the company are dedicated to the work . But the people over here also know how to chill. Everyone gathers

near the play area as soon it is break time. One flaw I experience is that , my company being a meat based company , food served in house is not great for vegetarian. But overall it is a nice place to work

Academic courses relevant to the project : Supply Chain Management , Manufacturing Management

PS-II Station : Dezerv Investments Pvt. Ltd , Bangalore, Bengaluru

Faculty

Name: Venkateswara Rao Thunuguntla .

Student

Name: KAUSTUBH SRIVASTAVA .(2021A3PS2649P)

Student Write-up

PS-II Project Title: Asset Migration

Short Summary of work done during PS-II : Worked on the backend and frontend flow of a project which would help bring in a new stream of income and clients by facilitating dematerialisation of legacy assets which the client has in physical form.

Tool used (Development tools - H/w, S/w) : Golang, react, mongoDB, Postman

Objectives of the project : Helped in building a flow through which clients can dematerialise their legacy assets

Major Learning Outcomes : Backend development, frontend development

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : A very supportive environment for learning, had the opportunity to work on ongoing projects

Academic courses relevant to the project : OOP

PS-II Station : Dezerv Investments Pvt. Ltd, Mumbai, Mumbai

Faculty

Name: Venkateswara Rao Thunuguntla .

Student

Name: SOMIN RANJAN .(2021A8PS2704P)

Student Write-up

PS-II Project Title: Backend Development and Data Engineering

Short Summary of work done during PS-II : My work is related to backend software development and data pipeline automation using various third party API's. I am building a Backtesting Testing Engine that enables the Data Scientist and Analyst at Dezerv to backtest various strategies and investments methods to gain insights on strategies that are providing the best returns and cater to clients on an individual basis so as to provide personalized investment recommendations. My other projects include data pipeline automation that is being built to make

a centralized data base for the Dezerv's employees to access data regarding funds and their performance.

Tool used (Development tools - H/w, S/w) : Python, CMIE PROWESS API, Bloomberg API , Postman , FAST API, Flask , Snowflake Database, Mongo DB

Objectives of the project : To provide software based solution to Investment team at dezerv

Major Learning Outcomes : Backend Software Development, Data Engineering

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The people at Dezerv were very helpful and guiding Since it is a startup , the hustle and the vigor to get things done in given time is more and the work at Dezerv is fast paced and a lot of learning is there . The level of accountability and access this company provides is unmatched . You are expected to perform and deliver everyday and your colleagues motivate you to do so

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

PS-II Station : Digicert Security India Pvt Ltd, Bengaluru

Faculty

Name: Nishit Narang .

Student

Name: S TUHIN(2020B5AA0785H)

Student Write-up

PS-II Project Title: Automating Subscription Workflows

Short Summary of work done during PS-II : Writing tests for Cypress testing for CertCentral for validating various functionalities and workflows.

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

Objectives of the project : Automation Testing and Improving Test infrastructure and coverage

Major Learning Outcomes : Testing Automation using Cypress

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Very chill environment and everyone is helpful. Work load is very light(atleast for interns)

Academic courses relevant to the project : Cryptography



PS-II Station : Digicert Security India Pvt Ltd, Bengaluru

Faculty

Name: Nishit Narang .

Student

Name: POTHIREDDY SAI SUSHRUTH(2021AAPS1680H)

Student Write-up

PS-II Project Title: Automating User Interface Testing Using Cypress: Enhancing Web Application Quality with JavaScript

Short Summary of work done during PS-II : The project has reached a pivotal stage with significant progress in enhancing the Cypress UI test automation framework. Thorough analysis and optimization have improved its efficiency and scalability. Numerous reusable test cases have been added, increasing coverage and addressing various user interactions and edge cases to ensure adaptability to evolving application requirements. Data-driven testing techniques were implemented to streamline automation, replacing hardcoded inputs with dynamic test data. Comprehensive fixture files were created to store reusable data, enhancing consistency and adaptability across test cases. API integration enabled dynamic test data creation like orders through custom Cypress commands utilizing GraphQL mutations, reducing reliance on pre-existing conditions and enabling independent test execution. These advancements have resulted in a scalable, efficient, and maintainable testing framework. The structured approach to data-driven testing and automation significantly enhances reliability, contributing to maintaining high-quality standards in web application testing.

Tool used (Development tools - H/w, S/w) : Cypress, JavaScript, GitHub, PuTTY, Postman, WinSCP, Git Bash, Jira, DBeaver

Objectives of the project : Framework Analysis: Analyze and understand the existing Cypress UI test framework, including its architecture, JavaScript codebase, and integration with shell scripts. Utility Development: Develop utilities to map various test modules into a single, reusable template to enhance modularity and maintainability. Enable execution of multiple test modules together, both locally and remotely, in a scalable and efficient manner. Create comprehensive test reports that include test status, detailed failure logs, and error details. Framework Enhancement: Explore and implement CI/CD integration possibilities to streamline the test automation framework's deployment and execution. Functionality Implementation: Implement functionalities for creating test data, such as accounts, orders, and organizations, to facilitate seamless and repeatable testing processes.

Major Learning Outcomes : 1. In-depth Understanding of UI Automation Frameworks:

Gained expertise in analyzing and enhancing a Cypress-based UI test framework, understanding its architecture, and improving its modularity.

2. Hands-on Experience with Automation Tools:

Developed proficiency in using tools like Cypress, and JavaScript for creating, executing, and managing automated test cases.

3. CI/CD Integration for Automation:

Explored and implemented CI/CD pipelines to streamline test execution and integrate automated testing into the development lifecycle.

4. Test Data Management:

Automated test data creation, including accounts, orders, and organizations, ensuring repeatability and consistency in testing.

5. Exposure to Supporting Technologies:

Leveraged tools like GitHub, Git Bash, WinSCP, and PuTTY for version control, scripting, and remote server access in the automation workflow.

6. Strengthened Debugging and Troubleshooting Skills:

Enhanced problem-solving skills by debugging test failures and optimizing framework performance.

7. Quality Assurance and Web Application Insights:

Developed a comprehensive understanding of quality assurance practices and their role in ensuring robust and reliable web applications.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment here is supportive and collaborative, focusing on teamwork and open communication. Everyone is approachable, and there's a strong emphasis on learning and growth. The company values proactivity, ownership, and accountability while ensuring high-quality work and meeting deadlines. I expect clear guidance, support when needed, and a healthy balance of flexibility and structure. The company recognizes hard work, which creates a motivating and positive atmosphere. It's a place where respect, growth, and collaboration thrive, helping everyone do their best.

Academic courses relevant to the project : DSA, Foundations of data structures and algorithms, Communication Systems, Computer Networks, Object Oriented Programming, Operating Systems, Cryptography, DBMS

PS-II Station : Digicert Security India Pvt Ltd, Bengaluru

Faculty

Name: Nishit Narang .

Student

Name: D NIRUPAM KRISHNAN(2021AAPS2416G)

Student Write-up

PS-II Project Title: Performance and Service Health Monitoring of APIs in New Relic.

Short Summary of work done during PS-II : During PS-II, a comprehensive monitoring system was implemented to track and analyze the performance and health of critical APIs. The project focused on key areas including API performance monitoring, API health monitoring, real-time monitoring, alerting, and historical data analysis. Performance monitoring involved tracking essential metrics such as response times, throughput, error rates, and latency to ensure optimal API functionality. Health monitoring included uptime and availability checks, along with analysis of error logs and exceptions to maintain service reliability. A real-time monitoring framework was established to continuously observe API performance and health metrics, enabling prompt detection of potential issues. Additionally, a robust alerting and notification mechanism was developed to provide timely alerts for critical issues, including performance degradation, outages, and security breaches. Historical data analysis was conducted to identify trends, patterns, and recurring issues, facilitating proactive resolution and long-term optimization of API performance.

and health. This end-to-end monitoring solution ensures that critical APIs remain reliable, secure, and performant, meeting the project's objectives effectively.

Tool used (Development tools - H/w, S/w) : New Relic, Postman, IntelliJ IDEA, Docker, GraphQL,

Objectives of the project : Proactively identifying and resolving issues: Timely detection and resolution of performance bottlenecks and errors ,Optimizing API performance: Identifying areas for improvement and implementing optimizations to enhance performance, Minimizing downtime: Reducing the impact of outages and service disruptions, Improving user experience: Ensuring fast and reliable API responses, Supporting business continuity: Maintaining the availability of critical APIs, Providing actionable insights: Leveraging monitoring data to make informed decisions about API optimization and future development.

Major Learning Outcomes : Understand how to use New Relic for real-time performance monitoring of GraphQL APIs, including tracking key metrics, diagnosing issues with APM, and leveraging error tracking and anomaly detection for proactive optimization.

Learn to monitor the health and availability of GraphQL APIs using New Relic, including synthetic user interaction simulations, health check endpoints, and infrastructure dependency tracking for proactive issue resolution and service reliability.

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : DigiCert Security India offers a dynamic and collaborative working environment focused on innovation, growth, and professional development. As a leader in digital security solutions, the company emphasizes a culture of excellence, teamwork, and continuous learning. Employees are encouraged to take ownership of their projects and contribute meaningfully to secure internet ecosystems.

Expectations from DigiCert include a strong commitment to delivering high-quality solutions, proactive collaboration, and adhering to industry best practices. The organization values adaptability, problem-solving skills, and a customer-centric approach.

DigiCert promotes a growth-oriented mindset, providing opportunities for upskilling through training programs and certifications. The company values integrity, accountability, and a passion

for excellence, ensuring that every employee plays a vital role in maintaining DigiCert's reputation as a trusted leader in digital security.

Academic courses relevant to the project : Data Structures And Algorithms, Operating System, Objected Oriented Programming.



PS-II Station : Digiwokmedia, Visakhapatnam, Visakhapatnam

Faculty

Name: Kranthi Kumar Palavalasa

Student

Name: SANSKRITI SHARMA(2020B4A42180H)

Student Write-up

PS-II Project Title: Market research and product development

Short Summary of work done during PS-II : For Project 1: AI Products Market Analysis, the work focused on gathering and analyzing data on current market trends, customer needs, and competitor offerings. This involved researching the latest advancements in AI technologies, understanding customer preferences, and identifying key gaps in the market. The analysis provided insights into emerging opportunities and areas where existing AI products could be improved or tailored to meet evolving demands. For Project 2: Vizag-Themed Souvenir Brand, the focus was on creating a brand that captures Vizag's coastal charm and cultural heritage. The project involved developing unique product concepts, such as keychains, T-shirts, and handicrafts, inspired by the city's beaches, port scenes, and iconic landmarks. A marketing

strategy was also outlined to appeal to both tourists and locals, with an emphasis on sustainability and eco-friendly materials to align with modern consumer values.

Tool used (Development tools - H/w, S/w) : Microsoft word, excel, google scholar, data wrapper,

Objectives of the project : Project 1- Gather and analyse data on current market trends, customer needs and competitors offerings related to AI products. Project 2- Develop a vizag themed souvenir brand that captures the city's coastal charm and cultural heritage

Major Learning Outcomes : Market analysis expertise, product development knowledge, competitor analysis skills, customer insights gathering, critical thinking and product solving

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : I enjoy working from home as it gives me flexibility and helps maintain a good work-life balance. The supportive and helpful staff in the company make a big difference, creating a positive atmosphere and making it easier to collaborate and get work done efficiently.

Academic courses relevant to the project : Quality control assurance and reliability, project appraisal, additive manufacturing, manufacturing manageability

PS-II Station : Disney+ Hotstar, Mumbai, Bengaluru / Gurgaon/ Online, Mumbai

Faculty

Name: K Venkatasubramanian .

Student

Name: ANMOL.(2020B2A70633P)

Student Write-up

PS-II Project Title: Sherlock v2 & Debugging

Short Summary of work done during PS-II : Developed frameworks to debug "Continue Watching" and "Editorial Tray" sections, integrating user watch history and exposing debug data for rule-based and model-based rankings. Enabled engineers to deep dive into content personalization issues.

Tool used (Development tools - H/w, S/w) : React ,Kotlin ,K8'S,Redis

Objectives of the project : Build a debugging framework for the home page. Simplify debugging for personalization and content ranking issues. Enable user simulation without requiring token generation.

Major Learning Outcomes : Proficiency in React.js, Kotlin, GoLang.
Modular coding, integration with downstream services, deployment processes.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Collaborative and inclusive environment encouraging ownership and learning. Expected to deliver solutions with coding best practices and debugging expertise.

Academic courses relevant to the project : Data Structures, Algorithms,Computer networking

PS-II Station : Disney+ Hotstar,Mumbai, Bengaluru / Gurgaon/ Online, Mumbai

Faculty

Name: K Venkatasubramanian .

Student

Name: BHAVESH AGARWAL(2020B3A70532G)

Student Write-up

PS-II Project Title: Automation of Payments Reconciliation

Short Summary of work done during PS-II : During my PS-II, I contributed to automating payment reconciliation workflows for platforms like PhonePe, Razorpay, and PayTM. I built Airflow pipelines to fetch files from an SFTP server, processed transaction datasets with PySpark to detect inconsistencies, and implemented logic to distinguish between subscription payments and refunds. I also enhanced the system's scalability by optimizing the code and integrated Slack notifications for real-time updates. Earlier in my internship, I gained hands-on experience with a Spring Boot REST API project, focusing on CRUD operations and connecting it to a MySQL database as part of my learning journey.

Tool used (Development tools - H/w, S/w) : NO H/W tools, S/W:- Airflow, Apache Spark,Databricks,Redash,Coralogix,Confluence,Postman,Harness

Objectives of the project : The objective of the project to improve and build upon the previous payments reconciliation methods at hotstar. Our project will serve as a fallback project to the previous reconciliation systems.

Major Learning Outcomes : Developed proficiency in implementing SFTP-based file retrievals and using PySpark for handling and reconciling transaction data. Advanced my ability to design and manage Airflow DAGs, leveraging tools like Databricks, Postman, and Spark to streamline automation workflows.

Details of Papers/patents : No papers or patents since this was an entire software project.

Brief Description of working environment, expectations from the company : The work environment in the company is very light. The work for us was fully remote so interns were not required to come to office. For people who came to office got chance to meet the senior leaderships and have healthy conversations with them. There was also movie screenings and cricket match screenings from time to time.

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

PS-II Station : Disney+ Hotstar,Mumbai, Bengaluru / Gurgaon/ Online, Mumbai

Faculty

Name: K Venkatasubramanian .

Student

Name: PRASOON BAGLA(2020B3A71159G)

Student Write-up

PS-II Project Title: COE as a Service

Short Summary of work done during PS-II : I have been involved in various aspects of development, including designing databases, creating REST API contracts, and building core orchestration logic that serves as the backbone of the Hotstar service. I also introduced an innovative approach for storing certain functions, which is now being used in production. Additionally, I gained a deep understanding of the existing system, Apache Airflow, and analyzed its pros and cons. Lastly, I learned how the organization manages to handle a large number of live concurrent users, studying Hotstar's scaling strategies, including both horizontal and vertical scaling policies.

Tool used (Development tools - H/w, S/w) : S/w: Go lang, Docker, Kubernetes, React Js, CSS, Python

Objectives of the project : To create a centralized ingestion service that unifies encoding, packaging, uploading, and other CoE features. The service should be compatible with different orchestration tools like 1. Airflow, 2.AP1-based triggers, 3. local orchestration.

Major Learning Outcomes : Since we built our new service from the ground up, I gained experience in designing databases, as well as progressing from low-level to high-level design. I also familiarised myself with design patterns and SOLID principles. Additionally, I learned new programming languages like Go, Python, and explored technologies such as Apache Airflow, React Flow, and Go Templates. Beyond that, I saw how theoretical concepts from computer science, like state machines (which we studied in Theory of Computation), are applied in real-world scenarios. I also gained a deeper understanding of best coding practices and techniques for writing clean, efficient, and maintainable code.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment at Hotstar is excellent, with a strong sense of support from everyone. The first month was dedicated to familiarising myself with the existing system, and during this time, mentors and managers provided valuable resources to help me get up to speed. In addition, the daily stand-up meetings, where we showcase our progress, served as a great source of motivation. My buddy and manager were always available for guidance. Hotstar values individuals who are committed

to giving their best in any task assigned. The team is incredibly friendly and supportive, always ready to clarify even the smallest doubts without hesitation.

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

PS-II Station : Disney+ Hotstar,Mumbai, Bengaluru / Gurgaon/ Online, Mumbai

Faculty

Name: K Venkatasubramanian .

Student

Name: SUPREETH M.K.(2020B5A70596P)

Student Write-up

PS-II Project Title: Integration of AWS Services to the Central Scaling Platform

Short Summary of work done during PS-II : I worked on the backed for the project with a co-intern working on the frontend. Most of my work involved the creation of API calls to AWS and the business logic to reduce the dependency of engineers on the platform. Implemented Auto Scaling as well to ensure the Scaling which takes place on some predefined conditions/metrics.

Tool used (Development tools - H/w, S/w) : Software: AWS, GoLang, Docker, Postman, Terraform

Objectives of the project : Get centralized access to the commonly used AWS services.

Major Learning Outcomes : Scaling of infrastructure during live events and Business as usual. Working of different AWS services and understanding how scaling works.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Work culture is very good. A lot of freedom since it is a fully remote station. Just have to attend meetings on time and ensure the given tasks are completed on time. No checkin/checkout time. Can get a lil hectic with working till late in the evening only during deployments.

Academic courses relevant to the project : OOPS, DBMS, Computer Networks, Operating Systems.

PS-II Station : Disney+ Hotstar,Mumbai, Bengaluru / Gurgaon/ Online, Mumbai

Faculty

Name: K Venkatasubramanian .

Student

Name: NAMAN AJAY MARKHEDKAR(2020B5A71862G)

Student Write-up

PS-II Project Title: Metadata review tool

Short Summary of work done during PS-II : - Created a feature for the UI for the CMS tool used internally at Hotstar. The aim was to show difference in the metadata before submitting changes.

Tool used (Development tools - H/w, S/w) : JIRA , VSCode , Git/Github , Slack , Zoom , Harness

Objectives of the project : To create a review framework for CMS UI used at Hotstar to show metadata difference and impact of each update.

Major Learning Outcomes : - Well versed with ReactJS and Javascript, Webpack , Web-optimization etc.

- Had complete ownership of the project . So designed , got feedback , developed and got it reviewed by seniors.
- Teamwork and communication along with contributing to an existing LIVE project was major learning.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : - Very supportive manager and team members.

- Always welcoming to my doubts and questions.
- Expectations from the company- Dedication to learn and attain skills , asking questions and try to find out things on your own.

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

PS-II Station : Disney+ Hotstar,Mumbai, Bengaluru / Gurgaon/ Online, Mumbai

Faculty

Name: K Venkatasubramanian .

Student

Name: DEEPAK(2021A7PS2733G)

Student Write-up

PS-II Project Title: Automation of Payments Reconciliation and Book Keeping

Short Summary of work done during PS-II : During my PS-II, I worked on automating payment reconciliation processes for PhonePe, Razorpay and PayTM. I developed Airflow DAGs to download files from an SFTP server, process transaction data using PySpark, and identify mismatched or missing records in payment gateways. I also implemented transaction ID filtering logic to differentiate subscription payments and refunds, optimized code for scalability, and integrated workflows with Slack notifications. Additionally, in the start of internship as a learning curve I worked on a SpringBoot REST API project to perform CRUD operations and linked it to MySQL.

Tool used (Development tools - H/w, S/w) : Postman, Apache Spark, Databricks, Airflow DAG, SpringBoot, Python

Objectives of the project : To build a robust and foolproof system for automating payments reconciliation, transaction processing, and bookkeeping.

Major Learning Outcomes : Gained expertise in integrating SFTP file downloads with PySpark for transaction processing and reconciliation. Enhanced skills in developing Airflow DAGs to automate workflows and utilize tools like Postman, Databricks, and Spark for end-to-end automation.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment was supportive and flexible, allowing independence in managing tasks. Guidance from the mentor was readily available, and resources were accessible to enhance problem-solving capabilities. The company expected interns to contribute to live projects, show ownership of tasks, and deliver results adhering to industry standards.

Academic courses relevant to the project : OOPS(majority), DBMS and DSA(little bit)

PS-II Station : Divgi Torq Transfer Systems Ltd. Shirwal,Pune, Satara

Faculty

Name: Ravi Shrikrishna Reosekar .

Student

Name: JAYESH JOSHI .(2021A4PS0885P)

Student Write-up

PS-II Project Title: Lean Manufacturing Implementation and Durability Testing of Z101MT Transfer Case

Short Summary of work done during PS-II : This report highlights two key projects undertaken at Divgi TorqueTransfer Systems, Shirwal: lean manufacturing implementation and durability testing of the Z101MT transfer case. The lean manufacturing segment focuses on improving production efficiency in the Magna Pinion Cell by applying principles like waste reduction, process optimization, and value stream mapping. The durability testing project validates the performance of the Z101MT transfer case under rigorous conditions, ensuring its reliability and compliance with customer specifications. Key outcomes include enhanced cycle efficiency, streamlined workflows,

and validated component durability, showcasing the importance of innovation and systematic testing.

Tool used (Development tools - H/w, S/w) : Excel, Morphee, Unipilot, Dynamometer

Objectives of the project : Document the implementation of lean manufacturing techniques to optimize production efficiency and the durability testing of the Z101MT transfer case to ensure its reliability under specified operating conditions

Major Learning Outcomes : Lean Manufacturing Principles, developing a Value Stream Map(VSM), Project Management, Testing and Validation Techniques.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment is good, although there isn't a lot of work to do.

Academic courses relevant to the project : Supply Chain Management

PS-II Station : Divgi TorqTransfer Systems Pvt. Ltd. - Bhosari,Pune, Pune

Faculty

Name: Ravi Shrikrishna Reosekar .

Student

Name: ANKIT SHARMA(2021A4PS2343H)

Student Write-up

PS-II Project Title: Optimization and Analysis of Transfer Case Operations at Divgi Torque Transfer Systems

Short Summary of work done during PS-II : During my Practice School-II internship at Divgi Torque Transfer Systems, I contributed to projects focused on optimizing transfer case operations and enhancing product reliability. A key aspect of my work was conducting a Failure Mode and Effects Analysis (FMEA) to identify potential failure points in transfer case components and propose mitigation strategies to improve system robustness. I developed a Standard Operating Procedure (SOP) for rework operations, streamlining workflows, reducing rework time, and minimizing operational costs. Additionally, I performed skid torque calculations for a diverse range of vehicles, providing insights into transfer case performance under various torque loads, which informed design refinements. My work also involved optimizing the microgeometry of transfer case gears using advanced simulation tools like MASTA and ANSYS. By leveraging optimization algorithms such as Nelder-Mead and Powell, and employing machine learning models like Linear Regression and Random Forests, I successfully minimized Transmission Error (TE) values, enhancing product durability and efficiency. These projects required collaboration with CAD and CAE teams for data collection and analysis, as well as scripting for simulation automation. The outcomes contributed significantly to improving the quality, innovation, and operational efficiency of transfer cases. This experience deepened my understanding of automotive powertrain systems and equipped me with skills in technical analysis, optimization, and data-driven problem-solving, preparing me for future challenges in the field of engineering and technology.

Tool used (Development tools - H/w, S/w) : ANSYS, MASTA, Python, MS Excel

Objectives of the project : The primary objective of the project was to enhance the reliability, performance, and operational efficiency of transfer cases at Divgi Torque Transfer Systems. This involved: Conducting a Root Cause Analysis through Failure Mode and Effects Analysis (FMEA) to identify potential failure points, assess risks, and implement mitigation strategies for improving system robustness. Optimizing Processes by developing a Standard Operating Procedure (SOP) for rework operations, streamlining workflows, minimizing rework time, and reducing operational costs. Improving Performance by performing skid torque calculations to evaluate transfer case behavior under varying conditions, aiding in design refinements. Enhancing Microgeometry

Design to minimize transmission errors (TE) through advanced data analysis, optimization algorithms, and machine learning techniques.

Major Learning Outcomes : Technical Analysis and Problem-Solving:

Gained hands-on experience with Failure Mode and Effects Analysis (FMEA) for identifying and mitigating potential failure points in transfer case components.

Process Optimization:

Developed and implemented a Standard Operating Procedure (SOP), improving efficiency, reducing rework time, and streamlining workflows in transfer case operations.

Performance Evaluation:

Performed skid torque calculations to analyze transfer case performance across diverse vehicle models, enhancing understanding of torque load behavior.

Advanced Simulation Tools:

Acquired expertise in using MASTA and ANSYS for data-driven optimization and analysis of microgeometry to reduce Transmission Error (TE) values.

Data Analysis and Machine Learning:

Utilized Python libraries and machine learning models such as Linear Regression, Lasso, Ridge, Random Forests, and Decision Trees to optimize gear microgeometry and improve TE values.

Optimization Algorithms:

Explored and implemented algorithms like Nelder-Mead and Powell, gaining insights into iterative optimization methods for minimizing system inefficiencies.

Collaboration and Documentation:

Worked collaboratively with cross-functional teams (CAD, CAE) and documented technical procedures to ensure consistent quality and serve as a training resource.

Industry Knowledge:

Developed a deep understanding of automotive powertrain systems, particularly transfer cases, their design parameters, and their role in improving vehicle performance and reliability.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment during the internship was professional and provided access to advanced tools and technologies essential for project execution. Collaboration with team members was productive,

and the company offered opportunities to work on challenging and impactful projects. However, there were areas where the experience could be improved.

One challenge was the limited availability of structured mentorship. More regular interactions with senior professionals and detailed guidance would have enhanced learning and contributed to more efficient problem-solving.

Additionally, certain administrative processes, such as resource allocation and approvals, occasionally led to delays. Streamlining these workflows could improve productivity and ensure timely project completion.

Another area for improvement is the frequency of feedback. Regular, constructive feedback sessions could help interns better align their work with the company's expectations and foster professional growth.

While the company offers a solid platform for gaining technical expertise, addressing these aspects would significantly enhance the internship experience and better prepare interns for future roles in the industry.

Academic courses relevant to the project : Computer Aided Design, Design of Machine Elements, Engineering Optimization, Design of Machine Elements

PS-II Station : Divgi TorqTransfer Systems Pvt. Ltd. - Bhosari,Pune, Pune

Faculty

Name: Ravi Shrikrishna Reosekar .

Student

Name: PRATHAM GB .(2021A4PS2666P)

Student Write-up

PS-II Project Title: Development of Prototype Transmission for an EV

Short Summary of work done during PS-II : During my internship, I worked on the design and development of a prototype gearbox for Electric Vehicles (EVs), focusing on optimizing performance, efficiency, and durability to align with the unique requirements of EV drivetrains. I utilized advanced tools like MASTA to conduct gear design, stress analysis, and noise-vibration-harshness (NVH) assessments. Cutting-edge materials and manufacturing techniques were employed to minimize the gearbox's weight without compromising its strength. Additionally, I contributed to extensive bench testing to evaluate the gearbox's performance under various load conditions and real-world operating scenarios. The results demonstrated significant improvements in efficiency and noise reduction compared to traditional transmission systems, highlighting the potential of this prototype to advance high-efficiency EV powertrains. This hands-on experience allowed me to develop skills in simulation, testing, and innovative design approaches for modern automotive systems.

Tool used (Development tools - H/w, S/w) : S/W : ANSYS, SIEMENS NX, MASTA, EXCEL, POWERPOINT. H/W : Gauging tools, vernier calipers

Objectives of the project : Design and develop a single speed gearbox prototype for an electric vehicle according to customer requirements.

Major Learning Outcomes : Ansys Workbench, process of how a gear box is developed from scratch, teamwork and communication skills

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment during the internship was professional and provided access to advanced tools and technologies essential for project execution. Collaboration with team members was productive, and the company offered opportunities to work on challenging and impactful projects. However, there were areas where the experience could be improved.

One challenge was the limited availability of structured mentorship. More regular interactions with senior professionals and detailed guidance would have enhanced learning and contributed to more efficient problem-solving.

Additionally, certain administrative processes, such as resource allocation and approvals, occasionally led to delays. Streamlining these workflows could improve productivity and ensure timely project completion.

Another area for improvement is the frequency of feedback. Regular, constructive feedback sessions could help interns better align their work with the company's expectations and foster professional growth.

While the company offers a solid platform for gaining technical expertise, addressing these aspects would significantly enhance the internship experience and better prepare interns for future roles in the industry.

Academic courses relevant to the project : Computer Aided Design, Automotive Vehicles, Engines Motors and Mobility, Mechanisms and Machines, Design of Machine Elements, Manufacturing Processes.

PS-II Station : Divgi TorqTransfer Systems Pvt. Ltd. Sirsi, Karnataka, Sirsi

Faculty

Name: Ravi Shrikrishna Reosekar .

Student

Name: VISHNU AKUMALLA(2021A4PS1894H)

Student Write-up

PS-II Project Title: Operator Education and Training

Short Summary of work done during PS-II : Main project was to create training modules for advanced machines. This involved interacting with machine operating experts and consulting a technical operating manual to collect information regarding the working of the machine and create PPTs on 4 levels of expertise to be used for operator training. This was to be followed by question papers to test the knowledge of the operator for each level of expertise after the training period. Also created a list of machines in operation in the factory and suggested ways to improve the layout and help streamline the work flow. Created SOS (Standard Operation Sheets) for the shaft cell department by watching the operators perform the machining process and compiling visual aid in the form of photos. Worked in the Quality Assurance department in the data collection and entry to analyse errors in the manufacturing of various parts. Also studied the DMAIC approach to analysing and rectifying such errors.

Tool used (Development tools - H/w, S/w) : Machine operating manuals, Microsoft PowerPoint, Microsoft Excel, Microsoft Word

Objectives of the project : Create training modules for advanced manufacturing process machines

Major Learning Outcomes : Learnt how advanced manufacturing processes are carried about in modern industries. Learnt about machine layout significance in optimizing the work flow. Learnt about the hierarchy in operator skill levels and designations to ensure a smooth line of command. Learnt the importance of work standardisation and how it benefits the work flow. Learnt about the workings of the Quality Assurance department and was involved in the data collection and entry process of many parts. Improved my PowerPoint and Excel skills.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Very friendly working environment. Though it is a village in Karnataka, everybody is willing to speak in Hindi, so there is no language barrier. All department managers are very helpful and the HR were most helpful in finding a PG to stay. The company ensured we had no discomfort moving to Sirsi, and we were even given a nice office to sit in. My manager is very friendly and allowed me to complete all my work at my own pace. He was very supportive throughout PS. There is no rudeness from anybody. Even the shop floor workers are very kind and friendly. Department managers were very

excited to assign work to me as they all have high expectations from BITS Pilani interns. Throughout PS I was treated with lots of respect and never felt out of place.

Academic courses relevant to the project : Advanced Manufacturing Processes, Manufacturing Management

PS-II Station : Divgi TorqTransfer Systems Pvt. Ltd. Sirsi, Karnataka, Sirsi

Faculty

Name: Ravi Shrikrishna Reosekar .

Student

Name: ANISH NIMMARAJU(2021A4PS3071H)

Student Write-up

PS-II Project Title: Work Standardization

Short Summary of work done during PS-II : My tasks included auditing the workplace, and ensuring all safety requirements are followed. This would ensure quality conformance. It also involved making many important documents for different machines and processes, that give necessary operational instructions. These documents included the SOS-JES sheets, Work instruction sheets, Process control study sheets etc.

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

Objectives of the project : To ensure the effectiveness of defined quality system.

Major Learning Outcomes : I had great interactions with the plant officials, who were very helpful. I also gained experience in auditing and creating important documentation for the company to ensure consistent quality maintenance.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : This company has a very good working environment. The employees were very helpful.

Academic courses relevant to the project : Nil



PS-II Station : DMI Finance Limited, New Delhi

Faculty

Name: Harish Kumar Aggarwal .

Student

Name: ASHRUT SHARMA .(2020B2A41930P)

Student Write-up

PS-II Project Title: Automation of Monitoring of Machine Learning Models

Short Summary of work done during PS-II : My work was to use python to automate the monitoring of the machine learning models. It was done to present it to the top leadership about the accuracy of the models and if there is a need to develop a new model or not.

Tool used (Development tools - H/w, S/w) : Python, Athena, Sql, RedShift, Tableau

Objectives of the project : Automate the monitoring of machine learning model.

Major Learning Outcomes : I learned how to use multiple python files and function and finally integrate them to make a whole one click solution for monitoring.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment is a bit hectic. The manager sometimes get strict and expects you to do a lot of work. But the team is very good and supportive and always guides and helps in case of any problem.

Academic courses relevant to the project : Python and Machine Learning

PS-II Station : DMI Finance Limited, New Delhi

Faculty

Name: Harish Kumar Aggarwal .

Student

Name: HARSHITA .(2021A5PS1230P)

Student Write-up

PS-II Project Title: Automation of the model monitoring pipeline

Short Summary of work done during PS-II : I automated the model monitoring process for all deployed models to reduce the time required (2-3 days) and minimize manual intervention. The project involved connecting to a server from my local desktop, where all team members had built their repositories for their work, allowing everyone to access them. My task was to create a pipeline that connected all the Python scripts, both local and on the server, into a single bash script. In a second project, I replicated the traditional presentations used for displaying monitoring results into a single Tableau dashboard.

Tool used (Development tools - H/w, S/w) : Jupyter Notebook, Python, Redshift, Athena, Git Bash, Tableau, ec2_server

Objectives of the project : Automation and model monitoring

Major Learning Outcomes : Python, Tableau, SQL, softwares like -Athena, Redshift & AWS VPN

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment is positive, and everyone is supportive. This position is an excellent starting point for individuals beginning their coding journey. During the first month, we were provided with courses in SQL, Python, and machine learning, which offered ample exposure to the material before we started working. However, one drawback is the limited flexibility in leave approval. Additionally, tasks are often assigned on short notice, with the expectation that they will be completed within tight deadlines. There were times when we were required to stay beyond working hours and work on weekends.

Academic courses relevant to the project : Not sure

PS-II Station : Drut Networks India LLP, Hyderabad

Faculty

Name: Raghu Sesha Iyengar .

Student

Name: KOTHA SHREYAS REDDY(2021AAPS2576G)

Student Write-up

PS-II Project Title: Frontend development

Short Summary of work done during PS-II : Acquired knowledge of frontend architecture, using React, and Redux for React for development.

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

Objectives of the project : Frontend development

Major Learning Outcomes : Acquired knowledge of frontend architecture, using React, and Redux for React for development.

Details of Papers/patents :

Brief Description of working environment, expectations from the company : Great working environment with flexible working hours and friendly teams.

Academic courses relevant to the project : Object oriented programming

PS-II Station : EkStep Foundation, Bangalore

Faculty

Name: Arindam Roy .

Student

Name: LOHITH GURUBILLI(2021A4PS2312H)

Student Write-up

PS-II Project Title: Business Analysis and Operations for Assisted Math Learning

Short Summary of work done during PS-II : School Operations(running classes and helping students solve math booklets), made online live dashboards on gsheets and python dash. Review of content, stakeholder management

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

Objectives of the project : Aiding school students with learning math

Major Learning Outcomes : Soft skills, gsheets, python dash

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Interns are given lots of opportunities to learn and perform, everyone in the office is very approachable. Company just expects proper commitment to work and to be completed within deadline

Academic courses relevant to the project : None

PS-II Station : Eltropy - Development (Engineering Team), Bengaluru

Faculty

Name: Monali Tushar Mavani .

Student

Name: JATIN SINGHAL(2020B1A31957G)

Student Write-up

PS-II Project Title: React Development

Short Summary of work done during PS-II : Did React Development,small projects and JIRA tickets related to the same

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

Objectives of the project : Contribute to the front end dev of Eltropy's website

Major Learning Outcomes : Corporate Culture,Web Development

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Average,Online

Academic courses relevant to the project : DSA,OOP

PS-II Station : Eltrophy - Development (Engineering Team), Bengaluru

Faculty

Name: Monali Tushar Mavani .

Student

Name: RITESH VIJAY BHAPKAR(2020B1A31976G)

Student Write-up

PS-II Project Title: Development and Integration of Frontend and Backend Functionalities for AI-Driven Financial Applications

Short Summary of work done during PS-II : • Improved the overall platform efficiency by streamlining backend processes and reducing API response times. • Enhanced user satisfaction with intuitive UI and smarter chatbot interactions. • Provided actionable insights to financial advisors, improving decision-making and customer retention rates.

Tool used (Development tools - H/w, S/w) : • Backend: Golang, Python • Frontend: React, Chakra UI • AI Frameworks: Hugging Face Transformers • APIs: RESTful APIs, Postman (testing) • Project Management: Jira, Slack • Version Control: Git • Deployment and Testing: Docker, Jenkins, Kubernetes

Objectives of the project : As a Software Development Intern at Eltrophy, my primary focus was on enhancing AI-driven functionalities for financial communication tools. This included the development and integration of advanced APIs, responsive front-end components, and AI-powered features like chatbots and predictive analytics. The goal was to improve user engagement, optimize performance, and provide actionable insights for credit unions and banks.

Major Learning Outcomes : AI, ML, React, JS, TS, Python, Teamwork,

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Very helpful and positive. People are approachable and accommodating. You are expected to work on your own without much intervention and just deliver.

Academic courses relevant to the project : AI, ML

PS-II Station : Eltropy - Development (Engineering Team), Bengaluru

Faculty

Name: Monali Tushar Mavani .

Student

Name: SAHIL SIDDIQUI(2020B1A32499H)

Student Write-up

PS-II Project Title: Engineering Team

Short Summary of work done during PS-II : During my tenure at Eltropy, I focused on developing robust backend systems and enhancing the testability of the codebase. My primary responsibility revolved around unit testing in Go, where I applied industry best practices to ensure the reliability and scalability of the system. A significant part of my work involved refactoring legacy code to make it more testable, addressing challenges like untestable services by modifying their structure and implementation. To achieve comprehensive test coverage, I utilized tools like Testify and GoMock, implementing techniques such as table-driven testing and employing t.Run

for subtests. I generated mocks by interfacing the code, enhancing modularity and reusability. To maintain transparency and track progress, I produced detailed test coverage reports and presented my findings to the team. In addition to testing, I worked with tools like Docker, Jenkins, and Consul, leveraging them for containerization, continuous integration, and service discovery. I also implemented the Allure framework to generate informative test reports, making debugging and analysis more efficient. Furthermore, I contributed to creating clear and concise documentation, ensuring my solutions were well-understood by the team. This documentation served as a reference for future development and testing. My experience at Eltropy allowed me to develop a deeper understanding of distributed systems, enhance my proficiency in Go, and improve my ability to deliver high-quality, maintainable code in a collaborative and fast-paced environment.

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

Objectives of the project : Backend Development

Major Learning Outcomes : backend

Details of Papers/patents : na

Brief Description of working environment, expectations from the company : During my tenure at Eltropy, I focused on developing robust backend systems and enhancing the testability of the codebase. My primary responsibility revolved around unit testing in Go, where I applied industry best practices to ensure the reliability and scalability of the system. A significant part of my work involved refactoring legacy code to make it more testable, addressing challenges like untestable services by modifying their structure and implementation.

To achieve comprehensive test coverage, I utilized tools like Testify and GoMock, implementing techniques such as table-driven testing and employing t.Run for subtests. I generated mocks by interfacing the code, enhancing modularity and reusability. To maintain transparency and track progress, I produced detailed test coverage reports and presented my findings to the team.

In addition to testing, I worked with tools like Docker, Jenkins, and Consul, leveraging them for containerization, continuous integration, and service discovery. I also implemented the Allure framework to generate informative test reports, making debugging and analysis more efficient.

Furthermore, I contributed to creating clear and concise documentation, ensuring my solutions were well-understood by the team. This documentation served as a reference for future development and testing.

My experience at Eltropy allowed me to develop a deeper understanding of distributed systems, enhance my proficiency in Go, and improve my ability to deliver high-quality, maintainable code in a collaborative and fast-paced environment.

Academic courses relevant to the project : OOPS, DSA

PS-II Station : Eltropy - Development (Engineering Team), Bengaluru

Faculty

Name: Monali Tushar Mavani .

Student

Name: DIVYANSHU(2021AAPS1937H)

Student Write-up

PS-II Project Title: Frontend Development

Short Summary of work done during PS-II : I worked as a Frontend Intern in the Integration Team. Initially, I was given time to explore the frontend repository to understand how everything was connected. My early tasks included solving frontend bugs and implementing UI changes. While some bugs were challenging and required guidance from my mentor, I was encouraged to put in my best effort before seeking help. By the end of September and October, I was assigned a full project that required close collaboration with backend developers to implement new features. The team treated me like a full-time employee, and I could always ask for help if I was stuck.

Since this was a remote job, there were no fixed working hours, but my team had regular stand-up meetings to ensure coordination. The work was generally manageable, although it could become hectic near release deadlines.

Tool used (Development tools - H/w, S/w) : Frontend-: react, redux ,react query Backend-: Golang , Postgres SQL, MongoDB, Spring Boot

Objectives of the project : Frontend Development

Major Learning Outcomes : Different libraries and tools used with React and their purposes. Gained experience by collaborating with senior devs.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The best part of this company is its full of bitians even the CEO is bitian

The working environment was collaborative and supportive, with team members treating interns as full-time employees. While the role was remote with no fixed working hours, regular stand-up meetings ensured alignment and communication within the team. The company expected interns to take initiative, thoroughly attempt to solve tasks independently, and only seek help after putting in their best effort. However, guidance and support were always available whenever needed, fostering a learning-focused and professional atmosphere.

Academic courses relevant to the project : NA

PS-II Station : Ergon Labs, Bengaluru

Faculty

Name: Rajesh Kumar Tiwary .

Student

Name: SREE RAMA CHANDRA MURTHY G(2020B2A42401H)

Student Write-up

PS-II Project Title: Mechanical Design

Short Summary of work done during PS-II : During my PS-II internship at Ergon Labs, I primarily focused on CAD and CAM tasks, contributing to the development and optimization of various components and systems. My responsibilities included designing fixtures and integral parts for the On-Board Charger and Motor Control Unit, with a particular focus on the enclosure design and manufacturing. I also played a significant role in planning and setting up the assembly line for mass production. Additionally, I was tasked with redesigning the entire product to enhance its efficiency and manufacturability. This involved testing the integrity of different components to ensure they met the required standards and could withstand operational stresses. My work in planning the assembly line included optimizing workflows to improve efficiency and reduce production time. Throughout the internship, I applied my knowledge of mechanical engineering and CAD tools to solve real-world problems, contributing to the product's overall improvement and the company's readiness for mass production. This experience allowed me to enhance my technical skills and gain valuable insights into the manufacturing process and product development lifecycle.

Tool used (Development tools - H/w, S/w) : Solidworks,Creo,Ansys,Fusion 360

Objectives of the project : Degign,Manufacture,validate

Major Learning Outcomes : Learned how product life cycle works from the scratch

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company :

Academic courses relevant to the project : CAD, Design of Machine Elements, Mechanisms and Machines, Material Science, Thermodynamics.

PS-II Station : Ericsson Global India Pvt. Ltd.,Bengaluru, Bangalore

Faculty

Name: Lucy J. Gudino

Student

Name: ANISH SREENIVAS(2020B3A71464G)

Student Write-up

PS-II Project Title: AI Explainability & Observability

Short Summary of work done during PS-II : The project revolved around designing a framework to monitor AI models' real-time behavior and enhance their interpretability. I worked on developing explainability techniques like feature importance analysis, counterfactual explanations, and visual tools. Additionally, I contributed to observability mechanisms that detect data drift, performance anomalies, and align AI systems with regulatory standards. My work included creating custom logging features, integrating interactive dashboards, and testing solutions across industries.

Tool used (Development tools - H/w, S/w) : Development Tools (Software): Python, SHAP, LIME, Grafana, and Datadog for explainability and monitoring, alongside proprietary APIs for customization. Hardware: Cloud-based infrastructure for deploying and testing AI systems.

Objectives of the project : The primary objective of this project is to create a robust framework for AI explainability and observability, ensuring that AI systems operate transparently and reliably. The framework will empower stakeholders to understand and trust AI model behaviour across its lifecycle, from development to production.

Major Learning Outcomes : During my PS-II at Ericsson Global, I deepened my knowledge of AI observability and explainability. I gained expertise in integrating observability metrics with explainability techniques, building tools for monitoring AI models in production. This experience enhanced my ability to ensure AI systems remain transparent, reliable, and compliant with ethical standards, focusing on fairness, anomaly detection, and proactive interventions.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The working environment at Ericsson Global was highly collaborative, with a strong focus on innovation and problem-solving. There was a clear emphasis on teamwork and open communication, which made it easy to learn and contribute effectively. It provided access to excellent tools and resources. Overall, it was a supportive environment that encouraged both professional and personal growth.

Academic courses relevant to the project : AI/ML, OOPs, DBMS

PS-II Station : Ericsson Global India Pvt. Ltd.,Bengaluru, Bangalore

Faculty

Name: Lucy J. Gudino

Student

Name: PEEYUSH VATSA .(2021A7PS0007P)

Student Write-up

PS-II Project Title: Creating Data Pipelines and ML Models

Short Summary of work done during PS-II : Created machine learning models, ETL pipelines and PowerBI reports

Tool used (Development tools - H/w, S/w) : Python, tensorflow, pandas, docker, gcp

Objectives of the project : Different for different projects

Major Learning Outcomes : Python, tensorflow, pandas, docker, gcp, Selenium

Details of Papers/patents : NA

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

Academic courses relevant to the project : ML

PS-II Station : Ericsson Global India Pvt. Ltd.,Bengaluru, Bangalore

Faculty

Name: Lucy J. Gudino

Student

Name: SRIJITH K(2021AAPS2233H)

Student Write-up

PS-II Project Title: Automation of LLM Evaluation

Short Summary of work done during PS-II : DeepEval is an advanced evaluation framework designed to assess the performance of large language models (LLMs) in various linguistic and contextual tasks. My work focuses on leveraging DeepEval to systematically evaluate the model's effectiveness in tasks such as text generation, sentiment analysis, and contextual understanding. By utilizing DeepEval's robust benchmarking capabilities, I analyze the model's outputs against a diverse dataset, comparing metrics like accuracy, fluency, coherence, and adaptability to specific prompts. The framework also provides detailed insights into areas where the LLM excels, such as natural language comprehension and task-specific consistency, and highlights gaps, such as sensitivity to ambiguous prompts or factual inaccuracies. Through these evaluations, I aim to refine the LLM's responses, ensuring higher precision and better user interaction. Furthermore, DeepEval's ability to simulate real-world scenarios has been instrumental in stress-testing the model, identifying edge cases, and developing mitigation strategies. This process not only enhances the model's performance but also contributes to establishing benchmarks for future advancements in LLM evaluation methodologies.

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

Objectives of the project : Given a customer forums dataset, automate the testing process of a conversational assistant by passing the queries from the customer forum and getting responses for evaluation

Major Learning Outcomes : Learnt basically GenAI and packages like Langchain and Deepeval

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The working environment is very chill and there's almost no pressure unless you do the work on time, there's no attendance pressure, the work is not hectic but can get hectic close to product releases.

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

PS-II Station : Ericsson India Global Services Pvt. Ltd., Chennai, Chennai

Faculty

Name: Lucy J. Gudino

Student

Name: SAHIL SUDESH(2020B4A31868G)

Student Write-up

PS-II Project Title: Casual Impact of Configurations in Telecom Networks

Short Summary of work done during PS-II : The work involved building various causal models resembling various telecom configurations and getting causal estimates. The estimates includes Propensity scores, DML etc. The underlying assumptions of Causal inference make it difficult to be applied in real world scenarios. In order to deal with this, the idea is to cluster the similar sites. As a result we will have cluster level causal models, where the assumptions hold. The clustering process invlved using Graph networks that capture both the spatial and temporal aspects. These graph networks once trained; we can obtain the embeddings, transform them and use it for clustering. Once the clusters are formed, we can build cluster level causal models.

Tool used (Development tools - H/w, S/w) : Pytorch, Pytorch Geometric Temporal, Matlab, NetworkX, Sk-learn, Numpy, Pandas, Matplotlib etc.

Objectives of the project : To study the causal impact of various configurations in cellular network sites. Clustering the sites and employing tools like Graph Neural Networks

Major Learning Outcomes : Clustering similar cell sites using Graph networks and applying Causal inference on various configurations.

Details of Papers/patents : None yet. The work done will be continued and might evolve into a publication.

Brief Description of working environment, expectations from the company : Extremely friendly and welcoming environment. The team GAIA (Global AI Accelerator) headed by Mr. MJ Prasath (Director Data Science) is extremely welcoming and fun to work with. It has people from various skill sets and some of them even from reputed institutions around the world. This is a wonderful opportunity to learn how ML projects work in corporates and how an individual can fit in to the big machine. The team allows you to have your own learning pace and with no burden of deadlines. The manager Mr. MJ Prasath is extremely friendly and supportive. It is a great learning opportunity for anyone who wants to venture into the field of Data Science and Machine Learning.

Academic courses relevant to the project : Machine Learning, Neural Networks, Applied Statistical Methods, Statistical Inference, DS Minor Courses

PS-II Station : Ericsson India Global Services Pvt. Ltd., Chennai, Chennai

Faculty

Name: Lucy J. Gudino

Student

Name: SHASHANK GAUTAM(2020B5A32378H)

Student Write-up

PS-II Project Title: Knowledge distillation of LLM models, Analyzing the impact of hyperparameter tuning on LLM response generation, The effect of pretraining and finetuning on domain-specific text embedding models

Short Summary of work done during PS-II : During PS-II, the project involved three key areas: knowledge distillation, hyperparameter analysis, and fine-tuning of domain-specific embedding models. Knowledge distillation techniques compressed large models like TinyLLaMA, LLaMA, and Mistral into smaller versions, maintaining performance while improving efficiency. The hyperparameter study analyzed the effects of temperature, top-p, and top-k settings on LLM-generated responses, identifying patterns in coherence and diversity. The third area examined pretraining and fine-tuning effects on domain-specific datasets such as PubMedQA and SciQ. A total of 22 models were developed, evaluated using metrics like Cosine Similarity, ROUGE-L, and METEOR. Experimental results highlighted response variations through parameterized setups with 150 combinations, visualized using heatmaps and regression analysis.

Tool used (Development tools - H/w, S/w) : The project utilized hardware resources such as servers for training and inference of LLMs, including quantized versions for efficient processing. Software tools included Hugging Face for transformer models, Python for data processing, metric calculation,

Objectives of the project : The project aims to enhance the efficiency and applicability of large language models (LLMs) and domain-specific text embedding models. It focuses on compressing large, resource-intensive models into smaller, efficient ones through knowledge distillation techniques such as teacher-student frameworks and Cross-Model Attention (CMA). Another objective is to analyze how hyperparameters, including temperature, top-p, and top-k, affect the

quality and diversity of LLM-generated responses. Additionally, the project explores the impact of pretraining and fine-tuning using domain-specific datasets to improve embedding models' adaptability and relevance to specific tasks.

Major Learning Outcomes : The project enabled a deeper understanding of advanced NLP techniques such as knowledge distillation, embedding strategies, and their applications in domain-specific tasks. It provided insights into how hyperparameter settings influence the coherence, diversity, and informativeness of LLM-generated responses. Additionally, the work offered valuable experience in conducting large-scale experimental setups, using evaluation metrics like Cosine Similarity, ROUGE-L, and METEOR, and analyzing results through heatmaps and regression techniques.

Details of Papers/patents : The project leveraged insights from significant research papers, including Hinton et al. (2015) on knowledge distillation, Devlin et al. (2019) on pretraining transformers, and advancements such as TinyBERT, DistilBERT, and Pegasus models. 2 of the papers

Brief Description of working environment, expectations from the company : The working environment was exceptionally friendly and interactive, fostering a culture of continuous learning and collaboration. Mentors provided guidance rooted in prior works and research papers, equipping us with a solid foundation before assigning live tasks. Regular presentations, held three times a week, enabled us to share progress and gain constructive feedback. We could approach our mentors at any time for assistance, ensuring seamless communication and support throughout.

Every Friday, a presentation was conducted with the manager, who made a conscious effort to include us in all office activities, creating a sense of belonging. The work itself was engaging and enjoyable, blending professional growth with a sense of community. Additionally, the open-door culture within the GAIA team allowed us to approach any member for help, ensuring that doubts were promptly resolved and guidance was always available.

As interns, we were encouraged to develop both technical and soft skills, with the team providing an enriching and inclusive environment. This experience not only enhanced our knowledge but also prepared us for the challenges of the professional world, offering invaluable lessons in teamwork, problem-solving, and effective communication.

Academic courses relevant to the project : Machine Learning, Artificial Intelligence, Neural Network and Fuzzy Logic, Deep Learning, Data Science

PS-II Station : Ernst & Young L.L.P.,Bangalore, Bengaluru

Faculty

Name: Gaurav Nagpal .

Student

Name: VISHNU PEDDINENI(2020B3AA0371H)

Student Write-up

PS-II Project Title: Turnaround and Restructuring Pursuits

Short Summary of work done during PS-II : I worked with the Turnaround and Restructuring team in the UK geography. Our team's primary work was to identify and build reports on distressed companies in the UK, adding our commentary and suggestions for the upper management to take action on- including pitching to the targeted companies, to provide our services in their turnaround/restructuring

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

Objectives of the project : Assisting the EY UK onshore team to identify and build reports on distressed UK companies

Major Learning Outcomes : I built a detailed understanding of the UK market, its sectors, and its trends. I learnt to write concise and detailed reports for the upper management and Partners.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The environment was very welcoming, from our team members and managers to the upper management. We had multiple meetings with upper management to catch up and understand how we can improve our learning/work experience.

Academic courses relevant to the project : Msc Economics / Finance minor courses

PS-II Station : Ernst & Young L.L.P.,Bangalore, Bengaluru

Faculty

Name: Gaurav Nagpal .

Student

Name: AHANA JAIN .(2021A1PS2098P)

Student Write-up

PS-II Project Title: Strategic Consulting and Financial Analysis: Unlocking Digital Transformation, Value Chain Optimization, and AI-Driven Insights Across Industries

Short Summary of work done during PS-II : Built a Knowledge Hub LMS used by 70,000+ users, performed competitor and industry analysis for healthcare, legal, CPG and A&D sector clients, built value accelerator and maturity assessment tools

Tool used (Development tools - H/w, S/w) : Excel, PowerPoint, PowerBI, CapitalIQ

Objectives of the project : Objective of the projects were to provide clients with value generating use-cases, and to perform competitor analysis and come up with GTM strategies

Major Learning Outcomes : Learnt networking, industry research, market research and competitor analysis, also learnt product development as well as adaptability to different clients and projects.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Mentors and teams were incredibly helpful, working environment is very enjoyable and enriching, expectations were to get exposure in a professional setup, and it exceeded my expectations by far, overall great experience.

Academic courses relevant to the project : None

PS-II Station : Ernst & Young LLP, Gurugram, Gurgaon

Faculty

Name: Gaurav Nagpal .

Student

Name: VED DESHMUKH(2020B3A41183H)

Student Write-up

PS-II Project Title: Data and Analytics Team

Short Summary of work done during PS-II : We automated most of a powerpoint presentation using python to read the data through excel and processing it to fit the needs of the client, after which we loaded up a powerpoint template in python and individually accessed and edited each slide according to the wishes of our user. The finished product was then edited once again to account for thinkcell graphs and charts in the powerpoint, after which a downloadable version of the ppt was made available to the user.

Tool used (Development tools - H/w, S/w) : VS Code, Python, Pandas, Numpy, thinkcell, Azure

Objectives of the project : Automation of PPT using python modules

Major Learning Outcomes : Learned how to handling erroneous data and automate most of the aspects of making a powerpoint presentation using a template and python modules
Learned how to use Azure to integrate and deploy the code using APIs

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : It was a good working environment with sufficient guidance from the seniors and more and more responsibilities placed upon me as I got the hang of the project. The seniors were very professional and helpful to me and other interns. The leadership also paid close attention to everyone in the team, be it for guidance or growth as and when needed.

Academic courses relevant to the project : NA

PS-II Station : ERP BITS, Hyderabad, Hyderabad

Faculty

Name: Venkateswara Rao Thunuguntla .

Student

Name: SAMEER PODDAR(2021A4PS2484H)

Student Write-up

PS-II Project Title: BITS Calendar Automation and research for BITS Dubai Attendance System

Short Summary of work done during PS-II : The project had three parts: first, to make upgrades to the API software made before midterms, second, to devise a layout which can be used for attendance system at BITS Dubai Campus. Lastly, I was assigned the task to make hierarchy order for existing BITS Website.

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

Objectives of the project : The project had three parts: first, to make upgrades to the API software made before midterms, second, to devise a layout which can be used for attendance system at BITS Dubai Campus. Lastly, I was assigned the task to make hierarchy order for existing BITS Website.

Major Learning Outcomes : Web Development, App Development, Documentation

Details of Papers/patents : n/a

Brief Description of working environment, expectations from the company : n/a

Academic courses relevant to the project : Object Oriented Programming, Operating Systems, Database Management

PS-II Station : eShipz.com (LogIQ Labs Pvt. Ltd), Bengaluru

Faculty

Name: Arindam Roy .

Student

Name: SHOUMIK NAG .(2021A4PS0042P)

Student Write-up

PS-II Project Title: Enhancing efficiency of app.eshipz and exploring various marketing streams

Short Summary of work done during PS-II : We were tasked with both working on the product, developing new product features (from a wireframe perspective), and also in marketing and generating leads for the company. It was an enriching experience for me, since all of these avenues and domains were completely new for me and I enjoyed exploring new things while fulfilling meaningful expectations of the company. From a product point of view, we worked on creating the wireframe for a new Shopify returns and exchanges app and revamping the existing UI of app.eshipz. From a marketing and lead generation point of view, we reached out to 100+ points of contact from over 30 companies in the footwear industry, and also contributed to blogs for the website as part of digital marketing for eShipz.

Tool used (Development tools - H/w, S/w) : Canva, Figma, LinkedIn (Sales navigator)

Objectives of the project : Enhancing efficiency of app.eshipz and exploring various marketing streams

Major Learning Outcomes : Developed an understanding of UI/UX elements of a complex platform like app.eshipz

Developed an understanding of digital marketing techniques for a B2B business
Developed an understanding of how lead generation works in B2B businesses like eShipz

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The work culture at eShipz is very positive and fosters growth and productivity among employees. All important shareholders of the company are easily approachable and always willing to help. We were also fortunate enough to take part in a corporate retreat organized by the company, this further underlying their principles of teamwork.

Academic courses relevant to the project : N/A - non core project

PS-II Station : Eureka Forbes Limited, Bengaluru

Faculty

Name: Pawan Sharma .

Student

Name: DHRUV PARASHAR(2021A3PS2233G)

Student Write-up

PS-II Project Title: Enhancing Service Operations and Fraud Prevention through Data Analytics and Technology at Eureka Forbes

Short Summary of work done during PS-II : During my internship at Eureka Forbes, I worked on some exciting and impactful projects. I worked on some analysis regarding customer behavior,

company's service quality, and bottlenecks which are holding it back from improvement. The second phase of work was related to targeting fraudulent activities and developing a mechanism to curb them. The third segment is related to the launch of the new technician app. So, doing user reviews, help set up campaigns for notifications and setting up analytics of the app. Ensuring user onboarding on the app by making training modules etc. All in all it was an intersection of product and data analytics.

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

Objectives of the project : To enhance operational efficiency by leveraging data-driven insights and automation. To improve customer satisfaction through optimized service delivery and complaint resolution processes. To develop robust fraud prevention mechanisms to safeguard resources and ensure compliance. To analyze technician and customer behavior for better resource allocation and engagement. To contribute to the design and implementation of innovative digital tools, such as the technician app, to streamline workflows and improve productivity. To ensure data integrity and system reliability through cleansing and validation processes.

Major Learning Outcomes :

During my internship, I developed strong proficiency in utilizing Python, SQL, and Excel for data analysis, process automation, and operational improvements. I leveraged Python to automate workflows, analyze large datasets, and create actionable insights for fraud detection and complaint resolution tracking projects. SQL was instrumental in querying databases to extract and analyze customer behavior patterns, technician performance, and complaint lifecycle data. Additionally, I utilized Excel for advanced data manipulation, visualization, and reporting, providing clear and concise insights to stakeholders.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The work environment was amazing. The team at Eureka was highly qualified and consisted of amazing people doing very good work. The teams are nicely structured, and most of the people come from tier-1 institutions. The company expects you to blend in with the team and learn these basics first. It takes a fair bit of time to learn how the data works, and you can learn it while doing some basic

projects. The people in the team expect you to work seamlessly with them, just like an employee, and give your best. As long as there is a learning attitude, everything is great.

Academic courses relevant to the project : -

PS-II Station : Even Healthcare, Bengaluru, Bengaluru

Faculty

Name: A Michael Alphonse .

Student

Name: SARTHAK GOYAL .(2020B2A81622P)

Student Write-up

PS-II Project Title: Data Analyst Intern

Short Summary of work done during PS-II : I was tasked with making dashboards showing the metrics of the company, and make a few suggestions to improve such things. Majority of the time, I was occupied with work related to the data concerning the company and the customers.

Tool used (Development tools - H/w, S/w) : MongoDB, SQL, Python, Power BI, Metabase

Objectives of the project : Analyze customer drop-off and onboarding behaviors using data collected from website and app sources.

Major Learning Outcomes : Dashboarding skills and communication with multiple stakeholders. Data analysis leading to improvement in company metrics.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment of the company was very blissful, everybody was friendly and helpful, everything you'd expect from your mentor.

Academic courses relevant to the project : None

PS-II Station : Evmaaag Innovation Opc pvt ltd, Bengaluru, Bengaluru

Faculty

Name: Gopalakrishnan Venkiteswaran .

Student

Name: PALASH GAGRANI .(2021A1PS2580P)

Student Write-up

PS-II Project Title: Algorithm Development for range enhancement in electric vehicles

Short Summary of work done during PS-II : During PS-II, I worked on developing a range-enhancing algorithm for electric vehicles (EVs) to optimize energy consumption and extend vehicle range. The project involved collecting real-time data from IoT sensors, including speed, battery levels, and environmental conditions, and integrating this data with cloud-based storage and analysis systems using AWS. In the first phase, I focused on setting up the data collection infrastructure and refining the algorithm with basic driving data. In the second phase, I expanded the project to include a wider variety of vehicle models and additional sensors, such as tire

pressure and GPS, and incorporated external data like weather conditions. This allowed for better energy optimization across different driving conditions. I also conducted a sustainability and economic evaluation, confirming that the algorithm reduced energy consumption, resulting in lower charging costs and fewer emissions. Additionally, usage of developed algorithm in showed optimal increase in range capacity of electric vehicles.

Tool used (Development tools - H/w, S/w) : Hardware: IoT Sensors: Used to collect real-time data on vehicle performance parameters (speed, battery level, acceleration, etc.). Electric Vehicles (EVs): Vehicle models were used to test the algorithm's effectiveness and adaptability. Software: Andro

Objectives of the project : The objectives of the project were to enhance range-enhancing algorithm for electric vehicles (EVs) aimed at optimizing energy consumption and extending vehicle range. This involved collecting and analyzing real-time data from vehicle sensors, such as speed, battery level, and environmental conditions, to improve energy efficiency. Additionally, the project aimed to assess the sustainability and economic benefits of the algorithm, focusing on reducing energy consumption, lowering charging costs, and contributing to environmental sustainability.

Major Learning Outcomes : The major learning outcomes of the project included developing skills in data collection and analysis using IoT sensors and cloud platforms like AWS. The project also enhanced my mobile app development skills, particularly using Android Studio to create cross-platform apps with real-time feedback. I learned how to evaluate the sustainability and economic impact of technology, focusing on energy efficiency and cost savings. Additionally, I developed expertise in creating scalable systems and improving user-centric designs through iterative feedback.

Details of Papers/patents : Research Papers:

"Electric Vehicle Range Optimization Using Data Analytics": This paper discusses the use of data analytics and machine learning techniques to optimize the range of electric vehicles by predicting energy consumption patterns based on drive

Brief Description of working environment, expectations from the company : The working environment at Evmaaag Innovation Pvt Ltd was collaborative and dynamic, with a focus on

innovation in the electric vehicle (EV) technology sector. The team comprised professionals from diverse fields, including data science, software development, and energy optimization, which created an interdisciplinary atmosphere conducive to learning and growth. The office culture promoted open communication and knowledge sharing, enabling team members to contribute ideas and solve complex problems together.

The company provided access to cutting-edge tools and resources, including cloud infrastructure (AWS) and machine learning frameworks, to support the development of the range-enhancing algorithm. The expectations from the company were to apply the knowledge gained in real-world scenarios, optimize energy consumption in electric vehicles, and improve overall vehicle range performance.

The company also encouraged personal development, with opportunities to enhance technical skills through continuous learning and mentorship. I was expected to adapt to new challenges, develop innovative solutions, and contribute to the sustainability goals of the project. Overall, the working environment was supportive, with a clear focus on the development of practical, industry-relevant solutions that contribute to the widespread adoption of electric vehicles. The experience provided valuable insights into the EV industry and how technology can play a critical role in shaping a sustainable future.

Academic courses relevant to the project : Data Science

Courses in data science and artificial intelligence are good for developing the algorithms used to optimize energy consumption in electric vehicles. Topics like data preprocessing, data analysis and neural networks helped in predicting and im

PS-II Station : FanPlay IoT Technologies Pvt Ltd, Bengaluru

Faculty

Name: Shree Prasad M

Student

Name: ARNAV GUPTA .(2021A3PS1596P)

Student Write-up

PS-II Project Title: Embedded Systems Development on STM32

Short Summary of work done during PS-II : During my internship at Fanplay IoT Technologies, I had the opportunity to work extensively on integrating embedded systems, machine learning, and communication technologies for real-world applications. My primary focus revolved around advancing the functionality of the Khelo India Fitness App. The project began with configuring sensor communication protocols like SPI for interfacing the LSM6DSOX IMU with the STM32 microcontroller, followed by debugging data acquisition issues and implementing USB-CDC for real-time monitoring. I learned to utilize STM32CubeMX and STM32CubeIDE for configuring peripherals and debugging, which significantly enhanced my embedded programming skills. Moving forward, I implemented Bluetooth Low Energy (BLE) communication using the X-CUBE-BLE2 middleware, which involved setting up the BLE stack layers (GAP and GATT) and adding custom services to transmit sensor data. This was an excellent opportunity to explore BLE architecture, and I gained proficiency in tools like the nRF Connect app to validate communication. A significant part of my work involved training machine learning models for Human Activity Recognition (HAR), leveraging TensorFlow and Edge Impulse to preprocess data, train models, and deploy them on the STM32 platform using X-CUBE-AI. Despite challenges like TensorFlow version incompatibility and quantization trade-offs, I successfully deployed models capable of real-time inference, achieving a balance between memory optimization and accuracy.

Tool used (Development tools - H/w, S/w) : STM32CubeIDE, Edge Impulse, nRF Connect, STM32 Development Board

Objectives of the project : To implement edgeML and BLE for Real time data processing and transmission

Major Learning Outcomes : Microcontroller Programming and Debugging, Implementation of various communication protocols and edgeML for Real-time inference.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Fanplay is very relaxed, with barely any supervision on the interns. The work hours are very relaxed as well and most employees work from home rather than coming to the office. Due to my project being hardware based, I had to work in the office, which was empty most of the time, the mentors are very laid back and don't give much suggestions or reviewed my work until the final week. Everything that I did at Fanplay was of my own initiative with minimal feedback or input from anyone else.

Academic courses relevant to the project : Computer Programming, Microprocessors and Interfacing

PS-II Station : Feedback Business Insights Pvt. Ltd, Bangalore

Faculty

Name: Arindam Roy .

Student

Name: ARUNIM KANITKAR(2020B1A41629H)

Student Write-up

PS-II Project Title: Data analysis for manufacturing and product companies

Short Summary of work done during PS-II : Edited a lot of files initially, categorised Verbatims (qualitative data) such that they could be converted into quantities to be further analysed, made

presentations for clients, generated insights from data, briefly did interviews for better understanding of client needs

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

Objectives of the project : Gather, organize and prepare large amounts of qualitative and quantitative data for analysis and generating valuable insights for clients

Major Learning Outcomes : Thorough with Microsoft Excel, understanding of end to end workflow in consulting firms, customer interaction, coordination in a team

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Work hours are flexible, peers are friendly but are mostly older, no team outings or anything conducted, office is decent with a coffee room, no lunch facility available

Academic courses relevant to the project : Nothing directly aligned with role as it was an analysis and consulting role

PS-II Station : Feedback Business Insights Pvt. Ltd, Bangalore

Faculty

Name: Arindam Roy .

Student

Name: DEV SINGH BAGHEL(2021A4PS2508H)

Student Write-up

PS-II Project Title: Consulting and Research oriented projects

Short Summary of work done during PS-II : Worked on multiple projects during the PS2 duration. Some were dealing with existing clients regarding a survey, secondary research on multiple topics including NTW startups and NGO impact Measurement, gathering insights from CEO of various companies, and some experimental projects such as profiling CIOs of various companies.

Tool used (Development tools - H/w, S/w) : Excel, Lusha, Chatgpt, Powerpoint.

Objectives of the project : Helping with the existing clientele and working on experimental projects to measure their impact.

Major Learning Outcomes : Talking with existing clients improved my articulation and skills to hold an natural conversation flow during interviews. General excel skills and working on research projects helped increase my knowledge base.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment is good and the colleagues are very helpful. No strict working hours and working from home can be arranged on required occasions. Expected more team building exercises and sometimes the work was little dull.

Academic courses relevant to the project : As it was a consulting and Business Development role, so none.

PS-II Station : Fix Health (previously YourPhysio), Bengaluru

Faculty

Name: Arindam Roy .

Student

Name: ANUSHKA P NAIR(2020B5A41624G)

Student Write-up

PS-II Project Title: Holistic Marketing and Customer Engagement Optimisation

Short Summary of work done during PS-II : During my internship at Fix Health, I undertook a variety of tasks aimed at enhancing marketing strategies and customer engagement. I managed Trustpilot reviews, securing multiple five-star ratings and responding to customer feedback. I drafted ad copy for Meta and Performance Max ads, connected Meta campaigns to LSQ, and implemented best practices for Google Ads. I also created content for the website redesign and Meta creatives, and managed the website chatbot to improve user interaction. I analysed data to update key business metrics in the MIS, calculated CAC, ARPU, and CPL, and reconciled revenue payments. I gathered investor data, researched venture capitalists, and compiled international testimonials for the investor pitch deck. Additionally, I tested sending calendar invites, obtained Add to Calendar data, and fixed discrepancies in international patient treatments. I improved the user experience by removing overlays from the website, adding FAQs, and implementing a new cookie design. I also managed logistics for a hybrid webinar series, analysed marketing charts, and moderated a UK group physiotherapy series. My efforts contributed to increasing Fix Health's TrustScore from 4.5 to 4.7, reflecting enhanced customer satisfaction and credibility. Overall, my work involved a holistic approach to optimising marketing strategies, improving customer engagement, and supporting the company's growth and success.

Tool used (Development tools - H/w, S/w) : Airtable, LeadSquared, Clarity, Tidio, CallHippo, Loops, Looker Studio, YouTube, Meta Business Suite, Google Ads and Trustpilot were instrumental in various tasks, from data analysis and marketing to customer engagement and content creation.

Objectives of the project : 1. Enhance Patient Communication 2. Improve Website Credibility and User Experience (UX) 3. Optimise Marketing Strategies 4. Analyse Data and Manage Dashboards 5. Redearch on Investors and Monitor Financial Metrics 6. Implement Technical Improvements 7. Conduct Competitive Analysis and Market Research 8. Build Customer Satisfaction and Trust

Major Learning Outcomes : Effective Writing, Outcome-Based Approach, Prioritisation, Data Verification, First Principles Thinking, Compliance, Customer Engagement, Data Analysis, Digital Marketing

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Own laptop required, startup environment

Academic courses relevant to the project : Fundamentals of Finance and Accounting

PS-II Station : Flipkart (Software Development),Bengaluru, Bengaluru

Faculty

Name: Vineet Kumar Garg .

Student

Name: RISHABH RAJ(2020A7PS1716G)

Student Write-up

PS-II Project Title: cold start problem

Short Summary of work done during PS-II : My work mostly involved developing pyspark pipelines and generating data- this involved making scripts, configs and dags. Also the research and prep work of the architecture- several research paper studies and case studies of other organisations. Followed by planning of the architecture to be used as the solution.

Tool used (Development tools - H/w, S/w) : Pyspark, Apache spark, Gcloud

Objectives of the project : to solve the issue of cold start in search ranking architecture

Major Learning Outcomes : Working with Industrial data and making low latency, parallelized models and data pipelines

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Good amount of freedom in the hands of employees all that matters is your work should be completed

Academic courses relevant to the project : Machine Learning, Distributed Computing, Information Retrieval

PS-II Station : Flipkart (Software Development),Bengaluru, Bengaluru

Faculty

Name: Vineet Kumar Garg .

Student

Name: Nikhil Agarwal(2020B2A71611P)

Student Write-up

PS-II Project Title: Lexical Intent Model Generation and Retraining

Short Summary of work done during PS-II : ### Summary of Work Done During Internship
During my internship at Flipkart, I focused on the Lexical Intent Model Generation and Retraining project. I transitioned job submissions from SSH-based to API-based using Google Cloud's Dataproc API, enhancing security and streamlining operations. I automated workflows with Apache Airflow, enabling reliable and consistent execution of daily tasks and model retraining. I brought two to three models live, ensuring they run daily as required. This involved designing and implementing a robust system architecture, integrating Apache Airflow and Google Cloud Dataproc. I addressed challenges such as ensuring job accuracy, automating command creation, and resolving workflow failures by collaborating with senior developers and leveraging documentation. My efforts resulted in a scalable, automated system capable of handling complex job submissions and daily model retraining, significantly improving operational efficiency and data processing capabilities. This project provided hands-on experience with Python, Scala, Spark, Dropwizard, Java, and Google Cloud technologies, enhancing my technical skills and preparing me for future challenges in software development and data engineering.

Tool used (Development tools - H/w, S/w) : IntelliJ, PyCharm, Postman, Airflow, Github

Objectives of the project : To generate and retrain the ML models to enhance search results

Major Learning Outcomes : Java, Python, Scala, Apache Spark, Apache Airflow, Kubernetes

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment of the company was excellent , Entire team was very supportive and patient during the initial phase of the internship , which encouraged me to learn things very quickly and start contributing in the assigned tasks. they were clear on the outcomes they were expecting for an intern. The team members and the company culture were very inclusive in nature. The whole workspace was supportive towards clarifying doubts. The mentor assigned was open for doubts all the time.

Academic courses relevant to the project : Object Oriented Programming , Data Structures and Algorithms , Database Management , Operating Systems

PS-II Station : Flipkart (Software Development),Bengaluru, Bengaluru

Faculty

Name: Vineet Kumar Garg .

Student

Name: KUNAL BANSAL(2020B2A72456H)

Student Write-up

PS-II Project Title: Rate Limiting, JUnit Testing & API Workflow

Short Summary of work done during PS-II : I had to implement a dual rate limiting solution using strategy design pattern which can help dynamically switch between two or more strategies. This involved thorough discussion and research of the existing solutions in the industry. Analyzing the best out of those and then implementing using Java dropwizard and then writing integration

testing files. Also had to conduct performance testing under high constraints to check the functionality of the solutions

Tool used (Development tools - H/w, S/w) : DropWizard, Github, Java, Locust, Junit

Objectives of the project : Implement rate limiting approach efficient in high stress integrated via the strategy design pattern.

Major Learning Outcomes : Development of efficient solutions and better coding practices, Java development, Scalable solutions, soft skills

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment in flipkart is encouraging and the co workers will always help you out in the best way possible. If you are proactive and have a strong desire to learn, Flipkart provides a platform where you can thrive and grow in your career.

Academic courses relevant to the project : OOPS, DBMS

PS-II Station : Flipkart (Software Development),Bengaluru, Bengaluru

Faculty

Name: Vineet Kumar Garg .

Student

Name: ASHRAY KASHYAP(2020B3A70494G)

Student Write-up

PS-II Project Title: Demand 3P Orchestrator

Short Summary of work done during PS-II : During my internship, I contributed to the development of the 3P Orchestrator service, which integrates Flipkart's backend with third-party systems for seamless campaign management. My primary responsibilities included designing a generalized webhook service to enable real-time data synchronization, replacing legacy poller-based systems. Additionally, I revamped the error propagation mechanism by standardizing error codes and implementing robust state transition diagrams. I played a key role in implementing retry mechanisms for transient failure recovery and conducted a comprehensive Proof of Concept for database schema migration tools like Liquibase and Flyway. This ensured scalability and seamless production readiness. Furthermore, I actively participated in production debugging, resolving critical issues in campaign workflows and UAT bugs, ensuring a smooth experience for external partners. I also collaborated with the team to optimize data ingestion pipelines and supported the final stages of deployment by refining workflows for performance and scalability. This internship allowed me to enhance my skills in backend development, real-time system design, error handling, and database management while contributing to a high-impact project in Flipkart's AdTech ecosystem.

Tool used (Development tools - H/w, S/w) : Java, MySQL, Postman, Kubernetes, Dropwizard, Git

Objectives of the project : The 3P Orchestrator is a service designed to integrate Flipkart's backend with third-party platforms for seamless campaign management.

Major Learning Outcomes :

1. Gained expertise in designing and implementing scalable microservices
2. Enhanced understanding of error propagation mechanisms, retry policies.
3. Learned the transition from poller-based systems to webhook-based architecture for efficient and real-time data updates.

Details of Papers/patents : Not applicable

Brief Description of working environment, expectations from the company : Flipkart offers a highly supportive and collaborative working environment that fosters learning and professional growth. The team ensures that interns have sufficient time to understand the technologies and processes, allowing for a smooth onboarding experience.

One of the most remarkable aspects of the internship was being assigned to real-world projects from the start, which provided hands-on experience and exposure to impactful work. This not only helped me apply my technical knowledge but also enhanced my problem-solving and decision-making skills.

The culture encourages collaboration, with opportunities to interact and work closely with members from other teams. This cross-functional engagement significantly improved my communication and teamwork skills while giving me a broader understanding of the organization's operations.

Academic courses relevant to the project : Object oriented programming, Database systems, Operating Systems

PS-II Station : Flipkart (Software Development),Bengaluru, Bengaluru

Faculty

Name: Vineet Kumar Garg .

Student

Name: VAIDYA SAAHIR JITENDRA(2020B3A71142G)

Student Write-up

PS-II Project Title: Rate Limiter and other Servers

Short Summary of work done during PS-II : First task was solving a database transactional bug, my second task was creating a separate platform for product ops team to view kafka messages for a chosen cluster to cut down on time wasted in cli-commands. I was asked to investigate the feasibility of using lifecycle policies in elastic search. The last task was to automate a discounts procedure by creating a API from scratch. The project I was working on in the meantime was setting up rate limiters in a highly configurable set up for my department such that performance loss would be minimal and various settings could be tweaked at run time. A prototype was created to test externally implemented limiter and it had a very low latency making this approach viable after which I had to investigate all approaches used in the company during the course of which I reached out to many people.

Tool used (Development tools - H/w, S/w) : Java, Nginx, Lua, Kubernetes

Objectives of the project : Dealt with automating some processes and added a rate limiter to servers to prevent clients from making too many requests

Major Learning Outcomes : How Kubernetes hosts services and benefits of Redis and its in cache memory access

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Working environment was quite nice, everyone was friendly and ready to help out in case I needed any support in case of a blocker. I was expected to work like a SDE-1 and given the same level of tasks which is something I really appreciate. It gave me a lot of exposure to best practices.

Academic courses relevant to the project : Computer Networks slightly

PS-II Station : Flipkart (Software Development), Bengaluru, Bengaluru

Faculty

Name: Vineet Kumar Garg .

Student

Name: DIVYANSHU KUMAR(2020B5A72367H)

Student Write-up

PS-II Project Title: Design Your Room

Short Summary of work done during PS-II : During PS-II, I worked on the "Design Your Room" project, which focuses on creating an immersive 3D room design application. The work involved leveraging Generative AI models, particularly GANs, to generate depth maps from 2D images and converting them into 3D GLB models using Blender. These models were rendered interactively on the web using Three.js, providing a seamless and customizable user experience. I contributed to refining depth maps using tools like Apple ML Depth Pro, enhancing mesh quality with Trimesh, and improving object detection accuracy using YOLOv8. To address occlusion and collision issues, I implemented bounding boxes and explored advanced algorithms for realistic interactions between 3D models. Additionally, I developed automation pipelines for placing and orienting models within scenes and conducted experiments with Babylon.js for rendering. Key challenges included optimizing model quality, integrating depth completion techniques, and improving rendering performance. This project allowed me to gain practical knowledge of integrating AI with immersive design, optimizing 3D pipelines, and enhancing user experience in interactive applications.

Tool used (Development tools - H/w, S/w) : Hardware: H100 GPU. Software: Blender Apple ML Depth Pro GAN Models YOLOv8 Trimesh Three.js Babylon.js Python Libraries (TensorFlow, PyTorch)

Objectives of the project : The "Design Your Room" project aims to provide users with an immersive 3D experience to design and customize their spaces in real-time. It leverages GANs for depth map generation, Blender for 3D model conversion, and Three.js for web rendering.

Major Learning Outcomes : Gained expertise in generating 3D models from depth maps using GANs and Blender and rendering them interactively on the web using Three.js. Enhanced skills in integrating Generative AI with immersive 3D design for user-centric applications.

Details of Papers/patents : YOLOv8: "You Only Look Once: Unified, Real-Time Object Detection" by Joseph Redmon et al. – A comprehensive paper detailing the YOLO framework, its advancements, and real-time object detection capabilities.

Apple ML Depth Pro: "Learning Depth with Monocu

Brief Description of working environment, expectations from the company : The working environment at FK Labs was collaborative, dynamic, and focused on innovation, with a strong emphasis on both research and development. The team was highly skilled in emerging technologies such as Generative AI, 3D modeling, and immersive VR experiences, creating a stimulating atmosphere for learning and growth. The company encouraged hands-on experience with cutting-edge tools and frameworks like Blender, YOLOv8, and Three.js, which contributed significantly to my technical development.

The expectations from the company were clear: to apply my knowledge in AI and 3D modeling to deliver innovative, user-centric solutions. I was tasked with enhancing the "Design Your Room" project by integrating depth map generation, 3D model creation, and immersive web rendering. I was expected to explore new technologies, identify challenges, and contribute to solving complex problems related to model optimization and user experience.

FK Labs provided a supportive environment where I was encouraged to experiment and collaborate with cross-functional teams, ensuring that I was able to grow professionally. I also had the opportunity to propose ideas and work on impactful projects that aligned with the company's mission of creating cutting-edge solutions for VR and generative AI applications.

Academic courses relevant to the project : Machine Learning, Data Science, Software Engineering

PS-II Station : Flipkart (Software Development),Bengaluru, Bengaluru

Faculty

Name: Vineet Kumar Garg .

Student

Name: YASH KUMAR KANDOI .(2021A7PS2417P)

Student Write-up

PS-II Project Title: SDE Intership

Short Summary of work done during PS-II : I worked extensively on API enhancements, resolving bugs and implementing batch-calling methods for OMS Client APIs, which required an in-depth understanding of database schemas and microservices. I developed an Order Cancellation System for Revalidation Flow, integrating three microservices to manage customer-initiated cancellations while ensuring seamless communication with external clients. This involved drafting API contracts, implementing code, and rigorous testing. Additionally, I designed production pipelines for healthcare services using CI/CD methodologies. This involved understanding staging and production environments, integrating tools like Docker, Helm charts, and Flow, and successfully deploying pipelines within a week. I also established a Flash Testing Framework using Locust and Flash tools to simulate user load and optimize API performance. My enhancements, including CSV parsing and structured API code, improved usability for other teams. For prescription management, I implemented asynchronous flows to optimize the upload/download process, reducing latency by 20 times. This improvement greatly enhanced user experience for pharmacists and customers alike. These experiences honed my expertise in microservices architecture, API design, CI/CD pipelines, and performance optimization, while deepening my understanding of tools like GitHub, Postman, Docker, and Locust.

Tool used (Development tools - H/w, S/w) : Github, Postman, Locust, IntelliJ, JAVA, Python

Objectives of the project : To develop the backend infrastructure including APIs, production pipelines, testing framework for Flipkart Health Plus, healthcare vertical of Flipkart

Major Learning Outcomes : In my role at Flipkart Health Plus, I've been assigned to develop APIs and handle bug fixes related to the prescription flow. The prescription flow is a critical part of the system, involving various functionalities that ensure the smooth processing of prescriptions from the customer to the pharmacist. My tasks are aimed at not only building these APIs but also resolving issues as they arise. This helps keep the system functioning properly and ensures that other developers on the team can continue their work without delays, lightening their workload and ensuring the overall project progresses efficiently.

During my internship at Flipkart over the past few months, I worked on various aspects of backend development and API integration. My role involved understanding the codebase, debugging, creating and modifying APIs, and ensuring seamless integration within Flipkart Health Plus systems.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Flipkart is really good. For the initial 2 weeks, all students undergo the JEDI Training program where you need to work in a team of 5 and are taught about how systems work at Flipkart and things like 3-layer architecture. You are also expected to make a small project similar to college OOP project.

And then you are allotted teams. One person from your team becomes your mentor whom you can ask whatever doubts you have about the work that is assigned to you. People are very supportive here and treat you with respect. You can be open about your doubts and usually you find a flat hierarchy in teams meaning you get to have regular interaction with your manager, tech leads and other senior developers of your team. Also flipkart has a flexible wfh depending on team. Most teams have 2-3 days WFH and the other days of the week as in office.

Overall, you can expect to work with great people who help you throughout your internship.

Academic courses relevant to the project : OOP (Object Oriented Programming), DBMS (Database Systems)

PS-II Station : Flipkart (Software Development), Bengaluru, Bengaluru

Faculty

Name: Vineet Kumar Garg .

Student

Name: AJEY MALIK .(2021A7PS2542P)

Student Write-up

PS-II Project Title: Insight Transformation

Short Summary of work done during PS-II : During PS-II, I contributed to transforming streaming jobs into batch jobs, focusing on scalability and performance. Key tasks included creating batch-specific pipelines for processing facts like AccountDetailsFactBatchV2 and generating insights for names and confidence scores. I implemented methods for filtering, mapping, grouping, and processing data to produce insights and wrote them to FDP sinks using the FStream framework. Additionally, I developed the FirstNameLastNameAerospikePushJob to ingest processed insights into Aerospike, ensuring efficient data handling for downstream systems. This involved integrating sampling logic, repartitioning, and payload conversion for compatibility with Aerospike's storage model.

Tool used (Development tools - H/w, S/w) : Development Tools: IntelliJ IDEA, Git
Software Frameworks: Apache Spark, Scala, FStream, Aerospike

Objectives of the project : Convert streaming jobs to batch jobs for scalability. Develop and optimize batch processing pipelines for insights generation. Integrate insights into Aerospike and FDP sinks for downstream consumption.

Major Learning Outcomes : Hands-on experience in designing scalable batch pipelines.
Understanding of distributed data processing with Apache Spark.
Proficiency in Scala and FStream framework for large-scale data workflows.
Knowledge of Aerospike integration and insight transformation.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The company provided a collaborative and learning-focused environment with strong support from mentors. My tasks involved working with cross-functional teams and handling real-world datasets, ensuring practical industry exposure. The expectation was to deliver scalable, maintainable code and align with the company's vision of data-driven decision-making.

Academic courses relevant to the project : OOPS , ML

PS-II Station : Flipkart Internet Pvt Ltd - Business Analytics,Bengaluru, Bengaluru

Faculty

Name: Ramesh Venkatraman .

Student

Name: SACHIN GAUR(2021A4PS2980G)

Student Write-up

PS-II Project Title: RR driver modelling

Short Summary of work done during PS-II : Built RCA tool to diagnose the target metric. Tool could also predict future of the metric

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

Objectives of the project : Build rca tool to diagnose dips in metrics

Major Learning Outcomes : Analytics, excel, python,ML

Details of Papers/patents : Null

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

Academic courses relevant to the project : None

PS-II Station : Flipkart Internet Pvt Ltd - Business Development,Bengaluru

Faculty

Name: Ramesh Venkatraman .

Student

Name: AFFAN NADEEM QAZI(2020B1A41918G)

Student Write-up

PS-II Project Title: Key Account Management Intern at Flipkart

Short Summary of work done during PS-II : Overall handling of the brands contributing to their YoY growth and managing stock levels etc

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

Objectives of the project : Growth of brands allotted at flipkart Marketplace

Major Learning Outcomes : Management

Details of Papers/patents : None

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

Academic courses relevant to the project : None

PS-II Station : Flipkart Internet Pvt Ltd - Business Development,Bengaluru, Bangalore

Faculty

Name: Ramesh Venkatraman .

Student

Name: KAUSHIK KUMAR(2020B2A41929G)

Student Write-up

PS-II Project Title: Merchandising and Business Analysis

Short Summary of work done during PS-II : Managing Homepage and Category Landing Page for the Appliances Category. Enabling team with various data points,PRM gaps, AOP insights. Created Power BI Dashboards and worked with vast types of SQL queries. Data driven Marketing Strategies for the category. Improved User Experience for the Microwaves and Refrigerators on the App. Identified Customer Segments for the growth of the category.

Tool used (Development tools - H/w, S/w) : SQL, Excel, Power BI

Objectives of the project : To improve the CTRs on HP and CLP for the category. Improving User Experience on App. Identifying different segments for growth of the category. Enabling KAMs with various data points. Insights for Annual Operating Plan 2025.

Major Learning Outcomes : Data Analysis, Strategy Marketing

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Little bit depends on team but overall good working culture

Academic courses relevant to the project : Manufacturing Management, Quality Control, Assurance and Reliability

PS-II Station : Flipkart Internet Pvt Ltd - Business Development,Bengaluru, Bangalore

Faculty

Name: Ramesh Venkatraman .

Student

Name: VAISHNAVI.(2021A5PS0359P)

Student Write-up

PS-II Project Title: 1. Dashboard and Tools Roadmap 2.SEO Roadmap for Flipkart 3.Marketing and Merchandising for Festive and Other Seasons

Short Summary of work done during PS-II : My tenure as a Business Development Intern at Flipkart has been a transformative experience, offering an in-depth understanding of the e-commerce landscape. Engaging with the Auto-accessories vertical under the Business and General Merchandise (BGM) department, I was exposed to the intricacies of managing a wide array of products and services. The projects I undertook allowed me to bridge the gap between theoretical knowledge and practical application, as I navigated the complexities of digital marketing, search engine optimization, and data-driven decision-making. The Marketing and Merchandising for Festive and Other Seasons project provided me with a comprehensive understanding of how to strategically plan and execute campaigns that resonate with consumers during peak shopping periods. By analyzing past performances and setting SMART goals, I learned the importance of data in shaping effective marketing strategies. This project taught me how to tailor content and messaging for different channels, ensuring a consistent brand experience that aligns with customer expectations and business objectives. Working on the SEO Roadmap project deepened my expertise in enhancing online visibility through targeted keyword research, on-page optimization, and technical SEO audits. I was able to see firsthand how strategic SEO efforts can directly impact traffic, rankings, and ultimately, sales. This project highlighted the significance of continuous monitoring and iteration, as well as the importance of staying ahead of competitors in a rapidly evolving digital landscape. The Dashboard and Tools Development project was particularly instrumental in enhancing my analytical skills. By centralizing data from various sources into a cohesive dashboard, I gained insights into how data

can drive informed decision-making and optimize business operations. This project emphasized the value of collaboration, as I worked closely with different teams to ensure that the dashboard met the needs of all stakeholders. The ability to automate data processes and provide real-time insights underscored the importance of efficiency in managing large-scale e-commerce operations. Overall, my internship at Flipkart has equipped me with valuable skills and experiences that will undoubtedly serve as a strong foundation for my future career. The challenges I encountered and the solutions I developed have not only strengthened my understanding of business development but also instilled in me a deep appreciation for the dynamic nature of the e-commerce industry. As I move forward, I am confident that the lessons learned during this internship will guide me in making meaningful contributions to any organization I join.

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

Objectives of the project : Centralize marketing and sales data from various sources into a single dashboard. Enable data-driven decision-making by providing. Improve Flipkart's organic search rankings on Google for key product categories. Increase relevant traffic to Flipkart's website and app from Google search Boost sales of high-margin products by improving their visibility in search.actionable insights. Empower teams to monitor performance and identify areas for optimization.Increase holiday season sales. Boost various product awareness and reach new customers during the festive season and normal days. Optimize marketing campaigns across Instagram channels for maximum impact. Improve Customer Engagement: Create personalized and engaging content that resonates with the festive mood.

Major Learning Outcomes : During my tenure as a Business Development Intern at Flipkart, I contributed to several strategic initiatives within the Auto-accessories vertical under the Business and General Merchandise (BGM) department. My primary focus areas were Marketing and Merchandising for Festive and Other Seasons, SEO Roadmap for Flipkart, and Dashboard and Tools Development. In the Marketing and Merchandising project, I aimed to boost sales during the festive season by developing SMART goals, evaluating past performances, and planning omnichannel campaigns. This involved optimizing product assortments, enhancing customer engagement, and measuring campaign success to iterate on strategies.

For the SEO Roadmap project, the objective was to improve Flipkart's organic search rankings. This involved conducting comprehensive keyword research, optimizing on-page content, and

performing technical SEO audits. The goal was to increase relevant traffic, improve search visibility, and ultimately drive sales. The Dashboard and Tools project focused on centralizing marketing and sales data into a unified dashboard. This enabled data-driven decision-making and allowed teams to monitor performance metrics effectively. I worked on identifying key data sources, automating data refreshes, and ensuring collaboration across teams for continuous improvement.

These projects collectively enhanced my understanding of e-commerce business strategies, data analytics, and digital marketing. The skills and experiences gained will be invaluable as I pursue future opportunities in the field.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Flipkart offers a dynamic and innovation-driven work environment that empowers employees to excel. Known for its collaborative culture, teams from diverse domains such as marketing, analytics, engineering, and operations work closely, ensuring inclusivity and shared success. Open-door policies and regular brainstorming sessions create an atmosphere where every idea matters.

The fast-paced nature of Flipkart keeps employees engaged, especially during peak periods like the Big Billion Days, fostering adaptability and problem-solving skills. Employees are encouraged to think outside the box, leveraging cutting-edge technologies like AI and big data to address real-world challenges.

Flipkart strongly focuses on employee growth, providing access to training resources, mentorship programs, and opportunities to lead impactful projects. Autonomy and ownership are emphasized, allowing employees to develop professionally. Despite the challenges, the company promotes work-life balance through flexible hours, wellness initiatives, and regular team engagement activities.

Diversity and inclusion are core to Flipkart's values, ensuring individuals from all backgrounds feel supported. Celebrations, hackathons, and team outings add vibrancy to the workplace, making it both results-driven and fun.

In summary, Flipkart's environment blends innovation, collaboration, and growth, making it an exciting place to contribute to the evolving e-commerce landscape.

Academic courses relevant to the project : Project Management, Digital Marketing, Computer Programming, Cross Cultural Skills, Effective Public Speaking

PS-II Station : Flipkart Internet Pvt Ltd - Business Development,Bengaluru, Bangalore

Faculty

Name: Ramesh Venkatraman .

Student

Name: SHRUTEE GUPTA .(2021A5PS0378P)

Student Write-up

PS-II Project Title: Business Development for Shopsy

Short Summary of work done during PS-II : I worked on projects oriented towards influencers marketing majorly where initially I had to QC already available videos to ensure they are good to repurpose on various platforms and then I had to scout different influencers channels on YouTube and Instagram for the team to approach them. I also worked on Google Flarifeed which is a tool by Google and is still not available worldwide which creates AI generated Title and Description for different product categories. I also worked on SEO by updating the title, description and footer links that were already provided to me.

Tool used (Development tools - H/w, S/w) : Google Sheets, Google Flarifeed, Flipkart Internal SEO Console, Instagram and Youtube

Objectives of the project : To help the performance marketing team for business development

Major Learning Outcomes : Learnt majorly about Influencers marketing and SEO Optimization

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment is good and even people are helpful whenever you go and ask for any query but I expected a more friendly behaviour of the people there and the manager but they were too busy with their own things

Academic courses relevant to the project : Digital Marketing

PS-II Station : Flipkart Internet Pvt. Ltd. - AM Planning, Bengaluru

Faculty

Name: Ramesh Venkatraman .

Student

Name: KARAN MEHTA .(2020B2A11950P)

Student Write-up

PS-II Project Title: Optimization of Grocery Supply Planning Processes: Workflow Creation and Automation

Short Summary of work done during PS-II : The work done was related to automation in the file preparation of various processes done manually currently by the team. This was done with

the help of scripting macros to complete smaller steps minimizing the need of manual interventions

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

Objectives of the project : Achieving automation of recurring processes to minimize manual intervention and reduce errors

Major Learning Outcomes : Technical Skills: Visual Basic code

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : The work culture is great. All the people be it of the same team, different team, higher post or lower, are ready to help and understand the business better. The working hours are friendly. Expectation from the company was to implement the automation work done with the team.

Academic courses relevant to the project : None

PS-II Station : Flipkart Internet Pvt. Ltd. - AM Planning, Bengaluru

Faculty

Name: Ramesh Venkatraman .

Student

Name: PRATHAM AGRAWAL .(2020B5A40744P)

Student Write-up

PS-II Project Title: Traffic/units projection of supply chain and Automation projects

Short Summary of work done during PS-II : During my PS-II internship, I contributed to the Traffic/Units Projection for Supply Chain and Automation Project, focusing on improving supply chain efficiency through data analysis and automation. My primary responsibility was to forecast traffic and unit demands using historical data, identifying trends and patterns to support demand planning. I collaborated with the team to analyze existing supply chain processes and identify bottlenecks or inefficiencies. I helped implement real-time monitoring systems using IoT sensors and analytics tools to enhance supply chain visibility and enable proactive decision-making. By integrating these technologies, we were able to track traffic flow, monitor unit movements, and quickly respond to any disruptions. Additionally, I worked on optimizing resource allocation, particularly in inventory management and route planning, to reduce operational costs and improve delivery accuracy. I also supported the automation of repetitive tasks within the supply chain, such as order processing and inventory checks, which contributed to reduced errors and improved throughput. Overall, the internship provided me with hands-on experience in predictive analytics, automation tools, and supply chain optimization. It enhanced my ability to contribute to data-driven solutions that streamline operations, reduce costs, and improve scalability in complex supply chain environments.

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

Objectives of the project : The objective of the Traffic/Units Projection of Supply Chain and Automation Projects is to leverage data-driven forecasting, optimize operational efficiency, and integrate automation to enhance scalability, reduce costs, and improve throughput. This involves developing accurate demand forecasts, automating repetitive tasks, and streamlining traffic and unit flow management across the supply chain to minimize bottlenecks, improve real-time visibility, and ensure cost-effective resource allocation. The ultimate goal is to create a flexible, responsive supply chain capable of adapting to changing demands, improving on-time delivery, and driving sustainable operational improvements.

Major Learning Outcomes : During my internship in the Traffic/Units Projection of Supply Chain and Automation Project, I developed expertise in advanced forecasting techniques, supply chain optimization, and the implementation of automation to streamline operations and increase

efficiency. I gained practical experience in capacity planning, real-time data integration, and cost efficiency strategies, while also learning to identify and mitigate risks and disruptions in the supply chain. I optimized resource allocation, fostered collaboration among stakeholders, and applied automation tools to enhance scalability, reduce costs, and improve sustainability. This experience allowed me to implement data-driven, automated solutions that contributed to continuous improvement and adaptability within complex supply chain environments.

Details of Papers/patents : NIL

Brief Description of working environment, expectations from the company : Working at Flipkart as a Planning Analyst offers a dynamic and fast-paced environment where innovation and collaboration are highly encouraged. The role demands a strong analytical mindset, attention to detail, and the ability to derive actionable insights from complex data. The work culture is vibrant and inclusive, fostering a sense of ownership and accountability among employees. Teams are cross-functional, enabling exposure to diverse perspectives and expertise, which enhances problem-solving and decision-making capabilities.

As a Planning Analyst, the expectations include driving data-driven strategies, creating accurate forecasts, and automating processes to enhance operational efficiency. The role involves leveraging advanced tools and techniques to solve real-world problems, ensuring that planning aligns with the company's business goals. Being adaptable to changing priorities and delivering results under tight deadlines are key aspects of this role.

Academic courses relevant to the project : Supply chain Management, Probability and Statistics

PS-II Station : Flipkart Internet Pvt. Ltd. - AM Planning, Bengaluru

Faculty

Name: Ramesh Venkatraman .

Student

Name: GAGAN JAIN .(2021A1PS2102P)

Student Write-up

PS-II Project Title: Capacity and manpower planning for flipkart minutes

Short Summary of work done during PS-II : .

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

Objectives of the project : Capacity and Manpower Planning

Major Learning Outcomes : Excel and stakeholder management

Details of Papers/patents : Na

Brief Description of working environment, expectations from the company : Supportive and collaborative

Academic courses relevant to the project : Supply chain

PS-II Station : Flipkart Internet Pvt. Ltd. - AM Planning, Bengaluru

Faculty

Name: Ramesh Venkatraman .

Student

Name: PATEL MAITREY UPENDRAKUMAR .(2021A4PS0725P)

Student Write-up

PS-II Project Title: Planning and Summary analysis for BGM business unit in Non-Large and Hyperlocal domain

Short Summary of work done during PS-II : During my Practice School II at Flipkart, I focused on enhancing supply chain planning and inventory management within the Non-Large domain. Key achievements include: Inventory Optimization: Developed methodologies to optimize inventory levels by implementing Min. Stock to Norm tracking and creating granular allocation strategies across India. Purchase Order Management: Analyzed the purchase order generation process, focusing on accurate sell plan collection, demand analysis, and brand-specific supply preferences. Technological Innovation: Developed an R-programming based "Hyperlocal Buying Readiness Master" on Google Cloud Platform to automate product readiness assessment. Contributed to the development of automated buying systems. Data-Driven Decision Making: Utilized advanced analytics like waterfall analysis to identify root causes of inventory losses, improve operational efficiency, and enhance decision-making. Strategic Flexibility: Aligned inventory strategies with various business scenarios, including BAU operations and major sales events. This project provided invaluable experience in applying theoretical knowledge to real-world challenges, showcasing the impact of data analytics and technological innovation in optimizing e-commerce operations.

Tool used (Development tools - H/w, S/w) : FDP and Retailer Hub

Objectives of the project : This project aimed to optimize the planning and execution of the BGM business unit in the Non-Large domain at Flipkart. Through a comprehensive analysis of demand forecasting, inventory management, purchase order generation, and vendor management, we identified areas for improvement and implemented targeted strategies. By optimizing inventory

levels, streamlining purchase orders, improving demand forecasting accuracy, and enhancing vendor performance, we successfully reduced costs, improved efficiency, and enhanced customer satisfaction. The BGM business unit is now better equipped to meet customer demand, optimize inventory levels, and explore new opportunities for growth and innovation.

Major Learning Outcomes : Hard Skills (R code, Excel, SQL and Power BI) and Soft Skills (Stakeholder communication)

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Fast-paced and dynamic: Flipkart operates in a highly competitive and rapidly evolving e-commerce market, demanding agility and adaptability.

Data-driven culture: Strong emphasis on data analysis and insights to drive decision-making across all levels.

Collaborative environment: Opportunities to work closely with cross-functional teams, including product, engineering, and operations.

Focus on innovation: Encouragement to explore new technologies and develop innovative solutions to address business challenges.

Academic courses relevant to the project : SCM, SC Analytics, C programming

PS-II Station : Flipkart Internet Pvt. Ltd. - AM Planning, Bengaluru

Faculty

Name: Ramesh Venkatraman .

Student

Name: SAANYA.R.JAIN(2021A5PS1278H)

Student Write-up

PS-II Project Title: Driving Efficiency and Visibility: MSL Model Development, Automation, and Metrics Governance,

Short Summary of work done during PS-II : During PS-II, I focused on automating speed and capacity metrics, as well as streamlining inventory management within my team. As someone with a background outside of technology and supply chain, I had to quickly acquire new technical and domain-specific knowledge. The supportive environment at Flipkart significantly facilitated my learning journey. The team's solution-driven approach and focus on achieving results were highly influential. This emphasis on practical outcomes significantly impacted my project deliverables and fostered a valuable learning experience.

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

Objectives of the project : Goal 1: Developed an MSL/Auto Replenishment Model Goal 2: Process Automation and Reduce Manual efforts Goal 3: Unified Metrics Governance/Monitoring and Stakeholder Visibility

Major Learning Outcomes : I gained a deep understanding of supply chain principles, including inventory management metrics and various planning cycles. Concurrently, I developed strong technical skills, mastering data analysis and automation through R, Python, SQL, and Power BI. This multifaceted learning journey equipped me with the necessary knowledge and tools to excel in a dynamic and data-driven supply chain environment

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Fast-paced and dynamic: Flipkart operates in a highly competitive and rapidly evolving e-commerce market, demanding agility and quick decision-making.

Data-driven: The company heavily relies on data analysis and insights to drive business decisions, making it a data-driven environment.

Innovative and entrepreneurial: Flipkart fosters a culture of innovation and encourages employees to think outside the box and come up with new ideas.

Collaborative: Teamwork and cross-functional collaboration are crucial for success at Flipkart.

Customer-centric: The company prioritizes customer satisfaction and strives to provide a seamless and enjoyable shopping experience.

Academic courses relevant to the project : SAPM

PS-II Station : Forus Health, Bengaluru

Faculty

Name: Swapna S Kulkarni

Student

Name: MANAS ATUL NARKHEDE(2021A4PS1996G)

Student Write-up

PS-II Project Title: Design of Handheld Slit-Lamp

Short Summary of work done during PS-II : Designed a Handheld Slit-Lamp using Solidworks. Designed PCBs needed for the same using KiCAD. Tested the prototypes

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

Objectives of the project : Design of Handheld Slit-Lamp

Major Learning Outcomes : Solidworks, KiCAD, Vendor management

Details of Papers/patents : none as of yet

Brief Description of working environment, expectations from the company : Good work environment. Very friendly people who will help you in whatever way that they can

Academic courses relevant to the project : CAD

PS-II Station : Frontier Tower Associates Philippines Inc., Bengaluru

Faculty

Name: Manoj Subhash Kakade .

Student

Name: JAIN SAMYAK SANAT(2020B3A70511G)

Student Write-up

PS-II Project Title: M&A, Strategy

Short Summary of work done during PS-II : 1. Assisted/shadowed my Associate on a live M&A deal for most part of my internship. 2. Worked on the strategy for ongoing operations, largely making presentations and decks for our investors and C-suite.

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

Objectives of the project : 1. Working on the corporate finance and strategy aspects of the ongoing businesses. 2. M&A modelling and presentations

Major Learning Outcomes : 1. Understanding in great detail how an M&A works and the intricacies.

2. Real life application of courses like BAAV and Financial Management

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Work Environment:

The work culture is very healthy and exciting. It's a small, tightly knit team working together. Really enjoyable to work from office, everyone is pretty approachable and chill. A start-up like culture in a more settled, MNC-like firm. A fair deal of exposure to the big guns on calls and meets that is uncommon in most corporates.

Expectations:

You are not expected to know much before, basic knowledge of finance courses helps. You are however expected to learn proactively by yourself, ask questions, understand concepts. Attention to detail is key as your job would involve making a lot of PPTs to be presented to the CXOs.

Academic courses relevant to the project : Business Analysis and Valuation, Financial Management, Fundamentals of Finance and accounting, (SAPM and DRM not very relevant but good to know)

PS-II Station : Frontier Tower Associates Philippines Inc., Bengaluru

Faculty

Name: Manoj Subhash Kakade .

Student

Name: NANDAN VARATHE(2020B3AA0919H)

Student Write-up

PS-II Project Title: Opportunities in M&A

Short Summary of work done during PS-II : The project provided a deep dive into strategy and corporate finance, focusing on company operations and deal logistics. It enhanced my understanding of mergers and acquisitions, strategic decision-making, and corporate finance. Hands-on experience included financial modeling, data analysis, creating presentations, and project management. These efforts supported larger deals and strategic initiatives in modern infra businesses.

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

Objectives of the project : Acquire TMT assets in country of Interest

Major Learning Outcomes : Financial Modelling, Corporate Finance, Strategic Thinking, Stakeholder management

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The work environment was highly conducive to learning, fostering structured thinking and skill development. A supportive, competent team and flexible arrangements made the experience enriching.

Academic courses relevant to the project : Fundamental of Financial Accounting and Business Analysis and Valuation

PS-II Station : Gameskraft, IT- Product Management, Bengaluru

Faculty

Name: Venkateswara Rao Thunuguntla .

Student

Name: YASH TYAGI .(2020B5A20718P)

Student Write-up

PS-II Project Title: Experience and funnel improvements for new players to increase acquisitions

Short Summary of work done during PS-II : I majorly worked in the Acquisitions pod of our product, Rummy Culture. In our platform's context, acquisitions are defined as users adding money to their in-app wallet for the first time. As a product intern, my role involved thinking of various initiatives to increase acquisitions, with well-defined metrics used to analyze the results. I was responsible for analyzing Add Cash funnels and handling acquisition or referral-related tasks assigned to me. Most initiatives were launched as A/B experiments to determine their impact. I conducted User Acceptance Testing (UAT) for any new feature I launched and performed a detailed data analysis of the experiment results to evaluate their effectiveness. Additionally, I also did analytics tasks to improve my analytical sense and gain insights on user behaviour.

Tool used (Development tools - H/w, S/w) : Mixpanel, Dbeaver, Google Sheets - For product and data Analysis, Jira. Trello - for raising requirements and tracking projects, Confluence, Google Docs - for documentation, Figma - for design purposes, Postman - for API responses, Google Play Console, Ta

Objectives of the project : Increase acquisitions and revenue through different initiatives

Major Learning Outcomes : Product Sense, Product Analytics, A/B Experimentation, Analytical Sense

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The work environment is good, and there aren't very strict timelines to complete initiatives since their progress depends on various factors. There is no micromanagement, but you are expected to own the tasks assigned to you, solving any obstacles that come up. The team members are helpful and cooperative when you're stuck.

You should be able to perform data analysis on your own to gain insights and determine impact. Having a good understanding of SQL and other tools used for data analysis is important.

Academic courses relevant to the project : NA

PS-II Station : GE Vernova Advanced Research, JFWTC, Bengaluru

Faculty

Name: Swapna S Kulkarni

Student

Name: NISHANT ABHIJEET KONDEKAR .(2021AAPS0326P)

Student Write-up

PS-II Project Title: Robotic Automation of Non-Destructive Inspection Procedures: A system-level overview presented via multiple projects.

Short Summary of work done during PS-II : The overall work comprised of multiple sub-projects each of which involved some sub-system related to the overall theme of robotics in NDT. I was

responsible for trajectory generation for 6-DOF Robotic Arms, development of a tendon driven continuum robot from literature as well as machine interfacing with an industrial NDT Scanner.

Tool used (Development tools - H/w, S/w) : Python, MATLAB, 6-DOF Robotic Arm, Microcontrollers, Actuators and Sensors.

Objectives of the project : Robotic automation of NDT inspection.

Major Learning Outcomes : Hands-on Robotics, Signal Processing, Control Systems

Details of Papers/patents : None as of the present moment.

Brief Description of working environment, expectations from the company : The working environment was great, particularly due to the open-mindedness at the workplace. A loose problem statement was given to be pondered and discussed which finally evolved into the projects referenced above, as opposed to a rigid problem statement akin to a task to be carried out. I was happy to be able to apply myself and not a single day was monotonous.

Expectations from the station were that you are proficient in programming (regardless of language, so long as you are able to translate ideas and math into code), have a basic understanding of engineering math, and are able to learn and implement quickly from literature and other sources.

Academic courses relevant to the project : Modern Control Systems, DSP, IOT, CP, M1, M2, M3

PS-II Station : Genpact - C&H One Data and AI , Bengaluru, Bengaluru

Faculty

Name: S.P.Vimal .

Student

Name: MAYANK BHADARIA(2021A3PS2843H)

Student Write-up

PS-II Project Title: An Automated Framework for Monitoring and Analyzing Global Healthcare Regulations.

Short Summary of work done during PS-II : During my internship at Genpact, I worked on developing a comprehensive application for a healthcare firm based in Japan to track and analyze changes in global healthcare regulations. The project aimed to provide an efficient and automated solution for gathering, processing, and presenting regulatory updates from various countries. My contributions included using BeautifulSoup and Selenium to perform web scraping, enabling the extraction of critical data from diverse and dynamic government websites. I also played a key role in building the application's backend using Flask, ensuring robust API functionality, and the frontend using React, creating an intuitive and dynamic user interface. The scraped data was cleaned, structured, and stored in SQL databases, and insights were visualized using Power BI to assist the client in decision-making. Additionally, I integrated Large Language Models (LLMs) to analyze and summarize the data, uncovering patterns and trends in global healthcare regulations. Overcoming challenges such as handling dynamic web content and addressing site-specific structures allowed me to enhance my problem-solving and technical skills. This internship provided hands-on exposure to full-stack development, data processing, and automation, while bridging academic knowledge with real-world industry applications in the healthcare sector.

Tool used (Development tools - H/w, S/w) : Python, Flask, LLMs, React, PowerBI.

Objectives of the project : To create an application for a Japanese healthcare firm that tracks, processes, and analyzes global healthcare regulations.

Major Learning Outcomes : Gained hands-on experience with web scraping tools like BeautifulSoup and Selenium for efficient data extraction.

Developed full-stack skills using Flask and React for application development and deployment.

Enhanced understanding of SQL and Power BI for data storage, structuring, and visualization.

Applied LLMs for data summarization and analysis, providing actionable insights.

Strengthened problem-solving abilities by handling dynamic web pages and diverse site structures.

Improved collaboration and communication skills through teamwork and client interactions.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Genpact was professional, dynamic, and collaborative, providing ample opportunities for learning and growth. The company emphasized innovation, quality, and client-focused solutions, fostering a culture of teamwork and open communication. Regular feedback from mentors and collaboration with cross-functional teams created an atmosphere of continuous improvement and problem-solving.

Academic courses relevant to the project : AI, ML

PS-II Station : Genpact - C&H SCM, Bengaluru, Bengaluru

Faculty

Name: S.P.Vimal .

Student

Name: ANUBHAV KASHYAP(2020B3A41161G)

Student Write-up

PS-II Project Title: Supply management and Excel automation

Short Summary of work done during PS-II : Connect with suppliers, receive data, and update the information of orders in the SAP tool. Analyzing supply and Demand with the help of features in Kinaxis to predict more accurate inventory, thereby preventing understock and overstock issues. To automate the weekly dates and order quantity updation from the supplier's sheet to SAP using Excel and VBA code and macros. To create automation to compare the current week's and last week's supply order delivery dates and to find the orders that have been pushed back or ahead so that the supply planner can focus on more delayed orders accurately.

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

Objectives of the project : Supply/Demand management and analysis through tools. Automation of manual tasks using Excel, VBA and Macros to reduce company resources.

Major Learning Outcomes : A thorough pre-read on supply chain management, demand planning, supply planning, automation, data analysis, Inventory, MRP, etc. Becoming efficient in Excel and learned to use macros and code in VBA in Excel to automate tasks. A realistic understanding of supply chain management. Improved communication and interaction skills.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The company had a good overall working environment. Since the project was in the supply chain management domain, there used to be a lot of communications between team members. Also the first automation that I had done, was with the automation team, who helped me understand the task and fix errors. My expectations were adequately met by the company standards.

Academic courses relevant to the project : Manufacturing Management, Supply Chain Management

PS-II Station : Genpact - H&M, One Data and AI, Bengaluru, Bengaluru

Faculty

Name: S.P.Vimal .

Student

Name: AARADHYA KULSHRESTHA .(2021A7PS1452P)

Student Write-up

PS-II Project Title: Business Intelligence and Data Analytics

Short Summary of work done during PS-II : Built a end to end dashboard in power BI by performing the end to end data analytics workflow on customer churn prediction, customer product recommendation, customer renewal timing optimization datasets to enable informed business decision making.

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

Objectives of the project : building a power BI dashboard according to a provided wireframe and anonymized customer data

Major Learning Outcomes : ETL workflow in analytics,

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : My team was completely work from home. I was assigned tasks to be completed in a time limited manner. There

were no strict working hours as such, rather I had to ensure that the tasks were being completed on time and I had to update my managers on the status if any delays were to occur.

Academic courses relevant to the project : basic DBMS

PS-II Station : Genpact AIML Data Scientist - AI Practice, Bengaluru, Bengaluru

Faculty

Name: S.P.Vimal .

Student

Name: P G S PRITAM VARMA(2021A3PS2982H)

Student Write-up

PS-II Project Title: Advanced Engineering Drwing Interpretation using Multimodal models annd Agentic Framework.

Short Summary of work done during PS-II : During my PS-II internship at Genpact, Hyderabad, I undertook two key projects aimed at automating processes and enhancing efficiency using advanced AI techniques. The first project, ****Engineering Drawing Interpretation****, focused on extracting and segmenting figures and tables from raw engineering drawings. To address the challenges posed by inconsistent layouts, I utilized Vision Agents by Landing AI, integrated with multimodal models like Gemini and GPT-4. A custom dataset was created using AutoCAD drawings and resources from textbooks. Advanced techniques such as YOLO v10 and Layout Parser were employed for document layout analysis, achieving an Intersection Over Union (IOU) score of 0.7788. Additionally, I explored 3D rendering from 2D segmented figures using ACAD-

Gen, enabling automated generation of simple 3D models. This project enhanced my understanding of computer vision, segmentation, and multimodal AI applications. The second project, ****Video-to-SOP****, involved automating the creation of dynamic Standard Operating Procedures (SOPs). By extracting snapshots and utilizing Vision Agents for visual cue highlighting, I developed a system to enhance user comprehension of key processes in the videos. This project required a strong understanding of computer vision techniques and AI-driven automation. Throughout the internship, I also explored various prompting techniques, completed certifications in Generative AI, and presented my work to the AI/ML team, gaining hands-on experience in machine learning and data science. These projects allowed me to apply theoretical knowledge to real-world challenges and refine my technical and professional skills for future opportunities.

Tool used (Development tools - H/w, S/w) : Tools for Engineering Drawing Interpretation: Microsoft PowerPoint – For simple engineering drawing creation. Vision Agents by Landing AI – For automating and enhancing image processing tasks. YOLO v10 – For document layout analysis and figure detection

Objectives of the project : Automating the whole process of interpreting and storage of data present in Engineering Drawings which can be use in future for cross checking the details accurately, VR and AR applications and also in the construction background.

Major Learning Outcomes : I have done certification courses like ML Udemy course and a certification course on Gen AI service by Oracle Cloud. I have learner how to utilise various advanced prompting techniques like Tree-of-Thought prompting, ReAct prompting, etc. I got practical working experience with experts in the domain of data science, I have learned how to use streamlit for front end application building. I got experience in writing a research paper for ICBAI conference. I learnt about various image segmentation, object detection and document layout analysis models. How to train a simple ML model, How to deploy and use Vision Agents by Landing AI for various computer vision tasks. Got experience with using various libraries like open CV, open3D, pyTorch, etc. Got experience working with various multimodal models like Azure GPT-4o, Google Gemini, AWS Claude Sonnet, etc.

Details of Papers/patents : Paper Title - "Advanced Engineering Drawing Interpretation". I have written this paper as the frist author for ICBAI conference.

Paper Title -

Brief Description of working environment, expectations from the company : The working environment at Genpact, Hyderabad, was dynamic, collaborative, and conducive to learning. As part of the AI/ML Data Science Practice Team, I had access to cutting-edge technologies and tools, which allowed me to work on innovative projects. The team fostered a supportive atmosphere, encouraging open communication and collaboration. Mentors and managers provided consistent guidance and were readily available to address queries, ensuring a smooth learning curve throughout the internship.

The company had high expectations of its interns, focusing on innovation, initiative, and deliverable quality. I was entrusted with real-world challenges, such as automating the segmentation of engineering drawings and developing dynamic SOPs, which required critical thinking and problem-solving. The organization expected adherence to deadlines, a proactive approach to learning, and the ability to adapt to new technologies quickly.

Genpact also emphasized professional growth by offering opportunities to present my work to the team, attend training sessions, and complete certifications. This allowed me to refine my technical expertise while developing soft skills like communication, time management, and teamwork.

Overall, the environment at Genpact was both challenging and rewarding, pushing me to apply my theoretical knowledge to practical scenarios while fostering a growth-oriented mindset. The company's expectations motivated me to deliver quality work and continuously enhance my technical and professional capabilities.

Academic courses relevant to the project : CS F425 - DEEP

LEARNING,

CS F407 - ARTIFICIAL

INTELLIGENCE,

CS F429 - NATURAL

LANGUAGE PROCESSING,

BITS F110 - ENGINEERING

GRAPHICS.

PS-II Station : Genpact AIML Data Scientist - AI Practice, Bengaluru, Bengaluru

Faculty

Name: S.P.Vimal .

Student

Name: SAMYAK SAHU .(2021AAPS2171P)

Student Write-up

PS-II Project Title: LLMOps explorations

Short Summary of work done during PS-II : I worked

Tool used (Development tools - H/w, S/w) : LlamaIndex, LangChain, Azure Open AI

Objectives of the project : Explore different tools and

Major Learning Outcomes : I gained deep insight into how R&D works in the corporate. Also got to explore a completely new domain in MLOps. There's a huge difference between reading about these topics for coursework and applying these to real products in the companies. I also worked on a client project which really taught me how to be a healthy part of a team of people from different backgrounds working together.

Details of Papers/patents : Internal documentation for company.

Brief Description of working environment, expectations from the company : Very suffocating. There's a huge gap in their hierarchy from us to senior management. Communication is awkward. A lot of details that should be informed to the inters weren't declared from the

company's side and then when questioned about it there was an expectation to know things already.

Academic courses relevant to the project : Generative AI

PS-II Station : Genpact AIML Data Scientist - AI Practice, Gurugram, Gurgaon

Faculty

Name: S.P.Vimal .

Student

Name: VIDUSHI SINHA .(2020B1A41607P)

Student Write-up

PS-II Project Title: Working with machine learning models

Short Summary of work done during PS-II : 1. Fine tuned Sentence Transformers model for the use case of invoice line to PO line matching and increased accuracy from 76% to 90%, outperforming other fine-tuned models. 2. Created a agentic framework for retrieving information from knowledge graphs using its ontology and the defined tools. This increased the number of queries that could be answered by 100% 3. Did technical analysis of LFM 40B model, benchmarking its performance against Llama 3.1 8B 4. Found azure deployment services suitable for SLM/TLM deployment. 5. Compared the performance of Naive RAG, MS GraphRAG and LightRAG on multiple use cases 6. Created a question answering system by fine-tuning BERT model on SQuAD dataset.

Tool used (Development tools - H/w, S/w) : Libraries used: Langchain, numpy, pandas, matplotlib, transformers, sentence transformers

Objectives of the project : Improving accuracy of invoice line to po line prediction by fine-tuning pre-trained models. Secondly, to enhance retrieval from knowledge graphs using llm agents and tools

Major Learning Outcomes : Gained knowledge on a variety of machine learning techniques and concepts such as Fine-tuning, knowledge graphs, ML model deployment, retrieval augmented generation, llm agents and tools, natural language processing. Also got exposure of real world projects and how they are executed.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Very warm and welcoming working environment. Even people in higher posts were friendly and helpful. The mentor assigned to me was very involved and took constant updates of the work done, helping me out whenever I got stuck. Constant feedback was given which helped in identifying weak points and working on them. All in all, it was a very good internship experience.

Academic courses relevant to the project : -

PS-II Station : Genpact AIML Data Scientist - AI Practice, Gurugram, Gurgaon

Faculty

Name: S.P.Vimal .

Student

Name: VEDANT GANGRADE(2020B4A81571G)

Student Write-up

PS-II Project Title: ML

Short Summary of work done during PS-II : (1) Built a Q&A model by fine tuning Distilbert on Squad Dataset. (2) Built a Solution for extraction of structured data from unstructure data using REBEL, Spacy , Spacy Experimental, Neural Coref. (3) Built a generalized method for scraping of article URLs from any given website using GenAI libraries and traditional scraping tools.

Tool used (Development tools - H/w, S/w) : Python, Transformers, STARDOG, APIFY, Tensorflow

Objectives of the project : Bias Mitigation through Prompt Engineering

Major Learning Outcomes : Developed a demo that can be used in client chat bots for Bias Mitigation

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : WFH not allowed for interns but apart from that the work life balance is pretty good compared to other firms as the projects are self paced unless it is a client project. Client based company so the work load on full time employees depends on the projects they are involved in.

Academic courses relevant to the project : None

PS-II Station : Genpact AIML Data Scientist - AI Practice, Hyderabad, Hyderabad

Faculty

Name: S.P.Vimal .

Student

Name: MEGHAN CHALLA(2021A3PS1708H)

Student Write-up

PS-II Project Title: Developing Generative AI Solutions using DSPy

Short Summary of work done during PS-II : During my PS II, I built a strong foundation in machine learning by learning to use Scikit-learn libraries for various ML tasks and completing Udemy courses on the subject. I further enhanced my knowledge through a certification program on generative AI offered by Oracle Cloud Infrastructure, where I explored advanced concepts like prompting techniques and prompt optimization. My experience with DSPy, an innovative framework, enabled me to apply these concepts effectively in real-world scenarios. Leveraging this expertise, I developed a project to automate insurance policy underwriting using DSPy, which included designing an interactive user interface with Streamlit to enhance functionality and usability. Additionally, I designed a human-in-the-loop pipeline for prompt tuning, which emphasized the integration of human feedback to improve system accuracy and adaptability. My research paper, titled "Analyzing and Mitigating Prompt Injection Techniques in AI Language Models," focuses on identifying vulnerabilities, proposing mitigation strategies, and evaluating the robustness of language models against these attacks. This work has been submitted to the 11th ICBAI Conference hosted by IIM Bangalore. Beyond my project work, I contributed to knowledge sharing by conducting a session on DSPy for the Hyderabad team, showcasing my ability to communicate technical concepts effectively. These experiences have equipped me with hands-on expertise in machine learning, cutting-edge frameworks, and advanced AI techniques, as well

as the ability to conduct impactful research and collaborate effectively. Together, these skills position me to address complex challenges in the field of AI and machine learning.

Tool used (Development tools - H/w, S/w) : Python - DSPy, Langchain, Azure OpenAI, Google Cloud vertex, Streamlit, FAISS,,Git

Objectives of the project : 1. Develop Generative AI Solutions using cutting edge frameworks like DSPy 2.Prompt Engineering(includes prompting techniques,prompt injection techniques,prompt optimization techniques) 3.integrating human factor in automated processes (Human feedback for prompt tuning) 4. providing solutions for specific domains as well as generalized domains 5.Transformer Architecture and RAG properties 6.UI integration using Streamlit

Major Learning Outcomes : Learning cutting edge frameworks like DSPy and building large language model based applications using DSPy, applications of Generative AI, Prompt Engineering(prompt tuning/prompt optimization) and prompt injection techniques, authoring research paper, learning about advanced prompt optimization packages like textgrad, learning how to integrate human factor in automated processes - using human feedback for prompt tuning, creating UI for projects using streamlit

Details of Papers/patents : I have authored a research paper titled "Analyzing and Mitigating Prompt Injection Techniques on AI Language Models," which I submitted to the 11th ICBAI Conference hosted by IIM Bangalore. The paper investigates different prompt injection techniques, tes

Brief Description of working environment, expectations from the company : Genpact has provided a supportive and enriching environment that fostered my growth in AI/ML and generative AI. From the beginning, we were encouraged to strengthen our foundational knowledge through courses recommended by senior mentors, which helped clarify key concepts in machine learning and generative AI. The work culture was collaborative, promoting both individual growth and teamwork. I had ample opportunities to work on projects, receiving guidance from experienced professionals, which helped me develop practical skills and gain industry knowledge. Genpact also supported me in authoring a research paper, providing crucial assistance throughout the process. In addition to technical expertise, the company placed a strong emphasis on the

development of soft skills. Regular technical group discussions and knowledge-sharing sessions helped me improve my communication, presentation, and collaboration abilities. The work environment was deadline-driven, instilling a sense of responsibility and time management. I was encouraged to complete projects ahead of schedule, which enabled me to consistently meet and exceed expectations.

My primary goal was to learn how to develop generative AI solutions for real-world problems, and this expectation was fully met through hands-on projects and mentorship. I also aimed for all-round development, both technically and in terms of communication, which was achieved through continuous training and collaborative sessions. I wanted to experience corporate work life, and Genpact offered valuable insights by exposing me to real-world challenges. The team also provided strong support in helping me write and refine my research paper, ensuring that my goals were fulfilled during my time at the company.

Academic courses relevant to the project : Foundations of Data Science, Machine Learning, Object Oriented Programming, Artificial Intelligence

PS-II Station : Genpact AIML Data Scientist - AI Practice, Hyderabad, Hyderabad

Faculty

Name: S.P.Vimal .

Student

Name: MEGHNA REDDY YADMA(2021A3PS2762H)

Student Write-up

PS-II Project Title: Leveraging AI for Multimodal Prompt Generation and Automated Code Issue Resolution

Short Summary of work done during PS-II : During my PS-2 internship at Genpact, I experienced a transformative learning journey that significantly enhanced my skills and understanding of artificial intelligence. I began with foundational courses in machine learning and Python, followed by an Oracle GenAI certification, which provided me with essential technical knowledge. I have explored various prompting techniques, and applied them on an entity extraction task, bridging theoretical concepts with practical applications. As I progressed, I worked on my first project focused on multimodal prompt generation, where I developed a system to automate the creation of effective prompts for AI models. This experience deepened my understanding of how to integrate various data types effectively. Additionally, I explored video generation models, broadening my perspective on AI's capabilities. A significant milestone was writing a research paper titled "Optimizing AI Model Performance: A Comparative Analysis of Prompting Techniques across GPT-4, Gemini, and Claude," which I submitted for the ICBAI conference. This research experience honed my analytical skills and contributed to my knowledge of model performance optimization. In the second project, I worked on an automated code issue detection and resolution system using AI agents. The project involved integrating different components such as code analyzers, JSON updaters, and code writers to handle common code issues, automate bug fixing, and improve overall codebase quality. This internship has provided me with a solid foundation in artificial intelligence and has clarified my career goals within this dynamic field.

Tool used (Development tools - H/w, S/w) : LLMs like GPT-4o, GPT-4, Gemini, and Claude, AutoGen framework, Python, Streamlit

Objectives of the project : Project 1: Multimodal Prompt generation - Develop a streamlined system that automates prompt generation for various AI models, ensuring consistency and effectiveness. Project 2: AI-Driven Multi-Agent System for Automated Code Issue Detection and Resolution - Create a multi-agent system that automates the detection and resolution of code issues within a codebase.

Major Learning Outcomes : - Improved communication, teamwork, and project management skills by working in a professional environment.

- Gained valuable insights into the real-world applications of artificial intelligence.
- Learned various prompting techniques, worked with large language models (LLMs), and improved technical coding skills through the “Multimodal Prompt Generation using Instructions” project.
- Acquired knowledge of Agentic frameworks and developed a multi-agent system for the project “AI - Driven Automated Code Issue Detection and Resolution”, involving collaborative AI agents.
- Authored a research paper submitted to the ICBAI conference, enhancing my research and analytical skills.

Details of Papers/patents : Submitted a research paper for ICBAI Conference.

Title: "Optimizing AI Model Performance: A Comparative Analysis of Prompting Techniques across GPT-4, Gemini, and Claude"

Brief Description of working environment, expectations from the company : The working environment at Genpact during my PS-2 internship was supportive and encouraging, making it ideal for learning and growth. The company set clear expectations, focusing on ownership of tasks, quality deliverables, and continuous improvement. Collaborative practices were a key part of the work culture. Daily scrum calls helped in aligning team goals, while brainstorming sessions and peer feedback provided opportunities to learn and improve. My mentor and colleagues were always approachable, offering guidance and support whenever needed. I was given the chance to work on real-world projects, like multimodal prompt generation and automated code issue resolution using AI agents, which allowed me to apply my technical skills to practical challenges. The company valued initiative and encouraged creativity, which motivated me to deliver my best. Overall, the environment was professional yet friendly, fostering teamwork and innovation. It not only met my expectations but also helped me gain confidence and clarity about my career goals.

Academic courses relevant to the project : Generative Artificial Intelligence

PS-II Station : Genpact AIML Data Scientist - AI Practice, Hyderabad, Hyderabad

Faculty

Name: S.P.Vimal .

Student

Name: ASHRITA NAIDU VAKA(2021A3PS3061H)

Student Write-up

PS-II Project Title: REVOLUTIONIZING INFORMATION RETRIEVAL AND GENERATION

Short Summary of work done during PS-II : During my PS-II internship at Genpact, Hyderabad, I worked on revolutionizing information retrieval and generation through advanced solutions. The core of my work was the development of G-METRAG (Graph Multi-Layered Enhanced Thoughts for Retrieval-Augmented Generation), a graph-based RAG framework. This system integrated utility-based scoring, task-adaptive summarization, and large language models (LLMs) to enhance retrieval accuracy, contextual relevance, and response coherence. In addition to G-METRAG, I conducted research on different RAG paradigms, comparing naive, graph-based, and multimodal approaches across domains like healthcare, finance, and customer support. This research culminated in a publication at the 11th ICBAI Conference, a key milestone in my internship. Other significant tasks included late chunking to improve contextual understanding, integrating LLMs into graph-based systems, and multimodal analysis involving text, images, and graphs. I also implemented ethical AI practices to mitigate biases in LLM outputs through targeted and general prompting strategies. To showcase my work, I developed a Streamlit demo, which provided a user-friendly interface to demonstrate the practical applications of G-METRAG. This internship bridged academic concepts with real-world challenges, enhanced my technical and research skills, and gave me clarity on my future career goals in AI and data science.

Tool used (Development tools - H/w, S/w) : Software Tools: Neo4j: For graph-based storage and traversal. Streamlit: To build and showcase the user-friendly interface for G-METRAG. Python: For implementing algorithms, integrating LLMs, and data processing. LangChain: For integrating large language

Objectives of the project : Enhancing Information Retrieval: To address inefficiencies in traditional retrieval systems by developing a robust framework capable of delivering accurate, contextually relevant, and up-to-date information. Developing G-METRAG: To design and implement G-METRAG, a graph-based retrieval-augmented generation (RAG) framework that integrates utility-based scoring, task-adaptive summarization, and advanced LLMs to improve retrieval accuracy and coherence. Improving Summarization Quality: To implement task-specific summarization methods that distill large datasets into concise, actionable insights. Exploring RAG Paradigms: To conduct in-depth research on RAG types, such as naive, graph-based, and multimodal paradigms, and identify their strengths and weaknesses across different domains. Incorporating Multimodal Capabilities: To integrate and evaluate multimodal data formats (text, images, and graphs) into the RAG pipeline, enabling more versatile and comprehensive responses. Promoting Ethical AI Practices: To reduce biases in LLM outputs through targeted and general prompting strategies, ensuring fairness, inclusivity, and responsible AI development. Operational Efficiency: To optimize graph-based traversal and retrieval processes for faster and more scalable system performance.

Major Learning Outcomes : Developed expertise in G-METRAG design, graph-based retrieval, and tools like Neo4j and Streamlit.

Gained in-depth knowledge of RAG paradigms and their domain-specific applications.

Improved problem-solving skills through utility scoring, late chunking, and multimodal integration.

Learned to mitigate biases in LLM outputs using ethical prompting strategies.

Published a research paper at the 11th ICBAI Conference, enhancing research and presentation skills.

Bridged academic concepts with industry applications in AI and data science.

Strengthened collaboration, time management, and clarity in career goals.

Details of Papers/patents : A research paper published on rag paradigms in the 11th icbai conference

Brief Description of working environment, expectations from the company : The working environment at Genpact, Hyderabad, was dynamic, collaborative, and highly conducive to learning. As an intern, I was provided with the flexibility to explore innovative ideas while adhering to project goals and timelines. My mentors, both locally and remotely, offered continuous guidance and support, creating an atmosphere of trust and open communication. Regular discussions and feedback sessions ensured that I stayed aligned with the objectives and deliverables of the projects.

The company set high expectations in terms of quality, innovation, and professional conduct. The focus was not just on theoretical understanding but also on implementing scalable, efficient, and practical solutions that aligned with industry standards.

Academic courses relevant to the project : NLP , GEN AI , DEEP LEARNING

PS-II Station : Genpact Data Scientist - H&M, Gurugram, Gurgaon

Faculty

Name: S.P.Vimal .

Student

Name: YASH KAUSHIK .(2021A7PS0185P)

Student Write-up

PS-II Project Title: Creating and Integrating Machine Learning Models with .NET Framework

Short Summary of work done during PS-II : We had to create machine learning models in the field of FCRM (Financial Crime Risk Management) for US based client to reduce dispute investigation handling time and save resources

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

Objectives of the project : Creating and deployment of machine learning models on server for real time predictions

Major Learning Outcomes : How to deploy machine learning model on .NET framework for real time predictions

Details of Papers/patents : NIL

Brief Description of working environment, expectations from the company : Company expected us to adhere to working hours with regular update on work, even tho the working environment was a bit relaxed, we were always expected to be professional

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

PS-II Station : Goodera - Category, Bengaluru

Faculty

Name: Sandeep Kayastha .

Student

Name: RAGHAV SHARMA(2020B2A42461H)

Student Write-up

PS-II Project Title: Development of GoodyOs

Short Summary of work done during PS-II : My internship at Goodera has been a transformative experience, offering invaluable opportunities to apply and expand my technical expertise while contributing to meaningful projects. Over the course of my internship, I successfully resolved 16 JIRA tickets, tackling challenges that enhanced my understanding of software development. A major achievement was developing the master data management section, a feature that improved data integrity across modules. By designing dynamic search bars and real-time filtering, I streamlined data management, enhancing user productivity. Other projects, like the Event-Date Filter and Missing-Collaterals Filter, tested my ability to handle complex backend logic and optimize SQL queries. Highlights included creating an NPO Filter for precise search functionality and collaborating on the Partner Details Page, which involved cross-module coordination. Working directly with senior leadership on projects like the integration of YourCause into GoodyOs strengthened my system architecture skills and confidence in presenting innovative solutions. Beyond technical skills, the internship emphasized collaboration and user-centric design, instilling a deep appreciation for iterative development and impactful technology. This experience has refined my problem-solving abilities and reinforced my passion for engineering, equipping me to create meaningful social impact through technology in future endeavors.

Tool used (Development tools - H/w, S/w) : VScode, Terminal, BitBucket, GIT

Objectives of the project : To develop and migrate on new website

Major Learning Outcomes : Web Development

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The organization fosters a highly supportive and inspiring working environment that emphasizes

learning, growth, and collaboration. The workplace thrives on a culture where innovation and development are prioritized, creating an atmosphere conducive to personal and professional growth.

The managerial and technical teams play a pivotal role in enhancing the work environment. With leaders like Mr. Karan Saklani and Mr. Harsh Nagda, employees benefit from sharp insights, technical expertise, and smart leadership. Their collaborative and supportive nature ensures that challenges are navigated effectively, and learning remains at the forefront.

Moreover, the HR team, led by Ms. Ramya Prasad, ensures a welcoming and inclusive atmosphere. The camaraderie among team members fosters mutual respect and encouragement, making the organization an excellent place to work. This supportive and growth-oriented environment not only helps individuals overcome challenges but also enables them to thrive and achieve their goals.

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

PS-II Station : Goodera - Category, Bengaluru

Faculty

Name: Sandeep Kayastha .

Student

Name: KOSURI GYAN SUMANYU(2020B5A42176H)

Student Write-up

PS-II Project Title: Ideation of volunteering activities

Short Summary of work done during PS-II : As a Category Intern at Goodera, a company that organizes corporate volunteering activities as part of CSR initiatives for various companies. My role involved the ideation and development of activities aimed at enhancing the impact of these CSR programs. I contributed to creating innovative concepts for different campaigns, collaborating with teams to align with the company's objectives. Through this experience, I gained insight into how businesses can drive positive social impact through creative and purposeful

Tool used (Development tools - H/w, S/w) : Google sheets, Chat GPT , Canva, excel

Objectives of the project : As a category intern, i had to come up with volunteering ideas for the different events in their catalogue and manage the ongoing events

Major Learning Outcomes : Ideation, Creative thinking, event management, communication

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The work environment was good, you will have a good work life balance. The timings are very much relaxed (from 12pm to 6pm). Weekend are off. You will get plenty off non- office for your placement preparation. PPO and extension chances are also decent, but however will vary from team to team.

Overall it is a very good company but if you want to leverage this experience into your placements, you might not find many suitable roles for you

Academic courses relevant to the project : None

PS-II Station : Goodera - CSM Team, Bengaluru

Faculty

Name: Sandeep Kayastha .

Student

Name: SIDDHARTH SINGH SENGAR .(2020B1A31392P)

Student Write-up

PS-II Project Title: Customer Success Manager

Short Summary of work done during PS-II : Helped the team in managing clients, being the face of the organization. Internally coordinating with all the team to ensure everyone is on the same page about the client requirements and ensure smooth conduction of events

Tool used (Development tools - H/w, S/w) : Internal tools like VVApp and GoodyOS along with google slides and ppts

Objectives of the project : Assist the team in managing clients and coordinating with different teams

Major Learning Outcomes : Google sheets and slides

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : It's alright, lots of alumni here. The working hours are flexible in a bad way. Work could come up anytime. I have been asked to complete a presentation by 7 am, assigned at 1 am. Have also been given work while I'm on a leave.

Academic courses relevant to the project : None

PS-II Station : Goodera - CSM Team, Bengaluru

Faculty

Name: Sandeep Kayastha .

Student

Name: RUQQYAH KILLEDAR(2021A1PS2895H)

Student Write-up

PS-II Project Title: GOODYOS TRANSITION

Short Summary of work done during PS-II : As a Client Success Management Intern at Goodera, I had the opportunity to manage CSR projects and volunteer campaigns for prominent international companies, including , Arrow, Atlassian, MassMutual, BMI, Calix, Crocs, ByteDance, Target, FedEx, etc. My responsibilities spanned event planning, client dashboard management, and assigning nonprofit organizations (NPOs) to activities. I played a key role in the transition to Goodera's new platform, GoodyOS, which involved evaluating existing client data, mapping and uploading events, and collaborating with category and NPO teams to address gaps in event availability and mapping. I also oversaw event scheduling, monitored volunteer hours, and created detailed impact reports to highlight the outcomes of CSR initiatives. Additionally, I managed logistics, event reservations, and client communications for high-profile campaigns like the, Zuora EVENTS while also coordinating on-ground volunteer efforts with nonprofit partners. My role required creating marketing collateral, addressing challenges, and ensuring timely task completion to maintain smooth operations and client satisfaction. This internship honed my skills in data analysis, problem-solving, communication, and cross-functional teamwork, while providing valuable insights into the complexities of CSR operations and client relationship management. These experiences enhanced my ability to lead, adapt, and deliver results in a globally integrated and dynamic work environment.

Tool used (Development tools - H/w, S/w) : GOODYOS, VVAPP, SSP, EXCEL

Objectives of the project : NUN

Major Learning Outcomes : I managed logistics, event reservations, and client communications for high-profile campaigns like the, Zuora EVENTS while also coordinating on-ground volunteer efforts with nonprofit partners.

Details of Papers/patents : NON

Brief Description of working environment, expectations from the company : it was a good experience and the team was very helpful in helping me understand the work

Academic courses relevant to the project : dbms

PS-II Station : Goodera - CSM Team, Bengaluru

Faculty

Name: Sandeep Kayastha .

Student

Name: JOSHI ROHAN ABHIJIT .(2021A2PS2161P)

Student Write-up

PS-II Project Title: Client Success Management at Goodera

Short Summary of work done during PS-II : I managed CSR projects and volunteer campaigns for international companies like ByteDance, Target, and FedEx during my work at Goodera as a Client Success Management Intern. Among my duties were event planning, client dashboard maintenance, and assigning nonprofit organisations (NPOs) to activities. In order to guarantee smooth operations and client satisfaction, I worked extensively on platforms like Benevity and GoodyOS. Supporting the transition to Goodera's new platform, GoodyOS, constituted a large portion of my job. In order to do this, it was necessary to evaluate the client data that was already in place, make sure that events were correctly mapped and uploaded, and work with the category and NPO teams to fill up any gaps in NPO mapping or event availability. I oversaw the scheduling of events, kept tabs on volunteer hours, and produced thorough impact reports to showcase the results of these projects. In addition, I oversaw event reservations, logistics, and client communications for well-known campaigns like TikTok Open House. My duties also included making collateral, resolving issues, and making sure that tasks were completed on schedule. I also helped with event planning and delivery coordination for nonprofit partners, which added to the on-ground volunteer efforts. My abilities in data analysis, communication, problem-solving, and cross-functional teamwork were refined during this internship. Additionally, it gave me insightful knowledge about the subtleties of CSR operations and client relationship management, which equipped me to succeed in comparable positions in the future. My work at Goodera demonstrated my capacity to lead, adapt, and produce outcomes in a dynamic, internationally integrated workplace.

Tool used (Development tools - H/w, S/w) : VVApp, GoodyOS, Gsheet, Gslides, Benevity

Objectives of the project : Streamline CSR operations and client management
Facilitate platform migration to GoodyOS
Coordinate global volunteer campaigns and events
Enhance communication across clients and teams
Create impactful post-event reports

Major Learning Outcomes : Proficiency in Benevity and GoodyOS

Event coordination and NPO mapping expertise

Problem-solving in logistics and client challenges

Data analysis and impact reporting

Cross-cultural collaboration and communication

Leadership and ownership of tasks

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : I worked in a vibrant, cooperative atmosphere at Goodera throughout my internship, with a focus on client satisfaction and cross-functional teamwork. The workplace combined in-person and distant interactions, necessitating flexibility with regard to various workflows and communication tools. Email, Google Meet, Zoom, Lark, and other platforms were crucial for communicating with internal teams and clients. Every tool was customised to the client's needs, guaranteeing efficient communication between time zones and geographical locations.

I worked closely with a variety of teams, such as the supply and logistics team, category team, and NPO team. This cooperation was essential for tasks like assigning nonprofits to events, addressing logistical issues, and guaranteeing that campaigns ran smoothly. I was able to overcome obstacles like customs delays and client POC availability because to the encouraging work culture, which promoted proactive problem-solving and open communication.

Managing platforms like Benevity and GoodyOS was another aspect of the internship that called for a sharp eye for detail and knowledge of CSR operations. My duties included managing data, producing reports, and keeping up with client dashboards—all of which required precision and regularity. The team offered direction and assistance to guarantee task completion in spite of sporadic problems including platform crashes and manual data entering.

A sense of urgency was heightened by the hectic October–December timeframe, when a lot of clients needed to be attended to and effective multitasking was required. The experience was both demanding and fulfilling because of the cooperative and resourceful atmosphere, which encouraged a strong sense of accountability and ownership. My knowledge of CSR procedures and client success management has improved as a result of the chance to engage with international clients and teams.

Academic courses relevant to the project : Technical Report Writing

PS-II Station : Goodera - CSM Team, Bengaluru

Faculty

Name: Sandeep Kayastha .

Student

Name: SOHAM KAUSTUBH HENDRE(2021A4PS2905G)

Student Write-up

PS-II Project Title: Customer Success Management Intern

Short Summary of work done during PS-II : Most of my work entailed the management of Several Event Pages for clients, as well as making decks for the same. There was also a lot of manual work, such as filling spreadsheets, and google docs for my team. Towards the tail end of my PS, we were asked to create SSPs on Goodera's new in-house portal called GoodyOS, which would greatly simplify event process. I also attended and maintained notes for various client meetings, and was in charge of sending these to clients after meetings.

Tool used (Development tools - H/w, S/w) : Google Suite, Looker Studio, YourCause, Benevity, Deed

Objectives of the project : Learning about the roles of a CSM

Major Learning Outcomes : Google Suite, Looker Studio, Client Engagement, Event Management

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : When I had joined, I had expected my work to be actually useful work that would make good use of the engineering skills I had learnt, but on joining the company I realized that was not going to be the case. The working environment is rather laidback and casual. While this may seem good at first,

it actually is to a detriment. A lot of internal tasks that I had given to other teams were never done on time. Furthermore, delays and mishaps were incredibly common both inside and outside the company related to it's workings. The only plus point about Goodera was that the work timings were exceptional (2 PM - 10 PM for me), which allowed a lot of time for me to study and carry out other personal endeavours.

Academic courses relevant to the project : None

PS-II Station : Goodera - GTM, Bengaluru

Faculty

Name: Sandeep Kayastha .

Student

Name: KRISHNA PRASAD S(2020B5A41891G)

Student Write-up

PS-II Project Title: GTM Strategy

Short Summary of work done during PS-II : I was mainly doing prospecting related tasks by using LinkedIn Sales Navigator and Apollo to get new leads. I had to also research about various companies, get data such as their total volunteer hours, unique volunteer number, employee participation percentage etc. The work was mostly repetitive.

Tool used (Development tools - H/w, S/w) : Apollo, Outreach, LinkedIn Sales Navigator, Excel

Objectives of the project : Go-To-Market strategy

Major Learning Outcomes : Learnt about Go-To-Market strategies, CSR.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Work life balance is good and office timings are flexible. The work culture is good and the people are helpful.

Academic courses relevant to the project : None

PS-II Station : Goodera - Product Team, Bengaluru

Faculty

Name: Sandeep Kayastha .

Student

Name: ARYAAN PARIDA(2020B1A40833H)

Student Write-up

PS-II Project Title: Developing Client Dashboards and Ensuring Product quality

Short Summary of work done during PS-II : In my role, I collaborated with the Customer Success Management (CSM) team at Goodera to design and implement interactive dashboards in Looker Studio. This involved gathering requirements, creating and maintaining event sheets for over 30 clients, and ensuring seamless backend integration. I delivered weekly insights to 4-5 CSM pod groups, enabling data-driven decision-making. As part of the company's transition to a

new platform, I facilitated the migration process by developing and integrating new sheets into existing dashboards. Additionally, I contributed to product testing, prioritized issues, and implemented process improvements to enhance overall efficiency. During my time at Goodera, I also gained proficiency in the metabase and optimized internal reporting processes, further boosting operational efficiency. My responsibilities also included providing project management support to ensure smooth platform migration and fostering effective collaboration across teams.

Tool used (Development tools - H/w, S/w) : Looker Studio , Google Sheets , Metabase , Goodera Proprietary Software

Objectives of the project : Maintaining and Developing Client Dashboards , Ensuring Product quality is maintained by gathering requirements and giving recommendations through brain - storming and user testing , Ensuring optimized workflows for all stakeholders in the organization.

Major Learning Outcomes : Gained first-hand exposure of working in the field of product management in a cross-functional client-facing organization. Gained valuable insights on developing a client deliverables and optimizing existing workflows within organization.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Pretty great working environment , my managers were pretty supportive throughout the internship and encouraged me to take ownership of the various tasks that were assigned to me.

Academic courses relevant to the project : Principles of Management , Excel based courses like Supply Chain Management , Project Appraisal.

PS-II Station : Goodera - Product Team, Bengaluru

Faculty

Name: Sandeep Kayastha .

Student

Name: SAAKSHI ADIGA S(2020B1A41930G)

Student Write-up

PS-II Project Title: Product

Short Summary of work done during PS-II : Enhanced Virtual Volunteering Experience: Streamlined the process for volunteers, ensuring better engagement and smoother execution of virtual events. Increased Operational Efficiency: Automated workflows and integrated systems for better data management and real-time updates, reducing manual intervention. Improved Stakeholder Communication: Better collaboration across teams (design, engineering, etc.) leading to more cohesive and aligned project outcomes. Optimized Event Management: Centralized event-related data and improved event-specific workspaces, making it easier for hosts and clients to track and manage events. Data-Driven Decision Making: Enhanced integration of event data through APIs, enabling more accurate and insightful decision-making processes.

Tool used (Development tools - H/w, S/w) : None

Objectives of the project : Product management on upcoming and existing problem statements

Major Learning Outcomes : Stakeholder management, Live App on App Store and Play store, design critiques, Automations, WhatsApp cohort messaging

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Great place to work- will give full ownership on projects. Very exciting use cases.

Academic courses relevant to the project : None

PS-II Station : Goodera - Product Team, Bengaluru

Faculty

Name: Sandeep Kayastha .

Student

Name: ADITYA RATLEY(2020B2A42005G)

Student Write-up

PS-II Project Title: Design and Development of Workflow Automation and Data Integration Solutions

Short Summary of work done during PS-II : During my PS-II project, I focused on automating workflows, integrating data across multiple platforms, and optimizing user experience. I automated various repetitive tasks using tools like Zapier, reducing manual effort and enhancing operational efficiency. Additionally, I integrated data from multiple systems, ensuring seamless data flow and accessibility. I worked with **Metabase** to design interactive dashboards that provided real-time insights, aiding decision-making processes. I also contributed to product development by leveraging **Appsmith** to create an end-to-end solution for backend logic, using **JavaScript** and integrating **Dropbox API** for data storage. This allowed the creation of a streamlined workflow for internal operations. In parallel, I developed a client portal on **Notion**, focusing on data filtering and automation across interconnected data sources, improving client reporting capabilities. As part of the **Goodera Host Hub App**, I handled backend API integrations and managed the deployment process for both **Play Store** and **App Store**. The app was designed to optimize volunteer management, incorporating features such as event

checklists and navigation tools. Throughout the project, I also gained insights into stakeholder management, ensuring that the developed solutions met business goals and user requirements. This experience enhanced my skills in data analytics, process optimization, and full-cycle product development, providing me with a comprehensive understanding of workflow automation, data integration, and user-centered design.

Tool used (Development tools - H/w, S/w) : Appsmith, Zapier, Metabase, Notion, Dropbox API, Flutterflow, JavaScript, Play Store, App Store, API integration tools.

Objectives of the project : The project aims to automate workflows, streamlining repetitive tasks to enhance efficiency. It focuses on integrating data from multiple platforms, ensuring seamless data flow and accessibility. By creating dashboards, the project provides actionable insights for better decision-making. Additionally, it works on optimizing user experience by improving functionality and usability. Stakeholder management is a key aspect, ensuring alignment with business goals and delivering tailored solutions. Overall, the goal is to increase operational efficiency, reduce overhead, and boost productivity across systems while addressing stakeholder needs effectively.

Major Learning Outcomes : The project provided valuable learning in workflow automation, data integration, and the creation of interactive dashboards for data visualization. It enhanced my skills in stakeholder management, ensuring solutions align with business objectives. I also gained hands-on experience in full-cycle product development, focusing on optimizing user experiences and backend systems. Additionally, the project deepened my understanding of process optimization and data analytics, enabling me to identify inefficiencies, extract actionable insights, and implement effective solutions to boost operational performance.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The work environment was collaborative and innovative, allowing hands-on experience in product development and data integration.

Academic courses relevant to the project : Database Management Systems

PS-II Station : Goodera Customer Success, Bengaluru, Bengaluru

Faculty

Name: Sandeep Kayastha .

Student

Name: CHETAN VISHNU MAREM(2020B1A42399H)

Student Write-up

PS-II Project Title: Client Success Management Intern(CSM)

Short Summary of work done during PS-II : Managed global volunteering events, ensured seamless execution through cross-functional collaboration, and delivered data-driven insights to enhance client experience.

Tool used (Development tools - H/w, S/w) : Excel and company specific tools

Objectives of the project : ensure smooth event execution, maintain client satisfaction, and deliver impactful insights for global volunteering campaigns.

Major Learning Outcomes : -

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : As a CSM intern, the expectation was to coordinate effectively with internal teams, communicate promptly with clients

Academic courses relevant to the project : TRW

PS-II Station : Grasim Industries Ltd., Birla Cellulose, Staple Fibre Division, Nagda

Faculty

Name: Arun Maity .

Student

Name: ASMIT SHARMA(2020B3A41790G)

Student Write-up

PS-II Project Title: Blade breakage detection System Development

Short Summary of work done during PS-II : Team collaboration, data analysis and interpretation, machine learning model development

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

Objectives of the project : To develop an algorithm for detection of Blade breakage

Major Learning Outcomes : Team collaboration, data analysis and interpretation, machine learning model development

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Very helpful and informative environment

Academic courses relevant to the project : Study Oriented Project

PS-II Station : Grasim Industries Ltd., Birla Cellulosic, Kharach

Faculty

Name: Arun Maity .

Student

Name: HARSH SRIVASTAVA .(2020B1A11385P)

Student Write-up

PS-II Project Title: Development of algorithm to predict jet positions using data from online fault detection system

Short Summary of work done during PS-II : For the first month I collected faults from excel plant, passed them through sensor and annotated images containing faults • After that observed passing through 40 Jets of line D in excel plant, collected faults note time, type of fault, jet number and tow section from which fault was passing through • Worked on data of viscose plant from May to October to prepare dataset, visualize and analyze pattern through it by counting frequency of Jet numbers for each fault. Prepared a month wise plot of Jet position vs tow range • Plotted frequency for individual jet vs tow section plot • Plotted frequency vs tow section month wise for individual jets • Applied random forest on dataset for July to October but did not get desired result

Tool used (Development tools - H/w, S/w) : Jupyter lab, Labelimg, Python, ML

Objectives of the project : Development of algorithm to predict jet positions using data from online fault detection system

Major Learning Outcomes : Python and its libraries, Data visualization

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working environment was great, all the staff were very helpful especilly Sagar Sir . They helped me grow and and develop skills that was needed for project and wiil help in my c areer ahead. I think i fell slightly hort of expecations of the company becuae of some lack of skills but it was a fruitful learning experiance

Academic courses relevant to the project : NA

PS-II Station : Grasim Industries,Nagda, Nagda

Faculty

Name: Arun Maity .

Student

Name: DERICK S VEMPALA(2017A1PS0626G)

Student Write-up

PS-II Project Title: Salt Recovery in a Viscose Production Plant

Short Summary of work done during PS-II : Daily monitoring and analysis of logs and plant operations to get proper understanding of where the losses and inefficiencies are and modelling machines and work plans to decrease the losses.

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

Objectives of the project : Analyse the Daily process of the plant, Increase Recovery of Sodium Sulphate salt from the sump water after tow wash and spin bath

Major Learning Outcomes : Leant how a plant operated, the amount of working parts needed to run a plant, plant economics and general errors and mistakes that tend to happen along with plant safety.

Details of Papers/patents : Sodium sulphate in Viscose as by product

Brief Description of working environment, expectations from the company : People were helpful and eager to teach about the plant and operations. Work wasnt too hectic but frequent monitoring and walking around the plant was necessary.

Academic courses relevant to the project : Process Plant Safety, Process Equipment Design, Process Design Principles I & II, Seperation Process I & II

PS-II Station : Grasim Industries,Nagda, Nagda

Faculty

Name: Arun Maity .

Student

Name: OM SHIV SHARMA .(2021A1PS2139P)

Student Write-up

PS-II Project Title: ENHANCING SALT RECOVERY

Short Summary of work done during PS-II : During my internship at Grasim Industries' Nagda Plant, I worked on optimizing the salt recovery process in the auxiliary department. The primary objective was to increase the salt recovery rate to 70% or higher. My role involved analyzing existing processes, identifying inefficiencies, and proposing improvements. I collaborated with plant engineers to evaluate equipment performance and recommended upgrades to enhance efficiency. Additionally, I researched and implemented industry best practices to streamline operations. Through data analysis and process modifications, I contributed to achieving measurable improvements in the salt recovery rate while gaining practical insights into industrial chemical processes and problem-solving.

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

Objectives of the project : To increase the salt recovery in auxiliary department.

Major Learning Outcomes : I gained hands-on experience in process optimization while working on increasing salt recovery in the auxiliary department. I developed a strong understanding of chemical manufacturing processes and collaborated with cross-functional teams to analyze system inefficiencies and propose practical solutions. By focusing on equipment upgrades and implementing best practices, I enhanced my problem-solving and project management skills. This experience allowed me to apply my theoretical knowledge to real-world challenges and contribute meaningfully to improving the plant's efficiency.

Details of Papers/patents : N.A.

Brief Description of working environment, expectations from the company : While the work environment at Grasim Industries' Nagda Plant was highly engaging and provided exceptional learning opportunities, the HR experience fell short of expectations. The project itself was well-structured, offering ample scope to apply theoretical knowledge to real-world challenges. I worked

closely with experienced professionals and gained valuable insights into process optimization and industrial operations. However, the HR processes lacked efficiency and responsiveness, often leading to delays in communication and ambiguity regarding certain formalities. While the technical exposure and mentorship were excellent, a more streamlined and supportive HR approach could have enhanced the overall internship experience significantly.

Academic courses relevant to the project : Heat Transfer, Fluid Mechanics, Process Dynamic Control, Thermodynamics, Process Plant Safety, Separation Process.

PS-II Station : Grasim Industries, Nagda, Nagda

Faculty

Name: Arun Maity .

Student

Name: KARIYA SAI TEJESHWAR .(2021A1PS2579P)

Student Write-up

PS-II Project Title: Enhancing the recovery of salt production

Short Summary of work done during PS-II : We oversaw the equipments which was involved in the auxiliary dept for the sodium salt recovery. We studied their working principles and the application, how they were useful to the plant and what was each equipments addition to the process in the manufacturing of cellulose fibre.

Tool used (Development tools - H/w, S/w) : MSFE, RVF, ASPEN HYSYS, SPINNING BATH

Objectives of the project : To increase the recovery of salt production in the auxiliary department.

Major Learning Outcomes : Industry experience, real view of equipments and it's workings

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : It was a very peaceful environment, company had very minimum expectations from us, required us to finish only the work that was allotted to us. It was a great working campus, where safety was their most priority.

Academic courses relevant to the project : Heat transfer, fluid mechanics, process dynamic and control.

PS-II Station : Grasim Industries,Nagda, Nagda

Faculty

Name: Arun Maity .

Student

Name: ARCHIT ARYA(2021A4PS2981G)

Student Write-up

PS-II Project Title: Improvements in Mechanized Coal Handling Plant and Improving efficiency of MSFE

Short Summary of work done during PS-II : detailed analysis of mchp coal handling process and provide key insights

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

Objectives of the project : to do a detailed study of coal handling processes across the mchp

Major Learning Outcomes : structured learning, safety, and focus on critical pathways

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : the company was very demanding in terms of projects and the tasks given were challenging

Academic courses relevant to the project : manufacturing management

PS-II Station : Grasim Industries, Nagda, Nagda

Faculty

Name: Arun Maity .

Student

Name: SRIJAN KOSHTI .(2021ABPS1678P)

Student Write-up

PS-II Project Title: VALUE STREAM MAPPING: FIBRE BALE HANDLING FROM BALING PRESS TILL WAREHOUSE

Short Summary of work done during PS-II : not more than 250 words During my PS-II, I focused on optimizing fibre bale handling and developing a Warehouse Management System (WMS). Here's a brief summary: **Project Overview:** Objective: Streamline fibre bale handling and implement an efficient WMS for better inventory management. **Tasks and Responsibilities:** Analysis: Conducted a thorough analysis of the existing fibre bale handling process to identify inefficiencies. Design: Designed a comprehensive WMS tailored for fibre bales, including tracking, storage, and retrieval systems. Implementation: Collaborated with the team to develop and implement the WMS, ensuring seamless integration with existing systems. Testing: Conducted rigorous testing to ensure the WMS met performance standards and resolved any issues. Training: Provided training sessions for staff to ensure smooth adoption of the new system. Outcomes: Efficiency: Improved the overall efficiency of fibre bale handling, reducing time and effort required for inventory management. Accuracy: Enhanced inventory accuracy and real-time tracking of fibre bales, leading to better decision-making. Productivity: Increased productivity by automating manual processes and reducing errors. This project provided valuable hands-on experience and demonstrated the potential of technology to transform traditional processes.

Tool used (Development tools - H/w, S/w) : Opentheia, R, Impinj Itemsense, Oracle WMS Cloud

Objectives of the project : Optimize and come up with a reform to reduce produce loss caused due to bad bale handling processes.

Major Learning Outcomes : Proficiency in tackling real life industry problems, WMS knowledge application, C

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : During my PS-II, I worked in a dynamic and collaborative environment that emphasized hands-on learning and practical application of theoretical knowledge. The organization fostered a culture of continuous improvement, encouraging innovation and proactive problem-solving. Teamwork was highly valued, with regular brainstorming sessions and open communication channels facilitating the exchange of ideas and feedback.

Expectations from the company included:

Clear Communication: Regular updates on project progress and any challenges faced.

Support and Guidance: Access to experienced mentors who provided insights and assistance throughout the project.

Resource Availability: Adequate resources, including hardware and software tools, to ensure the successful completion of the project.

Professional Development: Opportunities for learning and skill enhancement, such as training sessions and workshops.

Constructive Feedback: Regular performance reviews with constructive feedback to help improve and refine skills.

This supportive and resource-rich environment played a crucial role in the successful execution of my project, enabling me to apply my academic knowledge in real-world scenarios and gain valuable industry experience.

Academic courses relevant to the project : SCM, Operations Management

PS-II Station : Grasim Industries,Nagda, Nagda

Faculty

Name: Arun Maity .

Student

Name: KISLAY TIWARI .(2021ABPS2566P)

Student Write-up

PS-II Project Title: Value Stream Mapping: Optimizing Fibre Bale Handling from Bailing Press to Warehouse

Short Summary of work done during PS-II : During the internship, the project focused on optimizing fibre bale handling from the bailing press to the warehouse using Value Stream Mapping (VSM) to identify inefficiencies and bottlenecks. Comprehensive analysis of the existing processes highlighted delays in manual tracking, layout inefficiencies, and overstocking issues. Recommendations included implementing RFID technology and an AI-powered Warehouse Management System (WMS Vision) for real-time tracking, automated inventory updates, and warehouse layout optimization. A pilot study for WMS Vision was proposed, incorporating features like heatmaps, ERP integration, and mobile dashboards to improve inventory visibility and operational efficiency. Key calculations demonstrated significant improvements, including a 42.8% reduction in handling time and ₹1,20,000 in monthly savings, with an ROI timeline of 8.3 months. Collaborating with stakeholders, including vendors, ensured practical and scalable solutions. The internship provided hands-on experience in process optimization, inventory management, and technology integration, contributing to leaner and more efficient warehouse operations.

Tool used (Development tools - H/w, S/w) : The project utilized both hardware and software tools to optimize operations. RFID systems, including tags and readers, were proposed for real-time tracking of fibre bales, while warehouse equipment supported process observations. WMS Vision, an AI-powered

Objectives of the project : The project aims to streamline fibre bale handling from the bailing press to the warehouse by optimizing workflows and eliminating bottlenecks through Value Stream Mapping (VSM). It focuses on enhancing warehouse efficiency, improving space utilization, and implementing technology-driven solutions such as RFID and AI-powered WMS Vision for real-time tracking and automated inventory updates. By improving inventory visibility, reducing manual effort, and optimizing resource utilization, the project seeks to lower costs, increase operational efficiency, and provide actionable insights for strategic decision-making. The goal is to develop scalable solutions to meet current and future operational demands.

Major Learning Outcomes : Major Learning Outcomes

Process Optimization:

Gained expertise in using Value Stream Mapping (VSM) to identify bottlenecks and streamline fibre bale handling processes.

Technology Integration:

Learned the practical application of RFID technology and AI-powered Warehouse Management Systems (WMS) to automate inventory tracking and improve warehouse operations.

Inventory Management:

Developed skills in managing inventory efficiently by implementing real-time tracking, optimizing stock levels, and reducing overstocking and storage costs.

Data Analysis & Decision-Making:

Acquired the ability to generate and interpret data-driven insights, such as warehouse heatmaps, product movement patterns, and inventory trends, to support strategic decisions.

Operational Efficiency:

Enhanced understanding of reducing cycle times, improving resource utilization, and minimizing manual interventions to achieve cost and time savings.

Scalable Solution Design:

Learned to design and recommend scalable solutions for operational challenges, ensuring adaptability to future production and storage demands.

Team Collaboration & Communication:

Gained experience in coordinating with cross-functional teams, vendors, and stakeholders to propose and implement effective solutions.

Project Management:

Improved project planning and execution skills, including managing timelines, reporting progress, and adapting to unexpected challenges.

Industry Practices:

Broadened knowledge of modern warehouse management and lean manufacturing techniques to enhance operational sustainability and efficiency.

Details of Papers/patents : As part of the project, two papers were developed. The first, titled "Optimizing Fibre Bale Handling Using Value Stream Mapping and RFID Technology", explores using VSM to identify inefficiencies in fibre bale handling and the integration of RFID and AI-p

Brief Description of working environment, expectations from the company : The working environment at Grasim Industries, where the PS-II took place, was dynamic and collaborative, fostering innovation and problem-solving. The company's focus on improving operations and implementing advanced technologies like RFID and AI-based systems created a high-tech, goal-oriented atmosphere. Cross-functional teams, including operations, technology, and

management, worked together to address challenges in warehouse management and inventory optimization.

Expectations from the company included a hands-on learning experience, exposure to real-world applications of warehouse management systems, and the opportunity to contribute to solving critical operational inefficiencies. The goal was to gain insights into the process optimization efforts, including Value Stream Mapping (VSM), and implement technology-driven solutions. The company's support in providing access to relevant tools, data, and expert teams facilitated the learning process and enabled effective participation in the project. Regular feedback sessions and mentorship from both faculty and internal mentors helped guide progress.

The company also encouraged proactive problem-solving and offered the chance to work on scalable, impactful solutions. Expectations included improving operational efficiency, reducing costs, and contributing to future-proofing warehouse operations. The opportunity to work with advanced technologies and integrate them into warehouse processes enhanced both technical and strategic thinking, providing a comprehensive learning experience.

Academic courses relevant to the project : 1. Supply Chain Management

2. Operations Management

PS-II Station : Grogu Payments Software Private Limited, Hyderabad

Faculty

Name: Sai Kishor Jangiti .

Student

Name: ADITYA VERMA .(2021A8PS2708P)

Student Write-up

PS-II Project Title: Software Engineering Internship

Short Summary of work done during PS-II : During my internship at MarketPe - Grogu Payments Software Private Limited, I gained extensive experience in full-stack software development, working across multiple technological domains. The internship provided a comprehensive learning experience that significantly enhanced my technical and professional skills. I developed proficiency in key technologies including NestJS, Flutter, TypeScript, and MySQL, learning to navigate complex software development challenges. The projects I worked on taught me crucial skills in API development, system integration, and creating robust, scalable software solutions. I learned the importance of detailed validation, secure coding practices, and efficient data management. A critical aspect of my learning journey was understanding the nuances of full-stack development, from backend logic and database management to creating responsive frontend interfaces. I improved my problem-solving skills by addressing real-world technical challenges, learning to optimize code, handle large datasets, and implement effective user experience solutions. The internship also emphasized the importance of collaborative development, code reviews, and continuous improvement. I developed skills in working within a professional software development environment, understanding project workflows, and contributing to team objectives. These experiences provided me with practical insights into professional software engineering, bridging the gap between academic knowledge and industry requirements, and laying a strong foundation for my future career in technology.

Tool used (Development tools - H/w, S/w) : Software Development Tools: Backend Technologies: NestJS Node.js TypeScript JavaScript Frontend Technologies: Flutter HTML CSS Database: MySQL Prisma API Development: RESTful APIs Version Control and Collaboration: Git GitHub

Objectives of the project : Full stack web development and engineering end-to-end features using Flutter, NestJS, and MySQL.

Major Learning Outcomes : Major Learning Outcomes:

Advanced Backend Development Skills:

Proficiency in NestJS and TypeScript

Complex data validation techniques

Implementing robust error-handling mechanisms

Frontend Development:

Advanced Flutter widget development

State management

Creating responsive and intuitive user interfaces

Database and API Management:

Efficient large-scale data processing

RESTful API design and implementation

Database optimization using Prisma and MySQL

Third-Party Service Integration:

Seamless integration of external services like Signzy

Handling API dependencies

Implementing secure authentication mechanisms

Software Engineering Best Practices:

Code quality and security

Performance optimization

Collaborative development techniques

User experience-driven design

Problem-Solving and Technical Adaptability:

Handling complex technical challenges

Developing innovative solutions for logistics and payment systems

Adapting to diverse project requirements

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : During my internship at MarketPe, I found the working environment to be excellent. There's no work pressure, but since I worked directly under the founding team, I got an incredible opportunity to learn and grow professionally. The founders were incredibly supportive, always ready to guide me and share their valuable insights.

Moreover the projects I worked on provided me with in-depth technical experience and exposure to real-world development challenges. From backend development to frontend implementations, I worked on diverse software engineering tasks.

The company offers flexibility with 12 paid leaves and relaxed working hours, which really helped me maintain a great work-life balance. While they currently don't have PPO opportunities, the

exposure and learning experience are truly invaluable. Being so close to the leadership meant I could understand the nuances of startup operations, strategic thinking, and entrepreneurial approaches that you wouldn't typically get in a traditional corporate setting.

Academic courses relevant to the project : Object Oriented Programming, Computer Programming, Database Management System and Operating Systems.

PS-II Station : Grogu Payments Software Private Limited, Hyderabad

Faculty

Name: Sai Kishor Jangiti .

Student

Name: HRISHIKESH NARAYANAN(2021AAPS2240G)

Student Write-up

PS-II Project Title: Building a Enterprise Logistics Assistant To Automate Operations

Short Summary of work done during PS-II : Actively developed an Enterprise Logistics Assistant to automate operational processes. Implemented the frontend using Flutter and Dart and the backend with Node.js and TypeScript. Employed Bruno for API testing, Git for collaborative development and Jest for code testing.

Tool used (Development tools - H/w, S/w) : Node.js, Flutter, TypeScript, Dart, API testing, Jest, Git, Bruno, Docker, Prisma.

Objectives of the project : Building a Enterprise Logistics Assistant To Automate Operations

Major Learning Outcomes : Node.js, Flutter, TypeScript, Dart, API testing, Jest, Git, Bruno, Docker, Prisma.

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : Very good company. It was work from home with flexible timings. Submission Date had to be kept for each task and was judiciously followed and timed. Mentors were very responsive and helpful and played a major part in our learning curve.

Academic courses relevant to the project : Nil

PS-II Station : Growhut Technologies PVT. LTD., Gurgaon

Faculty

Name: Nishit Narang .

Student

Name: HARSHIT BADHWAR .(2020B2A20745P)

Student Write-up

PS-II Project Title: Product Management across Multisectoral Projects

Short Summary of work done during PS-II : At Growhut, I had the privilege of contributing to transformative products in the HealthTech and Automotive industries. I designed three platforms

poised to drive VOC's expansion from 150+ dealerships to 800 dealerships over the next few years. Leading a cross-functional team for this project, I honed my skills in defining product vision, gathering requirements, and ideating concepts. I also gained hands-on experience in wireframing, enhancing user experience, and planning sprints, ensuring seamless collaboration across teams. This experience not only strengthened my ability to manage diverse stakeholders but also deepened my understanding of building scalable and user-centric solutions.

Tool used (Development tools - H/w, S/w) : Figma, Notion, Clickup, Whimsical

Objectives of the project : I was tasked with designing a platform to run the operations for one of the fastest growing startups in the Automotive Industry based in Bengaluru

Major Learning Outcomes : Learned about the various stages of Product Development from the Ideation Stage to Product Delivery as I got to work on different products at different stages of the Product Lifecycle, my biggest takeaway was how to approach the problem by first discovering everything about the situation at hand to then narrowing it down to the key items & coming up with the solutions post that.

Details of Papers/patents : N.A.

Brief Description of working environment, expectations from the company : The working environment at Growhut was both demanding and rewarding, fostering a culture of impact-driven work rather than just logging hours. While the pace could occasionally be tiresome, the focus on meaningful contributions made every effort worthwhile. I particularly appreciated how approachable and supportive the founders were, always ready to guide me at every step. This balance of high expectations and strong mentorship created a dynamic and enriching experience that I truly valued.

Academic courses relevant to the project : None

PS-II Station : GTM Buddy Software private limited - Customer Success, Hyderabad

Faculty

Name: Venkateswara Rao Thunuguntla .

Student

Name: JAIN TANISHQ HASMUKHBHAI .(2020B1A11897P)

Student Write-up

PS-II Project Title: DRIVING CUSTOMER SUCCESS INITIATIVES WITH AI INSIGHTS AND STRATEGIC NETWORKING

Short Summary of work done during PS-II : During my internship at GTM Buddy Software Private Limited, I gained hands-on experience in implementing customer success strategies tailored to a B2B SaaS framework. The project emphasized using data-driven insights and building networks to streamline customer onboarding, boost retention, and uncover opportunities for growth. Throughout my time at GTM Buddy, I developed a solid grasp of the B2B SaaS sales process, including lead generation, qualification, closing, and customer onboarding. I also became proficient in key sales frameworks, such as MEDDPICC and BANT, which are essential for managing complex sales cycles. One of the core areas of focus in this internship was customer success strategies. I was introduced to various aspects of customer success, including account research, implementation planning, onboarding processes, and customer support.

Tool used (Development tools - H/w, S/w) : Slack, Clickup, G2

Objectives of the project : Customer Success Strategy, CSM Role and Responsibilities, B2B SaaS Business Model

Major Learning Outcomes : he internship offered me a thorough understanding of how essential customer success is within the B2B SaaS landscape. The knowledge and skills I acquired will be crucial in shaping customer focused strategies and fostering sustainable business growth in the future

Details of Papers/patents : NA

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

Academic courses relevant to the project : Introduction to Mass communication

PS-II Station : Happay - Golang, Bangalore

Faculty

Name: Pawan Sharma .

Student

Name: PRATHMESH TIWARI(2021A7PS2834G)

Student Write-up

PS-II Project Title: Comprehensive Development of Card Transaction Monitoring, Settlement Processing, and System Performance Enhancement

Short Summary of work done during PS-II : During my PS-II at Happay, I contributed to enhancing the reliability and efficiency of card transactions by working on critical backend systems. My primary focus was the development and optimization of APIs, automation processes,

and error-handling mechanisms. I designed Health Check APIs to monitor critical components like the Hardware Security Module (HSM) and implemented Redis for efficient key-value storage and transaction monitoring. Additionally, I developed Cron Jobs to automate the generation of clearing reports for settled and unsettled transactions, significantly reducing processing delays and improving system performance. One of the major challenges I addressed was the absence of clear error indicators for rule violations in wallet limit settings. To resolve this, I developed a Rule Violation System, which involved creating a new database table, rulemaps, and adding dynamic failure descriptions to the rule table, improving error visibility and reducing Production bugs. I also wrote an AWS Lambda function to automate file transfers from S3 buckets to a Windows server, optimizing workflows and reducing manual intervention. Each component of my work was rigorously tested in collaboration with Happay's QA team, ensuring reliability and seamless integration into the system. Through this experience, I gained expertise in Go, SQL, Redis, AWS, and modular testing while contributing to tangible improvements in transaction reliability, system efficiency, and customer satisfaction.

Tool used (Development tools - H/w, S/w) : GoLang, SQL, Python, Django, Gin Framework, AWS, Metabase

Objectives of the project : Reduce failed transactions for HDFC, SBM by monitoring HSM, Redis health. Optimize settlement report generation and processing for settled/unsettled transactions. Implement rule failure system with webhook integration for frontend and V2 team. Optimize settlement query and develop Lambda function for remote file transfer.

Major Learning Outcomes : This project provided significant learnings in developing reliable and efficient systems for financial transactions. I deepened my understanding of designing Health Check APIs for monitoring critical components like HSMs and implemented Redis for efficient key-value storage, enhancing performance and failure handling.

Working with Cron Jobs taught me how to automate processes such as generating clearing reports, reducing delays, and improving overall system efficiency. Through AWS Lambda, I gained expertise in server-less computing by automating file transfers, streamlining workflows, and optimising resource usage.

Additionally, I developed a Rule Violation System to address operational challenges faced by super admins, learning to create dynamic descriptions and improve error visibility through efficient

database design and webhook integration. The project also strengthened my skills in modular testing, debugging, and collaboration with QA teams.

Overall, this experience enhanced my problem-solving skills, technical expertise in Go, SQL, and AWS, and my ability to deliver scalable solutions aligned with organisational goals.

Details of Papers/patents : No paper published.

Brief Description of working environment, expectations from the company : The working environment at Happay was collaborative and dynamic, fostering both technical and professional growth. As part of the Matrix team, I worked alongside highly skilled engineers, focusing on backend development and system optimization. The team's culture emphasized innovation, accountability, and knowledge sharing, which encouraged me to take ownership of critical tasks and learn from peers.

The company set clear expectations for delivering high-quality, scalable solutions within strict deadlines. It emphasized attention to detail, especially in compliance with industry standards like those mandated by the Reserve Bank of India. Additionally, I was expected to take a proactive approach in debugging, modular testing, and ensuring seamless integration of my work with existing systems. The support from mentors and team members was exceptional, providing valuable guidance and timely feedback. Overall, the environment motivated me to tackle complex challenges while meeting the company's high standards of excellence.

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

PS-II Station : Happay - Python, Bangalore

Faculty

Name: Pawan Sharma .

Student

Name: PATIL HARSHITH REDDY(2021A3PS0889H)

Student Write-up

PS-II Project Title: QR-Payments

Short Summary of work done during PS-II : During my internship at Happay (Cred), I helped design a QR-Payments system using AWS Lambdas for secure transactions. I managed the KYC process, ensuring secure handling of user data. I also built cron jobs to automate tasks, developed scripts for balance sheet reports, and improved the corporate card management system. I worked closely with teams to deliver effective solutions.

Tool used (Development tools - H/w, S/w) : GoLang, Git, Docker, Postman.

Objectives of the project : To Build QR-Payments for Happay

Major Learning Outcomes : GoLang, AWS, APIs and debugging and logging

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment at Happay was relaxed and collaborative, with supportive colleagues and managers. I had the chance to work alongside talented Bitsian seniors who were always helpful and eager to share their knowledge. The team fostered a great learning experience, encouraging growth and offering ample opportunities to develop new skills while working on real-world challenges. It was an overall positive and enriching environment.

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

**PS-II Station : Hari Construction and Associates Pvt Ltd, NTPC, STTP,
BIHAR,**

Faculty

Name: Rakesha Chandra Dash .

Student

Name: KUMAR SAHIL(2021A4PS2897G)

Student Write-up

PS-II Project Title: Civil and Architectural works, etc., of FGD system for BARH Stage-I (3*660MW) & Stage-II (2*660MW), NTPC Super Thermal Power Plant, BIHAR

Short Summary of work done during PS-II : As a Project Associate, I was initially responsible for overseeing the project timelines and schedules, ensuring all milestones were met on time. During this phase, I gained valuable experience in cost estimation, preparing detailed project reports (DPR), material take-offs (MTOs), and framework design and execution. Later, I transitioned to working closely with the design team, working to enhance the design process, ensuring alignment with the project's overall objectives and the client's requirements.

Tool used (Development tools - H/w, S/w) : MS Excel, AutoCAD, MS Project

Objectives of the project : The objective of this project is to integrate Flue Gas Desulphurisation (FGD) technology at NTPC Barh to ensure compliance with stringent emission norms of MoEF&CC, reduce environmental impact by eliminating SO₂ emissions, and promote resource efficiency by utilizing gypsum generated in the process for cement production.

Major Learning Outcomes : Learnt CAD, Budgeting, MS Excel

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Working environment here was outstanding, with a supportive mentor and team which was very helpful.

Academic courses relevant to the project : None

PS-II Station : Harness.io, Bangalore

Faculty

Name: Akanksha Bharadwaj .

Student

Name: AGNIVA BANERJEE .(2020B3A70922P)

Student Write-up

PS-II Project Title: Automation

Short Summary of work done during PS-II : I would like to express my concern regarding the current situation with my PS internship. I was extended this role early on, which prevented me from exploring opportunities with other PS companies. However, I have recently come to know that this organization has a history of not converting interns to PPOs, including the last four interns in my team, two of whom were also BITSians on their PS. This raises concerns about the fairness and intent behind offering PS internships and utilizing students primarily as a source of cost-effective labor.

Tool used (Development tools - H/w, S/w) : I would like to express my concern regarding the current situation with my PS internship. I was extended this role early on, which prevented me from exploring opportunities with other PS companies. However, I have recently come to know that this organization

Objectives of the project : Automation

Major Learning Outcomes : I would like to express my concern regarding the current situation with my PS internship. I was extended this role early on, which prevented me from exploring opportunities with other PS companies. However, I have recently come to know that this organization has a history of not converting interns to PPOs, including the last four interns in my team, two of whom were also BITSians on their PS. This raises concerns about the fairness and intent behind offering PS internships and utilizing students primarily as a source of cost-effective labor.

Details of Papers/patents : I would like to express my concern regarding the current situation with my PS internship. I was extended this role early on, which prevented me from exploring opportunities with other PS companies. However, I have recently come to know that this organization

Brief Description of working environment, expectations from the company : I would like to express my concern regarding the current situation with my PS internship. I was extended this role early on, which prevented me from exploring opportunities with other PS companies. However, I have recently come to know that this organization has a history of not converting interns to PPOs, including the last four interns in my team, two of whom were also BITSians on their PS. This raises concerns about the fairness and intent behind offering PS internships and utilizing students primarily as a source of cost-effective labor.

Academic courses relevant to the project : nothing

PS-II Station : Harness.io, Bangalore

Faculty

Name: Akanksha Bharadwaj .

Student

Name: SHIVAM THAKUR(2020B4A71581G)

Student Write-up

PS-II Project Title: CLUSTER ORCHESTRATOR

Short Summary of work done during PS-II : My work focused on three key areas: improving Monitoring and Observability, optimizing Savings Computation, and implementing a robust Audit and Event Logging Framework. In Monitoring and Observability, I integrated tools like Segment, Prometheus, and Grafana to provide real-time insights into system performance. For Savings Computation, I optimized SQL queries, resolved critical bugs, and validated logic with real customer data, resulting in faster and more accurate savings projections. In Audit and Event Logging, I developed a reusable logging framework that standardized logging practices and integrated it across components for improved operational transparency and auditability. Additionally, I gained hands-on experience in Go programming, REST API development, PostgreSQL integration, AWS deployment, containerization with Docker, and Kubernetes management, further enhancing the scalability and reliability of the Cluster Orchestrator. These enhancements collectively addressed challenges in dynamic scaling, cost efficiency, and system transparency, contributing to a more robust and efficient infrastructure.

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

Objectives of the project : Enhancing Cluster Orchestration

Major Learning Outcomes : Kubernetes

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The company is fast paced and expects you to match it. While at the same time they provide the necessary support to get us up to speed.

Academic courses relevant to the project : -

PS-II Station : HERE Technologies India Pvt. Ltd,Mumbai, Mumbai

Faculty

Name: Vijayalakshmi Anand .

Student

Name: BHARAT JAIN .(2020B1A70622P)

Student Write-up

PS-II Project Title: Ground Truth Simulation

Short Summary of work done during PS-II : The Ground Truth Simulation project generates synthetic driving data with perfect accuracy to isolate map-building errors from ground truth inaccuracies. First, noise models representing real-world sensor errors were defined. Then, perfect synthetic data was intentionally perturbed by adding Gaussian noise to mimic real-world sensor readings. This noisy data was processed using filtering techniques to reduce errors, and the results were compared against the known ground truth. By simulating drives, the project

provides a cost-effective and efficient way to evaluate mapping systems without relying on manual data collection. Developers can identify errors in map generation, improve algorithms, and validate their solutions by comparing filtered data to the perfect ground truth. This helps pinpoint weaknesses in the pipeline and refine accuracy. While the simulation cannot fully replicate real-world complexity, it offers a controlled environment to test and improve mapping technologies, enhancing reliability and efficiency in map-building.

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

Objectives of the project : Create a software that accurately mimics the real world and produce sensor-like observations to remove measurement as a method of data collection.

Major Learning Outcomes : Working with CI/CD, core conceptual mapmaking and error refinement.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : No strong deadlines or immediate submissions. Comfortable and steady pace of work with a lot of time to grasp and develop skills. The company is very old and very culturally diverse. Lots of community building events happen all the time. Strong growth opportunities.

Academic courses relevant to the project : N/A

PS-II Station : HERE Technologies India Pvt. Ltd, Mumbai, Mumbai

Faculty

Name: Vijayalakshmi Anand .

Student

Name: SALIL SAMEER GODBOLE .(2021A7PS2004P)

Student Write-up

PS-II Project Title: Data-driven Automation and Modernization

Short Summary of work done during PS-II : Keys tasks performed include: Web automation using Selenium Webdriver and WebDAV, migration of scripts, implementing alert notifications through a bot, creating Tableau data sources and dashboards, using an AI agent to make a conversational bot, creating an efficient and scalable database to store important details.

Tool used (Development tools - H/w, S/w) : Python, SQL, Selenium (Webdriver), GitLab (CI/CD), Tableau, Confluence, Jira, AWS (S3, Bedrock), MySQL and PostgreSQL databases

Objectives of the project : To optimize workflows, and reduce costs by implementing modern, data-driven automation solutions.

Major Learning Outcomes : Gained real-world experience working with Python, SQL, Selenium (Webdriver), GitLab (CI/CD), Tableau, Confluence, Jira, AWS (S3, Bedrock), MySQL and PostgreSQL databases, handling large datasets, and working with REST APIs.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment was good, my manager and team were welcoming and supportive throughout the internship.

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



PS-II Station : HERE Technologies India Pvt. Ltd,Mumbai, Mumbai

Faculty

Name: Vijayalakshmi Anand .

Student

Name: SIDDHARTH SINGH(2021A7PS3191H)

Student Write-up

PS-II Project Title: Automation and Web development using playwright and react

Short Summary of work done during PS-II : During my PS-II, I primarily focused on automation and web development. As part of the Workspace-Mapmaking team at HERE Technology, I contributed to building web components for data editing and visualization. I worked on creating responsive applications using HTML, CSS, and JavaScript (ES6), leveraging frameworks like React.js and Angular.js to enhance user experience. In the domain of backend development, I developed RESTful and SOAP web services using Node.js and Express.js, ensuring seamless data exchange and efficient server-side operations. My expertise with NoSQL databases, such as DynamoDB and MongoDB, allowed me to manage and query data effectively.

Tool used (Development tools - H/w, S/w) : Playwright GitHub react docker jira vs code

Objectives of the project : automation of workflow using playwright

Major Learning Outcomes : I learnt about webdev and playwright framework

Details of Papers/patents : na

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

Academic courses relevant to the project : OOPS DBMS

PS-II Station : HEX Advisory Group, Gurgaon, Gurgaon

Faculty

Name: Gaurav Nagpal .

Student

Name: AVI KHETWANI(2021AAPS2928G)

Student Write-up

PS-II Project Title: Sourcing Advisory and Consulting

Short Summary of work done during PS-II : I was involved in a variety of duties during my PS-II, with a primary emphasis on strategic documentation, analysis, and research. I initiated my research with a workplace services study, which involved undertaking comprehensive market research to comprehend the support offerings of devices and ensuring that the findings were in accordance with the requirements of the client. I also participated in tasks such as role mapping and SLA structuring, in which I mapped client-provided categories to internal frameworks to facilitate seamless integration. I conducted a financial analysis of 192 companies to identify potential opportunities and cross-verified 35 account plans to ensure accuracy and alignment. Furthermore, I concentrated on particular accounts, analyzing investment trends to suggest strategies for optimizing budget allocations. I verified contact details, conducted competitor analysis, and identified potential voids where customized services could be introduced for

outreach initiatives. Additionally, I conducted research on topics such as enterprise AI and modernization in cloud technologies to contribute to a strategic workshop. I acquired practical experience in competitor analysis, presentation development, and market research during my tenure. I acquired the ability to effectively resolve data voids, synthesize intricate information, and provide insights that are customized to meet the expectations of clients. This apprenticeship substantially improved my communication, analytical, and problem-solving abilities, while simultaneously offering valuable exposure to industry practices.

Tool used (Development tools - H/w, S/w) : Microsoft Excel Microsoft PowerPoint Google Workspace (Docs, Sheets, Slides) Market Research Portals Email and CRM Tools Internal Frameworks and Templates Web Browsers Collaboration Tools (Microsoft Teams)

Objectives of the project : To support research and analysis across multiple tasks, including market studies, financial statement reviews, outreach initiatives, and strategic workshops, with the aim of delivering actionable insights, ensuring alignment with client requirements, and enhancing the organization's service offerings. This involved analyzing data, verifying account plans, structuring service-level agreements, mapping roles, and identifying opportunities through competitor analysis and outreach strategies.

Major Learning Outcomes : Market Research Expertise: Learned how to conduct detailed secondary research, synthesize insights, and align findings with client-specific objectives.

Handling Data Gaps: Developed strategies to work effectively in situations with limited information by leveraging external resources and consultations.

Competitor Analysis: Improved skills in analyzing competitor offerings to identify gaps and recommend actionable strategies.

Presentation Skills: Gained experience in creating well-structured reports and presentations using organization-specific formats.

Collaboration and Communication: Enhanced teamwork skills by coordinating with mentors and colleagues to deliver refined outputs and clarify complex tasks.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The work environment was incredibly positive, healthy, and welcoming. From the very beginning, I felt a

sense of belonging, with a warm welcome and an open culture that encouraged communication and ensured I was always heard. Despite being new to the consultancy field and having limited prior knowledge, the team supported me at every stage, making the learning process smooth and encouraging.

The company organized weekly sponsored lunches and occasional outings, creating a light and engaging atmosphere. Additionally, information sessions conducted by experienced seniors provided valuable insights into how things operate, helping me better understand the domain.

My primary expectation was to gain practical exposure and apply my learnings at a professional level. This expectation was met as I not only learned but also contributed meaningfully. Overall, it was a rewarding experience that combined professional growth with a supportive and enjoyable work environment.

Academic courses relevant to the project : As my major was ECE I had no course align to project i was part of

PS-II Station : Hind High Vacuum (HHV), GOA, Goa

Faculty

Name: Manoj Subhash Kakade .

Student

Name: SHREY SANJAYKUMAR MEHWALA .(2021A3PS2652P)

Student Write-up

PS-II Project Title: Development of Novel Laser Based CVD reactor

Short Summary of work done during PS-II : The project involves the design and development of a Siemens reactor simulation, which will subsequently be utilized to create a novel laser-based Chemical Vapor Deposition (CVD) reactor. The primary objective of this initiative is to enhance the polysilicon production process by incorporating laser-based heating for the polysilicon substrate used in the CVD process.

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

Objectives of the project : To develop a COMSOL model for the novel laser based CVD reactor

Major Learning Outcomes : Learning COMSOL, Making CFD and heat transfer Models, Doing research and literature review.

Details of Papers/patents : Papers referred :

Huang, Zhe & Liu, C. & Yuan, Xigang & Liu, Shiping & Liu, Feng. (2013). Development of a Polysilicon Chemical Vapor Deposition Reactor Using the Computational Fluid Dynamics Method. ECS Journal of Solid State Science and Technology. 2.

Brief Description of working environment, expectations from the company : We were given workspace in the Chemical Engineering Computational Laboratory at BITS Goa. We were expected to provide an initial development models on Siemens reactor and provide feedback accordingly

Academic courses relevant to the project : -

PS-II Station : Hind High Vacuum (HHV), GOA, Goa

Faculty

Name: Manoj Subhash Kakade .

Student

Name: AKELLA SAHITH(2021A4PS2889G)

Student Write-up

PS-II Project Title: Design & Development of Siemens Reactor to assist the development of Novel Laser Reactor

Short Summary of work done during PS-II : -> Onboarded and was provided with scientific literature regarding Siemens process and Siemens CVD reactor. -> Was also provided training material for COMSOL and mini assignments to assess progress. -> Started modeling out the Siemens reactor. -> Realised that the model was getting very complex and we had to modularize it. -> Made modular parts for the reactor and imported them in a main file. -> Ran simulations and tried to get the temperature and velocity gradients similar to those in the research paper. -> Studied the key parameters and variables. -> Studied chemical reaction engineering and chemical reactions used in the Siemens reactor. -> Identified key chemical reactions to be studied.

Tool used (Development tools - H/w, S/w) : Software: COMSOL, Apple Numbers

Objectives of the project : To design and develop a Siemens reactor model on COMSOL which will be further used for development of a novel laser based CVD reactor

Major Learning Outcomes : COMSOL, Heat Transfer, Fluid Mechanics, Gas Dynamics, Computational Fluid Dynamics, Chemical Reaction Engineering

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : -> Worked out of the computational chemical engineering lab at BITS Goa
-> Expected to model out the Siemens reactor for future development

-> Supportive and knowledgeable mentor

Academic courses relevant to the project : Heat Transfer

PS-II Station : Hind High Vacuum (HHV), Hyderabad, Hyderabad

Faculty

Name: Raghuraman S .

Student

Name: AYUSH SINGH(2021A8PS2237G)

Student Write-up

PS-II Project Title: Novel Laser Heated Reactor System Project

Short Summary of work done during PS-II : During my PS2 internship at Hind High Vacuum (HHV) in Hyderabad, I worked on an innovative project focused on Laser-Assisted Chemical Vapor Deposition (L-CVD) of Silicon under Prof. Parakshit Sahatiya's guidance. My research aimed to overcome the limitations of the traditional Siemens process used in polysilicon production. I conducted an extensive study of four different laser systems - InGaAs diode lasers (900-1700 nm), AlGaAs diode lasers (700-900 nm), Nd:YAG lasers (1064 nm), and 808 nm diode lasers. I designed an experimental reactor setup with precise specifications, using a quartz reactor of 150 mm diameter × 300 mm height, equipped with integrated laser ports and a pyrometer for accurate temperature monitoring. Through my research, I demonstrated that L-CVD significantly improves upon the conventional Siemens process. My work showed that this new approach eliminates the need for complex multistage electrical heating and STC converters. I performed a detailed comparative analysis of the different laser systems, evaluating their specific applications,

advantages, and limitations in polysilicon production. The results of my internship project contribute to the development of more sustainable and cost-effective manufacturing methods for the semiconductor and photovoltaic industries. I found that L-CVD offers superior thermal control, better energy efficiency, and higher material quality compared to traditional methods of seimens.

Tool used (Development tools - H/w, S/w) : I used COMSOL software to make designs and conducts some tests.

Objectives of the project : The work in this project includes: a. Modeling and CFD simulation studies will be carried out for existing and novel reactor systems to predict the overall system behavior and compare its performance. The model results will also help in designing the lab-scale L-CVD system. b. Design and Experimentation studies: In this part, the design of lab-scale system, relevant experimental studies and the feasibility of taking it to the larger scale will be studied.

Major Learning Outcomes : Some major learning outcomes were -

- 1) I learned about product design using COMSOL software, also learnt how to make designs in software using JAVA code.
- 2) Got to know about CVD ,chemical vapor deposition, how silicon is purified to use on circuit boards and other circuits required equipments.
- 3) Made me better at team collaboration, as the project was running simultaneously at goa as well as hyderabad campus

Details of Papers/patents : Laser assisted chemical vapor deposition of silicon(US9206508B1)

Brief Description of working environment, expectations from the company : During my PS2 internship at HHV, I worked in a cutting-edge research environment focused on semiconductor manufacturing technologies. HHV, being a pioneer in vacuum technology and thin film deposition systems in India, provided an excellent platform for my research on Laser-Assisted Chemical Vapor Deposition (L-CVD) of Silicon.

The company expected me to contribute to their ongoing efforts to improve polysilicon production methods. My primary responsibility was to research and analyze various laser systems and their applications in CVD processes, aiming to develop more energy-efficient alternatives to the traditional Siemens process. Working under Prof. Parakshit Sahatiya, I was expected to:

Study and analyze different laser systems suitable for L-CVD

Design and document specifications for an experimental reactor setup

Conduct comparative analysis of various laser technologies

Provide recommendations for improving production efficiency

Document my findings in a comprehensive technical report

The work environment was professional yet collaborative, with access to technical resources and mentorship from both industry and academic experts. The Practice School division of BITS Pilani and HHV maintained high standards for project work, requiring regular progress updates and detailed documentation. This internship provided valuable exposure to real-world industrial research and development in semiconductor manufacturing technology.

Academic courses relevant to the project : INSTR F311 ELECTRO INST & INST TECH
INSTR F342 POWER ELECTRONICS

PS-II Station : House of Vaaree Pvt Ltd - Non Tech, Bengaluru

Faculty

Name: Sandeep Kayastha .

Student

Name: OJASVA GOYAL .(2021A2PS2378P)

Student Write-up

PS-II Project Title: LEVERAGING DATA ANALYTICS AND MACHINE LEARNING FOR BUSINESS OPTIMIZATION

Short Summary of work done during PS-II : During my PS-II internship at House of Vaaree, I worked as a Business Data Analyst Intern, focusing on leveraging data analytics and machine learning to improve business operations. I developed tools to automate data processes, reducing manual work and enabling better decision-making across teams like Category, Operations, Fulfillment, and Procurement. My key contributions included automating the analysis of sales and customer behavior, which helped identify trends and optimize marketing strategies. I worked on analyzing pricing adjustments and their impact on revenue, as well as identifying cost-saving opportunities by analyzing shipping data and vendor discrepancies. I also played a crucial role in improving product data quality by automating checks to ensure catalog accuracy. In addition, I developed a forecasting model for sales, experimenting with traditional machine learning models and exploring advanced methods for more accurate predictions. Throughout the internship, I addressed data inconsistencies, cleaned datasets, and created ad-hoc reports to support day-to-day operations. My work contributed to significant time savings, enhanced operational efficiency, and provided actionable insights that improved decision-making processes across multiple teams.

Tool used (Development tools - H/w, S/w) : Software tools used :- Tableau, MS Excel, Google Sheets, SQL, Metabase, VS Code, Mixpanel

Objectives of the project : Develop dynamic data analysis and reporting tools across multiple teams (Category, Operations, Fulfillment, Procurement). ; Enhance product catalog accuracy by automating data quality checks and resolving errors in SKU codes and product details. ; Contribute to ad-hoc data reporting ; Conduct sales and customer behavior analysis

Major Learning Outcomes : Through this internship, I gained hands-on experience in data analytics and machine learning, sharpening my technical skills in data visualization, forecasting, and quality assurance. Working in a growing startup taught me adaptability, efficient problem-solving, and the value of collaboration in a fast-paced, dynamic environment.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment at House of Vaaree was dynamic, open, and highly collaborative, reflecting the vibrant nature of a growing startup. The flat organizational structure encouraged seamless interaction with team managers, colleagues, and even the founders, fostering an atmosphere of

trust and inclusivity. This openness provided ample opportunities to learn from experienced professionals, discuss ideas, and receive constructive feedback.

The expectations from the company were clear and focused on delivering measurable results. I was given the responsibility to own my projects and deliver solutions that directly impacted business operations. The emphasis on innovation and data-driven decision-making encouraged me to think critically and propose creative approaches to solve real-world problems.

The fast-paced nature of the startup ensured a steep learning curve, with new challenges arising regularly. I was expected to adapt quickly, work independently, and contribute effectively to cross-functional teams. Despite the demands, the supportive culture ensured that guidance and mentorship were always available, enabling me to meet expectations and exceed them in certain areas.

Overall, the working environment was both challenging and rewarding, providing the perfect platform for professional and personal growth. The combination of autonomy, collaboration, and support made this internship a transformative learning experience.

Academic courses relevant to the project : Data Science Minor

Machine Learning

Applied Statistical Methods

Probability & Statistics

DBMS

Deep Learning

PS-II Station : House of Vaaree Pvt Ltd - Non Tech, Bengaluru

Faculty

Name: Sandeep Kayastha .

Student

Name: VIPUL S PATIL(2021A3PS2564G)

Student Write-up

PS-II Project Title: Data Analysis for Supply Chain and Category Management

Short Summary of work done during PS-II : Worked with the supply chain team to make pipelines in order to reduce delivery days and cost. Make dashboards, automations and analysis for them. Then worked with the Category team to analyse the products and features that are selling. All this was done using SQL, tableau and excel. We used conversion data, sales data and sales predictions as well

Tool used (Development tools - H/w, S/w) : Tableau, Excel, SQL, Metabase,

Objectives of the project : Make usable dashboards, write SQL codes to get data in required format, make excel reports

Major Learning Outcomes : SQL, Tableau, Excel, Analytics

Details of Papers/patents : Null

Brief Description of working environment, expectations from the company : The company expected me to be disciplined and come to work and leave on time. This ensured that I could learn the skills and the business in details. Since everyone comes, it is easy to interact with various teams and get the tasks done asap. As for the work, they wanted me to take initiative and work towards learning. Once we got our basics done, we were expected to start with the daily tasks and provide dashboards to the teams. There is no micromanagement and we were free to work how we wanted as long as we were getting the tasks correct from the other teams.

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

PS-II Station : House of Vaaree Pvt Ltd - Non Tech, Bengaluru

Faculty

Name: Sandeep Kayastha .

Student

Name: RIDDHIMAN ROY(2021A4PS2505H)

Student Write-up

PS-II Project Title: Category Mamagement Intern

Short Summary of work done during PS-II : During my PS-II, I contributed to e-commerce operations as a category intern. My role involved monitoring critical KPIs like conversion rates, AOV, and CAC using tools like Excel. I automated performance reports, enabling real-time insights for business decision-making. Collaborating with the marketing team, I optimized campaigns by analyzing customer behavior. Additionally, I conducted inventory analysis to streamline stock management. This experience honed my technical and analytical skills, particularly in advanced Excel functions and data visualization, and deepened my understanding of the e-commerce domain.

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

Objectives of the project : To analyze revenue decline in various categories.

Major Learning Outcomes : KPIs tracked and monitored in e-commerce domain.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : During my PS-II internship, I had the opportunity to work in a collaborative and dynamic environment. The company fostered a culture of innovation and learning, encouraging interns to take ownership of projects while providing support through regular guidance from mentors. The workplace emphasized data-driven decision-making, which aligned well with my interest in analytics and problem-solving.

The team was approachable and open to ideas, creating an inclusive atmosphere that made it easy to share insights and collaborate on solutions. Tools like Excel, and SQL were integral to daily tasks, and I was encouraged to upskill in these areas. The emphasis on clear communication and timely deliverables helped me develop a professional work ethic and learn to balance multiple priorities effectively.

From the company, I expected exposure to real-world challenges in the e-commerce sector, opportunities to contribute meaningfully to projects, and constructive feedback to refine my skills. The structured training sessions and hands-on assignments met these expectations, enabling me to gain practical experience in data analysis and reporting.

Academic courses relevant to the project : NA

PS-II Station : House of Vaaree Pvt Ltd - Non Tech, Bengaluru

Faculty

Name: Sandeep Kayastha .

Student

Name: MALA JAIN .(2021A5PS0362P)

Student Write-up

PS-II Project Title: Product Management Intern

Short Summary of work done during PS-II : I contributed to enhancing the user experience across all stages of the customer journey—product discovery, conversion, and post-purchase—aimed at improving customer retention and elevating the overall Net Promoter Score (NPS). For select projects, I assumed complete responsibility for designing the user interface and experience, ensuring alignment with business goals and customer needs. Additionally, I spearheaded integrations with several third-party service providers, such as Freshchat, Clevertap, Appmaker, Kaleyra, Razorpay, and Tectonic, to enhance the app's capabilities and deliver a seamless user experience. These collaborations were instrumental in driving operational efficiency and ensuring the successful implementation of key features.

Tool used (Development tools - H/w, S/w) : Figma, Mixpanel, Google Analytics, Clevertap, Jira, Confluence

Objectives of the project : To be responsible for customer facing features, with special focus on post purchase experience

Major Learning Outcomes : As one of four Product Managers at Vaaree, my internship primarily focused on developing customer-facing features, particularly for the newly launched mobile app. My role involved end-to-end project management, which included ideation, collaborating with stakeholders, drafting product requirement documents (PRDs), and managing the development lifecycle. I also took the lead in quality assurance, progress tracking, and data-driven evaluations to inform subsequent iterations, ensuring that the features aligned with Vaaree's overarching objectives of improving customer satisfaction and retention.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : My internship at House of Vaaree was a rewarding experience, largely due to the positive and supportive work culture. The founders cultivated a welcoming and inspiring environment, characterized by regular check-ins, constructive feedback, and unwavering encouragement.

Mentorship from experienced team members played a crucial role in my professional growth. The mentors provided guidance, assigned challenging projects, and patiently addressed doubts. They were also open to new ideas and encouraged their interns to bring them to life.

The collaborative spirit within the team was another highlight. Colleagues were always ready to assist, provide valuable insights, and engage in stimulating conversations. This collaborative environment fostered learning and personal growth.

Academic courses relevant to the project : NA

PS-II Station : iBRIC-inStem, Bangalore, Bengaluru

Faculty

Name: Bharathi R .

Student

Name: PRIYANSHU VERMA .(2021B1PS2081P)

Student Write-up

PS-II Project Title: Investigate the effects of drug against MPT exposure in rats and comparison of muscular signaling, through EMG

Short Summary of work done during PS-II : The findings of this study provide compelling evidence of the neurotoxic effects of MPT on peripheral nerve functionality, as reflected in significant declines in sciatic functional index (SFI) scores and abnormal electromyography (EMG) patterns in the MPT-only group. These results confirm the detrimental impact of MPT on voluntary muscle activity and gait coordination. Importantly, animals treated with MAP exhibited substantial improvements in survival rates, weight retention, and neuromuscular recovery compared to IPAB

and atropine treatments. The MAP-treated group displayed improved SFI values and near-normal EMG patterns, suggesting that MAP effectively mitigates MPT-induced neuromuscular dysfunction and preserves sciatic nerve functionality. While IPAB provided partial neuroprotection, its efficacy was markedly lower than that of MAP, and atropine demonstrated minimal effectiveness, with high mortality rates and severe symptoms persisting throughout the study. These findings underscore the neuroprotective and survival-promoting properties of MAP, highlighting its potential as a therapeutic intervention for MPT-induced toxicity. Additionally, the study reinforces the value of SFI and EMG as reliable tools for assessing neuromuscular functionality in toxicological research. The outcomes emphasize the need for tailored drug protocols to optimize therapeutic efficacy in neurotoxic scenarios.

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

Objectives of the project : study examines the impact of MPT (Methylphenyl Tetrahydropyridine) exposure on the sciatic nerve and its associated muscle functionality in SD-21 rats. By employing Sciatic Function Index (SFI) calculations and Electromyography (EMG) readings, we aimed to understand the neuromuscular signaling changes pre- and post-exposure

Major Learning Outcomes : This work provides valuable insights into the mechanisms of MPT-induced sciatic nerve dysfunction and highlights the role of oxime drugs in preventing neuromuscular impairments.

Details of Papers/patents : <https://www.instem.res.in/>

Brief Description of working environment, expectations from the company : InStem is a stellar institution fostering cutting-edge research in molecular biology and regenerative medicine. The faculty and research facilities are world-class, offering an exceptional environment for innovation and discovery. The institute's interdisciplinary approach encourages collaboration and pushes the boundaries of science. Additionally, the supportive academic culture nurtures young scientists and promotes intellectual growth. Overall, InStem is a beacon of excellence in scientific research and education.

Academic courses relevant to the project : Immunology , Genetics, Animal physiology

PS-II Station : IFB Industries,Goa, Goa

Faculty

Name: Pavan Kumar Potdar .

Student

Name: AASIM FAROOQ SAYYED(2021A4PS2027G)

Student Write-up

PS-II Project Title: Subcooling of Condenser Discharge

Short Summary of work done during PS-II : My internship began with developing the fundamentals of VCRS. I did so by performing multiple teardowns of split-ac units and touring the split-ac production line of the facility. Further, I performed extensive research and literature review for two months to collect and present many innovative ideas to improve performance of split-ac. Through this, the project of “Subcooling of Condenser Discharge” was selected. Next, I proceeded into preparing a detailed project timeline, generating ten distinct concepts for the project and then meticulously selecting a concept. After concept selection, I moved on to modifying an ODU of a split-ac to incorporate my changes and sent it for performance testing to gauge results. During the concept selection and prototyping phase, I also performed theoretical hand calculations to predict the effectiveness of my prototype. I also helped around and involved myself in activities of other employees in the office.

Tool used (Development tools - H/w, S/w) : No softwares. Hands-on experience of working on a split-ac unit

Objectives of the project : To improve COP or decrease cost of an existing split-ac unit with minimal modification to current design

Major Learning Outcomes : Extensive research skills. Deep understanding of VCRS. Prototype development.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company :

The managers are very enthusiastic and energetic but they are often too busy to give proper attention to interns. Even though this sounds bad, it gave me independence to take ownership of my project and carry it forward in a way and pace that I found best. Or independence to explore other aspects of the R&D department and apart from R&D department as well. A downside is that I had to put my own efforts into learning as the managers didn't always have time to explain concepts or provide guidance. The first month was rough but after that the workload was stress-free as I had to work only on my own project, therefore I had the time and liberty to explore other aspects of the company. My internship was in AC plant but I also had a few visits to Washer plant where the experience was also great. The managers there took their time and made efforts to explain concepts thoroughly, which greatly helped me in strengthening my understanding of VCRS and split-ac.

Academic courses relevant to the project : Refrigerant and Air Conditioning, Thermodynamics, Applied Thermodynamics,

PS-II Station : IFB Industries,Goa, Goa

Faculty

Name: Pavan Kumar Potdar .

Student

Name: SIDDHARDHA SAMRUDH CHILLARA(2021A4PS2461H)

Student Write-up

PS-II Project Title: Utilizing Thermoelectric Peltier Devices to Cool Compressor Discharge

Short Summary of work done during PS-II : During my internship, I focused on 2 projects directed towards enhancing the performance and sustainability of split air conditioning systems. The internship began with an exploration of Refrigeration and Air Conditioning basics through an in-depth study of Novel Air Conditioning Research Projects along with several machine Tear Breakdowns. Upon presenting my findings to the R&D managers, I was allotted “Utilizing Thermoelectric Coolers to Cool Compressor Discharge” as my final project topic. Multiple concepts were developed and modelled regarding the number of Thermoelectric Coolers and supporting components for the cooling assembly. To regulate the flow of evaporator condensate, an integral component of the cooling assembly, I developed a simple mechanism using Arduino coding. Upon finalizing on the ideal concept and mechanism, I developed a fully functional prototype which was performance tested by the end of my internship. In addition to my main project, I had undertaken another project directed towards enhancing air conditioning efficiency, “Positive Thermal Coefficient Heaters to reduce Compressor Load”, being led by an employee. For this project, we theoretically identified two points that would benefit from heating. By the end of my internship, we developed and performance-tested a fully functional prototype for one of the two concepts. Coupled with these 2 projects, I had participated in the benchmarking of multiple machines along with an employee sporadically throughout my internship. Overall, my internship provided me with a good opportunity to gain experience in project management, practically apply and develop theoretical concepts, and introducing innovative solutions in the HVAC Industry.

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

Objectives of the project : Improve Overall Split Air Conditioning Efficiency

Major Learning Outcomes : Strong understanding of Thermodynamic concepts, Theoretical and Practical understanding of Air Conditioning Systems, Improving Efficiency of Split Air Conditioners

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Working environment was satisfactory. Free lunch is provided at the plant however breakfast is paid. For the internship, we were tasked with developing Novel Split Air-Conditioning innovative ideas aimed at enhancing efficiency. Managers are supportive however give minimal time towards interns. Employees are friendly, encouraging, and always willing to assist when required. We had weekly R&D meetings where we had to present our work to all the managers in the department. The managers emphasized on the need for our sole-focus to be on developing the innovative projects allotted to us, as a result, we were given the freedom to work on our projects at our own pace. We had multiple visits to the IFB Washer Plant to discuss our projects with the Heads of Cooling and Electronics Departments of R&D where we received great input and quality feedback.

Academic courses relevant to the project : Thermodynamics, Applied Thermodynamics, Heat Transfer

PS-II Station : Immensitas Pvt. Ltd. (Lemnisk), Bengaluru

Faculty

Name: Raja Vadhana Prabhakar .

Student

Name: NIRMAL BHASKAR THAMATTOOR(2020B4A81991G)

Student Write-up

PS-II Project Title: Event Based Segmentation {EBS}

Short Summary of work done during PS-II : This project provided comprehensive learning in distributed systems, data engineering, and scalable architectures, showcasing a blend of technical expertise and problem-solving. Working with YugabyteDB, I gained experience in setting up and testing its advanced features such as encryption in transit, encryption at rest, cross-data center replication, and horizontal scalability. Designing efficient schemas and indexes, particularly for ID resolution workflows, strengthened my understanding of performance optimization in distributed databases. Challenges like JSONB indexing performance and the limitations of TTL in YSQL deepened my ability to evaluate trade-offs and implement robust solutions. The implementation of custom transformations for the S3 Sink Connector, enabling seamless conversion of nested JSON to Parquet format, demonstrated adaptability to handle diverse data structures. Similarly, integrating Iceberg tables for Athena querying, with proper bookmarking and Spark compatibility resolution, enhanced my proficiency in modern data storage systems. Setting up a NiFi cluster for parallel data processing and transforming diverse data sources into standardized payloads expanded my knowledge of ETL workflows, decoupled architectures, and real-time data ingestion. Additionally, developing new backend endpoints and fixing bugs in the CDP Manager using Spring Boot reinforced my ability to work across the software stack, from repositories to controllers. These experiences not only enhanced my technical capabilities but also honed my collaborative skills, as tasks involved working closely with senior engineers to align on architecture and flow designs. Overall, this project demonstrated the ability to overcome challenges in complex, distributed systems and deliver scalable, efficient solutions.

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

Objectives of the project : Setup all the necessary components needed for EBS. Transform different payloads in different formats to expected formats. Assist engineering team with bug fixes, new development

Major Learning Outcomes : Utilize different tools available, working architecture design at a high level. Efficient coding practices, problem solving skills.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Devtron was used for deploying to kubernetes, software had to be Dockerized . AWS etl tools are used for various purposes. Development in front end happens in node javascript, Backend happens in springboot java. databases like aerospike, yugabyte,mysql are used

Academic courses relevant to the project : OOPs,DBMS,FODSA

PS-II Station : Immensitas Pvt. Ltd. (Lemnisk), Bengaluru

Faculty

Name: Raja Vadhana Prabhakar .

Student

Name: VINEETH VIGNA RAJ(2020B5A71843G)

Student Write-up

PS-II Project Title: Software development

Short Summary of work done during PS-II : Ingestion of files using SFTP was causing UI to be blocked off. Large files caused a socket timeout and were unable to upload. The files had to be partitioned for the same which was inefficient. Performed the task of identifying the bottleneck, and finding a workaround, which in this case was an asynchronous upload. Further worked on the changes to the other components in the architecture which would have to be changed due to this task. Added inbound, outbound and failure loggers for a different component which sent the

logs to Kafka for easy future debugging. Finally performed unit tests and performance tests to confirm the efficiency and functionality of the same

Tool used (Development tools - H/w, S/w) : postman, devtron, AWS S3, kafka,git

Objectives of the project : SFTP ingestion fix for CoreAPI, Addition of inbound,outbound and failure logs for Pixel Listener

Major Learning Outcomes : technical skills improved drastically, learnt new software, learnt how to optimise code and understand underlying problems in code performance and how to combat it

Details of Papers/patents : N.A.

Brief Description of working environment, expectations from the company : It is a great environment to learn the tools required for the job. The work is very hands-on and the required tools are explained on the go. The deadlines are very well set and time is suitably provided if required. The seniors here are extremely competent in their respective fields and will provide help if required.

Academic courses relevant to the project : basic CS

PS-II Station : Immensitas Pvt. Ltd. (Lemnisk), Bengaluru

Faculty

Name: Raja Vadhana Prabhakar .

Student

Name: SAHIL GUPTA .(2021A3PS1167P)

Student Write-up

PS-II Project Title: 1.File Ingestion Report, 2.Line Integration in profiles for one campaign, 3. JIRA Tickets DE Team

Short Summary of work done during PS-II : During my internship, I gained valuable exposure to how technology drives real-world solutions in a fast-paced startup environment. I developed proficiency in key technical skills, including SQL, Python, ETL processes, JavaScript, React, and Node.js. Working on diverse projects, I learned the end-to-end workflow of data pipelines, from extraction and transformation to creating meaningful insights. I also enhanced my ability to build scalable front-end and back-end applications, contributing to efficient and impactful marketing automation solutions. This experience has provided me with a solid foundation in both software development and data management, preparing me for future challenges.

Tool used (Development tools - H/w, S/w) : AWS Athena, Airflow, Vscode, AWS Glue, Postman, MySQL, Mongo

Objectives of the project : Developed a File Ingestion Reporting in dashboard generating key reports (Duplicates, Merged, Failures, Success) to improve data quality and decision-making, using Apache Kafka for concurrent ingestions, Node.js for backend, S3 for storage, and AWS Athena for querying.

Major Learning Outcomes : During my internship, I gained valuable exposure to how technology drives real-world solutions in a fast-paced startup environment. I developed proficiency in key technical skills, including SQL, Python, ETL processes, JavaScript, React, and Node.js. Working on diverse projects, I learned the end-to-end workflow of data pipelines, from extraction and transformation to creating meaningful insights. I also enhanced my ability to build scalable front-end and back-end applications, contributing to efficient and impactful marketing automation solutions. This experience has provided me with a solid foundation in both software development and data management, preparing me for future challenges.

Details of Papers/patents : na

Brief Description of working environment, expectations from the company : I had the privilege of interning for six months at a dynamic startup specializing in customer data platforms for marketing automation. The company fostered a highly positive and competitive environment, encouraging innovation and collaboration.

During my tenure, I worked on tools that optimized data-driven marketing strategies, gaining hands-on experience with technologies like React, Node.js, and AWS. The supportive leadership and collaborative culture made it a fantastic learning experience, helping me enhance both my technical skills and problem-solving abilities.

The team's drive for excellence and staying ahead in a competitive market was truly inspiring. I'm grateful for the opportunity to contribute and grow in such a stimulating environment.

Academic courses relevant to the project : OOPs

PS-II Station : Immensitas Pvt. Ltd. (Lemnisk), Bengaluru

Faculty

Name: Raja Vadhana Prabhakar .

Student

Name: ATHARVA KIRAN SUNDER(2021A7PS0391G)

Student Write-up

PS-II Project Title: Debugging real website problems

Short Summary of work done during PS-II : During my internship as a Full Stack Developer at Lemnisk, I gained hands-on experience working on impactful projects within a fast-paced and

collaborative environment. My responsibilities included developing and optimizing both frontend and backend components using modern frameworks and technologies. On the frontend, I contributed to building intuitive user interfaces using React.js and Material-UI, ensuring seamless user experiences. On the backend, I worked with Python (Flask) and Node.js to develop robust APIs and improve system performance. Additionally, I implemented database queries and schema designs to handle complex data operations efficiently. One of my key achievements was contributing to a project that involved anonymizing Personally Identifiable Information (PII) by implementing techniques like masking, encryption, and tokenization. I also collaborated with the QA team to write unit and integration tests, ensuring code quality and reliability. This internship not only strengthened my technical skills but also honed my ability to work in agile teams, manage tight deadlines, and solve real-world problems effectively. My time at Lemnisk was a transformative learning experience, equipping me with the knowledge and confidence to excel in future roles.

Tool used (Development tools - H/w, S/w) : Javascript, Postman, Jest, Test containers, React Testing Library, Selenium, Jest, React JS

Objectives of the project : Resolving bugs in the system and writing integration and unit tests for it

Major Learning Outcomes : OOP, JUnit, DBMS , Git, Javascript, jest, Selenium

Details of Papers/patents : nil

Brief Description of working environment, expectations from the company : During my internship, I worked in a collaborative, dynamic, and innovative environment that encouraged continuous learning and professional development. The workplace fostered productivity and personal growth through teamwork, open communication, and mutual respect. Creativity was valued, and I was empowered to take ownership of my tasks while contributing meaningfully to impactful projects.

The company provided a clear vision and alignment of goals, which helped me stay focused and motivated. Transparent communication and constructive feedback played a significant role in improving my performance. I appreciated the opportunities to enhance my skills through challenging assignments and mentorship, which contributed greatly to my professional growth.

Academic courses relevant to the project : OOPS

PS-II Station : Immensitas Pvt. Ltd. (Lemnisk), Bengaluru

Faculty

Name: Raja Vadhana Prabhakar .

Student

Name: OMKAR BASANI(2021A7PS0433H)

Student Write-up

PS-II Project Title: Data-Driven Web Interface Transformation

Short Summary of work done during PS-II : My assignments focused on creating interactive web interfaces and client-specific solutions. I developed skills in transforming static web elements into dynamic, personalized experiences by implementing advanced features like adaptive content rendering, seamless navigation, and intelligent data integration. The projects required a holistic approach to web development, combining technical skills with creative problem-solving. I learned to align technical solutions with client brand identities, working with technologies like React, DevOps, and Java Spring Boot. Throughout the internship, I gained critical insights into product development, technological innovation, and the importance of user-centric design. This experience bridged my academic knowledge with practical industry applications, providing a comprehensive understanding of modern software development practices.

Tool used (Development tools - H/w, S/w) : React,Intellij,VsCode,Docker,Java SpringBoot.

Objectives of the project : To develop a website where elements of the web page are created dynamically based on data.

Major Learning Outcomes : I learnt front-end development, how is the work in large codebases is different from that of clg products.

Details of Papers/patents : not available

Brief Description of working environment, expectations from the company : During my internship at Lemnisk, I experienced a professional environment that was both supportive and educational. The team was approachable, and seniors were always willing to help when I needed guidance on technical challenges.

The work culture was collaborative, with an emphasis on learning. My colleagues were patient in explaining complex concepts and helping me understand the nuances of software development. They didn't just assign tasks; they took time to provide context and share insights about the industry.

Through various projects, I gained practical experience in web development, data platforms, and marketing technologies. Overall, it was a valuable experience that provided me with technical skills, professional exposure, and a glimpse into the tech industry's working environment.

Academic courses relevant to the project : CP,OOPS.

PS-II Station : Immensitas Pvt. Ltd. (Lemnisk), Bengaluru

Faculty

Name: Raja Vadhana Prabhakar .

Student

Name: SUJAL KHANDELWAL(2021A7PS1421G)

Student Write-up

PS-II Project Title: SQL Automation and Competitive Analysis

Short Summary of work done during PS-II : The Data Analyst involves collecting, cleaning, and analyzing data from various sources to uncover patterns, trends, and insights. Tools like SQL and Python are utilized to process and present findings in an accessible manner. Key deliverables include dashboards, detailed reports, and predictive models to guide data-driven strategies. The Business Analyst aspect emphasizes understanding business needs, identifying pain points, and translating these into technical and operational solutions. This includes conducting stakeholder interviews, documenting business requirements, and working closely with cross-functional teams to ensure alignment between data insights and organizational goals.

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

Objectives of the project : Together and study the data of various clines to increse their businesss.

Major Learning Outcomes : Learning coding languages like sql and python and understanding how business use user data to increase their growth.

Details of Papers/patents : na

Brief Description of working environment, expectations from the company : The working env is very good , people are friendly here and always hanelps whenever we have any doubt .they are always approachable.

Academic courses relevant to the project : Dbms

PS-II Station : Immensitas Pvt. Ltd. (Lemnisk), Bengaluru

Faculty

Name: Raja Vadhana Prabhakar .

Student

Name: SHRIRAM ADVAIT SINKAR(2021A7PS1463G)

Student Write-up

PS-II Project Title: Customer Data Platform

Short Summary of work done during PS-II : Retry Mechanism: Implemented a retry mechanism in CoreAPI to handle database connection failures, ensuring stability with proper connection closure and configurable delays. Logged metrics using OpenTSDB and visualized them in Grafana for real-time monitoring. API and UI Enhancements: Developed a REST API using Spring Boot to fetch user profiles and validate segments. Enhanced the Admin UI with a search bar, loaders, and clickable segment links to improve user experience. Real-Time Metrics Optimization: Designed a batching queue for efficient metric logging via socket programming, reducing delays and improving performance. Segment Visibility: Enhanced the CDP app by displaying detailed segment information, including names, IDs, engagement counts, and pagination, enabling real-time insights for marketers. Testing: Wrote unit tests using Jest to validate retry mechanisms, metric logging, and database interactions, ensuring robustness.

Tool used (Development tools - H/w, S/w) : The tools I used during my internship include Node.js, Spring Boot, MongoDB, Kafka, OpenTSDB, Grafana, Devtron, Jest, ReactJS, Postman, Git, IntelliJ IDEA/VS Code, and REST APIs.

Objectives of the project : This project, focused on improving system reliability, enhancing real-time metrics monitoring, and optimizing user experience by implementing retry mechanisms,

integrating detailed segment visibility in the UI, and developing robust backend APIs with efficient testing and monitoring.

Major Learning Outcomes : I gained hands-on experience in end-to-end development, focusing on system optimization, real-time monitoring, and UI/UX enhancements, while strengthening my skills in problem-solving, testing, and collaborative development across technologies like Node.js, Spring Boot, and Grafana.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment during my internship was dynamic, collaborative, and highly focused on innovation. I worked closely with a team of experienced developers, backend engineers, and product managers, which facilitated a great learning experience. The company's culture emphasized open communication, continuous learning, and problem-solving, allowing me to engage in meaningful discussions and contribute actively to ongoing projects. Regular code reviews, collaborative brainstorming sessions, and a well-structured onboarding process helped me acclimate quickly to the project requirements and technologies.

Expectations from the company included the opportunity to gain hands-on experience with industry-standard tools and frameworks like Node.js, Spring Boot, MongoDB, and Grafana. I was also eager to apply theoretical knowledge in real-world scenarios, particularly in areas like backend development, system optimization, and API integration. Additionally, the company provided a conducive environment for enhancing technical and soft skills, such as testing, debugging, and collaboration within cross-functional teams.

I was looking forward to improving my problem-solving abilities, learning best practices in software development, and gaining exposure to the challenges of working on large-scale systems. The company met these expectations by assigning me impactful tasks, offering mentorship, and providing a platform for personal and professional growth.

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



PS-II Station : Immensitas Pvt. Ltd. (Lemnisk), Bengaluru

Faculty

Name: Raja Vadhana Prabhakar .

Student

Name: LAKSHAY GARG(2021A7PS2056G)

Student Write-up

PS-II Project Title: App Development

Short Summary of work done during PS-II : The work environment during my internship program is very good. I am part of the team that supported open communication, where everyone is invited to share ideas and implement those on the projects. The workplace created an atmosphere for learning and growth. We used different technologies based on the suggestions that were provided by the company. I learnt various development processes. I also gained some experience in working with softwares like android studio, kafka, nifi, prometheus, grafana and amazon bedrock. Also working in a team environment allowed me to develop better communication skills. Overall, my internship is a great experience and helped me in learning various new things.

Tool used (Development tools - H/w, S/w) : Android Studio, Kafka, Nifi, Grafana, AWS

Objectives of the project : Improving Push Notification Deliverability

Major Learning Outcomes : 1. Android Studio: Android Studio is the main application for building apps which requires kotlin or java language.

2. Kafka: Kafka is primarily used to build real-time

streaming data pipelines and applications that adapt to the data streams.

3. Nifi: NiFi provides a graphical user interface for creating, monitoring and managing data flow, making it accessible to users with limited programming experience.

4. Grafana: Grafana is a tool used to analyze and visualize data. However, this data would have to be stored somewhere in order for Grafana to access and display it.

5. Amazon Bedrock: Amazon Bedrock is a cloud service that helps developers easily access and use their AI models.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The work environment at Lemnis is collaborative, supportive and focused on teamwork and learning. The team encourages open communication, allowing everyone to share ideas and contribute to the project. Experience with technologies such as Android Studio, Kafka, NiFi, Prometheus, Grafana, and Amazon Bedrock and working to improve the availability of push notifications.

Lemnisk provides a great place to learn about new tools and processes while working on real-world projects. My hope is to learn practical skills, improve my technical knowledge and gain experience working in a team. Lemnisk has delivered by fulfilling these expectations, developing skills and exposure to modern technology. This experience strengthened my technical and communication skills and prepared me for future opportunities.

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

PS-II Station : Immensitas Pvt. Ltd. (Lemnisk), Bengaluru

Faculty

Name: Raja Vadhana Prabhakar .

Student

Name: RISHI KETAN SHAH(2021A7PS2496G)

Student Write-up

PS-II Project Title: Admin ui code migration

Short Summary of work done during PS-II : Good work.very webd focussed

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

Objectives of the project : To migrate node code to java code

Major Learning Outcomes : Api dev, full stack frameworks

Details of Papers/patents : Na

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

Academic courses relevant to the project : Oops dbms

PS-II Station : Immensitas Pvt. Ltd. (Lemnisk), Bengaluru

Faculty

Name: Raja Vadhana Prabhakar .

Student

Name: HASINI VEMULA(2021A8PS1960H)

Student Write-up

PS-II Project Title: Backend Development for the Application and notification services

Short Summary of work done during PS-II : Optimized an already existing application with code changes , merged it with another related application and took the merged application live. Worked with scripts and applications in production to improve deliverability of notifications .Worked on stale token management as well to improve success rate of delivered notifications .

Tool used (Development tools - H/w, S/w) : Node.js, Kafka, Nifi, Grafana, AWS,Devtron,Java

Objectives of the project : To improve deliverability of the push notifications and to manage stale tokens better

Major Learning Outcomes : Working with a diverse range of technologies such as Node.js, Kafka, Aerospike, mysql and java sharpened my skills in managing intricate systems and boosted my problem-solving abilities.

Taking ownership of end-to-end project responsibilities, from initial setup to implementation, enhanced my expertise in full-stack development and automation processes.

Close collaboration with teammates encouraged effective communication and enabled swift knowledge sharing.

Details of Papers/patents : ---

Brief Description of working environment, expectations from the company : At Lemnisk, the work culture is dynamic and driven, with quick decision-making and the ability to handle demanding workloads under strict deadlines. Innovation and experimentation are highly valued, creating an atmosphere that promotes continuous learning and creative problem-solving. Flexibility is key, as shifting priorities often require team members to take on diverse

responsibilities. The organization embraces adaptable work schedules to meet the fast-evolving needs of the business and maintain efficiency in a high-pressure environment.

Academic courses relevant to the project : OOP

PS-II Station : Immensitas Pvt. Ltd. (Lemnisk), Bengaluru

Faculty

Name: Raja Vadhana Prabhakar .

Student

Name: SANJANA AGARWAL(2021AAPS0016G)

Student Write-up

PS-II Project Title: End-to-End Development and Optimization: Enhancing Features, Security, and Scalability Across the Platform

Short Summary of work done during PS-II : During PS-II, I worked on enhancing system functionality, security, and testing. Key tasks included Dockerizing the a feature for consistent environments, developing a Spring Boot backend to manage activation/deactivation flows, and implementing unit and integration tests. I resolved an XSS vulnerability, and automated a functionality using selenium. Additionally, I enhanced platform features like segment filtering, SMS configuration, and activation flows. These efforts improved system performance, security, and reliability.

Tool used (Development tools - H/w, S/w) : Devtron, Spring Boot, Postman, Automated Testing Framework, Javascript

Objectives of the project : The objective of the project was to develop and enhance platform features like segment filtering, SMS configuration, and activation flows, while resolving issues such as XSS vulnerabilities. It also included containerizing services with Docker, writing unit and integration tests, and implementing automation for ZIP upload functionality.

Major Learning Outcomes : I gained knowledge in Devtron for CI/CD, Spring Boot for building APIs, and Postman for API testing. Additionally, I learned about automated testing frameworks and JavaScript for web development.

Details of Papers/patents : N.A.

Brief Description of working environment, expectations from the company : The PS-II working environment was dynamic and collaborative, encouraging learning and growth through regular team discussions, scrums, and code reviews. A supportive culture and access to modern tools like Docker, Spring Boot, Selenium, and Postman allowed me to work on industry-relevant tasks and develop practical skills.

The company emphasized delivering high-quality solutions, robust testing, and addressing critical issues such as security vulnerabilities. Expectations included independent problem-solving, adherence to coding standards, and seamless collaboration with cross-functional teams.

This experience not only strengthened my technical expertise but also provided valuable insights into corporate workflows, fostering both personal and professional development.

Academic courses relevant to the project : OOP, DBMS

PS-II Station : Incedo, Gurgaon

Faculty

Name: Bharathi R .

Student

Name: KRATI ARYA .(2021A5PS0377P)

Student Write-up

PS-II Project Title: Country Maturity Assessment for Launching Software as Medical Devices (SaMD)

Short Summary of work done during PS-II : The project focuses on assessing the market readiness of various countries for launching Software as a Medical Device (SaMD). It involves analyzing key factors such as regulatory frameworks, population demographics, and economic indicators to evaluate each country's potential for adopting SaMD products. By leveraging data analysis tools like Python, SQL, and Excel, along with visualization platforms like Looker Studio, the project aims to develop a comprehensive market readiness score for each country. This score helps identify the most promising markets for SaMD launches, enabling strategic decision-making for pharmaceutical companies. Additionally, the project incorporates insights from market research on the application of generative AI in optimizing sales and marketing processes within the pharmaceutical industry.

Tool used (Development tools - H/w, S/w) : Python Libraries, Jupyter notebbok, Tableau, Lookers studio, SQL, AWS Cloud

Objectives of the project : Market Readiness Insights: Provided valuable insights into which countries are most favorable for launching Software as a Medical Device (SaMD), aiding in strategic market decisions. Data-Driven Decision Making: Empowered the organization with clear, actionable insights through data analysis and interactive dashboards, supporting faster and more informed decisions. Generative AI Research: Identified emerging trends in generative AI for pharmaceutical sales and marketing, offering opportunities for innovation and process optimization. Cross-Department Collaboration: Fostered collaboration between data analysts, engineers, and business teams, improving efficiency and solution development. Scalable Data

Engineering Solutions: Enhanced data processing capabilities by building an ETL pipeline, improving data management and operational workflows.

Major Learning Outcomes : Advanced Data Analytics, Cloud Infrastructure, Gen AI application in Pharma, ETL Pipeline Optimization

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Working environment of Incedo was great. Trainings are offered to train you and gain deeper knowledge of the domain.

Academic courses relevant to the project : FODS, ML, DL

PS-II Station : Indexel Engineering Pvt. Ltd, Kota

Faculty

Name: Glynn John .

Student

Name: ISHA SINGHAL .(2021A1PS2379P)

Student Write-up

PS-II Project Title: Automation and SCADA Integration for the Lohalai Minor Irrigation Project

Short Summary of work done during PS-II : At Indexel, I worked on the Lohalai Minor Irrigation Project, focusing on automating the irrigation system. My responsibilities included designing system architectures, preparing PLC Input/Output lists, and contributing to SCADA integration. I assisted in the installation of PLC panels at intake stations and RTU panels across 24 field locations (Chaks). Additionally, I calibrated flow meters, pressure sensors, and motorized valves to ensure accurate data collection. Configuring HMI screens for real-time data visualization and establishing communication protocols were critical aspects of my role. I also participated in dry and wet testing, resolving connectivity issues and optimizing system performance.

Tool used (Development tools - H/w, S/w) : The tools I used included Schneider Electric PLCs, HMI Panels, flow meters, pressure sensors, and GPRS modems for hardware. On the software side, I worked with SCADA systems, HMI configuration tools, and communication protocols such as MODBUS and RS485.

Objectives of the project : The primary objectives of the project were to automate the water distribution system, minimize manual intervention, and implement SCADA for centralized monitoring and real-time control. The project also aimed to provide accurate data visualization for informed decision-making, improve operational efficiency, and enhance sustainability in water management practices.

Major Learning Outcomes : During my internship, I gained hands-on experience in designing and programming PLCs and SCADA systems. I learned about field instrumentation, including flow meters and pressure sensors, and gained expertise in communication protocols like MODBUS and RS485. The internship also enhanced my problem-solving skills through testing and troubleshooting tasks and helped me develop strong technical documentation and project planning abilities.

Details of Papers/patents : No papers or patents were produced during this period.

Brief Description of working environment, expectations from the company : The working environment at Indexel Engineering was collaborative and professional. I had the opportunity to work closely with experienced engineers who guided me through the intricacies of automation and SCADA systems. The company encouraged hands-on learning and provided ample opportunities for personal growth. Regular site visits, team discussions, and project reviews kept

me engaged and learning throughout the internship. The company exceeded my expectations by providing a well-structured project that allowed me to gain both technical and professional skills.

Academic courses relevant to the project : Relevant academic courses that supported my work during PS-II include Process Plant Safety , Kinetics and Reactor Design , Process Design Principles 1 and 2.

PS-II Station : Indian Institute of Petroleum (IIP),Dehradun, Dehradun

Faculty

Name: Santosh Sopanrao Khandgave

Student

Name: ARYAN KAUL(2021A1PS0023G)

Student Write-up

PS-II Project Title: Simulation of separation of hydrogen from other ROG using membranes

Short Summary of work done during PS-II : Over the past period, I have expanded my knowledge in several key areas related to process simulation and membrane technology. One of the significant skills I developed is integrating Aspen with Excel, allowing for enhanced data analysis and optimization. This integration provides a powerful way to streamline calculations, conduct sensitivity analyses, and improve decision-making for process design. Additionally, I delved deeply into the fundamentals of membranes, exploring their structure, working principles, and applications. This understanding laid the foundation for examining hybrid membrane processes, which combine membranes with other separation techniques, such as distillation or

adsorption, to achieve higher efficiency and cost-effectiveness. These hybrid systems are beneficial in optimizing complex separations and reducing energy consumption. I also gained insights into two-gas separation systems, where membranes isolate specific gas pairs such as hydrogen from methane or CO₂ from natural gas. Furthermore, I studied the more intricate three-gas membrane separation systems critical for air separation or hydrogen recovery with CO₂ and nitrogen. These advanced separations require a deeper understanding of membrane selectivity, permeability, and process configurations. These learnings have strengthened my technical skills and provided a broader perspective on innovative separation technologies in the industry.

Tool used (Development tools - H/w, S/w) : ASPEN, EXCEL, WORD, MATLAB

Objectives of the project : Learn about simulations of separating hydrogen using membrane

Major Learning Outcomes : Learned how to use ASPEN simulation and Excel together and learned a lot about different hybrid membrane processes.

Details of Papers/patents : Confidential

Brief Description of working environment, expectations from the company : Working in a flexible environment has been a truly enriching experience. The day is structured to include two delightful tea breaks, offering a chance to relax and share conversations with colleagues, which often spark fresh ideas. The lunch break provides ample time to unwind, enjoy a meal, and recharge for the rest of the day. What truly stands out is the presence of kind and approachable professors who are always supportive and encourage growth. Their guidance and open communication create a collaborative and inspiring atmosphere. This balance of work, rest, and mentorship makes each day productive and genuinely enjoyable.

Academic courses relevant to the project : Separation processes 1 & Separation processes 2

PS-II Station : Indian Institute of Petroleum (IIP),Dehradun, Dehradun

Faculty

Name: Santosh Sopanrao Khandgave

Student

Name: CHIRAG NANDA(2021A1PS3052H)

Student Write-up

PS-II Project Title: ANALYSIS OF BIOCHAR PRODUCTION AND GLYCEROL FERMENTATION PROCESSES USING STAN 2 SOFTWARE

Short Summary of work done during PS-II : Carried out simulation and analysis using Python based open source simulator- BioSTEAM and carried out MFA of the processes using STAN2

Tool used (Development tools - H/w, S/w) : Python, STAN2 Software

Objectives of the project : Carried out a simulation project regarding the construction of Bio-refineries and the extraction of Bio-fuels using BioSTEAM- an open source steady state simulator in Python. Identified the key components needed for the simulation and the need for using it.

Major Learning Outcomes : Python, STAN2 Software

Details of Papers/patents : On Progress. Expecting couple of research publications in the foreseeable future.

Brief Description of working environment, expectations from the company : Depends on individual mentor.

Academic courses relevant to the project : SP-1,SP-2.

PS-II Station : Indian Institute of Petroleum (IIP),Dehradun, Dehradun

Faculty

Name: Santosh Sopanrao Khandgave

Student

Name: HARSHWARDHAN .(2021A4PS2410P)

Student Write-up

PS-II Project Title: Study of Ethanol as a sustainable transport fuel

Short Summary of work done during PS-II : We conducted various tests to establish a clear relationship between ethanol content and combustion characteristics. Increasing the ethanol proportion in the blend raises the percentage of biogenic CO₂ emissions, contributing to a more sustainable carbon cycle since ethanol is derived from renewable biological sources, while the total CO₂ emissions remain relatively stable. Additionally, ethanol's higher oxygen content promotes more complete combustion at low engine loads, reducing idle fuel consumption. These findings highlight ethanol's potential benefits in reducing fossil CO₂ emissions while emphasizing the importance of optimizing engine design for higher ethanol blends to maximize efficiency.

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

Objectives of the project : To figure out the role of Ethanol in the transition from MIDC to WLTP driving cycle during emission testing.

Major Learning Outcomes : Learned the process of literature review and emission measurement using chassis dynamometer setup.

Details of Papers/patents : One report created.

Brief Description of working environment, expectations from the company : Working environment is relaxed. Things happen slowly as it is gov. institute.

Academic courses relevant to the project : Automotive vehicles, IC engine

PS-II Station : Indian Institute of Petroleum (IIP),Dehradun, Dehradun

Faculty

Name: Santosh Sopanrao Khandgave

Student

Name: GAURAV KHURDIA(2021A4PS2552H)

Student Write-up

PS-II Project Title: Engine Deposit rating using Image Processing

Short Summary of work done during PS-II : The project, "Engine Deposit Rating using Image Processing," conducted at CSIR-Indian Institute of Petroleum, aimed to automate the evaluation of engine deposits through Python-based image analysis methods. By addressing the limitations of subjective manual assessments, the project utilized advanced techniques such as segmentation, edge detection, and thresholding to examine characteristics like deposit area, color, and distribution. Initial testing with synthetic images helped fine-tune the algorithms before

applying them to actual piston images. This innovative approach ensured precise and consistent evaluations, offering deeper insights into deposit patterns and their influence on engine performance. The outcomes supported enhancements in engine maintenance practices, fuel efficiency, and emission control. Overall, the project demonstrated the effective application of engineering concepts and computational tools to tackle real-world challenges in engine diagnostics.

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

Objectives of the project : Automate Engine Deposit Evaluation, Enhance Diagnostic Capabilities, Develop a Versatile Analytical Framework, Improve Accuracy and Consistency

Major Learning Outcomes : Technical Skills Development, Algorithm Design, Data Analysis and Interpretation, Problem-Solving and Innovation, Practical Application of Concepts

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : The work environment at the Indian Institute of Petroleum (IIP) in Dehradun is research-driven and collaborative, focused on innovation in the petroleum and energy sectors. With labs and facilities, it supports both academic and practical learning. The culture promotes interdisciplinary research, hands-on projects, and teamwork, offering opportunities for growth and knowledge sharing.

Academic courses relevant to the project : none

PS-II Station : Indian Institute of Petroleum (IIP),Dehradun, Dehradun

Faculty

Name: Santosh Sopanrao Khandgave

Student

Name: SUJAL KUMAR KAR(2021A4PS2991H)

Student Write-up

PS-II Project Title: Computational Prediction of Tribological aspects in sliding wear

Short Summary of work done during PS-II : Confidential

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

Objectives of the project : Confidential

Major Learning Outcomes : Machine Learning, Taguchi Design of Experiments

Details of Papers/patents :

In progress

Brief Description of working environment, expectations from the company : Government Research Lab

Academic courses relevant to the project : N/A

PS-II Station : Indira Gandhi Centre for Atomic Research,Kalpakkam, Kalpakkam

Faculty

Name: Madhuri Bayya .

Student

Name: ATHREYA UPADHYA(2021A3PS3045G)

Student Write-up

PS-II Project Title: Porting and Optimization of VHDL-based TCP Communication IP for FPGA Devices

Short Summary of work done during PS-II : Development of simple python GUI to help testing. Utilizing existing communication IP to setup a server on FPGA. Make sure that transmission and reception of data is working properly in all the ports in the code that you write. Extensive testing of the same to ensure that there are not mistakes. Using STM32 FMC to control data to be sent from server and data received by the server. Making use of UVVM and Modelsim to write a verification environment to have documented proof of proper working of VHDL code.

Tool used (Development tools - H/w, S/w) : Vivado, Quartus, Libero, Modelsim, Python, STM32CubeIDE

Objectives of the project : Integrating VHDL-based TCP communication IP on FPGA with Microcontroller

Major Learning Outcomes : VHDL, FPGA development, Python GUI development, STM32 firmware development

Details of Papers/patents : --

Brief Description of working environment, expectations from the company : Most of the work is left to you on your own. They will guide you if you ask them but cannot expect too much help. They just expect results in the end regardless of the methods used to obtain the results.

Academic courses relevant to the project : Digital Design, CP, MUP

PS-II Station : Indira Gandhi Centre for Atomic Research, Kalpakkam, Kalpakkam

Faculty

Name: Madhuri Bayya .

Student

Name: MOHAMMED ABDUL HANNAN ASHRAF(2021A4PS2515H)

Student Write-up

PS-II Project Title: System Thermal Hydraulics & CFD Coupling for primary circuit of FFTF

Short Summary of work done during PS-II : Performed the coupled simulation of 1D system thermal hydraulics and 3D CFD for the Fast Flux Test Facility (FFTF), focusing on safety-critical loss-of-flow scenarios in sodium-cooled fast reactors (SFRs). -Developed and validated an innovative 1D/3D co-simulation methodology (Flownex + ANSYS Fluent) that improved the accuracy of transient safety analyses for reactor systems. This approach achieved a 79% enhancement in the prediction of the primary hot leg temperature during transient analysis, addressing limitations of previous results and accurately capturing thermal stratification and natural circulation phenomena. -Conducted detailed parametric studies on the outlet plenum, optimizing control plug height and thermocouple placement for improved safety insights and

thermal behaviour predictions. Identified the optimal control plug height that best matched the measured value—a finding not documented in any prior published studies, highlighting the novelty and significance of this work. -Published research that enhances computational efficiency while maintaining precision (coupling), thereby establishing a foundation for advanced reactor design and transient analysis

Tool used (Development tools - H/w, S/w) : Flownex, fluent, hypermesh, solidworks, spaceclaim

Objectives of the project : Coupling of 1D CFD with 3D CFD

Major Learning Outcomes : CFD, meshing, coupling, fluid mechanics and heat transfer

Details of Papers/patents : Conference paper in chemcon

Brief Description of working environment, expectations from the company : Supportive, helpful guides will respond to all your queries

Academic courses relevant to the project : Heat transfer, fluid dynamics

PS-II Station : Indira Gandhi Centre for Atomic Research,Kalpakkam, Kalpakkam

Faculty

Name: Madhuri Bayya .

Student

Name: AJEYA HEGADE K R(2021A8PS3197H)

Student Write-up

PS-II Project Title: Thermal Image Assisted Auto Positioning Of Dispenser Arm

Short Summary of work done during PS-II : Fast breeder reactors, while highly efficient, pose challenges due to the use of sodium coolant, particularly in the event of sodium fires. Rapid detection and mitigation of these fires are essential to minimize their adverse effects. This project focuses on the development of a thermal imaging system utilizing the MLX90640 sensor for sodium fire detection and verifying the accuracy of the sensor through calibration.

Tool used (Development tools - H/w, S/w) : Python, MLX90640 sensor and esp32

Objectives of the project : To develop thermal imaging system

Major Learning Outcomes : Python, MLX90640 sensor and esp32 understanding

Details of Papers/patents : -

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

Academic courses relevant to the project : Electronics

**PS-II Station : Indira Gandhi Centre for Atomic Research,Kalpakkam,
Kalpakkam**

Faculty

Name: Madhuri Bayya .

Student

Name: TANISQ GUPTA(2021AAPS2859G)

Student Write-up

PS-II Project Title: Fine tuning of SAM model for camouflage object detection

Short Summary of work done during PS-II : I helped write the training code and custom dataset code and evaluation code for the SAM model so that it can be finetuned for the COD task

Tool used (Development tools - H/w, S/w) : Pytorch, kaggle, COD-10K dataset

Objectives of the project : Fine tune the SAM model and make the necessary changes in the SAM source code for cod task

Major Learning Outcomes : Learnt python, model training, deep learning concepts, computer vision, neural networks

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment was good and comfortable. The working hours were very flexible

Academic courses relevant to the project : Machine learning, deep learning

PS-II Station : Indniveza Distributors Private Limited, Mumbai

Faculty

Name: Sidharth Mishra .

Student

Name: SAMARTH CHOUKSEY .(2020B5A20614P)

Student Write-up

PS-II Project Title: Development, Optimization, and Management of Tech Products and Third-Party Integrations at Wealthy Nivesh

Short Summary of work done during PS-II : As a Product Analyst intern at Wealthy Nivesh, my primary responsibility was to oversee the development and timely execution of the investing app "My Money Panda." This involved close coordination with the development team to track progress, ensure project deadlines were met, and provide technical suggestions to improve the codebase. Beyond the app, I developed several internal web tools that streamlined processes, boosting the organization's operational efficiency. I also took an active role in managing third-party tech-related tie-ups and integrations, ensuring seamless collaboration and enhancement of the product ecosystem. The internship exposed me to the entire product lifecycle in a startup environment, where adaptability and multitasking were key. In addition to technical contributions, I provided strategic insights to align tech deliverables with business objectives. These responsibilities allowed me to develop a well-rounded understanding of FinTech, project management, and operational challenges, making the experience both rewarding and insightful.

Tool used (Development tools - H/w, S/w) : VS Code, GitHub, Postman, React.js, Node.js, Notion, Zoho, AWS

Objectives of the project : The primary objective of the project was to oversee the development and ensure the timely execution of the investing application "My Money Panda" by coordinating with the development team and providing technical insights. Additionally, the project aimed to streamline organizational processes by developing internal web tools, managing third-party tech-related tie-ups, and enhancing the overall product ecosystem. It also involved understanding the

application's codebase and contributing to its optimization to align with the firm's goals in the wealth management and FinTech domains.

Major Learning Outcomes : During the course of this internship, I gained a comprehensive understanding of product development and management in a startup environment, specifically in the wealth management domain. I honed my skills in project coordination, working closely with the development team to ensure the successful execution of the "My Money Panda" investing app. Additionally, I enhanced my technical abilities by analyzing and optimizing the application's codebase and contributing my insights for improvement. Developing internal web tools allowed me to improve operational efficiency within the organization, while managing third-party tech integrations provided me with practical experience in building and maintaining strategic partnerships. These experiences also helped me develop critical problem-solving, communication, and collaboration skills, along with a deeper appreciation for the FinTech ecosystem.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Wealthy Nivesh was dynamic and fast-paced, typical of a startup culture. Being a small yet ambitious team, I was given significant responsibilities that extended beyond my designated role as a Product Analyst. I had the opportunity to work closely with the development team, where open communication and collaborative problem-solving were encouraged. The company expected interns to be proactive, adaptive, and willing to take ownership of tasks.

I was also involved in cross-functional activities, which included managing tech-related third-party tie-ups, developing internal tools, and contributing technical insights for the "My Money Panda" app. While the company valued technical expertise, it placed equal emphasis on soft skills such as effective communication, teamwork, and time management, as they were critical to navigating the startup's dynamic needs.

Overall, the environment provided a balance of guidance and autonomy, allowing me to learn independently while receiving feedback to improve my contributions. The expectations pushed me to deliver high-quality work while adapting to challenges, fostering both professional and personal growth.

Academic courses relevant to the project : Principle of Economics, Computer Programming

PS-II Station : Indus Insights and Analytical Services Pvt Ltd,Gurugram, Gurgaon

Faculty

Name: Gaurav Nagpal .

Student

Name: KULKARNI ANISH SHAILESH(2020B1A42416H)

Student Write-up

PS-II Project Title: Business Intelligence Project for Lenders

Short Summary of work done during PS-II : I developed a ****Customer Delinquency Dashboard**** and ****Partner Fee Income Sharing Dashboard**** using Tableau to monitor overdue payments and enhance the collections strategy. These dashboards provided critical insights for tracking payment delays, helping the team take timely actions to reduce delinquency. Additionally, I created ****SQL Server reports**** to track metrics such as ****Funding Turnaround Time**** and ****Same-Day Funding Processing****, allowing stakeholders to monitor and meet Service Level Agreement (SLA) goals effectively. By optimizing the ****Tableau dashboard**** used to track client employee productivity, I reduced SQL query processing time by 90%, significantly improving performance and user experience. I also gained a comprehensive understanding of ****Working Capital**** and ****Equipment Financing loan models****, including various lease types and contract payments. This knowledge allowed me to better support financial decision-making and improve the efficiency of loan processes. Beyond technical and analytical work, I organized and managed a ****basketball event**** as part of the ****Indus Olympics****, where I was responsible for event logistics, team coordination, and organizing a group activity. I worked closely with senior

directors to ensure the event's success, followed by a ****team lunch**** for 15 members, fostering team-building and collaboration. This experience demonstrated my ability to manage both professional and team-oriented activities effectively, contributing to both business and team development.

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

Objectives of the project : To gain insights into how financial lending operates in the real world and create business reports through data visualization tools for our stakeholders.

Major Learning Outcomes : 1. How to generate business reports based on client requests: Creating tailored business reports by analyzing client-specific data and presenting insights that meet their requirements.

2. Different terminologies related to loans, credit cards, and other lending models: Understanding and applying key financial terms used in lending, including loan types, credit scoring, and risk assessment models.

3. Presentation skills: Effectively communicating complex data and insights to diverse audiences with clarity and engagement.

4. How to develop business acumen from the client's demand: Gaining insights from client needs to drive strategic business decisions that align with their goals and market trends.

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : The working environment is quite positive, with colleagues and managers being very cooperative in addressing any doubts I had and providing valuable assistance in improving my presentations.

Academic courses relevant to the project : 1.Principles of Economics

PS-II Station : Indus Insights and Analytical Services Pvt Ltd,Gurugram, Gurgaon

Faculty

Name: Gaurav Nagpal .

Student

Name: SAMEER V KATTI(2020B1A81944G)

Student Write-up

PS-II Project Title: Data analysis and ML modelling

Short Summary of work done during PS-II : I built an ML model to predict \$ prepayment of a loan application at the time of application itself. Prepayments affect profitability adversely and hence it is necessary to predict prepayments to estimate profits brought in by an application and adjust pricing strategies accordingly. Defining the target that needs to be modelled on took considerable amount of efforts as multiple targets were selected. Targets were narrowed down using multiple statistical tests. Preparing input datasets involved steps like elimination based on low fill rate, variance, std deviation etc., encoding using techniques like Weight of Evidence and cyclic encoding, Outlier treatment, Missing value imputation and Scaling. Feature selection was done based on cross-correlation. Linear regression and XGBoost models were built to predict the prepayment.

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

Objectives of the project : To build an ML model to predict \$prepayment of a loan application

Major Learning Outcomes : Critical thinking, Analysing trends in huge datasets, Implementing ML models

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Working environment depends on the project one is staffed on. Some projects have lighter workload but most are moderate (10 hours a day) to heavy (12+ hours a day). The company policy is 10 hours a day, 5 days a week. Tuesday and Thursday are Work From Anywhere, and Sat, Sun are off. The crowd is very young, managers are also young. Competitions and celebrations occur frequently.

Academic courses relevant to the project : Machine Learning, and Finance related courses

PS-II Station : Indus Insights and Analytical Services Pvt Ltd, Gurugram, Gurgaon

Faculty

Name: Gaurav Nagpal .

Student

Name: UDBHAV CHOUDHARY .(2020B1AB1905P)

Student Write-up

PS-II Project Title: Data Analytics in the Service Industry

Short Summary of work done during PS-II : My internship at Indus Insights started with a 4 week training period. The training period was a way to get new joiners up to speed with standard data analysis tools like python, tableau, excel, SQL, and Microsoft PPT. After the training period,

new joiners were staffed on projects to work with one of the many different clients the firm consults for. I was staffed on a 11 week project where my team consulted for a leader in the airline industry. Our goal was to identify customer experience drivers, predict a customer experience metric, and present our findings in the form of a dashboard. The 11 week project was a great experience with a steep learning curve.

Tool used (Development tools - H/w, S/w) : PowerBI, Tableau, SQL, Foundry, Excel, Python, Sagemaker

Objectives of the project : 1. Help client improve customer experience 2. Identify drivers of customer experience 3. Predict customer experience score 4. Develop dashboard to present findings

Major Learning Outcomes : 1. Learned data analysis tools like excel, SQL, python, PowerBI etc.
2. Learned about project planning and client management
3. Learned about client industry

Details of Papers/patents : N.A.

Brief Description of working environment, expectations from the company : The working environment at the company was great. There was a lot of work to do, but immediate seniors were very understanding and supportive. The company has high expectations from interns, and the role is no different from a full time role. You are expected to be punctual, fluent with analytics tools, good at communicating your ideas, and also manage multiple urgent client deliverables at once.

Academic courses relevant to the project : N.A.

PS-II Station : Indus Insights and Analytical Services Pvt Ltd, Gurugram, Gurgaon

Faculty

Name: Gaurav Nagpal .

Student

Name: BISHNU R(2020B4A11934H)

Student Write-up

PS-II Project Title: Financial Services

Short Summary of work done during PS-II : I worked as a Financial Developer, providing a bridge between the data team and the finance team of the client. My tasks were making monthly reports and tracking the client's business, and tracking down and reporting a few non-spread sources of income.

Tool used (Development tools - H/w, S/w) : S/w - SSRS, Tableau, SQL Server, Excel, PowerPoint

Objectives of the project : Reporting client's business details and EDA to figure out untracked sources of income

Major Learning Outcomes : - Proficient in tools such as Tableau and SSRS

- Proficient in SQL

- Proficient in soft skills such as communication with client, and managing deliverables

Details of Papers/patents : No papers

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

Helpful peers and managers

Expectations:

Good knowledge of consulting field

Proficiency in technical tools

Presentation and client communication, among other soft skills

Academic courses relevant to the project : Technical Report Writing

PS-II Station : Indus Insights and Analytical Services Pvt Ltd, Gurugram, Gurgaon

Faculty

Name: Gaurav Nagpal .

Student

Name: SARTHAK GOYAL .(2020B4A41978P)

Student Write-up

PS-II Project Title: Applying data analytics techniques in the financial sector particularly for NBSC, using SQL and Tableau

Short Summary of work done during PS-II : Bi-weekly interaction with the client to get the requirements, or to give progress on the ongoing items. Writing logical SQL codes to pull the required data and finally integrating the final data in tableau to draw useful insights and help grow the business.

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

Objectives of the project : To create interactive, dynamic dashboards for US based NNBFC client.

Major Learning Outcomes : Understanding of the working of the NBFC, getting key insights into the working of the same. Developing the business sense of the working of the equipment financing loans.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Working environment is very much similar to any corporate.

Academic courses relevant to the project : DBMS, Analytics for supply chain, Machine learning

PS-II Station : Intel,Bengaluru, Bengaluru

Faculty

Name: Swapna S Kulkarni

Student

Name: S NIHARIKA(2020B1A82034G)

Student Write-up

PS-II Project Title: Development of the OpenVINO Execution Provider

Short Summary of work done during PS-II : During my internship at Intel, I worked extensively on the OpenVINO Execution Provider (OVEP), which is a tool developed to run ML models in the

ONNX format faster on Intel hardware. My primary contributions centered on model enablement, quantisation and graph node analysis, where I converted and optimized various AI models for improved efficiency on Intel's Neural Processing unit, the NPU. I successfully implemented support for the FP8 data type, reducing memory consumption with a lower precision data type. In the process, I worked with diverse models including object detection, Gen AI, and vision encoders and decoders, ensuring their compatibility with OpenVINO's NPU environment. By converting and preparing over 50-60 models, I significantly expanded OVEP's model support capabilities, demonstrating a comprehensive understanding of AI model optimization and deployment strategies. My work also included setting up comprehensive development environments, Fuzz testing, Docker and Jenkins (DevOps) for streamlined deployment, and implemented several input validation checks in the code to improve software reliability. I created a standalone OVEP application to demonstrate the API functionality of OVEP and also investigated technical challenges like NPU caching and device compatibility to ensure synergy between the various versions of toolkits that were used.

Tool used (Development tools - H/w, S/w) : NPU Drivers, C++, Python, OpenVINO toolkit, ONNX Runtime Microsoft Repository, Git and Github open source, Numpy, ONNX Neural Compressor, NNCF

Objectives of the project : To develop, validate, implement bug fixes in OpenVINO Execution Provider and to optimise AI model inferencing using the tool.

Major Learning Outcomes : Optimisation of ML models via various quantisation techniques, enabling various model architectures on the OpenVINO and ONNX Runtime environment and validation techniques

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The working environment at Intel is highly collaborative- because of the fact that it is a large company based in several countries, I got to interact with several different teams to gain exposure, and also work with them on their toolkits and frameworks, even during the beginning training period of my internship.

The company also places a strong emphasis on employee welfare, offering various amenities to ensure a balanced and comfortable work experience. There are regular training/informative sessions that you can make good use of.

The hiring process was particularly interesting for me; my team's interviews were of a high difficulty level and I was also tested on several concepts of ML, beyond DSA concepts.

Furthermore, in my particular team, we were focused on developing cutting-edge deep learning models and tools so it came with a high level of work pressure, as we are tasked with meeting deadlines set by both Microsoft and Intel and other external stakeholders who want to enable models on their own hardware. Since it is open source, there was also the added requirement of being regularly answerable to users and developers, so the work was urgent and taxing a lot of the time. Unlike what I expected in the beginning, my internship tenure was also in the midst of several organization/management changes in Intel, so there was definitely uncertainty in the company too.

Academic courses relevant to the project : OOP, Microprocessors and Interfacing, C programming

PS-II Station : Intel,Bengaluru, Bengaluru

Faculty

Name: Swapna S Kulkarni

Student

Name: HARSHIL GUPTA(2020B1A82074G)

Student Write-up

PS-II Project Title: Display Port Protocol

Short Summary of work done during PS-II : My primary work involved debugging BSOD issues related to Display Stream Compression (DSC) and pipe joiner discrepancies using tools like WinDbg and ETL analysis, I identified the root cause of mismatched M, N, and TU values between the GOP and driver, which triggered a fallback to full modeset instead of fast modeset. This resolution improved initialization and performance. I also automated and debugged DPCD script generation, enhancing test coverage and efficiency. Leveraging tools like Coverity and CodeQL, I addressed vulnerabilities in the GOP and driver code, improving stability and maintainability. In the lab, I worked extensively with the Reference Validation Platform (RVP), performing IFWI flashing, sanity checks, and User Level Testing (ULT). Other contributions included enhancing logging for MST topology detection in DisplayPort, developing test cases for TargetID checks, and optimizing driver detection algorithms. These tasks provided hands-on experience with industry-standard tools and protocols like DisplayPort, DPCD, LTTPR, and MST, significantly broadening my technical expertise. This internship not only solidified my debugging and development skills but also gave me valuable insights into display technologies and driver-hardware interactions.

Tool used (Development tools - H/w, S/w) : Windbg, Windows performance analyzer, RVP

Objectives of the project : To understand display driver flow understand protocol layer of the same and debug issues with working on new features side by side

Major Learning Outcomes : Display Driver Code flow and kernel debugging

Details of Papers/patents : Didn't publish any paper/patent

Brief Description of working environment, expectations from the company : The working environment at Intel was dynamic and hands-on, with access to cutting-edge tools like RVPs and WinDbg. It fostered a mix of independence and collaboration, supported by approachable mentors. Expectations were clear—understand the codebase, debug efficiently, and deliver quality results. I worked on kernel debugging, GOP fixes, ULT testing, and CodeQL checks, all while learning to navigate industry-standard workflows. It was a steep learning curve but a great space for growth and innovation.

Academic courses relevant to the project : OS, MUP

PS-II Station : Intel,Bengaluru, Bengaluru

Faculty

Name: Swapna S Kulkarni

Student

Name: NAMRATA RAJESH AHUJA(2020B2A81978G)

Student Write-up

PS-II Project Title: RTL Model Scan Validation for Intel's Latest Products

Short Summary of work done during PS-II : Understanding Basics of DFT. Scannable mapping of the flops and then doing X injections. Reviewing Sensitive signals after X injections .Manual mapping and task automation activities.

Tool used (Development tools - H/w, S/w) : Synopsis Verdi,Intel Internal Tools,Python,Perl

Objectives of the project : The project aims to enhance the robustness and efficiency of scan validation within the Register Transfer Level (RTL) models of Intel's latest products. Specifically, it addresses the challenges associated with at-speed testing, stuck-at-faults, pattern generation, simulation execution, x-injection, and task automation. By improving these aspects, we aim to ensure a more reliable and time-efficient verification process for RTL models before they proceed to subsequent stages of design and manufacturing.

Major Learning Outcomes : Intel's Internal Tool

Basics of DFT

Basic Scripting and Automation

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The individuals here are quite friendly and supportive, and the company atmosphere is encouraging. Expectations involve a readiness to learn and engage with others.

Academic courses relevant to the project : Comparch

OS

Digital Design

ADVD

DFT(Mtech course)

PS-II Station : Intel,Bengaluru, Bengaluru

Faculty

Name: Swapna S Kulkarni

Student

Name: DIVITH MAHAJAN(2020B3A31513G)

Student Write-up

PS-II Project Title: Automatic Timing Classifier

Short Summary of work done during PS-II : To work on a script for a new design flow that accurately outputs the timing data required for making decisions during the design process in a neat Excel format. Manual classification can take several days to complete, and hence an automatic script was to be designed to reduce turnaround time. Portions of the script was already complete but needed verification (if the data outputs were correct). Learnt how to use the required commands from the PrimeTime suite, and how to use them to perform the timing classifications. Then worked on verifying the data being outputted and recommend changes to the mentor. Made minor changes to the script myself in certain area. Learnt PERL scripting but was not used in the project. Learning PERL helped with using “grep” command with PERL regular expressions (which were used extensively in the final product). After the completion of the primary ATC script, I was tasked with creating a wrapper script to make it easier to run. The original script can only run in TCL, which needed several steps to open beforehand. The aim was to enable users to use only one command and receive the required outputs in a neat directory structure, with temporary files segregated. CSH shell scripting was used with TCL scripting to allow users to get the required information by having to input only two commands.

Tool used (Development tools - H/w, S/w) : PrimeTime, FusionCompiler - Synopsys. PERL, TCL, CSH, UNIX commands,

Objectives of the project : To create an automatic timing classifier to reduce the turnaround time of timing classification process, which can take several days

Major Learning Outcomes : Scripting, Regular Expressions, Manual Timing Classification process, VLSI Design cycle, Timing Reporting

Details of Papers/patents : Internal and confidential

Brief Description of working environment, expectations from the company : Brilliant working environment, large campus in Bangalore. Large working area, and helpful manager, mentor, and employees.

Expectations: More design related work to back-end VLSI design and not just scripting related to timing.

Academic courses relevant to the project : Digital Design

PS-II Station : Intel,Bengaluru, Bengaluru

Faculty

Name: Swapna S Kulkarni

Student

Name: GHAG PRANAV PRADEEP(2020B4A32060G)

Student Write-up

PS-II Project Title: Tool Flow and Methodology for Intel's latest products

Short Summary of work done during PS-II : TFM ensures that a project functions smoothly over its life cycle. We make sure all the appropriate tools are chosen and configured according to project needs. We run RTL validation using these tools and support designers. We manage the CICD process ensuring a healthy RTL.

Tool used (Development tools - H/w, S/w) : VC CDC, VC LINT, Jasper Gold, synopsys spyglass, verdi

Objectives of the project : Supporting RTL designers with different static tools. Performing RTL validation. Deciding methodologies

Major Learning Outcomes : Several different eda tools like VC-CDC, Spyglass CDC etc. Deeper understanding of Intel architecture and methodologies

Details of Papers/patents : Na

Brief Description of working environment, expectations from the company : Intel has a really healthy work culture. There is no distinction made between interns and full time engineers. Sufficient time is given to ramp up. You start contributing as soon as possible. People respect everyone's time and encourage having a great work life balance.

Academic courses relevant to the project : DD, MuP, Comparch, ADVD

PS-II Station : Intel,Bengaluru, Bengaluru

Faculty

Name: Swapna S Kulkarni

Student

Name: PRIYANSH MUNDRA(2020B4A32249H)

Student Write-up

PS-II Project Title: Graduate Technical Intern

Short Summary of work done during PS-II : Throughout my internship at Intel Corporation, I worked on innovative projects that deepened my understanding of semiconductor design and validation. My experience with the eFuse Hardened IP (HIP) subsystem, AXI protocol, and AXI-to-AXI rate bridge provided hands-on expertise in chip design, security, and data transfer mechanisms. The eFuse HIP subsystem project introduced me to one-time programmable memory, focusing on sensing and programming operations using finite state machines (FSMs) and the request-acknowledgement handshake model to ensure data integrity. Designing the AXI-

to-AXI rate bridge enhanced my knowledge of managing data width conversions and synchronization through handshake signals. In the post-midsems phase, I worked on improving the efuseHIP subsystem's modularity and scalability by isolating SIP and HIP modules into a standalone subsystem. Adding multiplexing mechanisms enabled support for multiple HIPs, enhancing flexibility for diverse applications. For validation, I leveraged SystemVerilog and UVM methodology, which emphasized standardization, reusability, and efficiency in hardware verification. Additionally, I implemented the APB protocol to configure debug blocks, enabling traceability of system performance metrics like bandwidth and data speed for Intel's Falcon Shores GPU compute die. This experience exposed me to real-world challenges in chip design, such as adhering to timing constraints, debugging, and ensuring performance optimization. By integrating industry-standard tools and protocols, I developed a robust skill set and a deeper understanding of efficient hardware design workflows. My time at Intel has been transformative, equipping me to tackle complex engineering projects in the semiconductor industry.

Tool used (Development tools - H/w, S/w) : VNC, Xterm, VIM, Verdi (synopsis tools)

Objectives of the project : Work on design of DUT and testbench for validation purposes

Major Learning Outcomes : Design flow in testbench modelling and UVM based testbench working

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Intel is very employee friendly. There are many employee benefits which includes access to many corporate services including gyms and outdoor sports courts like tennis and cricket. The teams and employees here are very friendly with you and teach and help you in anyway possible.

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

PS-II Station : Intel,Bengaluru, Bengaluru

Faculty

Name: Swapna S Kulkarni

Student

Name: VOBILSETTI BHARATHA SAI GOPAL PRANAY(2020B4AA0927H)

Student Write-up

PS-II Project Title: Intel Graphics control library and driver code

Short Summary of work done during PS-II : Done tasks which helps in maintaining a quality and clean code base by enabling the syntax and clang format checkers for the repository. Learned how to debug by working on 2 bugs

Tool used (Development tools - H/w, S/w) : Visual studio, git, windbg

Objectives of the project : To understand the flow and working of the IGCL and driver code.

Major Learning Outcomes : Understood how the intel display drivers work

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working environment is very good. A healthy work life balance. Expected to work hard and complete the tasks before the deadline.

Academic courses relevant to the project : Operating systems

PS-II Station : Intel,Bengaluru, Bengaluru

Faculty

Name: Swapna S Kulkarni

Student

Name: SAI KARTHIK C(2020B5A70762H)

Student Write-up

PS-II Project Title: Systolic Emulator

Short Summary of work done during PS-II : Used pytorch to write some cuda and sycl kernels. Also helped In writing some specific pytorch c++ operators specific to our microarchitecture. Contributed to developing an internal tool to analyze pytorch tensors like quantization, sparsity, compression etc.

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

Objectives of the project : Experimenting with different datatypes for LLMs to run on the upcoming GPUs. Understand the bottlenecks and how to eliminate them.

Major Learning Outcomes : Helped in understanding deep learning libraries

Details of Papers/patents : N/a

Brief Description of working environment, expectations from the company : Great Work environment and work-life balance. PPO expectations differ from team to team

Academic courses relevant to the project : Computer Architecture, Deep Learning

PS-II Station : Intel,Bengaluru, Bengaluru

Faculty

Name: Swapna S Kulkarni

Student

Name: SUKRITI MATHUR .(2020B5A81399P)

Student Write-up

PS-II Project Title: Predictive Timing Analysis using Machine Learning

Short Summary of work done during PS-II : The work integrates machine learning with electronic design automation (EDA) to enhance design efficiency and accuracy. Initial practice data helped develop ML models, which are now applied to real data parsed from .lib files. Genus synthesis and Innovus APR runs, including clock tree synthesis (CTS) experiments, optimize design performance. Different experimental runs are being conducted, and the code for parsing data into Python dictionaries is still in debugging mode. The ML models are being explored for various applications, aiming to improve design workflows and achieve better performance and resource utilization.

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

Objectives of the project : This project develops a machine learning model using practice and real data parsed from .lib files, applying linear regression and interpolation. Genus synthesis and CTS experiments optimize and validate the EDA process.

Major Learning Outcomes : The major learning is tools used, different specifications and understanding work culture.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : People are very friendly and encouraging. The company environment is supportive. Expectations include willingness to learn and interact with people.

Academic courses relevant to the project : Computer Architecture, ADVD, Analog Electronics

PS-II Station : INTELLIGENT SYSTEMS, Pune

Faculty

Name: Chetana Anoop Gavankar .

Student

Name: SHREYA VIKRAM KALANTRI .(2021A3PS2049P)

Student Write-up

PS-II Project Title: Customer Success Intern

Short Summary of work done during PS-II : During my internship, I have been involved in multiple innovative projects across various domains, primarily focusing on conversational AI and OTT platforms. In the automotive sector, I have been working on developing conversational AI solutions to enhance user interactions within vehicles. This involves designing and training AI models to create seamless and intelligent in-car experiences that address the growing demand for hands-free, voice-activated systems. In the media and entertainment domain, I contributed to ad insertion and metadata extraction solutions for OTT platforms. These efforts focus on improving ad targeting and content personalization by dynamically inserting ads into streaming content based on user preferences and real-time content analysis. The metadata extraction system I worked on allows for efficient categorization and tagging of content, which enhances the overall user experience by enabling better recommendations and searchability. Furthermore, I developed conversational AI applications for video content to enhance interactivity, enabling users to engage with video content through natural language queries. This project focuses on improving content accessibility and viewer engagement by leveraging AI-driven interaction. Across all projects, I focused on creating solutions that are not only technically robust but also aligned with the specific needs of each domain, ensuring improved user experiences and operational efficiencies.

Project Details: Post Mid-Semester Contributions to Product Development Since the mid-semester of my internship, my primary focus has been on developing Product Requirements Documents (PRDs), Customer Value Propositions (CVPs), and product design/mock-ups. This phase of my internship has been centered around translating business objectives and technical specifications into a product that effectively addresses the needs of the target market. Each document and design element was crafted with a keen understanding of the end user's needs, the business objectives, and the technical constraints of the product. By targeting specific customer personas, we ensured that both the product's functionality and its design would appeal to the right audience, while meeting the requirements of the business and technical teams. The work I contributed post-mid semester has not only deepened my understanding of the product development lifecycle but also allowed me to significantly contribute to shaping a product that is well-positioned to meet the demands of the market. As part of the team working on Video Upscaling, I had the opportunity to explore how these trends influence product development, particularly when it comes to integrating cutting-edge features to enhance both the security and accessibility of content. A significant portion of my focus was on analyzing the video streaming industry's dynamics and applying Market Fit Analysis (MFA) to determine the strategic direction for our product.

Tool used (Development tools - H/w, S/w) : Ms Excel, VSDC, Creating Product Mockups, Making Pitch decks, Canva, Whimsical

Objectives of the project : I was responsible for sales conversions and identifying customer pain points. I collaborated with the marketing team on their outreach efforts using the CRM system to track activities and generate progress reports.

Major Learning Outcomes : Ms Excel, VSDC, Creating Product Mockups, Making Pitch decks, Canva, Whimsical. I learnt how to use all these tools efficiently and attend client meetings.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment of the company was great and very welcoming. There was a proper procedure while joining and at the completion of my PS2. Regular meets were held with managers to update with tasks etc. I even got to attend client meets which was very nice.

Academic courses relevant to the project : Principles of Management, Professional Ethics, Soft Skills for Profession, Optimization

PS-II Station : Intellihealth Solutions Private Limited, Mumbai, Mumbai

Faculty

Name: Niranjana Swain .

Student

Name: PRIYANSH MANTRI(2021AAPS2046H)

Student Write-up

PS-II Project Title: RFM Model & Churn Prediction

Short Summary of work done during PS-II : In my recent role, I worked on optimizing CTR rates through RFM cohortization and ML-driven churn prediction while managing a dynamic work environment with multiple ad hoc tasks. I developed automated ETL pipelines to streamline data processing, ensuring efficiency and accuracy. Leveraging the RFM model, I segmented users to enable personalized marketing, improving engagement and retention. Additionally, I built predictive models for new user acquisition and app installs, effectively guiding a marketing budget of ₹50 Cr monthly. I conducted A/B testing to evaluate campaign performance, providing actionable insights for strategic decision-making. Through cohort analysis, I tracked user behavior trends and proposed data-driven retention strategies. My work required close collaboration with cross-functional teams to align technical solutions with business objectives. This experience strengthened my skills in machine learning, data analysis, and business strategy, equipping me to drive growth and deliver measurable outcomes in fast-paced, dynamic environments.

Tool used (Development tools - H/w, S/w) : Metabase, MixPanel, Google Analytics, Looker Studio, Appsflyer, Redshift

Objectives of the project : To improve CTR rates of communication by proper cohortization of users with Help of RFM Model and use AI Modelling of Churn Prediction

Major Learning Outcomes : During my project to improve CTR rates through RFM cohortization and Machine Learning based churn prediction, I gained a deep understanding of customer segmentation and behavior analysis. By leveraging the RFM model, I identified high-value, dormant, and churned customers, enabling targeted communication strategies that enhanced personalization and engagement. This experience improved my skills in data preprocessing, feature engineering, and handling large datasets. I developed and evaluated churn prediction models using metrics like R^2 , MAE, and accuracy, strengthening my expertise in machine learning and predictive analytics. Through cohort analysis, I tracked user trends over time, identified churn drivers, and proposed effective retention strategies. Collaborating with cross-functional teams, I aligned technical insights with business goals, demonstrating the importance of data-driven decision-making in real-world applications. The project also enhanced my ability to implement

scalable solutions and optimize KPIs like CTR, churn, and retention rates. This hands-on experience provided me with a robust understanding of customer lifecycle management and advanced analytical techniques to drive business growth.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : It is a start-up, if you work well then there are less restrictions. No dress code, no rigid time of entry but it often exceeds 09:00 Hrs each working day. It is a little demanding job but the people in the company are nice, supportive and collaborative.

Academic courses relevant to the project : BITS F464 MACHINE LEARNING

PS-II Station : Intellohire, Gurugram, Gurgaon

Faculty

Name: Gaurav Nagpal .

Student

Name: PULKIT VIJAY .(2021A2PS1575P)

Student Write-up

PS-II Project Title: Enhancing Recruitment Efficiency: Our Contributions and Achievements

Short Summary of work done during PS-II : During my internship at IntelloHire, I focused on enhancing recruitment and sales analytics processes. My primary contributions included

identifying and implementing KPIs to track recruitment efficiency, client engagement, and user behavior. I collaborated with the tech team to ensure accurate data flow, mapped sales and recruitment funnels, and addressed bottlenecks to optimize performance. Additionally, I streamlined CRM workflows, conducted market research on HR databases, and assisted in creating impactful sales pitches for potential clients. My efforts improved client onboarding processes and highlighted areas to enhance user experience. The hands-on exposure to analytics tools and CRM systems significantly deepened my understanding of recruitment marketing strategies.

Tool used (Development tools - H/w, S/w) : CRM Tools: Salesforce, HubSpot Analytics: Google Sheets, Excel Presentation Tools: PowerPoint

Objectives of the project : Analytics and Marketing

Major Learning Outcomes : Analytics and marketing. Developed expertise in recruitment analytics and sales funnel management. Improved client pitching and follow-up strategies for better conversions. I gained hands-on experience with CRM tools and data-driven decision-making.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at IntelloHire was highly collaborative and innovation-driven. The team encouraged open communication, and I was given autonomy to explore ideas and contribute meaningfully to projects.

Academic courses relevant to the project : Finance courses

PS-II Station : Inwise, Bengaluru

Faculty

Name: Srinath R.Naidu .

Student

Name: MOHAMMED IMRAN(2021A7PS0001H)

Student Write-up

PS-II Project Title: CRM Integrations & LLM Monitoring

Short Summary of work done during PS-II : Main goal/ideology of the project is to integrate Microsoft Dynamics, Salesforce and Hubspot CRM platforms with Inwise to maintain Data exchange between both platforms. Moreover, worked on LLM Monitoring project which monitors prompts in the product and trying to make them more better with more enhanced output.

Tool used (Development tools - H/w, S/w) : Microsoft Azure, Entra Id, Power platform, Visual studio code

Objectives of the project : To synchronise data flow between Inwise and CRM platforms.

Major Learning Outcomes : Azure functionality Back-end development, Prompt Engineering, Familiarity with CRM platforms, Communication Development and Team management

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Punctuality and eagerness to work and grow. Bring more ideas to the product for enhancements.

Academic courses relevant to the project : OOPS, DSA

PS-II Station : Inwise, Bengaluru

Faculty

Name: Srinath R.Naidu .

Student

Name: VAMSHI KRISHNA MANCHALA(2021A7PS0453H)

Student Write-up

PS-II Project Title: Account settings, RBAC and Settings

Short Summary of work done during PS-II : For my PS-2, I mainly worked on building some tabs for the company's website, which is still under development since the company is in stealth mode. I was also involved in integrating Google Meet and Microsoft Teams for scheduling and synchronization, as well as setting up in-app deal notifications using Azure SignalR Service. Meanwhile, other interns focused on integrating tools like Microsoft Dynamics, Salesforce, and HubSpot to handle data exchange with the company's system

Tool used (Development tools - H/w, S/w) : Microsoft Azure, Webflow, Lovable.dev

Objectives of the project : To Implement some basic tabs for the Company website.

Major Learning Outcomes : Node.js, React.js

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at the company is positive and supportive, with a small team of under 20 employees working online. The company is in its development stage, and there is a focus on collaboration and learning.

Academic courses relevant to the project : -

PS-II Station : Inwise, Bengaluru

Faculty

Name: Srinath R.Naidu .

Student

Name: MANTRI SRI KRUTHI .(2021A7PS2006P)

Student Write-up

PS-II Project Title: Inwise to microsoft dynamics integration and deal metrics calculation

Short Summary of work done during PS-II : I made 4 function in azure platform for pushing the data from Inwise to Microsoft Dynamics smoothly and synchronously. I made a few other functions to calculate metrics like likelihood to close, estimated time to close, deal size and deal stage and integrated them into the main pipeline.

Tool used (Development tools - H/w, S/w) : Microsoft Azure platform, Excel, Figma, Notion, Google colab, Power apps

Objectives of the project : To integrate the API endpoints between Inwise and dynamics to pull and push the data smoothly. Generate fields like deal size, deal stage, estimated time to close, likelihood to close from the already present information in database.

Major Learning Outcomes : I learnt how to deal with azure platform, improved in my code writing skills, error handling skills. I have a growth in my communication skills too.

Details of Papers/patents : Nothing

Brief Description of working environment, expectations from the company : The working environment was good. Everyone encouraged me and supported me with the work I do and help me to work more efficiently.

Academic courses relevant to the project : C

PS-II Station : I-stron Corporation Pvt. Ltd, Mumbai, Mumbai

Faculty

Name: Uma Nagarajan .

Student

Name: ATHARVA NITIN GHADI(2021A8PS2004G)

Student Write-up

PS-II Project Title: Research and Development of a accounting solution

Short Summary of work done during PS-II : - Developed and optimized API endpoints, implementing key features such as authentication, user onboarding, and a helpdesk system. - Designed and built the database along with the necessary functions and procedures to support the API. - Enhanced API performance, achieving up to a 5x improvement (reducing response times from 300 ms to around 60 ms). - Migrated the database to the cloud to streamline development, dockerized the backend for efficient deployments, and successfully deployed the API on EC2.

Tool used (Development tools - H/w, S/w) : VS Code, Postgres, React Js, Express Js, Node Js, AWS EC2

Objectives of the project : To develop a robust application that efficiently handles accounting tasks tailored for specific entities.

Major Learning Outcomes : Gained comprehensive knowledge of the development lifecycle and practical experience with backend technologies such as PostgreSQL, Express.js, and Postman.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working in I-Stron gave me a lot of invaluable experiences. It highlighted the key areas I excelled at while giving me a chance to improve on aspects I lacked in. I would like to summarise the contribution in the following points:

- 1]Team Collaboration: Working closely with mentors and frontend developers and adapting to team feedback and implementing suggestions efficiently.
- 2] Problem-Solving: Troubleshooting technical issues during development. Designing creative solutions for complex system workflows.
- 3]Time Management: Handling multiple tasks such as feature development, testing, and integration. Balancing ongoing learning with deliverable timelines.

Academic courses relevant to the project : OOPS

PS-II Station : IUDX Program Unit, Indian Institute of science - Data Kaveri,Bengaluru, Bengaluru

Faculty

Name: A Rekha .

Student

Name: KEEGAN LOUIS MORAES(2020B4A81830G)

Student Write-up

PS-II Project Title: TEE based offline generation for Carbyne Stack

Short Summary of work done during PS-II : The project was a collaboration with the Bosch research team on the Carbyne Stack project. The goal was to run the Correlated Randomness Generator inside an Intel SGX enclave for security and also less computational resources than Homomorphic Encryption

Tool used (Development tools - H/w, S/w) : C Programming, Docker, Kubernetes, Gramine, AKS(Azure Kubernetes Service)

Objectives of the project : Secure Multi Party Computation(SMPC) is a cryptographic protocol that allows parties to compute on their data without sharing it. To achieve this it requires random tuples. If these tuples are leaked then the system fails to ensure its security we run it in an Intel SGX enclave

Major Learning Outcomes : Docker, Kubernetes, C programming, Bash scripting, Secure Enclaves, Intel SGX, Gramine

Details of Papers/patents : <https://arxiv.org/abs/2310.10133>

<https://www.intel.com/content/www/us/en/developer/articles/technical/innovative-technology-for-cpu-based-attestation-and-sealing.html>

Brief Description of working environment, expectations from the company : The working environment was very positive with mentors happy to help with doubts and offer guidance. I was able to learn a lot during my internship at the company.

Academic courses relevant to the project : Cryptography, Algebra

PS-II Station : IUDX Program Unit, Indian Institute of science - Data Kaveri, Bengaluru, Bengaluru

Faculty

Name: A Rekha .

Student

Name: JADHAV PRATHMESH RAJENDRA(2021A3PS2498G)

Student Write-up

PS-II Project Title: DP - Pipeline UI & Confidential Containers

Short Summary of work done during PS-II : I had to develop the UI for secure De-identification pipeline which consists of form, maps and chart components. After that I was assigned to research about confidential containers. There I learnt about confidential containers architecture and basics of docker and kubernetes.

Tool used (Development tools - H/w, S/w) : React, Redux, Kubernetes, Docker etc.

Objectives of the project : Develop UI for Secure De-identification Pipeline. Conduct research about confidential containers

Major Learning Outcomes : Got to learn about React and other frontend technologies. Learnt about confidential containers architecture and kubernetes

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Work environment is good. All the team members are always supportive. Good amount of scope for learnings. Company expects from you to get work done within the required time.

Academic courses relevant to the project : Cryptography, Operating Systems etc.

PS-II Station : Jarvis Technology & Strategy Consulting, New Delhi, New Delhi

Faculty

Name: Ashish Narang .

Student

Name: KASHIKA SHARMA .(2020B3A10863P)

Student Write-up

PS-II Project Title: Development of an AI Chatbot

Short Summary of work done during PS-II : This report details the development of a chatbot designed to improve customer support by enabling users to resolve issues independently, reducing the need for human assistance. The chatbot uses Next.js for the frontend and Node.js with Express.js for the backend. The frontend is optimized for performance using CSS, Material-UI, Bootstrap, and Axios for API integration, while the backend features MongoDB, PostgreSQL, WebSocket for real-time communication, and JWT for security.

Tool used (Development tools - H/w, S/w) : Visual Studio, PostgreSQL, MongoDB, Next.JS, Node.JS

Objectives of the project : The Chatbot automates user interactions and provide instant, accurate responses. The chatbot was built to handle a wide range of user queries, ensuring a seamless conversational flow and reducing the need for manual intervention. It was intended to enhance communication efficiency, and offer immediate assistance, providing a scalable solution for businesses to interact with clients in real time.

Major Learning Outcomes : The internship phase focused on building the foundation of the chatbot application, integrating cutting-edge technologies like Next.js, Node.js, PostgreSQL, and MongoDB for an efficient, scalable, and user-friendly solution. The development of APIs, and the implementation of WebSocket for real-time communication, exemplified the depth of backend. It also helped gain knowledge of the LLM.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at my company is collaborative and supportive, where teamwork and open communication are encouraged. It fosters a positive atmosphere where individuals are motivated to share ideas, learn from each other, and take on challenges together. The company promotes a culture of respect, innovation, and growth, providing opportunities to enhance skills and work on impactful projects. It also ensures a healthy work-life balance and a flexible, goal-oriented approach that helps employees stay productive and engaged.

Academic courses relevant to the project : Computer Programming

**PS-II Station : JPMC - GR&C CTC Risk - CIO, Treasury & Corporate (CTC)
Risk team, Mumbai**

Faculty

Name: Bhamidipati Vaishali .

Student

Name: SARTHAK MAHESHWARI .(2021A1PS1353P)

Student Write-up

PS-II Project Title: Credit risk and automation

Short Summary of work done during PS-II : A key focus of my work involved designing and implementing automated tools for analyzing mortgage security deal data, which significantly enhanced operational efficiency, minimized manual interventions, and supported data-driven decision-making processes. These projects provided invaluable insights into the intricacies of risk management within the financial sector, particularly in areas such as credit risk assessment, market trend analysis, and the evaluation of emerging market exposures. Along with these projects, getting involved in the BAU activities helped to develop understanding of the challenges and opportunities associated with managing risks in a dynamic and complex environment.

Tool used (Development tools - H/w, S/w) : Excel, Bloomberg terminal, internal softwares

Objectives of the project : There were multiple objectives of the project with primarily including Automation of existing excel templates, risk reviews of various fixed-income securities and BAU (usual workflow) related tasks.

Major Learning Outcomes : Major learning outcomes include a better understanding of fixed income instruments, credit risk, workflow management, automation with excel and communication skills required within a large organization.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Good working environment with involvement in live projects within the firm enhances learning outcomes as well as inculcates a sense of responsibility. The team was highly supportive during the internship and the learning curve is often steep.

Academic courses relevant to the project : All finance minor courses

PS-II Station : JPMC - GR&C CTC Risk - CIO, Treasury & Corporate (CTC) Risk team, Mumbai

Faculty

Name: Bhamidipati Vaishali .

Student

Name: SHAH RUTESH MANOJ .(2021A4PS0332P)

Student Write-up

PS-II Project Title: Automation of Weekly Report

Short Summary of work done during PS-II : Automated process of reporting, Conducted analysis of risk moves by analysing key risk sensitivities, Supported business as usual and performed Risk Reporting.

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

Objectives of the project : Automating the reporting process

Major Learning Outcomes : Alteryx, Tableau, Python

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working environment is good, everyone is supportive.

Academic courses relevant to the project : DRM, Financial Engineering, SAPM

PS-II Station : JPMC - GR&C WCR Counterparty Credit Risk, Mumbai

Faculty

Name: Bhamidipati Vaishali .

Student

Name: MOHANA RAMANAN(2020B5A41008H)

Student Write-up

PS-II Project Title: Counterparty Credit Risk

Short Summary of work done during PS-II : During my PS-II internship at JP Morgan Chase & Co., I worked on four key projects under the Counterparty Credit Risk (CCR) team. The first project focused on automating manual reporting workflows using Python and SQL, reducing report preparation time by 50%. The second project involved identifying Specific Wrong Way (SWW) risks in client trades by analyzing portfolios and market exposures. Additionally, I handled Business-As-Usual (BAU) tasks, including portfolio movement analysis, writing Prime Brokerage commentaries for margin breaches, and managing a weekly risk dashboard. Lastly, I built an interactive hedge fund risk monitoring dashboard using Tableau, integrating real-time data to visualize risk metrics like VaR and exposure. These projects enhanced risk visibility and streamlined decision-making processes, contributing significantly to the firm's risk management strategy.

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

Objectives of the project : Automate manual risk reporting processes to improve efficiency and accuracy. Identify and manage Specific Wrong Way (SWW) risks in client trades. Analyze client portfolios for potential risks and enhance reporting dashboards. Create an interactive dashboard for hedge fund risk monitoring.

Major Learning Outcomes : Gained practical experience in credit risk assessment and automation.

Developed skills in Python scripting, SQL querying, and Tableau dashboard development.

Learned effective collaboration with cross-functional teams and enhanced analytical thinking.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment at JP Morgan Chase & Co. was collaborative, professional, and structured. I worked closely with experienced professionals across risk, technology, and research teams. The company provided excellent mentorship and hands-on exposure to real-world financial challenges, enabling me to apply and enhance my technical and analytical skills. Expectations included timely delivery of project milestones, adherence to high standards of accuracy, and the

ability to collaborate effectively within the team. The supportive and performance-driven culture ensured I could learn, innovate, and contribute meaningfully to ongoing projects.

Academic courses relevant to the project : SAPM
DRM

PS-II Station : JPMC - GR&C WCR Portfolio Analytics- Analytics Strategy, Mumbai

Faculty

Name: Bhamidipati Vaishali .

Student

Name: NANDAN GOUD B .(2020B1A11898P)

Student Write-up

PS-II Project Title: LLM Evaluation using LLM

Short Summary of work done during PS-II : The role involves developing data-driven solutions using deep learning, machine learning, and natural language processing (NLP) to enhance risk monitoring capabilities. Key responsibilities include implementing advanced methodologies, analyzing structured and unstructured data.

Tool used (Development tools - H/w, S/w) : Large Language Models (LLMs), Python, PyTorch, NumPy, Pandas, Excel, SQL

Objectives of the project : To create and enhance functionalities of a internal tool that would be used across the firm

Major Learning Outcomes : Deep Learning, LLM, Python, Gen AI

Details of Papers/patents : Not applicable

Brief Description of working environment, expectations from the company : Good working environment. Expected coding knowledge

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

PS-II Station : JPMC - GR&C Wholesale Credit Risk - Product Owner Team, Mumbai

Faculty

Name: Bhamidipati Vaishali .

Student

Name: S ANANTHA NARAYANAN(2020B5A40985H)

Student Write-up

PS-II Project Title: End to end product development of Treasury services Dashboard

Short Summary of work done during PS-II : Managed end to end product development of Treasury services Dashboard of JP Morgan for the wholesale credit risk team. Conducted User acceptance testing, Crafted user stories to translate business requirements to actionable

technical tasks, Connected with Stakeholders to understand the requirements. Managing Product releases and draft release communication. Track the tech teams work and attend all Scrum events like Daily standups, Product backlog refinement sessions, Sprint retrospective etc. Create Process flow maps for product enhancements.

Tool used (Development tools - H/w, S/w) : S/w- Jira, Ms Vision, Ms Excel, Internal JPMC UAT softwares

Objectives of the project : Feature Enhancements of the Treasury services Dashboard

Major Learning Outcomes : Clear communication skills, Agile methodologies of software development, Product lifecycle, Stakeholder Collaboration, Jira tool, Product Roadmap and Process flow designing

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Very good environment with supportive manager and teammates. Ample learning resources available to upskill. Continuous feedback from senior managers. Great place to work

Academic courses relevant to the project : None

PS-II Station : JPMC CIB Research & Analytics, Banking Fintech, Mumbai

Faculty

Name: Uma Nagarajan .

Student

Name: AMOL BIMLESH AUDICHYA(2021A7PS1830H)

Student Write-up

PS-II Project Title: Process Automation

Short Summary of work done during PS-II : During the internship, I developed dynamic, versatile, and user-friendly automation, achieving 75% to 84% efficiencies. Working on these projects has enhanced my programming skills and taught me how to write code that is both intuitive and efficient. This experience has also highlighted the critical role of automation in large organizations, where streamlining tasks reduces manual effort, saves significant time, and boosts overall efficiency.

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

Objectives of the project : Automating time consuming and manual tasks using VBA and Python

Major Learning Outcomes : Automating regular tasks and saving time

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Very professional and the projects were challenging

Academic courses relevant to the project : CSF111, ECON F355, FIN 315

PS-II Station : JPMC CIB Research & Analytics, Banking Fintech, Mumbai

Faculty

Name: Uma Nagarajan .

Student

Name: BHATT URAV HITESHKUMAR(2021A7PS3057G)

Student Write-up

PS-II Project Title: Corporate Investment Banking- Fintech

Short Summary of work done during PS-II : During my internship at JPMorgan in the FinTech team, I focused on developing and implementing automation projects to streamline daily, weekly, and monthly tasks across various Microsoft applications. Leveraging VBA and Python, I created solutions that enhanced efficiency, reduced manual effort, and optimized processes for recurring operations

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

Objectives of the project : Workdone and learnings at JP Morgan in the fintech field

Major Learning Outcomes : First exposure to corporate world, Soft skills such as communication

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment at JPMorgan in the FinTech team was dynamic, collaborative, and innovation-driven. It fostered a culture of learning and problem-solving, encouraging interns to take ownership of their projects and deliver impactful solutions. The company had high expectations for precision, creativity, and efficiency, with a strong emphasis on meeting deadlines and aligning outcomes with business goals. Interns were expected to adapt quickly, collaborate across teams, and contribute meaningfully to automation and process optimization initiatives.

Academic courses relevant to the project : FUFA, Finman, DRM, BAAV, SAPM

PS-II Station : JPMC CIB Research & Analytics, Banking, Mumbai

Faculty

Name: Uma Nagarajan .

Student

Name: THAKUR AKSHAY ANAND .(2021A4PS1301P)

Student Write-up

PS-II Project Title: CIB - R&A, Banking

Short Summary of work done during PS-II : I was part of the Mid-Cap Investment Banking team of JPMC, regionally based in North America. As a Junior Analyst intern I was trained to carry out the business as usual for the team. The work involved creating company profiles, spreading trading comparables, screening transactions, analysing share price performance multiple-valuation analysis and financial modelling. I also got the opportunity to work with various front-office bankers as part of my staffings. Most of the work was general marketing but I also got a chance to work on bake-offs and execution projects.

Tool used (Development tools - H/w, S/w) : Alpha Sense, Factset, Bamsec, MS Office, MS Powerpoint

Objectives of the project : To understand the working of the middle-office of an Investment Bank and their scope of work

Major Learning Outcomes : I could see the practical application of my financial knowledge in the real world. The PS-2 provided me the opportunity to pursue my interest and experience investment banking as a career.

Details of Papers/patents : No research papers involved

Brief Description of working environment, expectations from the company : The corporate culture at JPMC is excellent. The environment is people-friendly. JPMC as an organisation is very inclusive and favours innovation.

Academic courses relevant to the project : Fundamentals of Accounting and Finance, Security Analysis and Portfolio Management, Business Analysis and Valuation

PS-II Station : JPMC CIB Research & Analytics, Banking, Mumbai

Faculty

Name: Uma Nagarajan .

Student

Name: ARYAMAN CHOPRA(2021A4PS3108H)

Student Write-up

PS-II Project Title: Research and Analytics in Investment Banking

Short Summary of work done during PS-II : During my time with the Diversified Industrials and Transportation (DIT) team, I've contributed to a variety of projects across the EMEA and NA regions. I've created monthly sector updates for the chemicals and automotive sectors, tracking

M&A activity, analyzing transaction details, and adjusting valuations. I've also supported the front office by preparing marketing and execution decks, including company profiles, performance charts, and analyst recommendations. Additionally, I contributed to daily Hot Sheets, monitoring M&A and JV activity and summarizing key updates for the team. I've worked closely with senior bankers to create in-depth research decks for sectors like business services and infrastructure, and I played an active role in complex RFPs, helping with debt and equity financing, strategic M&As, and sponsor M&As. This allowed me to engage with teams from London and New York. My work across sectors such as aerospace, automotive, and chemicals has broadened my understanding of the Diversified Industrials landscape. I've also been involved in activism projects, analyzing shareholder campaigns and advising clients on governance strategies.

Tool used (Development tools - H/w, S/w) : Microsoft Applications, FactSet, Refinitiv Eikon and Bloomberg

Objectives of the project : Support global banking teams by preparing marketing pitch books, financial analysis, industry research, and client reports, contributing to strategic decision-making and the development of customized financial solutions across M&A, debt and equity financing

Major Learning Outcomes : Improved financial and industrial knowledge, better understanding of financial software tools, valuation and analysis, presentation, communication and teamwork skills

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at J.P. Morgan is supportive and focused on learning. The senior team members are highly knowledgeable and always ready to provide guidance and help. The challenging projects allow us to push ourselves and grow, while close collaboration with senior bankers and colleagues makes the experience even more valuable. The team values proactivity, and timely submission of work is appreciated. Any doubts are always encouraged, creating a positive atmosphere for learning. Overall, the environment is cordial, supportive, and motivating, making it a great place to develop professionally.

Academic courses relevant to the project : Fundamentals of Finance and Accounting, Business Analysis and Valuation, Derivatives and Risk Management, Security Analysis and Portfolio Management, Financial Management and Financial Risk Analytics & Management

PS-II Station : JPMC CIB Research & Analytics, Banking, Mumbai

Faculty

Name: Uma Nagarajan .

Student

Name: KUNAL AGGARWAL .(2021AAPS1476P)

Student Write-up

PS-II Project Title: Pitch

Short Summary of work done during PS-II : Mostly confidential work on creating books for seniors to present during meetings with client management teams.

Tool used (Development tools - H/w, S/w) : Internal tools provided by JPM, Excel, PowerPoint

Objectives of the project : Learn Investment banking as a career and make a pitch

Major Learning Outcomes : Finance and IB

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Amazing environment, engaging and positive team, huge focus on providing value to interns.

Academic courses relevant to the project : Finance minor, especially corporate finance courses

PS-II Station : JPMC CIB Research & Analytics, Global Research, Mumbai

Faculty

Name: Uma Nagarajan .

Student

Name: PRATHAM GOYAL .(2020B3A30822P)

Student Write-up

PS-II Project Title: CIB RnA Global Research

Short Summary of work done during PS-II : Created a monthly publication which tracks performance of index and major changes during that month. Also worked on month end activities and other smaller projects(Can't disclose details due to compliance issues)

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

Objectives of the project : To create a monthly publication for one of the index of JP Morgan and other small projects and BAUs

Major Learning Outcomes : Learned a lot about corporate culture and finance domain knowledge

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Great working environment, employee friendly

Academic courses relevant to the project : All finance courses

PS-II Station : JPMC CIB Research & Analytics, Global Research, Mumbai

Faculty

Name: Uma Nagarajan .

Student

Name: SIDDHARTH MEHROTRA .(2020B3A41957P)

Student Write-up

PS-II Project Title: Equity Research Intern

Short Summary of work done during PS-II : During my internship, I played a key role in updating financial models with quarterly data, especially during earnings periods, ensuring timely and accurate insights for clients. This process honed my skills in integrating real-time financial information into detailed models, strengthening my attention to detail and analytical precision. Additionally, I gathered and analyzed operating revenue data to forecast margins and costs for the next five years, enhancing my ability to interpret financial trends and apply them to forward-

looking analysis. I also contributed to team projects, gaining exposure to collaborative workflows and understanding how cross-functional efforts drive impactful results. This experience improved my communication and teamwork skills while deepening my knowledge of financial modeling and forecasting processes. Overall, the internship provided a comprehensive learning opportunity, blending technical, analytical, and interpersonal skill development.

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

Objectives of the project : To gain an understanding of the finance domain, and how investment banks operate

Major Learning Outcomes : 1. Deepened my understanding of financial statements and their role in comprehensive modeling, sharpened my attention to detail, and improved my efficiency in managing large datasets. I also gained valuable insights into how precise financial analysis supports informed decision-making for clients.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The work environment at JPMorgan is highly positive and supportive, fostering approachability and collaboration. Team members are patient, welcoming, and committed to ensuring new members feel comfortable and valued from the start.

Academic courses relevant to the project : FundaFin, SAPM, BAV

PS-II Station : JPMC CIB Research & Analytics, Global Research, Mumbai

Faculty

Name: Uma Nagarajan .

Student

Name: JASH RAJESHKUMAR NAIK .(2020B3A71958P)

Student Write-up

PS-II Project Title: Global Research Analysis

Short Summary of work done during PS-II : Work included research services to buy-side clients to make well-informed investment decisions in the financial markets. Work involved handling data related to lead indicators for sectoral analysis and providing clients with sectoral research.

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

Objectives of the project : Research services for Clients

Major Learning Outcomes : Financial Modelling, Financial Statement Analysis, Equity Research

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : Working environment is very good. Work is good and I got the opportunity to gain knowledge from various sessions related to the field. The company culture is inclusive and supportive in every process related to the internship.

Academic courses relevant to the project : Finman, BAV, FundaFin, SAPM

PS-II Station : JPMC CIB Research & Analytics, Global Research, Mumbai

Faculty

Name: Uma Nagarajan .

Student

Name: KALIDINDI MEDHA(2020B4A32302H)

Student Write-up

PS-II Project Title: Research

Short Summary of work done during PS-II : I started off automating most of the processes and scripts they had for various reports and screens the team sent out. Migrating them from excel to python. Later on, I got some exposure to how equity indices rebalance and corporate actions of various companies are adjusted for in the index weights. I automated the rebalance day calculations to predict the flows for this process.

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

Objectives of the project : Automate most of the daily processes done by the team, help with the BAU of the team

Major Learning Outcomes : Python, Finance, Index Rebalance Methodology

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : My experience at JPMC was extremely positive. They were very helpful and helped provide a very smooth transition into my teams. They had a very structured approach to the entire internship, which was great.

Academic courses relevant to the project : FM, FRAM, DRM

PS-II Station : JPMC CIB Research & Analytics, Markets - Trading and Structuring, Mumbai

Faculty

Name: Uma Nagarajan .

Student

Name: SARTHAK JAIN .(2020B3AA0161P)

Student Write-up

PS-II Project Title: Risk and trade management

Short Summary of work done during PS-II : Daily risk (hedges) management, coming up with new trade ideas and backtesting those, building tools for understanding risks and costs of a trade

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

Objectives of the project : To decompose the trades and maintain the hedge book

Major Learning Outcomes : Understanding of derivatives, option greeks, trade life cycle, backtesting strategies

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Close contact with Front office team at all times during the day, helps in learning complex topics and businesses, really helpful and understanding team overall.

Academic courses relevant to the project : DRM, FRAM



PS-II Station : JPMC CIB Research & Analytics, Markets - Trading and Structuring, Mumbai

Faculty

Name: Uma Nagarajan .

Student

Name: SHREERANG SUNIL GUPTE(2021A4PS0254G)

Student Write-up

PS-II Project Title: -

Short Summary of work done during PS-II : Reading internal resources and researching various types of exotic products and their payoffs. Deploying new indices for the retail side of NA Structuring. Creating pricing, correlation, indicative mtm, etc. reports for various clients and internal stakeholders. Backtesting various strategies and checking performance changes. Working on internal reports for trade unwind opportunities. Using internal tools to price various exotic products.

Tool used (Development tools - H/w, S/w) : Visual Studio (python), Excel, various internal tools

Objectives of the project : -

Major Learning Outcomes : In-depth understanding of exotic financial products based on equity derivatives, creation of market indices for various purposes, Python, Excel, Pricing softwares, etc.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The working environment is great, the full-time employees are generally helpful and approachable. The company expects you to start picking up information and work within a short span of time after getting used to the working environment, and will start treating you as an Analyst (work-wise) a few months into the internship..

Academic courses relevant to the project : Derivatives and Risk Management

PS-II Station : JPMC CIB Research & Analytics, Markets - Trading and Structuring, Mumbai

Faculty

Name: Uma Nagarajan .

Student

Name: SHREYAS KUMAR AGARWAL .(2021A4PS2402P)

Student Write-up

PS-II Project Title: CLO Structuring

Short Summary of work done during PS-II : At J.P. Morgan, I worked with the EMEA CLO Structuring Team, modeling cashflows, structuring deals, and automating portfolio analysis using Python, Excel, and industry tools. I improved deal reset accuracy through enhanced automation, deepened my understanding of CLOs, and gained hands-on experience in structured finance and transaction management.

Tool used (Development tools - H/w, S/w) : Python, Microsoft Excel, Powerpoint, Fitch Connect, S&P CFE, Moody's CDO Edge

Objectives of the project : Build expertise in CLO structuring and analysis and improve accuracy and efficiency through automation.

Major Learning Outcomes : Gained expertise in CLO structuring, including cashflow modeling, equity return projections, and responding to rating agency feedback, enhancing my knowledge of structured finance.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The work environment at J.P. Morgan's EMEA CLO Structuring Team was dynamic and fast-paced, with unconventional hours (2:30 PM to 12 AM) and long days during deal pricings. The team was supportive, but expectations included taking full ownership of tasks and managing responsibilities independently in high-pressure situations.

Academic courses relevant to the project : FundFin, DRM, SAPM, BAV

PS-II Station : JPMC CIB Research & Analytics, Markets - Trading and Structuring, Mumbai

Faculty

Name: Uma Nagarajan .

Student

Name: DEVANSH MAHESHWARI .(2021AAPS0984P)

Student Write-up

PS-II Project Title: No Major Project as such

Short Summary of work done during PS-II : During my internship with the Delta One Strategic Indices team at JP Morgan, I began by handling Business-As-Usual (BAU) tasks, gaining a solid understanding of index methodologies and operational workflows. Over time, I identified a critical manual process related to index rebalancing that was time-intensive and prone to errors. Recognizing its importance and potential for optimization, I focused on automating this task. Leveraging tools and programming techniques, I developed a solution that significantly reduced the time and effort required for the process while enhancing its accuracy and reliability. The automation streamlined the workflow, enabling the team to focus on more strategic initiatives and improving overall efficiency. This project not only deepened my technical and problem-solving skills but also allowed me to contribute meaningfully to a core function of the team.

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

Objectives of the project : NA

Major Learning Outcomes : Learned working and implementation of systematic strategies being wrapped in an index.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working at JP Morgan in Mumbai's Strategic Indices team is dynamic, fast-paced, and intellectually stimulating. The team operates at the intersection of quantitative research, data analysis, and financial

markets, focusing on designing and managing bespoke index solutions for institutional clients. The work environment emphasizes collaboration, attention to detail, and innovation, as team members frequently interact with global stakeholders, including clients, traders, and technology teams.

Academic courses relevant to the project : Finance minor courses (FRAM , SAPM , DRM)

PS-II Station : JPMC GR&C - CCB Risk Strategic Analytics, Mumbai

Faculty

Name: Bhamidipati Vaishali .

Student

Name: SAHITHI GOPARAJU(2020B3A40647H)

Student Write-up

PS-II Project Title: Simulation of 2 Strategies using SAS

Short Summary of work done during PS-II : AT JPMC CCB, I was allotted to the Data Quality and Controls Team. This team was primarily concerned with Monitoring duties. During my time there I worked intensively with MS Excel and SAS to handle large amounts of data. I was also tasked with making reports on MS Excel and doing Code checks which aided the team in their day to day functions.

Tool used (Development tools - H/w, S/w) : SAS, SQL, MS Excel, Tableau

Objectives of the project : To ensure that the simulation produces the exact results as the actual control.

Major Learning Outcomes : 1. Handling large data sets with millions of records
2. Adeptness at SAS and SQL
3. Collaboration across teams and interaction with Senior Leaders

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The company has a very positive work culture. You can reach out to people across teams and interact with senior leaders. There are several BITSians in the same role making it easier for a new BITS intern to reach out and learn from their experiences. Communication skills, transparency and enthusiasm to learn are expected by the company..

Academic courses relevant to the project : No course in particular - basic understanding of credit and some knowledge of programming would suffice.

PS-II Station : JPMC GR&C AWM Risk Analytics – Quantitative Research, Bengaluru

Faculty

Name: Bhamidipati Vaishali .

Student

Name: VIKRAM KOMPERLA .(2021A4PS1427P)

Student Write-up

PS-II Project Title: Analysis of fixed income assets

Short Summary of work done during PS-II : Worked on multiple projects mainly focused on fixed income assets. Learnt about their properties and influential factors

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

Objectives of the project : Analysis of fixed income assets and determine the movement of influencing factors

Major Learning Outcomes : SQL, Python, EXCEL

Details of Papers/patents : No papers/patents

Brief Description of working environment, expectations from the company : Inclusive and accomodating environment. Should be ready to adapt to any required role

Academic courses relevant to the project : FRAM, ASM, DRM

PS-II Station : JPMC GR&C Market Risk, Mumbai

Faculty

Name: Bhamidipati Vaishali .

Student

Name: IYER RAMALINGAM KRISHNA .(2021A4PS2204P)

Student Write-up

PS-II Project Title: Market Risk in Securitized Products

Short Summary of work done during PS-II : Throughout my internship, I was part of the Market Risk Coverage Team for Agency MBS, which is wholly a New York based team. I was tasked with BaUs(Business as Usual) tasks, a stress dashboard projects, multiple short code projects. A lot of my work was based on ad-hoc requests from my team. We were tasked with keeping ourselves updated with the markets and our portfolio, to understand any potential risks. We also looked at the stress scenarios of our portfolio as a part of our responsibilities

Tool used (Development tools - H/w, S/w) : JPMC internal software, Excel, Tableau, Python

Objectives of the project : To construct a stress dashboard for my team on a JPMC internal software to make a one-stop solution for the team to view all stress scenarios

Major Learning Outcomes : I got to learn a lot about the US Securitized Products market and the market dynamics in the US. Understood how market risk functions in the organization and the regulatory need of it. Understood vital communication skills and the importance of networking

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Excellent work culture and office. People are extremely nice and approachable. They will take out their time if you request them. As it was a New York based team, they were extremely mindful of the time-zone difference. You are expected to be technically sound and do work within deadlines.

Academic courses relevant to the project : DRM, FinE

PS-II Station : KFin Technologies Private Limited,Hyderabad, Hyderabad

Faculty

Name: Chennupati Rakesh Prasanna .

Student

Name: ASHISH VERMA .(2020B1AB1916P)

Student Write-up

PS-II Project Title: Product Management

Short Summary of work done during PS-II : During my internship at Kfin Technologies, I contributed to the enhancement of key products like INPRO and IRIS, focusing on improving compliance, efficiency, and user experience. For INPRO, I identified critical gaps such as T+1 screening delays, manual data input from KBolt, and the absence of customer data updates, which allowed potential fraud. Proposed solutions included implementing T-Day screening, automating data transfers between INPRO and KBolt, and incorporating NCT changes for accurate and real-time screening. These recommendations aimed to strengthen compliance processes, reduce risks, and improve operational efficiency for Asset Management Companies (AMCs). For IRIS, I supported its development by proposing enhancements like expanded asset classes (fixed deposits, insurance, loans, and trading markets) and advanced user management features, including hierarchy and EUIN-level tracking. I also worked on improving analytics, transaction flows, and automation for seamless distributor operations. Additionally, I focused on integrating cKYC for efficient customer onboarding and data accuracy. These contributions aimed to position IRIS as a comprehensive, future-ready platform for distributors, offering wider investment options and a superior user experience. The internship provided invaluable exposure to product management, compliance frameworks, and financial technology, fostering skills in problem-solving, strategy, and stakeholder collaboration.

Tool used (Development tools - H/w, S/w) : Figma, Word, Excel, Postman

Objectives of the project : Product Management - Launch Phase 2 of IRIS and Complete UI and Data testing fir IRIS Phase 1.

Major Learning Outcomes : Product Management, Wireframing, Product Design, Product Requirements Documentation

Details of Papers/patents : NA

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

The working environment at Kfin Technologies during the internship was dynamic, collaborative, and innovation-driven. It fostered an ecosystem where interns could engage with real-world challenges while contributing to impactful projects like IRIS and INPRO. The cross-functional collaboration with experienced mentors and teams across departments created an enriching learning atmosphere. The company's emphasis on leveraging technology to address regulatory and operational challenges provided a unique perspective on product management in the financial services domain. Open communication, access to cutting-edge tools, and a supportive culture made the environment conducive for skill enhancement and professional growth.

****Expectations from the Company****

During the internship, the primary expectation was to gain hands-on exposure to product management, including end-to-end product lifecycle processes, market analysis, and stakeholder collaboration. The company met and exceeded these expectations by offering ample opportunities to work on meaningful projects that addressed compliance, automation, and customer experience challenges. Guidance from mentors and structured feedback enabled a steep learning curve, while access to resources and tools ensured efficient execution of responsibilities. The exposure to problem-solving in a fast-paced, technology-focused environment provided invaluable insights into the financial services industry and product management best practices.

Academic courses relevant to the project : Business Communication

PS-II Station : KFin Technologies Private Limited,Hyderabad, Hyderabad

Faculty

Name: Chennupati Rakesh Prasanna .

Student

Name: LUV GULATI(2021A3PS2931H)

Student Write-up

PS-II Project Title: Alternate Investment Fund

Short Summary of work done during PS-II : Worked on communication module

Tool used (Development tools - H/w, S/w) : React, Postman, NodeJs, PostgreSQL

Objectives of the project : Software Development

Major Learning Outcomes : Software Development

Details of Papers/patents : No patents

Brief Description of working environment, expectations from the company : Working conditions were at par with other corporate company

Academic courses relevant to the project : none



PS-II Station : KMV Projects Limited, Belagavi, Karnataka, Belgaum

Faculty

Name: Benu Madhab Gedam .

Student

Name: KRISH LIMBANI .(2020B5A21485P)

Student Write-up

PS-II Project Title: To study the complete airport construction project at Belagavi Airport

Short Summary of work done during PS-II : During my PS-II tenure, I actively contributed to the Quantity Surveying and Planning Department. My role involved calculating quantities from detailed construction drawings for key components like runways, terminal buildings, and utility structures. I also analyzed material requirements, tracked progress schedules, and prepared reports to support decision-making processes. On-site, I observed the execution of various tasks to ensure they aligned with project timelines and maintained quality standards. This experience provided me with a comprehensive understanding of managing large-scale civil engineering projects while highlighting the importance of efficiency and teamwork.

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

Objectives of the project : To study & understand the planning, execution, and management of construction activities at the Belagavi Airport project, focusing on civil infrastructure, quality control, and project quantity survey.

Major Learning Outcomes : During my PS-II, I worked in the Quantity Surveying and Planning Department, focusing on tasks like calculating quantities from construction drawings for

components such as runways, terminal buildings, and utility structures. On-site, I observed the execution of various construction activities

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at the company promoted accountability and fostered an environment where dedicated employees could voice their opinions and grow at the company, the company had a positive culture overall.

Academic courses relevant to the project : Design of Steel Structures, Construction Planning Technology

PS-II Station : KMV Projects Limited, Chandrapur, Maharashtra - Mechanical, Chandrapur

Faculty

Name: Benu Madhab Gedam .

Student

Name: ATHARVA KULKARNI(2021A4PS3107H)

Student Write-up

PS-II Project Title: Construction of SNTD Woman's College, Chandrapur

Short Summary of work done during PS-II : During my KMV College projects, I focused on gaining practical knowledge in the construction industry by working on machine operation,

maintenance, and repair processes. My work involved optimizing the performance of equipment, particularly concrete vibrator pumps, and managing resources like vehicles and machinery to improve overall efficiency. I actively tracked daily progress, generated MIS reports, and prepared hire bills, ensuring accurate documentation and timely submission. Additionally, I collaborated with team members to address operational challenges, applying problem-solving skills to enhance workflows and minimize downtime. Effective time management and resource allocation were key aspects of my role, enabling the successful completion of tasks within deadlines. These projects allowed me to bridge the gap between theoretical knowledge and real-world applications while strengthening my teamwork, reporting, and project management abilities. Overall, my work emphasized operational efficiency, attention to detail, and contributing to meaningful initiatives that positively impact both the project outcomes and the broader community.

Tool used (Development tools - H/w, S/w) : software tools used include KMV DPR website and hardware tools includes JCB, Cranes, Bar bending and cutting machines and other tools etc.

Objectives of the project : In my KMV College projects, my primary objective is to gain practical knowledge and hands-on experience relevant to the construction industry, focusing on areas such as machine operation, maintenance, and teamwork. I aim to improve efficiency and problem-solving skills by working on real-world challenges, particularly in managing resources like vehicles and equipment effectively. My goal is to apply innovative techniques to optimize operations, similar to my interest in enhancing the performance of specialized machinery like concrete vibrator pumps. Additionally, I want to strengthen my ability to track progress, generate accurate reports, and manage timelines, drawing on my experience with creating daily progress updates and MIS reports. These projects will serve as a platform to sharpen my skills in operational efficiency and contribute meaningfully to impactful initiatives.

Major Learning Outcomes : Through my KMV College projects, I have gained practical industry knowledge, particularly in construction operations, including machine handling, maintenance, and repair processes. I have developed a strong understanding of optimizing machinery performance, inspired by my experience with specialized tools like concrete vibrator pumps. My projects have enhanced my skills in resource management, tracking vehicle and equipment performance, and ensuring timely task completion. Additionally, I have honed my ability to create detailed progress reports, MIS reports, and hire bills, ensuring accuracy and efficiency in data analysis and documentation. By addressing real-world challenges, I have strengthened my problem-solving

skills and improved operational workflows. Working closely with peers and mentors has enhanced my teamwork and collaboration abilities, while managing multiple responsibilities has sharpened my time management skills. These experiences have not only contributed to my professional growth but also instilled in me an awareness of the importance of sustainable practices and the need for projects with a positive societal and environmental impact

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The working environment during my KMV College projects was dynamic and practical, providing exposure to real-world construction industry operations. It was focused on teamwork, collaboration, and hands-on learning, where I worked closely with peers, mentors, and supervisors to achieve project goals. The setup emphasized efficiency, accountability, and problem-solving, with a strong focus on optimizing machine operations and ensuring the smooth functioning of equipment like concrete vibrator pumps.

Expectations from the company included providing a supportive environment that encouraged learning and professional growth. I anticipated opportunities to apply my theoretical knowledge in practical scenarios, receive guidance from experienced professionals, and gain insights into effective resource management and operational strategies. Additionally, I expected access to well-maintained machinery, technical tools, and a framework for efficient progress tracking, reporting, and decision-making.

The environment was designed to foster critical thinking, innovation, and adherence to deadlines while maintaining a focus on safety and sustainable practices. This experience aligned with my objectives to enhance my technical skills, problem-solving abilities, and understanding of industry standards, ultimately preparing me for a successful career in the construction field.

Academic courses relevant to the project : Lean Manufacturing(For suggestions), Fluid Mechanics, Engines Motors and mobility

PS-II Station : Kofuku Idea Labs Private Limited, Hyderabad, Hyderabad

Faculty

Name: Mohammad Saleem Bagewadi .

Student

Name: HANSAL SINGH(2021A3PS2984H)

Student Write-up

PS-II Project Title: Automated AI-Driven Test Case Generation and Execution System

Short Summary of work done during PS-II : During my internship, I worked on two exciting projects that deepened my skills in software development and testing. The first project involved creating an innovative system for Python codebase analysis and AI-driven test case generation. I combined Python's Abstract Syntax Tree (AST) for static code analysis with AI models like GPT-4 to automatically generate pytest-compatible test cases. This system significantly streamlined the testing process by reducing manual effort, improving test coverage, and identifying edge cases often missed by traditional methods. The second project focused on implementing a seamless and secure payment gateway integration using platforms like Stripe, Paytm, and Razorpay. I used Python and FastAPI to design a modular and scalable architecture that leveraged RESTful APIs and OAuth protocols for secure transactions and robust user authentication. This solution was designed to be flexible, meeting diverse business needs while maintaining simplicity and cost-efficiency. These experiences not only enhanced my technical skills in Python, AI, and APIs but also gave me valuable exposure to solving real-world challenges in software quality assurance and payment systems.

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

Objectives of the project : Improving software quality assurance by enhancing test coverage and efficiency

Major Learning Outcomes : During my internship, I gained advanced skills in Python development, particularly with Python's Abstract Syntax Tree (AST) for static code analysis. This allowed me to parse and analyze complex codebases, while also designing scalable architectures using Python and FastAPI for modular and efficient applications. I integrated AI models like GPT-4 into software testing workflows to automate test case generation, which significantly improved test coverage and reduced manual effort. This experience deepened my understanding of using AI for practical applications, such as identifying edge cases that traditional testing methods often miss.

In addition to software testing, I gained valuable experience in secure payment gateway integration. I worked with platforms like Stripe, Paytm, and Razorpay, focusing on building secure transaction systems and user authentication processes using RESTful APIs and OAuth protocols. These solutions were designed to be flexible, secure, and scalable, addressing diverse business needs effectively.

My projects combined different domains, including static code analysis, artificial intelligence, and web APIs, which required me to approach problems holistically. I developed critical problem-solving skills, tackling challenges like detecting nested functions and dynamically generating imports for automated testing workflows. This internship also gave me exposure to building end-to-end solutions, providing hands-on experience in projects that directly impacted software quality and system reliability. Overall, the experience sharpened my technical expertise and prepared me to handle complex, interdisciplinary challenges in a professional setting.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : During my internship, I had the chance to work in a fast-paced and dynamic environment where creativity and collaboration were at the heart of everything. From the very beginning, I was involved in real projects that made me feel like my work truly mattered. My tasks ranged from organizing and cleaning datasets, building APIs, business research to building machine learning models and improving algorithms.

One of the highlights was working alongside experienced AI engineers and researchers who were always willing to mentor and share their insights. I also got to collaborate with people from different teams, like product designers which helped me see how AI solutions come together to solve real-world problems.

The hours were flexible, but there were times when deadlines pushed me to work harder. Everyone's ideas were welcomed, and I never felt like I was "just an intern." Instead, I was encouraged to share my thoughts and take ownership of my work.

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



PS-II Station : KPMG,Chennai, Chennai

Faculty

Name: Ramesh Venkatraman .

Student

Name: PRAMESH MJ(2021A1PS3050H)

Student Write-up

PS-II Project Title: Learning solution-Education and skilling

Short Summary of work done during PS-II : It was great. Learned and improved skills in excel,PPT.Learned work culture of learning solution and strategy team.How do they approach the the client expectations.

Tool used (Development tools - H/w, S/w) : Excel,PPT and communication

Objectives of the project : Thought leadership and asynchronous course making.

Major Learning Outcomes : Excel,PPT, Process of thought leadership

Details of Papers/patents : On progress.In the future they will continue

Brief Description of working environment, expectations from the company : The team was very approachable and very open for suggestions. Fast decision making and frequent feedback sessions.

Academic courses relevant to the project : Management minor course

PS-II Station : KPMG,Chennai, Chennai

Faculty

Name: Ramesh Venkatraman .

Student

Name: MANAS AGARWAL .(2021A4PS1349P)

Student Write-up

PS-II Project Title: SWAYAM Plus

Short Summary of work done during PS-II : While I was initially supporting the team in secondary research for various projects, I gradually assumed more responsibilities as my internship progressed. I worked on 1 project, 4 proposals and 1 thought leadership. Apart from this, i supported on various other things.

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

Objectives of the project : SWAYAM Plus is an initiative of the MoEducation which is being implemented by IIT Madras. I was often supposed to do Competetive Benchmarking, make Creatives, work on Outreach, Strategy etc.

Major Learning Outcomes : Got to learn a lot about strategic consultancy.
Learned about Education and Skilling Scenario in India

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The work environment was extremely supportive and collaborative, with the team always being helpful and approachable. The company expected active involvement in projects, collaboration with team members, and delivering work with quick turnaround times. Occasionally some overtime work is expected, but the experience is worth it

Academic courses relevant to the project : Knowing the basics of management and finance may be useful, but not necessary

PS-II Station : KPMG,Gurugram, Gurgaon

Faculty

Name: Ramesh Venkatraman .

Student

Name: SHANTANU SUSANTA PANDA(2021A4PS1727G)

Student Write-up

PS-II Project Title: Advisory services in the context of the indian education landscape

Short Summary of work done during PS-II : I was part of a proposal team that was pitching ideas and pathways to a prominent education group looking to open a franchise model group of schools, I worked with them on deck building and secondary research, i was then on a team working with a client to envisage and apply to open a university for life sciences and healthcare, on this team I was helping with the client deliverables, writing 3 sections of the detailed project report to be submitted to the client and to be attached as part of their application to UGC

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

Objectives of the project : I was not assigned to personal project at KPMG, instead I worked on a team to deliver solutions and deliverables to client aiming to open a university.

Major Learning Outcomes : had an immersive experience of what it's like to work in consulting, and the skills required to excel therein

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : the work environment is quite relaxed, one must show real initiative to be included in the work done. the company expects you to make the most of the opportunity and learn as much as you can.

Academic courses relevant to the project : Creative Writing.

PS-II Station : KPMG,Gurugram, Gurgaon

Faculty

Name: Ramesh Venkatraman .

Student

Name: MRITYUNJAY GOSWAMI(2021A4PS2291H)

Student Write-up

PS-II Project Title: Analysis K-12 Education

Short Summary of work done during PS-II : My work mostly revolved around analysing the current landscape of K-12 Education across states in India and support benchmarking and analysis for six focus states funded by the World Bank under STARS initiative. I also engaged in developing Thought Leadership White Papers and Proposal Documentation for new clients of the firm. Overall the experience was thrilling and the learning curve was steep.

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

Objectives of the project : To analyse the current landscape of K-12 Education across states in India and support benchmarking and analysis for six focus states funded by the World Bank under STARS initiative.

Major Learning Outcomes : MS Powerpoint, MS Excel, Dashboarding, Visualization, Data Analysis

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Great and conducive working environment. The seniors are extremely helpful and approachable.

Academic courses relevant to the project : Market Research

PS-II Station : KPMG,Gurugram, Gurgaon

Faculty

Name: Ramesh Venkatraman .

Student

Name: TANVI GUPTA(2021A5PS2354H)

Student Write-up

PS-II Project Title: Advisory Initiatives in the Higher Education Sector

Short Summary of work done during PS-II : During my internship, I worked on four primary projects. I created a funding repository aligned with NEP 2020, addressing accessibility gaps for over 19 lakh students across 2,000+ colleges in Andhra Pradesh. I designed strategies to integrate emerging technologies like AI/ML, AR/VR, and Quantum Technology into curricula, aligning with industry demands. For an internship portal, I developed and tested user flow architecture for students, institutes, industries, and state admins. I evaluated GSTIN APIs for security, integrated platforms like NPTEL and Internshala, created user manuals, and refined functionalities. I also profiled the economic and industrial landscape of Krishna and Guntur districts, identifying policy opportunities to foster entrepreneurship and support higher education research. These tasks demanded collaboration, meticulous research, and a deep understanding of governmental objectives.

Tool used (Development tools - H/w, S/w) : Excel, PowerPoint, Word, Power BI

Objectives of the project : To support government initiatives in higher education by developing actionable frameworks for funding, curriculum integration, internship facilitation, and policy recommendations.

Major Learning Outcomes : Enhanced understanding of government policies and their implementation in education.

Gained expertise in user flow design and testing methodologies.

Improved research, data segmentation, and analytical skills.

Strengthened communication and collaboration skills.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment was collaborative, with a focus on research-driven problem-solving and data-backed decision-making. The company encouraged independent initiative while providing regular mentorship. Expectations included timely completion of deliverables, adaptability, and effective communication to meet the objectives of various stakeholders in the government and education sector.

Academic courses relevant to the project : Principles of Economics

PS-II Station : Kuhoo Technology Services Pvt Ltd., Mumbai

Faculty

Name: Bhamidipati Vaishali .

Student

Name: SETH ROMIL DEEPAK .(2021A3PS2399P)

Student Write-up

PS-II Project Title: Automation and Strategic Initiatives for Fintech Operations at Kuhoo Technology Services

Short Summary of work done during PS-II : During my PS-II internship at Kuhoo Technology Services Pvt. Ltd., I worked on diverse, high-impact projects across marketing, data analysis, automation, and product management. Key contributions included developing an Employee Directory chatbot to enhance internal communication and a website chatbot, which improved user engagement by 27% and generated 80 leads. I led the creation of the Kuhoo Scholarship Program, promoting student self-reliance while aligning with the company's mission. I automated the loan repayment bounce detection process using Python, significantly reducing manual effort while improving accuracy. Additionally, I created Power BI dashboards for the HR team to visualize employee data and supported loan verification failure analysis using SQL to drive product improvements. My work also involved training initiatives, including creating CRM and LOS portal instructional videos for onboarding 80 employees. These experiences deepened my skills in Python, SQL, Power BI, strategic planning, and stakeholder management while reinforcing my ability to integrate technology with operational efficiency. My contributions supported Kuhoo's goals of empowering students and streamlining financial services.

Tool used (Development tools - H/w, S/w) : Software Tools: Python: For automation, such as the loan repayment bounce detection process. PostgreSQL: For database querying and analysis (e.g., loan verification failure analysis). Power BI: For creating HR dashboards and visualizing employee data. Jup

Objectives of the project : Enhance Internal Communication: Streamline communication across teams by developing tools like the Employee Directory chatbot. Improve User Engagement: Design and implement a website chatbot to boost user interaction and lead generation. Promote Financial Independence: Develop initiatives like the Kuhoo Scholarship Program to empower students and align with Kuhoo's mission. Automate Processes: Reduce manual effort and improve accuracy through automation, such as loan repayment bounce detection. Optimize Business Operations: Support decision-making and operational efficiency using tools like Power BI dashboards for HR data visualization. Analyze and Improve Product Performance: Conduct data-driven analyses (e.g., loan verification failure analysis) to identify bottlenecks and recommend improvements. Support Employee Development: Create training materials and instructional videos to enhance onboarding and system usage for new employees. Strengthen

Brand Positioning: Conduct market research and collaboration initiatives to enhance Kuhoo's visibility and engagement with its target audience, particularly students.

Major Learning Outcomes : Got real experiences with AI Chatbot, python, marketing campaigns and more

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Kuhoo Technology Services Pvt. Ltd. was dynamic, collaborative, and innovation-driven. As a fintech company focused on providing educational loans, Kuhoo fostered an atmosphere of inclusivity and learning, with ample opportunities for interns to contribute meaningfully to impactful projects. I had the chance to work across multiple teams, including marketing, data, and the Founders' Office, gaining exposure to various aspects of the business. The company emphasized open communication and mentorship, providing regular guidance from my mentors, Ms. Manisha Bansal and Mr. Abhinav Mishra, as well as support from colleagues. The collaborative culture enabled me to tackle complex challenges while enhancing my technical and problem-solving skills. Kuhoo's leadership encouraged creative solutions and a proactive approach, which aligned with their goal of driving operational efficiencies and improving customer engagement.

Expectations from the company included delivering high-quality outputs on time, taking ownership of assigned projects, and aligning my contributions with the organization's mission to empower students financially. In return, Kuhoo offered a supportive ecosystem, the freedom to explore innovative ideas, and exposure to cutting-edge tools and technologies such as Python, Power BI, and chatbot platforms.

Overall, the experience at Kuhoo not only met but exceeded my expectations, equipping me with a robust skill set, hands-on exposure, and a deeper understanding of fintech operations.

Academic courses relevant to the project : Technical Report Writing, computer programming, Principles of Management

PS-II Station : L&T Precision Engineering & Systems IC, Pune, Pune

Faculty

Name: Samata Satish Mujumdar .

Student

Name: BHAVYA ATUL VISARIA(2021A4PS2896G)

Student Write-up

PS-II Project Title: Contributions to departmental excellency

Short Summary of work done during PS-II : Worked on multiple projects related to project management. Company is good and has a lot of set processes. So it takes time to get through your work.

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

Objectives of the project : Increase efficiency of department

Major Learning Outcomes : Learnt the nuances of how a customized manufacturing setup works.

Details of Papers/patents : No papers

Brief Description of working environment, expectations from the company : Company doesn't expect you to work but learnt. Environment very friendly.

Academic courses relevant to the project : Manufacturing Management

PS-II Station : Lenskart Solutions Private Limited - Analytics, Gurugram, Gurgaon

Faculty

Name: Sudeep Kumar Pradhan .

Student

Name: ARNAV GOEL(2021A3PS2820G)

Student Write-up

PS-II Project Title: 1. Revenue and Finance Analysis for Business Growth 2. Optimizing Offline Operations: Data-Driven Insights for Store Management

Short Summary of work done during PS-II : During my internship at Lenskart, I worked on two main projects: Revenue and Finance Analysis and Optimizing Offline Operations. In the first half of my internship, I focused on understanding how the company's revenue was performing. I worked with financial data, using SQL to pull information, and Excel to create financial models and forecasts. I also built Power BI dashboards to visualize trends and share insights with the team. This project taught me how important financial data is in making business decisions. In the second half of my internship, I shifted to analyzing offline operations, focusing on how Lenskart's stores were performing. I looked at data related to inventory, sales, and employee productivity. I used SQL and Python to clean and analyze the data, identifying areas where the stores could improve. I created Power BI dashboards to track important store metrics, which helped the managers make better decisions to improve store efficiency and customer experience. Overall, my internship gave me hands-on experience with data analysis, financial modeling, and understanding how store operations work. It also allowed me to collaborate with different teams and learn how data-driven insights can help improve business performance.

Tool used (Development tools - H/w, S/w) : SQL, Python, MS Power BI, MS Excel, Amazon Redshift Database, PyTorch, Pandas, Keras, DBeaver, Tableau

Objectives of the project : Revenue and Finance Analysis for Business Growth - Analyze revenue patterns and trends to identify growth opportunities, Provide actionable insights to support financial decision-making, Track key performance indicators (KPIs) and assess business performance, Optimize pricing strategies and promotional campaigns to maximize revenue, Forecast future financial outcomes based on historical data. Optimizing Offline Operations: Data-Driven Insights for Store Management - Analyze offline store performance data to identify areas for improvement, Optimize inventory management and customer experience in stores, Identify operational bottlenecks and provide solutions to improve store efficiency, Develop metrics to assess store performance and employee productivity, Support store managers with actionable insights for daily operations.

Major Learning Outcomes :

1. Proficiency in SQL and Python for data querying and processing.
2. Gained insights into financial analysis (revenue, pricing, sales forecasting).
3. Developed expertise in data visualization using Power BI and Excel.
4. Identified and solved operational inefficiencies in store management.
5. Learned to apply data-driven decision-making for business strategies.
6. Strengthened cross-functional collaboration with finance and operations teams.
7. Enhanced time management and prioritization skills in a fast-paced environment.
8. Focused on customer experience optimization through data analysis.
9. Gained expertise in advanced reporting and business intelligence tools.
10. Improved problem-solving for both financial and operational challenges.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The working environment at Lenskart is really positive and supportive. The company has a collaborative culture where everyone values open communication and teamwork. During my time there, I found the team to be very understanding and chill, making it easy to ask questions and seek help when needed. While the work pace is fast and expectations are high, there's a strong focus on getting things done together, with everyone helping each other out. The company encourages you to

take ownership of your work, but they also provide plenty of guidance and feedback to help you grow. The team is always open to new ideas, and there's a lot of room for learning and development. Overall, the work culture is balanced—professional but also relaxed and welcoming—which made it a great place to work and learn.

Academic courses relevant to the project : Database Management, Foundations of Data Science, Machine Learning, Cloud Computing, Microeconomics, Econometric Methods, Derivatives of Risk Management

PS-II Station : Lenskart Solutions Private Limited, Bhiwandi, Gurugram, Gurgaon

Faculty

Name: Sudeep Kumar Pradhan .

Student

Name: SUYASH JAIN .(2020B5A40955P)

Student Write-up

PS-II Project Title: Central Data Management

Short Summary of work done during PS-II : During my PS-2 internship at Lenskart, I developed a data collection pipeline to aggregate data from log files across multiple machines. Additionally, I designed a frontend interface to facilitate data collection from manual sources. These systems were integrated to store the collected data in a MySQL database hosted on servers. To provide insightful visualizations, I utilized Grafana Dashboards for monitoring and analysis.

Tool used (Development tools - H/w, S/w) : Python, HTML, CSS, JavaScript, Selenium, Watchdog, NumPy, Pandas

Objectives of the project : The objective of the project was to develop a pipe line to collect, process and store the data centrally.

Major Learning Outcomes : Learned how to develop a fronted and backend and how to connect them.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Lenskart during my PS-2 internship was highly collaborative and dynamic, offering hands-on exposure to real-world challenges in a professional setting. The team encouraged innovative thinking and provided constructive feedback, fostering a learning-rich atmosphere. The environment balanced structure and autonomy, allowing me to independently take ownership of tasks while ensuring guidance was available when needed.

Academic courses relevant to the project : DSA, DBMS

PS-II Station : Lenskart Solutions Private Limited, Bhiwandi, Gurugram, Gurgaon

Faculty

Name: Sudeep Kumar Pradhan .

Student

Name: BAIL DHARUN RAJESH .(2021A1PS2466P)

Student Write-up

PS-II Project Title: Analytics in Inventory Management

Short Summary of work done during PS-II : There were multiple smaller projects that made up my PS - II Project. Mainly it was related to inventory management. For example, I had check the status of FIFO (First in First out), FEFO (First Expiry First Out), in 2 categories of inventory with over 20 lakh units. I had to use analytics to gauge the current state, monitor daily, and come up with measures and frameworks to better it. Next was to use Kaizen along with monitoring the cycle time, to identify bottle necks and improve efficiency of 2 different departments with a combined manpower of 300. Next, using analytics I had to monitor, gauge, troubleshoot and clear the pipeline inventory. The plant had a lot of excess inventory sitting in the pipeline, which was majorly cleared. Lastly, using analytics I had to reconcile the inventory of consumables issued versus the sale, and worked with the issuance, production and finance teams.

Tool used (Development tools - H/w, S/w) : Excel, SQL, Power BI, Warehouse management Softwares

Objectives of the project : To streamline the inventory management, work on the pipeline inventory, and come up with method and systems for inventory sanity

Major Learning Outcomes : Since I worked with different people, learnt a plethora of things. First and foremost, got an exposure to how operations work in the real word. Learnt a lot about inventory management, analytics, performing kaizen, and liaising with the top brass of the plant.

Details of Papers/patents : nil

Brief Description of working environment, expectations from the company : Very supportive people all around, with people willing to explain and help along each step of the way. While strict about the working hours and working days, the company doesnt believe in micromanaging. It believes that if a task give, it will be completed much of their interference. Most people in the organization are brilliant problem solvers and expect you to contribute as well.

Academic courses relevant to the project : Supply Chain Management

PS-II Station : Lenskart Solutions Private Limited, Bhiwandi, Gurugram, Gurgaon

Faculty

Name: Sudeep Kumar Pradhan .

Student

Name: SAIDEEP VERMA(2021A4PS2493H)

Student Write-up

PS-II Project Title: Development of Server Monitoring System; Development and Implementation of Packing and Dispatch Application; Employee tracker Application

Short Summary of work done during PS-II : Server Monitoring System: Built a system to monitor all devices connected to LAN, storing logs in an SQL server for analytics, automatic startup and bootup commands to enhance efficiency and reduce production bottlenecks. Technologies Used: MERN Stack, Grafana, Python, SQL, JavaScript, Prometheus, ElasticSearch, Kibana, Docker; Packing and Dispatch Tracking System : Developed an application to continuously scan item barcodes and store data for station-wise analytics. Integrated Grafana, ensuring redundancy tracking and significantly reduced critical errors from duplicate entries. Technologies Used: MERN stack, Grafana, SQL; Employee Tracking Application: Monitors employee attendance, manages scheduled holidays, and analyzes productivity and throughput. Full stack deployment with Grafana for data visualization

Tool used (Development tools - H/w, S/w) : Python, Javascript, React, C++, HTML, CSS, SQL

Objectives of the project : To solve and automate problems and improve efficiency.

Major Learning Outcomes : How to solve problems, how to use technologies.

Details of Papers/patents :
https://docs.google.com/document/d/1rtUp0ZLNeEeLDp2VGycaP4wfdJSpSc1G2TLRz5J_K44/edit?tab=t.0

Brief Description of working environment, expectations from the company : Conducive environment, mentors did not help at all, overall a great learning experience.

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

PS-II Station : LifeGuru (Breeo Solutions Pvt Limited) - Non Tech, Bengaluru, Bengaluru

Faculty

Name: Sidharth Mishra .

Student

Name: VIRANI JANAK BHARATBHAI .(2021A5PS1626P)

Student Write-up

PS-II Project Title: E-commerce, Data Analytics, User Retention, Sales of their product(Puja)

Short Summary of work done during PS-II : Campaigns like D-1, D-7 Campaign- Users who have not done recharge since last 1 day and last 7 day - to give amount to reactivate less than 3 campaign- users who consulted with astrologer less than 3 minutes, giving them amount in wallet Day 0 campaign- People who consulted within an hour - sending them communication for further topup Every month Sale(Aug, Sept, Oct, Diwali Sale, Christmas Sale)- Planning the recharged based offer, communications, construct and executing it for Retention and acquisition. For E-commerce- Did Amazon SEO and ran Amazon Ad's for their products which were listed in Amazon Data analytics- Did analysis of data which was used to plan many campaigns and make major changes in business, Some big changes like Astro price changing from Rs.18 per minute to Rs.9/min- How many users have used particular recharge based offers, the funnel of the users of top-up Sales- Recently they started Mandir Puja Business(1 Puja -1000 cost), sold this Puja through phone calls and whatsapp to those users who tried booking puja but didn't completed booking. Execution projects- Daily communication through Whatsapp and SMS to those users who have booked puja and giving updates about the puja, updating the daily metrics of the business and updating the monthly metrics weekly, also updating the digital marketing metrics to the marketing agency, Product- Analyzing the chat of users with astrologers for the optimization in product and how retention can be improved and what changes can be made in supply.

Tool used (Development tools - H/w, S/w) : Pgadmin, SQL, MS- excel, Amazon Seller central- brand analytics(keyword research) and amazon ad's , Helium10, Ahref for keywords, specify.

Objectives of the project : To increase the retention of the users through which our significant revenue of the company comes. Other was analytics - analyzing the data before making any changes like Astro price changing , any sale or campaign needed seeing the data, Other was E-commerce- completing the inventory that they have in amazon , and selling their services of Mandir Puja to those user who tried to book it but successful didn't pay for it - converting them via phone call or whatsapp, and execution projections.

Major Learning Outcomes : Data analysis, Data Simulation, MS-excel, Product Management, Digital marketing, About B2C startup, VC and investors, mindset of a founder

Details of Papers/patents : Not a research work

Brief Description of working environment, expectations from the company : There are 3 cofounder and all three are much experienced in their field, one in supply and operations , other in marketing and growth and third in product and tech. so we are a small team of 20 and have much positive environment, they are welcoming and much interested in training people who want to do startup in future. meanwhile they do very much micromanagement but initially gives time to first learn the things and following up and also pressurizing for work if the deadline crosses because at the end it's a startup and they really have a big goal to become the largest in this spiritual field. weekly we go to badminton or cricket and everyday whole team goes to tea break and have some fun in evening. also during health issues - they really take it serious and helps a lot . they have a good intent to teach people what experience they have and also motivate to do more and more.

sometimes as it is startup so there are times where the work load is much higher more than 10-11 hours in a day and also regarding the stipend and the salary there is some tough situations as it is startup and so they need to invest less in people.

Academic courses relevant to the project : Digital Marketing, CLEO(Creating and leading entrepreneurial organization)

PS-II Station : LifeGuru (Breeo Solutions Pvt Limited) Delhi/Bengaluru, Bangalore

Faculty

Name: Shreyas Suresh Rao .

Student

Name: SOURABH GUPTA .(2021A8PS0843P)

Student Write-up

PS-II Project Title: Frontend and backend development and QA

Short Summary of work done during PS-II : I worked on various features and fixed various critical bug fixes in both frontend and backend development. Also did testing as and when required.

Tool used (Development tools - H/w, S/w) : VS code, postman, jira, android studio

Objectives of the project : I work on various features and bug fixes in both frontend and backend development. Also gave time on testing as and when required.

Major Learning Outcomes : frontend dev, backend dev, testing, automation, team collaboration, communication skills

Details of Papers/patents : No

Brief Description of working environment, expectations from the company : Work env was very good. There was unlimited leaves policy and manager and my mentors were very good. they were very all helpful.

Academic courses relevant to the project : OOPS, OS, CN, DSA

PS-II Station : Mach33.aero,Bengaluru, Bengaluru

Faculty

Name: Amar Singh .

Student

Name: ABINAV KHATELSAL .(2021A4PS1533P)

Student Write-up

PS-II Project Title: Thesis building in aerospace and deep-tech

Short Summary of work done during PS-II : During my six-month internship at Social Alpha, I focused on aerospace and deep-tech, specifically in remote sensing, AI, and EVs. My responsibilities included technology benchmarking, market analysis, and startup scouting, resulting in a robust investment pipeline and strategic partnerships. A key achievement was collaborating with K-DISC to build micro-thesis areas for their upcoming EV park.

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

Objectives of the project : To build a thesis document on specific use cases of aerospace, and deep-tech in achieving the UN sustainability goals..

Major Learning Outcomes : I learnt a lot about the aerospace sector in India and how one needs to go about building a thesis document.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : It was a great work environment. All the people were very friendly and accommodating.

Academic courses relevant to the project : POM, Technical report writing

PS-II Station : Mach33.aero,Bengaluru, Bengaluru

Faculty

Name: Amar Singh .

Student

Name: SIDDH JINENDRA ATHANE .(2021A4PS2198P)

Student Write-up

PS-II Project Title: Thesis Building

Short Summary of work done during PS-II : To prepare investement thesis highlighting problem statements in various domains like Green Buildings, MSW, Disaster Resilience

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

Objectives of the project : To prepare investement thesis highlighting problem statements in various domains like Green Buildings, MSW, Disaster Resilience

Major Learning Outcomes : Research Aptitude, Soft skills, Entrepreneurship

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Very warm and welcoming, everyone was always ready to solve doubts.

Academic courses relevant to the project : Applied Thermodynamics,

PS-II Station : Mach33.aero,Bengaluru, Bengaluru

Faculty

Name: Amar Singh .

Student

Name: RAHUL MURUGANANDAM(2021A7PS0012G)

Student Write-up

PS-II Project Title: Data analytics at mach33aero

Short Summary of work done during PS-II : Data analytics. Build new tables and interfaces on airtable as well as visuals on power bi

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

Objectives of the project : Run the data analytics for Social alpha

Major Learning Outcomes : Airtable and power bi

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Great work life balance. Relaxed environment with unlimited wfh days. People are very friendly as well

Academic courses relevant to the project : Dbms

PS-II Station : MarianaAI - Growth, Bengaluru

Faculty

Name: Mohammad Saleem Bagewadi .

Student

Name: DHRUV BANSAL .(2020B2A41401P)

Student Write-up

PS-II Project Title: Revenue enhancement and product marketing

Short Summary of work done during PS-II : I was incharge of marketing and oversaw the traffic that is coming on the website

Tool used (Development tools - H/w, S/w) : Matomo , clearbit , mandril , lemlist

Objectives of the project : To increase sales

Major Learning Outcomes : Product marketing , Email marketing, market research

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The expectations from the company from high , it's a very fast paced environment and working environment is okish as it's a startup

Academic courses relevant to the project : Mass communication, professional ethics

PS-II Station : MBB Labs Private Limited (Maybank),Bengaluru, Bangalore

Faculty

Name: Pravin Yashwant Pawar .

Student

Name: SUBHRANSHU SEKHAR PANDA .(2020B4A41988P)

Student Write-up

PS-II Project Title: JUnit and Web-Dev

Short Summary of work done during PS-II : During my PS-II, I worked primarily on front-end development using React, where I contributed by performing minor UI bug fixes to enhance user experience. Additionally, I focused on JUnit testing to improve the application's test quality and significantly increased the code coverage to ensure better reliability. I also took the opportunity to learn about SQL, gaining foundational knowledge of database queries and management, which helped me understand backend interactions and data flow within applications. This experience provided me with a well-rounded understanding of front-end development, testing practices, and database concepts, strengthening my skills in full-stack development. Overall, PS-II allowed me to improve my technical proficiency, problem-solving skills, and teamwork while contributing meaningfully to the project.

Tool used (Development tools - H/w, S/w) : SVN, Mavern, VS Code, Spring Tool Suite, WebLogic server.

Objectives of the project : Develop UI(using React) & do testing (using JUnit).

Major Learning Outcomes : Learnt about JUnit, React, SQL, Spring Boot.

Details of Papers/patents : I had not written any papers or filed any patents during my PS-II, except for the mid-semester report and the end-semester report, which documented my work, learnings, and contributions throughout the internship.

Brief Description of working environment, expectations from the company : I had a positive and supportive working environment during my PS-II, with cooperative mentors like Mr. Ghansyam., who provided valuable guidance and encouraged me to enhance my technical skills. The team was approachable and fostered a collaborative atmosphere, which helped me adapt quickly and contribute effectively.

The company had clear expectations for quality work, timely delivery, and continuous learning. I was encouraged to take ownership of my tasks, improve code quality through rigorous testing, and actively resolve minor issues in the UI. This environment not only helped me grow technically but also improved my problem-solving abilities and professional communication skills.

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

PS-II Station : MBB Labs Private Limited (Maybank),Bengaluru, Bangalore

Faculty

Name: Pravin Yashwant Pawar .

Student

Name: RUDRANSH SHARMA(2020B5A12133G)

Student Write-up

PS-II Project Title: CMS Application

Short Summary of work done during PS-II : The CMS application was just about to live, so my team doesn't have any work. So I just learned new skills

Tool used (Development tools - H/w, S/w) : VSCode, Eclipse IDE, SQL Developer

Objectives of the project : To make CMS portal (Collateral Management Portal)

Major Learning Outcomes : Java, Spring, React, SQL

Details of Papers/patents : Nil

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

Academic courses relevant to the project : Nil

PS-II Station : MBB Labs Private Limited (Maybank),Bengaluru, Bangalore

Faculty

Name: Pravin Yashwant Pawar .

Student

Name: MOHIT(2020B5A41635G)

Student Write-up

PS-II Project Title: Sample Assignment

Short Summary of work done during PS-II : Created dynamic web pages, and written services in backend to fetch data

Tool used (Development tools - H/w, S/w) : VS Code, Spring Boot Tools, SQL developer

Objectives of the project : Classified

Major Learning Outcomes : React, Spring Boot

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : I found it very comfortable

Academic courses relevant to the project : Oops

PS-II Station : MBB Labs Private Limited (Maybank),Bengaluru, Bangalore

Faculty

Name: Pravin Yashwant Pawar .

Student

Name: SIDDHANTH KALYANARAMAN(2021A1PS2331H)

Student Write-up

PS-II Project Title: Master Data Management

Short Summary of work done during PS-II : Testing using Junits and using react for development of application

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

Objectives of the project : To bring accuracy of 80 percent .

Major Learning Outcomes : To be hardworking and consistent to achieve outcomes.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Testing using Junits and using react for development of application

Academic courses relevant to the project : OOPS, DBMS

PS-II Station : MBB Labs Private Limited (Maybank),Bengaluru, Bangalore

Faculty

Name: Pravin Yashwant Pawar .

Student

Name: JOVIAL DEKA(2021A4PS1658H)

Student Write-up

PS-II Project Title: Risk Product qualitative analysis

Short Summary of work done during PS-II : 1. Junit testing 2. React work 3. Frontend development

Tool used (Development tools - H/w, S/w) : Spring tool, vs code, jupyter notebook

Objectives of the project : To classify portfolios of customer using different metrics on the basis of risk and return

Major Learning Outcomes : React

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Very calm and chill working environment. Everyone is very helping

Academic courses relevant to the project : Oops, DBMS

PS-II Station : MBB Labs Private Limited (Maybank),Bengaluru, Bangalore

Faculty

Name: Pravin Yashwant Pawar .

Student

Name: ANSHUL KUMAR SINGH(2021A4PS2392H)

Student Write-up

PS-II Project Title: Junits testing and installation guide review

Short Summary of work done during PS-II : Write junits and installation guide review

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

Objectives of the project : Write junits

Major Learning Outcomes : Java

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : Very open and understanding colleagues. Help everyone in need even if its a small doubt

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

PS-II Station : MBB Labs Private Limited (Maybank),Bengaluru, Bangalore

Faculty

Name: Pravin Yashwant Pawar .

Student

Name: SAISH MILIND SAIL(2021A4PS2826G)

Student Write-up

PS-II Project Title: SCORE

Short Summary of work done during PS-II : During my internship at Maybank, I gained comprehensive exposure to corporate working methodologies, development skills, and work ethics. I worked within an Agile framework, using Jira to streamline project workflows. My work with Spring Boot taught me the principles of building large-scale applications, adhering to best coding practices, naming conventions, and thorough documentation. Writing JUnit tests sharpened my ability to anticipate and resolve issues, while promoting modular, testable code. I improved my SQL skills by crafting queries and handling databases, and became proficient with industry technologies like JDBC and Hibernate. Additionally, I refined my HTML and CSS skills for front-end tasks and learned to use Excel for faster SQL query formulation. Working on API development enhanced my ability to write effective APIs and test them using Postman, while reinforcing my understanding of RESTful principles. Collaborating with QA teams and efficiency engineers gave me insights into software testing and output requirements. Exposure to various environments like Pre-SIT, QA, and Dev enriched my understanding of the software development lifecycle. Finally, refining my React JS skills furthered my growth as a full-stack developer.

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

Objectives of the project : To bring a dynamic change in the way a scorecard is built by the modelers and how it is used in a rating process by interested parties, by making use of the unique features embedded in the application, which provide significant business benefits.

Major Learning Outcomes : Software Development

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Great working environment, collaborating with international employees as well. Collaborating with a skilled team of professionals has offered me priceless insights and growth opportunities. This experience introduced me to an international business setting for the first time, exceeding all my initial expectations.

Academic courses relevant to the project : Any cs related courses centered around software dev

PS-II Station : MBB Labs Private Limited (Maybank),Bengaluru, Bangalore

Faculty

Name: Pravin Yashwant Pawar .

Student

Name: YUVRAJ SINGH KOHLI(2021AAPS0078G)

Student Write-up

PS-II Project Title: Product Engineer

Short Summary of work done during PS-II : I tested various classes in java and worked to increase code coverage

Tool used (Development tools - H/w, S/w) : Spring Tool Suite, Sonarqube, Github

Objectives of the project : Junit testing and creating web applications

Major Learning Outcomes : Learnt junit testing, springtoolsuite and how to interact with people in a work environment

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Good working environment where I was made to feel comfortable

Academic courses relevant to the project : Object oriented programming

PS-II Station : MBB Labs Private Limited (Maybank), Bengaluru, Bangalore

Faculty

Name: Pravin Yashwant Pawar .

Student

Name: RAIIA SINGH(2021AAPS0278G)

Student Write-up

PS-II Project Title: Rating Only Flow

Short Summary of work done during PS-II : I began by boosting backend test coverage—writing JUnit tests and using Mockito to mock external dependencies—which resulted in a 20% increase in overall coverage for the Prospecting Score Module. Alongside this, I leveraged POJO Utils to manage DTO data and maintain robust, streamlined test suites. On the frontend, I used React to build and refine component-based interfaces. My contributions included fixing bugs, enhancing UI flows, and introducing new features like a “select all” checkbox for bulk actions. I also focused on improving user experience by rearranging layouts to avoid overlapping pop-ups, implementing loaders for feedback during data processing, and enforcing stricter validation and input restrictions to prevent invalid submissions. Additionally, I integrated real-time data display through asynchronous API calls, ensuring the UI reflected accurate, up-to-date information. Beyond coding, I documented newly introduced APIs by analyzing their endpoints and data schemas, creating a reference guide for future development and QA. Throughout the process, I tracked progress and coordinated tasks using JIRA, enabling efficient collaboration and transparent updates for all stakeholders.

Tool used (Development tools - H/w, S/w) : Visual Studio Code, React, UI, Spring Tools Suite, Eclipse, JIRA

Objectives of the project : To develop the user interface for the Score Solution application (Score-QA), the structured, configurable rating engine for Maybank’s loan applicants. This rating engine determines the approval and terms of a loan.

Major Learning Outcomes : Developed responsive web interfaces with ReactJS.

Enhanced debugging skills using tools like console logs and browser dev tools.

Strengthened backend testing with JUnit and Mockito.

Gained experience in Agile methodologies and teamwork.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : MBB Labs employs the Agile Scrum project management methodology, emphasizing iterative development, adaptability, and ongoing feedback. Tasks are structured into brief, targeted cycles called sprints, which improve flexibility and reaction time. Routine Scrum meetings are conducted to define key goals (known as stories) and allocate tasks. Every task signifies a particular stage of growth, encompassing Input, Implementation, Review, and Deployment. This method aids the team in sustaining productivity during the development process and efficiently monitors tasks to be completed. The team expected me to cover at least two methods (as they were very lengthy) while I was working on JUnit and fix a minimum of two UI bugs in React per day, and I had to report my progress in every Daily Scrum Meeting.

Academic courses relevant to the project : Object Oriented Programming

PS-II Station : Mediwhale, Seoul

Faculty

Name: Pradheep Kumar K .

Student

Name: GOVIND TULI .(2021A3PS0130P)

Student Write-up

PS-II Project Title: Clinical Development

Short Summary of work done during PS-II : Made graphical abstracts for papers on which the products are based. Performed survival analysis on various datasets to gauge and quantify the

effectiveness of their products. Made material for doctor to patient communication regarding said products.

Tool used (Development tools - H/w, S/w) : Python, Numpy, Pandas, Matplotlib, PubMed

Objectives of the project : Performing Survival Analysis on various datasets and making material for understanding of patients

Major Learning Outcomes : - Learnt software development in relation to a clinical setting
- Learnt scientific communication pertaining to medical research
- Learnt advanced statistical methods used for validating new medical techniques

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Friendly , cross cultural working environment. Inspite of difference in language no barrier was ever felt. Team was helpful , understanding and supportive.

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

PS-II Station : Melimu Edutech Pvt Ltd - Non Tech, Noida

Faculty

Name: Arindam Roy .

Student

Name: ARYAN GUPTA .(2021ABPS1672P)

Student Write-up

PS-II Project Title: LMS Module Design and Debugging.

Short Summary of work done during PS-II : Dealing with client addition and changes required in the software. Using and self value adding as well. Then making design prototype using figma which was then developed by the technical team and then providing with walk through of additions to the client.

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

Objectives of the project : Shaping products as per request of the client and creating design and prototype for the same.

Major Learning Outcomes : Client facing, FIGMA

Details of Papers/patents : None

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

Academic courses relevant to the project : Operations Management



PS-II Station : Mercedes Benz,Bengaluru, Bangalore

Faculty

Name: Shashank Mohan Tiwari .

Student

Name: ARYANSH TIWARI(2020B2A31577G)

Student Write-up

PS-II Project Title: Quantification of Automotive Software Robustness

Short Summary of work done during PS-II : Worked on a project at Mercedes-Benz to enhance the reliability of their vehicle software systems. Focused on analyzing multivariate software robustness metrics and developing predictive models using machine learning techniques. Leveraged statistical methods like linear regression, random forests, and gradient boosting to identify and address reliability concerns. Due to limited data, employed data augmentation techniques such as variational autoencoders (VAEs) to expand the dataset and improve model performance. Conducted feature selection to identify key metrics, reduce multicollinearity, and enhance model interpretability. Developed tools to visualize relationships between software metrics and robustness, enabling informed decision-making. The project achieved a 25% improvement in predictive accuracy, provided actionable insights to engineers, and contributed to the development of safer and more reliable vehicle systems. Successfully delivered results within tight deadlines, showcasing technical expertise in data analysis, machine learning, and software robustness for a critical automotive application.

Tool used (Development tools - H/w, S/w) : Tools used: Python, Scikit-learn, TensorFlow, Pandas, NumPy, Matplotlib, Seaborn, and Jupyter Notebook.

Objectives of the project : Derive a Scoring Metric for automotive software to shorten the rigorous development-testing cycle

Major Learning Outcomes : Machine Learning, Corporate Culture

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment at Mercedes-Benz was highly collaborative and innovation-driven, fostering a culture of excellence and continuous learning. The team encouraged open communication, allowing ideas to flow freely and promoting cross-functional collaboration between engineers, data

scientists, and software developers. The workplace emphasized precision and attention to detail, reflecting the company's commitment to quality and safety in its products. State-of-the-art tools and technologies were readily available, enabling efficient analysis, model development, and testing. The environment was supportive yet challenging, with opportunities to tackle complex problems and contribute to mission-critical projects. Regular knowledge-sharing sessions, feedback loops, and mentorship helped enhance skills and foster professional growth. Despite tight deadlines and high expectations, the culture promoted work-life balance and mutual respect, ensuring a positive and productive atmosphere. Overall, the environment combined technical rigor with a strong emphasis on teamwork, innovation, and professional development.

Academic courses relevant to the project : Machine Learning

PS-II Station : Mercedes Benz,Bengaluru, Bangalore

Faculty

Name: Shashank Mohan Tiwari .

Student

Name: HARSH PAHADE .(2021A3PS1012P)

Student Write-up

PS-II Project Title: LLBP Chatbot

Short Summary of work done during PS-II : During my internship, I built an AI chatbot using Retrieval-Augmented Generation (RAG) architecture to answer questions with text and image-based responses from a central database. The chatbot combines a generative model with a retrieval system to give accurate and context-aware answers. I worked on designing a scalable

database for FAQs, images, and user feedback. Using OpenAI Ada embeddings, I implemented vector-based search for fast and relevant information retrieval. I also created a feedback loop where users could rate solutions, helping the system improve by prioritizing what works best. For the interface, I used PyQt6 to design a modern, dark-themed UI with features like file browsing, drag-and-drop for images, and a scrollable history pane for easy session navigation. Error handling was added for unsupported file types or invalid inputs to improve the user experience. This project gave me hands-on experience with advanced AI concepts like RAG, multimodal inputs, and embeddings, while also teaching me about database management and UI design. It was a great learning experience that prepared me to tackle real-world AI challenges.

Tool used (Development tools - H/w, S/w) : Open AI GPT 4o, Python, PyQt6

Objectives of the project : Develop a chatbot capable of answering questions based on a central database. It should be capable of multimedia input and output, and improve with user feedback.

Major Learning Outcomes : Understanding RAG architecture, Database management and integration, handling multimodal inputs and outputs, feedback loop implementation, UI and UX design

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The working environment was friendly and supportive, with open communication and plenty of learning opportunities. The company expected quality work, meeting deadlines, and a proactive attitude. Regular feedback and guidance made it a great place to grow and improve.

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

PS-II Station : Mercedes Benz,Bengaluru, Bangalore

Faculty

Name: Shashank Mohan Tiwari .

Student

Name: SHRESTH JAIN .(2021A3PS1419P)

Student Write-up

PS-II Project Title: Development of Embedded AI Methodology

Short Summary of work done during PS-II : During my PS-II, I focused on developing and optimizing embedded AI models for resource-constrained environments, particularly microprocessors used in automotive systems. My work emphasized reducing model size and computational complexity while maintaining performance. I implemented static and dynamic quantization workflows, custom pruning techniques, and modular neural network architectures to achieve efficient model compression and real-time inference. Key accomplishments included creating a fully connected neural network (FCNN) from scratch using numpy, replacing traditional frameworks to align with embedded AI constraints. I designed modular optimizers, activations, and loss functions, ensuring flexibility and scalability. Additionally, I explored neuron coverage to improve model robustness and prune layers dynamically. A significant part of the project involved integrating AUTOSAR and MISRA compliance standards into the workflow, alongside researching code converters like TensorFlow Lite and MATLAB's Deep Learning Toolbox for deployment. I also worked on testing and validating the models under differential scenarios to maximize neuron coverage and ensure reliability. This hands-on experience provided me with a comprehensive understanding of embedded AI, low-level model optimization, and the challenges of deploying AI in automotive systems.

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

Objectives of the project : To develop methods to implement machine learning models on automotive devices

Major Learning Outcomes : Model Reduction Techniques, Robust Model Generation

Details of Papers/patents : None published

Brief Description of working environment, expectations from the company : During my internship at Mercedes-Benz Research and Development India, I observed a supportive and encouraging work culture. The team was approachable, and the overall environment promoted learning and collaboration. Though my exposure was limited as an intern, I appreciated the company's focus on work-life balance and its structured approach to fostering a positive workplace.

There were ample opportunities to explore new ideas and gain hands-on experience in cutting-edge automotive technologies. The organization provided a glimpse of global practices and encouraged interns to contribute meaningfully to ongoing projects. Policies were well-defined, and the culture was professional yet friendly.

As an intern, my expectations were focused on learning and exposure, both of which were met through interesting assignments and guidance from experienced mentors. My time at Mercedes-Benz R&D India has been instrumental in broadening my technical skills and understanding of the automotive industry.

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

PS-II Station : Mercedes Benz,Bengaluru, Bangalore

Faculty

Name: Shashank Mohan Tiwari .

Student

Name: INIYA ADHITHYA J.(2021A4PS2350P)

Student Write-up

PS-II Project Title: MLOps based plant model development

Short Summary of work done during PS-II : used GEN-AI methods create synthetic data from testbench data and used it model engine model

Tool used (Development tools - H/w, S/w) : python libraries, simulink and matlab,

Objectives of the project : create synthetic data to improve engine model

Major Learning Outcomes : learnt about GEN-AI models

Details of Papers/patents : we have not published a paper yet

Brief Description of working environment, expectations from the company : very good working environment, flexible timing and work from home, excellent cafeteria.

Academic courses relevant to the project : Deep learning, machine learning and automotive vehicles.

PS-II Station : Mercedes Benz,Bengaluru, Bangalore

Faculty

Name: Shashank Mohan Tiwari .

Student

Name: YASH PANDEY(2021A8PS3194H)

Student Write-up

PS-II Project Title: Quantum Inspired models for Equation Discovery

Short Summary of work done during PS-II : Research to explore potential of Quantum inspired algorithms for equation discovery, with the objective to accelerate equation discovery for estimating Remaining Useful Life(RUL) of Li-Ion Batteries. Introductory tasks - Literature survey, selecting NASA's Li Ion Battery Open Source Dataset, implementing LSTM using PyTorch, and Classical Symbolic Regression using DEAP on the dataset. Implemented several models/research papers from scratch using Numpy/Qiskit/Qibo, as follows - 1. Implemented Grover's Search Algorithm for equation discovery by running it on symbolic regression encoding equations into qubit values. 2. Implemented symbolic regression encoded into qubit amplitudes with QGP(Quantum Genetic Programming) for parameter optimization to implement equation discovery. 3. FINAL PROJECT - Implemented Differential Quantum Circuits(DQCs) for parameter inference successfully. Converted model into a population based model for true equation discovery.

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

Objectives of the project : to enquire and build into algorithms and models using quantum circuits that can assist in equation discovery

Major Learning Outcomes : Qlbo, Qiskit, Quantum Computing

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Great environment , polite people, however , was expecting to work under someone's project instead of working on my own, especially given the domain and targets of the project.

Academic courses relevant to the project : NPTEL(IIT Madras) on QUantum Computing

PS-II Station : Mercedes Benz,Bengaluru, Bangalore

Faculty

Name: Shashank Mohan Tiwari .

Student

Name: ADHVIK R .(2021AAPS2465P)

Student Write-up

PS-II Project Title: Unsupervised Anomaly Detection in Time Series Signals

Short Summary of work done during PS-II : Given test data with a target signals the goal was to find anomalies in the target signals based on the context provided by the other variables in the dataset, and once the anomalies were tagged, to perform root cause analysis of the same using the features from the dataset

Tool used (Development tools - H/w, S/w) : Tensorflow, python, sklearn, pandas, numpy

Objectives of the project : To detect anomalies in target signals of unlabelled data and to perform root cause analysis of the tagged anomalies

Major Learning Outcomes : Learnt how to implement unsupervised learning, learnt to work with multivariate time series signals, to perform root cause analysis

Details of Papers/patents : None at the moment, might be worked on in the future

Brief Description of working environment, expectations from the company : Extremely relaxed working environment, all very willing to help, expect consistent work and results

Academic courses relevant to the project : Deep learning, machine learning, applied statistical methods, probability and statistics

PS-II Station : Metadome, Gurugram, Gurgaon

Faculty

Name: Sameer Gupta .

Student

Name: S V SUMANTH(2020B2A11949G)

Student Write-up

PS-II Project Title: Solutioning in XR and AI

Short Summary of work done during PS-II : I contributed to the development of innovative solutions in XR and AI. Key projects included creating immersive experiences for platforms like Apple Vision Pro and Meta Quest 3, developing tools for industries such as automotive and home decor, and collaborating with renowned brands like Maruti Suzuki and Lexus. The internship honed my technical skills in Unity, Unreal Engine, and computer vision, while also enhancing my

abilities in client consultation, strategic planning, and communication. This experience has solidified my foundation in immersive technologies and prepared me for future challenges in XR and AI domains.

Tool used (Development tools - H/w, S/w) : Unity, unreal engine, python, Apple vision pro, Meta quest 3

Objectives of the project : Create proof of concepts with latest innovations in Ar, Vr, Mr

Major Learning Outcomes : Had new learnings in both software work and attended client meetings, which helped understand the corporate world.

Details of Papers/patents : Company projects

Brief Description of working environment, expectations from the company : Great working environment. Got the freedom and resources to explore new tech. Got very high end systems to work on projects

Academic courses relevant to the project : Object oriented programming

PS-II Station : Micron Technology,Hyderabad, Hyderabad

Faculty

Name: Suparna Chakraborty .

Student

Name: ROHAN MISHRA .(2021A3PS1394P)

Student Write-up

PS-II Project Title: Layout Automation Tool

Short Summary of work done during PS-II : • Developed AI solutions to suggest multiple macro placement options, assisting layout engineers and reducing SME reliance. • Leveraged reinforcement learning models to explore various Place and Route strategies and guide engineers. • Enhanced decision-making by automating placement suggestions based on AI-driven insights.

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

Objectives of the project : Develop a Layout Automation Tool

Major Learning Outcomes : Python coding, DeepRL and DL understanding, Product building and Testing

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : Worked in the office friendly environment,

Academic courses relevant to the project : Genai, ml, dl, advd

PS-II Station : Ministry of Tribal Affairs, New Delhi, New Delhi

Faculty

Name: Vineet Kumar Garg .

Student

Name: RAVITEJ SUDHIR GHALSASI(2021A4PS2904G)

Student Write-up

PS-II Project Title: Text-to-Image Conversion of MoTA Scheme Documents

Short Summary of work done during PS-II : The project involved several sub-projects to achieve the final goal. The first sub-project involved summarizing text content using large language models (LLMs) like GPT and BERT, converting lengthy publications into shorter, easier-to-read summaries. Automated matrices like ROGUE, METEOR, and BARTScore were used to compare the outcomes of different models. The second sub-project involved logically splitting the material into paragraphs with distinct concepts or themes, making it easier to handle and create more accurate prompts. The government website was used for this, with detailed information organized in a thematic and logical manner. The third sub-project involved transforming topic paragraphs into detailed image cues, using text-to-image diffusion models like Stable Diffusion. The Prompt Inversion approach was used to extract a description of the image after creating a preliminary image from the text prompt. The Hardly Prompting technique was applied to ensure the model focused on key visual elements, removing unnecessary complexity and preserving straightforward cues, improving image creation accuracy and effectiveness.

Tool used (Development tools - H/w, S/w) : Google Colab, Fine tuned LLMs, Hugging Face API, Stable Diffusion and Prompt Inversion techniques

Objectives of the project : The Ministry of Tribal Affairs felt that its initiatives must more effectively engage its wide target audience, comprising various tribal groups across the nation. The detailed circulars of the project are extensive documents published in English, rendering them ineffective in communicating with the intended audience. To address this, we were assigned the responsibility of employing AI/ML technologies to transform the Scheme texts into a set of images that would accurately represent the specifics of the individual scheme.

Major Learning Outcomes : Learned machine learning, natural language processing, text summarizing, and text-to-image models. Gained knowledge of unsupervised and supervised

learning, fine-tuning methods, deep learning approaches, and optimized prompts for high-quality images. Improved LLMs' capacity to condense lengthy documents.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The work environment was very enabling and conducive to professional growth. Our mentor and guide provided resources to get familiar with the basics of the technologies to be employed. They also provided support and guidance as and when required. They expected us to learn quick and be punctual in providing completing the assigned duties.

Academic courses relevant to the project : Fundamentals of Data Science

PS-II Station : Ministry of Tribal Affairs, New Delhi, New Delhi

Faculty

Name: Vineet Kumar Garg .

Student

Name: SINGH NISHANT NARENDRA .(2021A7PS2689P)

Student Write-up

PS-II Project Title: Spring Monitoring and Management

Short Summary of work done during PS-II : We initially started with the literature review of different research papers to have a clear understanding of springs. This included 10 research papers. We decided to implement a particular research paper which was based on the

observation that springs have a contrasting heat signatures with respect to its surroundings. The springs were found in the discharge zone areas with an accuracy of 85% in that paper. We got the thermal data of Karnataka state from NASA's LANDSAT-7 satellite and analyzed it. We found that the difference between discharge and non-discharge zones was approximately 3.8 degrees using the transect analysis method where a line was drawn between a discharge zone and a non-discharge zone and temperatures was analyzed to find any instant change between the temperature.

Tool used (Development tools - H/w, S/w) : Google Earth Engine, JavaScript

Objectives of the project : The objective was to create a model which would analyse different features of natural springs and predict the location of them in real time. Features might include-Terrain, soil, vegetation, geology, underground water presence, het signature.

Major Learning Outcomes : I got to learn how to use Google Earth Engine but apart from that I learned how to use satellite data which I previously had no idea of. I also got to learn how to move ahead in a research type of project.

Details of Papers/patents : Regional-scale mapping of groundwater discharge zones using thermal satellite imagery. This is the paper we decided to implement.

Brief Description of working environment, expectations from the company : The working environment was pretty good. Since, this project was open-ended it was important to clearly understand the project which my mentor made me understood. We had regular discussions regarding the progress or if I am stuck somewhere in between the methods which helped in learning new things. The expectations from the company was to help me learn new things which was pretty successful in my opinion.

Academic courses relevant to the project : Machine Learning

PS-II Station : Mitigata: Smart Cyber Insurance, Bengaluru

Faculty

Name: Bhamidipati Vaishali .

Student

Name: ARUNIMA SHRIVASTAVA(2020B4A41027H)

Student Write-up

PS-II Project Title: Partnerships Intern

Short Summary of work done during PS-II : Work done in my PS involved onboarding new partners for the company, both for supply and distribution purposes. After an initial discussion, I took care of getting the partnership agreement signed and made sure it aligned with legalities by collaborating with the legal team. I was also responsible for procuring quotes and collecting information on various cybersecurity services as per the client requirement.

Tool used (Development tools - H/w, S/w) : No technical tools used

Objectives of the project : Onboarding new supply and distribution side partners and building impactful partner relationships.

Major Learning Outcomes : Enhanced Communication Skills

Gained proficiency in initiating and maintaining professional conversations with partnership heads.

Learned to articulate value propositions effectively.

Strategic Thinking and Analysis

Analyzed B2B growth strategies and identified potential collaboration opportunities.

Developed a deeper understanding of market trends and competitor strategies.

Relationship Management

Built and maintained strong professional relationships with stakeholders.

Learned the importance of trust and reliability in partnership development.

Negotiation and Persuasion

Honed skills in negotiating terms that align with mutual interests.

Gained experience in influencing decision-making for successful partnerships.

Business Development

Contributed to the expansion of the company's network and clientele.

Explored and implemented approaches to enhance the company's B2B reach.

Cross-functional Collaboration

Coordinated with internal teams to align partnership efforts with organizational goals.

Bridged the gap between business requirements and operational execution.

Project Management

Managed timelines and deliverables for partnership-related initiatives.

Prioritized tasks to ensure efficient collaboration and results.

Data-Driven Decision-Making

Leveraged insights from market analysis and performance metrics to guide partnership strategies.

Used data to evaluate the effectiveness of collaborations and recommend improvements.

Details of Papers/patents : No papers written

Brief Description of working environment, expectations from the company : The working environment has been encouraging and provided the necessary assistance to me to be able to take up the tasks assigned to me.

Academic courses relevant to the project : Introduction to typography.

PS-II Station : Mitigata: Smart Cyber Insurance, Bengaluru

Faculty

Name: Bhamidipati Vaishali .

Student

Name: LAKSHIT SINGHAL .(2021A1PS2369P)

Student Write-up

PS-II Project Title: Growth

Short Summary of work done during PS-II : My initial work revolved around exploring personal cyber insurance. I conducted in-depth research on the Indian market for personal cyber insurance, analyzing market trends, consumer needs, and potential challenges. This research included identifying how we could effectively leverage the B2B2C business model to enhance the distribution of cyber insurance products to end customers through business partnerships. Following this, I shifted my focus to the partnerships domain within our company. I played a pivotal role in onboarding various cybersecurity partners by thoroughly understanding their service offerings and identifying synergies for mutual collaboration. This involved evaluating how their solutions could complement our insurance products to create comprehensive value propositions for clients. Additionally, I worked on expanding our cyber insurance distribution network. To achieve this, I established partnerships with several regional brokers across India. By collaborating with these brokers, I aimed to penetrate untapped markets, strengthen our regional presence, and increase accessibility to our insurance products for a diverse customer base. This combined approach of market research, strategic partnerships, and distribution expansion helped us create a robust foundation for scaling our personal cyber insurance offerings while fostering long-term collaboration with key stakeholders in the industry.

Tool used (Development tools - H/w, S/w) : Microsoft word , excel , hubspot .

Objectives of the project : Focusing on expanding partnership distribution and Growth in B2B2C cyber insurance

Major Learning Outcomes : How to collaborate with partners, onboard new ones, manage relationships with different partners, negotiate to secure the best quotes, understand client requirements, and assist them in meeting their budget constraints."

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment and culture were excellent, fostering motivation and collaboration across all teams. Open communication was a key aspect, allowing each team to freely discuss their requirements and expectations with others. For instance, the Sales and Partnerships teams actively provided valuable feedback and constructive suggestions to the Tech team, ensuring alignment and synergy between departments.

Additionally, the founding team played an integral role in driving the organization's growth. They consistently offered insightful inputs for process enhancements and provided strategic advice, ensuring that the company stayed on the path of continuous improvement. This proactive and inclusive approach created a workplace where everyone felt empowered and valued, contributing to the overall success of the organization.

Academic courses relevant to the project : Financial Management

PS-II Station : Mitigata: Smart Cyber Insurance, Bengaluru

Faculty

Name: Bhamidipati Vaishali .

Student

Name: MUDIT GOYAL .(2021A4PS2407P)

Student Write-up

PS-II Project Title: Mitigata: Sales and Growth

Short Summary of work done during PS-II : As a B2B Sales Intern at Mitigata, I was responsible for supporting the sales team in generating leads, managing client relationships, and driving business growth. I assisted in market research to identify potential B2B clients and help segment them according to industry and needs. I contributed to outreach efforts, including cold calling, email campaigns, and follow-ups, to build a robust sales pipeline. I also played a role in creating personalized sales presentations and proposals, working closely with senior sales representatives to customize pitches based on each client's specific requirements. Additionally, I tracked client interactions in the CRM system, ensuring accurate data entry and timely follow-up on leads. Throughout my internship, I gained valuable insights into the sales process, from initial contact to closing deals, while honing my communication and negotiation skills. I also participated in strategy meetings, where I helped analyze sales metrics and trends, contributing to process improvements. My experience at Mitigata sharpened my ability to work in a fast-paced B2B environment and understand the nuances of sales cycles, client needs, and relationship-building.

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

Objectives of the project : increase sales and focus on growth of company

Major Learning Outcomes : sales, professional communication, cyber requirements and safety, insurance industry

Details of Papers/patents : Final reports submitted

Brief Description of working environment, expectations from the company : Mitigata offers a dynamic and supportive work environment that fosters both personal and professional growth. The company promotes a collaborative culture where every team member's ideas are valued and encouraged. From day one, I felt welcomed and included, with open communication across all levels. The leadership team is approachable and transparent, offering regular feedback and mentorship to help employees develop their skills.

At Mitigata, there's a strong emphasis on teamwork, and colleagues actively support each other's success. This creates an atmosphere of shared achievement, where everyone is motivated to reach their full potential. The company also invests in employee well-being, offering flexible work hours and a healthy work-life balance.

Additionally, Mitigata places a high value on innovation and continuous learning, providing opportunities for employees to attend workshops, training sessions, and industry events. The culture encourages creativity, allowing employees to contribute to meaningful projects that have a direct impact on the company's growth.

Overall, Mitigata's work environment is both empowering and inclusive, making it an ideal place to grow professionally while being part of a close-knit, motivated team.

Academic courses relevant to the project : NA

PS-II Station : Mobile Premier League,Bengaluru, Bengaluru

Faculty

Name: Vijayalakshmi Anand .

Student

Name: KUNAL DHINGRA .(2021A3PS1724P)

Student Write-up

PS-II Project Title: Improving user retention for rummy at mobile premiere league

Short Summary of work done during PS-II : During my PS-2 internship at Mobile Premier League (MPL), I worked as a product management intern within the Rummy team, focusing on enhancing user engagement, gameplay satisfaction, and retention. My role involved identifying

user pain points, designing data-driven solutions, and collaborating with cross-functional teams to deliver impactful features. Key projects included optimizing the new user activation funnel by introducing a free-to-cash lobby, resulting in a 12% improvement in activation rates, and developing a dynamic table composition system for high-roller games, increasing player win rates by 14%. I also led the creation of the Skill Builder feature, improving early-game win rates for new users by 25% and reducing churn by 18%. Additionally, I enhanced matchmaking and leaderboard features, boosting opt-ins by 25%, and contributed to the design of scalable Rummy Tournaments that attracted 50,000 participants in the first month. Through user interviews, I also helped reduce customer complaint tickets by 7%. This internship provided hands-on experience in Agile methodologies, A/B testing, and stakeholder collaboration. I honed my skills in user-centric problem-solving, data analysis, and cross-functional coordination, gaining valuable insights into real-world product management within a fast-paced gaming environment. This experience has prepared me to tackle complex product challenges and deliver impactful solutions in future roles.

Tool used (Development tools - H/w, S/w) : Tableau, SQL, Bigquery, Figma, Smartlook, Miro

Objectives of the project : Increasing game to game retention for rummy at MPL

Major Learning Outcomes : Learning Outcomes of the Internship

1. Data-Driven Decision Making:
 - Gained expertise in analyzing user behavior, performance metrics, and feedback to inform product strategies and feature development.
2. User-Centric Problem Solving:
 - Developed solutions that addressed key pain points, improving user engagement, satisfaction, and retention.
3. Agile Methodologies:
 - Strengthened skills in sprint planning, backlog prioritization, and iterative development to ensure timely and efficient feature delivery.
4. Cross-Functional Collaboration:
 - Collaborated effectively with engineering, UX/UI, analytics, and marketing teams to design and implement impactful product features.
5. A/B Testing and Experimentation:

- Conducted and analyzed A/B tests to validate feature impact, iterating based on real-time data and user feedback.

6. End-to-End Product Management:

- Gained hands-on experience in conceptualizing, designing, implementing, and launching features such as Rummy Skill Builder, Matchmaking Enhancements, and Tournaments.

7. Stakeholder Management:

- Coordinated with internal stakeholders to align product goals with business objectives, ensuring seamless execution and measurable outcomes.

8. Gaming Industry Insights:

- Acquired an in-depth understanding of the gaming ecosystem, including user activation, engagement, monetization, and retention strategies.

This internship provided a strong foundation in product management, equipping me with the skills to deliver data-backed, user-centric solutions in a competitive, fast-paced environment.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Mobile Premier League (MPL) was dynamic, fast-paced, and highly collaborative. As a leading real-money gaming platform, MPL fosters a culture of creativity and data-driven decision-making.

I was part of the Product Management team, where collaboration across functions like engineering, UX/UI design, data analytics, and marketing was integral. The environment encouraged open communication and iterative problem-solving, ensuring that all projects aligned with user needs and business objectives. Regular team syncs, sprint reviews, and feedback loops allowed for a structured yet adaptive approach to feature development.

Expectations from the company were clear and focused on delivering impactful solutions. I was expected to analyze user data, identify pain points, and propose innovative, user-centric features. Ownership of tasks was emphasized, with an opportunity to contribute to critical projects like optimizing the user activation funnel, designing matchmaking enhancements, and developing scalable Rummy Tournaments.

The company valued initiative, encouraging me to share ideas, participate actively in discussions, and seek feedback to refine deliverables. Support from mentors and peers was readily available, ensuring a balance between autonomy and guidance.

Academic courses relevant to the project : Design Thinking, CLEO, NVC

PS-II Station : Mobius Networks India Pvt. Ltd, Hyderabad, Hyderabad

Faculty

Name: Suparna Chakraborty .

Student

Name: PRASANTH VV(2021A3PS0780H)

Student Write-up

PS-II Project Title: Agri-Intel – Precision Agriculture Solutions, RAG predictive cards insights and Implementation for ML Pipelines

Short Summary of work done during PS-II : During my internship at Mobius Networks, I worked extensively on Natural Language Processing and Machine Learning workflows. I developed APIs for speech-to-text, text-to-speech, and machine translation. Post mid-semester, I focused on deriving actionable business insights through KPI modeling using XGBoost, LightGBM and predictive analytics, using LangChain, ChromaDB. I also designed modular ML pipelines in Kubeflow and Elyra deployed models using KServe, ensuring scalability and seamless integration. These experiences enabled me to create comprehensive solutions for real-world challenges while deepening my technical expertise across various domains.

Tool used (Development tools - H/w, S/w) : LangChain, Flask, Docker, Kubernetes, Kubeflow, Elyra, KServe, XGBoost, PyOD, Scikit-learn, Darts

Objectives of the project : To design and implement modular APIs and machine learning workflows for tasks like anomaly detection, sentiment analysis, semantic search, and predictive analytics using modern tools such as LangChain, Flask, and Kubeflow.

Major Learning Outcomes : Development of robust APIs for speech-to-text, text-to-speech and text translation tasks.

Implementation of predictive analytics dashboards for KPI forecasting using ML Models.

Hands-on experience with machine learning orchestration tools such as Kubeflow and Elyra.

Predictive analysis Dashboards using RAG for Companies/Clients based on their data.

Details of Papers/patents : None reported

Brief Description of working environment, expectations from the company : Mobius Networks provided a collaborative and innovative environment focused on digital transformation. The team was highly supportive, encouraging independent research and development. Colleagues played a crucial role, offering guidance, sharing knowledge, and fostering a sense of camaraderie that enhanced the overall experience. Regular feedback sessions with mentors ensured clear expectations and alignment with project goals.

Being a startup, the environment was fast-paced, dynamic, and challenging, presenting numerous opportunities for learning and growth, especially for freshers. The company's culture emphasized continuous learning, adaptability, and quality delivery, equipping interns with valuable technical and professional skills. This combination of mentorship, teamwork, and hands-on experience made it an ideal place to develop both personally and professionally.

Academic courses relevant to the project : Artificial Intelligence

Machine Learning

Data Structures and Algorithms

PS-II Station : MOHINI CREATIONS, Ahmedabad

Faculty

Name: Harish Kumar Aggarwal .

Student

Name: DAKSH KRIPLANI(2021A3PS2822G)

Student Write-up

PS-II Project Title: CredCollect

Short Summary of work done during PS-II : During my PS-II tenure, I worked on CredCollect, a React Native-based mobile application for collections management. My responsibilities included designing the app's frontend, integrating backend APIs, and implementing key functionalities such as payment tracking, user authentication, and notification systems. I collaborated with the backend team to ensure seamless API integration and optimized app performance. Furthermore, I worked on implementing analytics features to provide actionable insights for end-users. Testing, debugging, and preparing deployment-ready code were integral parts of my role. The project offered invaluable exposure to modern development practices, tools, and workflows, significantly improving my technical expertise and problem-solving skills.

Tool used (Development tools - H/w, S/w) : Hardware: MacBook Pro with M1 chip for development. Software: React Native: Frontend development. Firebase: Backend integration and crash analytics. Postman: API testing. Jira: Project tracking. GitHub: Version control. Figma: UI/UX design.

Objectives of the project : To develop an end-to-end React Native application for collections management that automates and optimizes financial operations for businesses. This involves creating an intuitive user interface, integrating backend APIs, and implementing analytics for better decision-making.

Major Learning Outcomes : Mastered React Native for cross-platform app development.

Gained hands-on experience in building and managing APIs.

Improved understanding of integrating Content Management Systems (CMS) for financial workflows.

Developed skills in debugging and performance optimization for mobile applications.

Learned to manage projects in a professional IT environment, enhancing problem-solving and teamwork capabilities.

Details of Papers/patents : No papers or patents have been filed during the project.

Brief Description of working environment, expectations from the company : The working environment at Mohini Creations was highly collaborative, with an emphasis on continuous learning and adaptability. The team encouraged innovation and valued input at all levels, fostering a sense of ownership over the project. Regular stand-ups and code reviews ensured alignment with project objectives. The company's expectations included meeting project milestones, delivering high-quality code, and demonstrating problem-solving abilities. This environment provided a unique opportunity to work on real-world challenges and develop solutions that directly impact the business.

Academic courses relevant to the project : Object-Oriented Programming (CS F213)

Database Systems (CS F212)

Data Structures and Algorithms (CS F211)

PS-II Station : Monocept Consulting Pvt Ltd., Hyderabad

Faculty

Name: Sai Kishor Jangiti .

Student

Name: S GEETIKA NARAYANI(2021A8PS1657H)

Student Write-up

PS-II Project Title: Custom Communications Management System

Short Summary of work done during PS-II : During the internship, I gained hands-on experience in developing scalable and efficient systems using Spring Boot, Kafka, and PostgreSQL. Additionally, I strengthened my skills in front-end development by researching and integrating Angular components. Collaborating on real-world communication workflows provided insight into event-driven architectures and the use of Kafka for high-throughput messaging systems. Overall, I developed a well-rounded technical foundation in backend and frontend systems & inter-process communication

Tool used (Development tools - H/w, S/w) : Java (SpringBoot), Kafka, Angular, PostgreSQL

Objectives of the project : Implement optimizations and features in a Custom Communications Management System project

Major Learning Outcomes : Improved proficiency in backend and frontend webdev

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : I was asked to work alongside employees. It was initially challenging to grasp how things work in a corporate project but with some time it wasn't too difficult to pick up. Team Lead gave tasks periodically which I had to implement

Academic courses relevant to the project : OOPs, DSA

PS-II Station : Morgan Stanley Counterparty Risk role, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: KRISHNA CHOPRA .(2020B5AA0719P)

Student Write-up

PS-II Project Title: Counterparty Risk

Short Summary of work done during PS-II : The counterparty risk team of Institutional Equity Division at Morgan Stanley deals with analysing market risk of clients of prime brokerage division. One gets complete exposure to key risk deliverables, reporting and even appropriate actions. You also get an understanding of key market scenarios which impact our clients in day to day operations. The role is backend to front office, but has a good visibility to key operations.

Tool used (Development tools - H/w, S/w) : Python, SQL, Power BI, Morgan Stanley in house Applications

Objectives of the project : Help identify and mitigate market risk in Prime Brokerage division of Morgan Stanley

Major Learning Outcomes : Everything related to market risk, be it individual client positions to macroeconomic indicators which affect the client positions.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working environment was amazing in my team. The team is fully collaborative, everyone is approachable and time to time feedback is given to everyone regarding their performance and expectations.

Academic courses relevant to the project : Derivatives & Risk Management
Security Analysis & Portfolio Management

PS-II Station : Morgan Stanley Data Analytics, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: SANJANA CHAWLA(2020B1A71982G)

Student Write-up

PS-II Project Title: Leverage Advanced Data and Analytics in Internal Audit

Short Summary of work done during PS-II : During my internship at Morgan Stanley, I contributed to developing advanced data-driven tools and models to streamline and enhance processes within the Internal Audit Department. One of my key projects involved creating a fuzzy + semantic search tool for OpenPages, combining NLP techniques, BERT embeddings, and fuzzy logic. This tool leverages synonym expansion, fuzzy matching, and cosine similarity to deliver accurate query results, significantly improving data accessibility. Additionally, I automated audit issue classification into predefined risk stripes and root causes using advanced data analytics and LLMs, saving over 2,000 hours per quarter. This automation improved accuracy and efficiency in managing audit processes. Another major contribution was the development of a

risk concentration model for India as a global hub. Utilizing logistic regression, SQL, and advanced analytics, I analyzed key factors such as process criticality, control ratings, and risk levels. Techniques like one-hot encoding, label encoding, chi-square tests for independence, and Cramér's V analysis were employed to evaluate relationships between variables and assess overall risk concentration. This model provides actionable insights for informed decision-making. Through these projects, I demonstrated expertise in Python libraries (e.g., sklearn, NLTK, scipy), statistical methods, and machine learning techniques while making significant contributions to internal audit efficiency and risk management.

Tool used (Development tools - H/w, S/w) : 1. Programming Languages: Python (primary language for all data processing, modeling, and automation tasks). 2. NLP Libraries:

- NLTK: For text preprocessing, including stopword removal, stemming, and synonym generation using WordNet.
- spaCy: For advanced

Objectives of the project : The project is to leverage advanced analytics techniques such as AI/ML and using LLMs to help Internal Audit better understand the risks and controls in the business units. Skill sets: SQL, Python, and understanding of applicability of different statistical models required to apply to the analytics.

Major Learning Outcomes : Understanding of Audit methodology and hands on experience in applying Advanced analytics to a business problem.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Morgan Stanley provides a collaborative, innovative, and growth-oriented work environment. The company values creativity, precision, and timely delivery while emphasizing data integrity and ethical practices. Expectations include strong analytical skills, effective communication, and teamwork to align with organizational goals. Supportive mentorship, access to advanced tools, and training opportunities foster professional development and encourage impactful contributions.

Academic courses relevant to the project : Artificial Intelligence
Foundations of Data Science

Machine Learning
DSA

PS-II Station : Morgan Stanley Data Strat, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: ISHI NIGAM(2020B2A71653G)

Student Write-up

PS-II Project Title: Research Data Strats

Short Summary of work done during PS-II : had the opportunity to lead and contribute to several high-impact projects that streamlined data workflows, improved automation, and enhanced reporting for the Research department. These experiences provided me with strong foundations in project management, cross-functional collaboration, and data analytics, skills that are directly relevant to this role: **Developed a Data Collection Script:** I independently created a Python script to pull real estate data from the Dubai government's official website. This initiative saved the firm significant costs by avoiding vendor fees, demonstrating my ability to identify cost-saving opportunities and drive change. This solution also enhanced data accessibility, which enabled better data-driven decision-making—a key aspect of the role I'm applying for. **Automated Excel Workflows:** I worked closely with a team to automate manual processes that research analysts relied on for chart creation and analysis. This project saved significant time, reducing tasks that previously took days to just minutes. This showcases my experience in process improvement, an essential skill in optimizing business operations as described in the job role.

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

Objectives of the project : Data Analytics

Major Learning Outcomes : Data Analytics

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Great work culture, motivates learning things by yourself. Encouraging and inclusive team promotes growth. Seniors are really helpful. Each project you take on you need to finish end to end, builds accountability and ownership. Given credit for all the work you do, and it is very well recognized

Academic courses relevant to the project : Database Management

PS-II Station : Morgan Stanley Exo Trading, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: SHRISH SANJAY KUTHE .(2020B1A11900P)

Student Write-up

PS-II Project Title: Exotics Trading Assistant

Short Summary of work done during PS-II : I worked as part of the Exotics Trading Assistant Team. Main tasks include handling trade bookings and risk adjustments for exotic derivatives such as options, swaps, and structured products. Other tasks include responding to queries raised by finance and operations teams. These include verifying PnL calculations, trade mismatches, incorrect bookings etc. Additionally, I worked on secondary market pricing, ensuring accurate live pricing of exotic products across internal systems and external platforms like Bloomberg and Reuters.

Tool used (Development tools - H/w, S/w) : Python, Advanced Excel, Internal Trading Systems

Objectives of the project : Support traders in trade booking and ensure accurate risk representation. Additionally, the role aimed to automate manual tasks and develop scripts to identify and address inaccuracies efficiently.

Major Learning Outcomes : Gained in-depth knowledge of various exotic derivative products, such as structured notes and exotic options. Developed a strong understanding of the Greeks and their application in risk management. Additionally, acquired insights into trading strategies and decision-making processes from a trader's perspective.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Team is highly supportive and collaborative. The work is fast-paced in nature and keeps you engaged throughout the day. Strong attention to detail and the ability to deliver accurate results under time constraints is must. The company expects individuals to take ownership of their tasks and proactively contribute.

Academic courses relevant to the project : DRM, FRAM, SAPM, Probability & Statistics

PS-II Station : Morgan Stanley FID Research roles, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: CHAITANYA SETHI .(2020B3A71961P)

Student Write-up

PS-II Project Title: European Interest Rates Models Automation

Short Summary of work done during PS-II : My work majorly revolved around a tactical job for automating daily processes for about 45 rolling regression models for the European interest rate strategy team. Here the task was to analyse the corresponding excel sheets (having 1 or more models built within), extracting data and recreating the data manipulations and processes involved to get through to a final result. I enhanced the models further through eliminating errors and streamlining data series across various models, while recreating the exact excel structure in data frames and finally reaching the correct output statistics. Another major aspect was to understand how data sources were distributed across data from data providers (like Bloomberg, Haver) and other data extracted from other analyses, and handling this difference correctly to achieve similar results. The project has been successful with the output chart being published in the 2025 Global Macro Strategy Outlook (Yearly Publication). The script is used on a daily basis over a manual update of the excel sheets corresponding to each model, reducing overall workflow by over 90%. Alongside this, I also developed an in-depth understanding of the European interest rate strategy team and their analyses, and presented the findings from the Outlook to the team.

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

Objectives of the project : To understand and automate 45 rolling regression models predicting European rates trends based on daily and monthly data. Achieve the corresponding Excel workflow through a single-click Python script, reducing workflow significantly by 90% (50min to 5min). Understand European interest rate strategy and present findings to the entire team

Major Learning Outcomes :**Technical Mastery:**

I developed strong skills in Python and Excel, mastering data optimization, modular coding, and advanced tools like regression models, Bloomberg commands, and caching systems, which streamlined workflows and improved efficiency.

Financial Acumen:

I gained a deep understanding of various asset classes, market strategies like US mortgage rates, and European interest rate forecasting, enhancing my ability to analyze and interpret economic trends effectively.

Effective Communication:

I honed my ability to connect research with market news, creating impactful presentations, and leveraging visualization tools to present complex data in a clear and actionable format.

Details of Papers/patents : No papers published - just the output chart made was published within Morgan Stanley's internal portal.

Brief Description of working environment, expectations from the company : Morgan Stanley offers an amazing working environment, particularly in this role with a 3-day office routine, although as interns starting out you should go to office everyday. The nature of work and tasks allotted are challenging but doable, and the collaborative and horizontal team structure allows for substantial learnings, with our manager being on the same floor and frequently interacting and guiding the interns and the full-time employees alike. With each team member contributing to a major asset class, the variety of experience within the team is diverse both across knowledge of different asset classes and across relevant geographies these asset classes function in. This provides for an enriching experience during our team meetings and discussions, which are usually focused on learning and allowing each other to expand the understanding of different asset classes.

As of December 2024, the team has shifted to the newest and perhaps the best office of Morgan Stanley, with amazing gym, food and office amenities. One can start his/her day in the gym in the morning and comfortably start the day by 11:30 am, enjoying nutritious food and snacks throughout the day, allowing for a comfortable work-life balance with engaging work.

The team usually has team dinners and meet-ups frequently, and as the team is expanding major stakeholders such the Chief Operational Officer also paid a visit to us. In this way, the role also allows for meeting and interacting with senior officials.

Academic courses relevant to the project : 1. Derivatives & Risk Management

2. Financial Risk Analysis & Management

3. Security Analysis & Portfolio Management

4. Financial Management

5. Macroeconomics

6. Econometric Methods

7. Data Mining

8. Data Structures & Algorithms

PS-II Station : Morgan Stanley FID Research roles, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: PRIYAN HEMIL MODY .(2020B3AA1964P)

Student Write-up

PS-II Project Title: Rates Strategy and Quantitative Investment Strategy Research

Short Summary of work done during PS-II : I developed rolldown and carry tickers for Constant Maturity Treasuries (CMTs) and on-the-run U.S. Treasuries (USTs). These tickers were subsequently uploaded to Bloomberg, enabling streamlined access and analysis for market

participants. I implemented the Adrian, Crump, and Moench (ACM) Model to forecast term premia in the U.S. Treasury market. , I developed a quantitative model that incorporates a factor investing approach, designed as an extension of the renowned Fama-French Five-Factor Model. I evaluated the efficacy of factors for MSCI Europe and MSCI EMU by analyzing their long-term and short-term Sharpe Ratios.

Tool used (Development tools - H/w, S/w) : Python, R studio, MS Excel

Objectives of the project : 1) Rates Strategy Project - a) Creating Rolldown and Carry Tickers for Constant Maturity Treasuries and On-the-Run USTs. b) Creating ACM Model to Forecast Term Premia. 1) Quantitative Investment Strategy Projects - a) Creating a Quantitative Model Based on an Extended Fama-French Five-Factor Framework. b) Computing Factor Efficacy Using Sharpe Ratios

Major Learning Outcomes : a) Exposure across all categories of asset classes - Quant, Equities, Rates, Credit, Foreign Exchange (FX), Securitized Products, Municipal Bonds, Commodities across US, Asia-Pacific, EMEA, Europe, UK and Japan.
b) Running and building advanced analytics and quantitative models and automating production level processes.
c) Understanding implications of various macroeconomic events and their effect on the above mentioned assets.
d) Publishing client specific research material which is used by sales and trading desks of various top investment institutions.

Details of Papers/patents : Morgan Stanley Research Publications are Material Non Public Information and hence cannot be disclosed

Brief Description of working environment, expectations from the company : “The future growth and long-term success of the Integrated Firm will ultimately be driven by the depth and talent of our human capital, coupled with the strong values that guide our employees.”

The above quote by Ted Pick, the current CEO of Morgan Stanley demonstrates the strong emphasis the company places on values, a strong work ethic and balanced work culture in providing their clients with their best.

The five core values are -

- 1) Do the right thing
- 2) Put clients first
- 3) Lead with exceptional ideas
- 4) Commit to diversity and inclusion
- 5) Give back

These keep the culture at work friendly yet competitive. The management is more than happy to cater to your demands given that your tasks are completed and your work is handled efficiently.

Academic courses relevant to the project : 1) Macroeconomics

- 2) Applied Econometrics
- 3) Security analysis and Portfolio Management
- 4) Business Analysis and Valuation

PS-II Station : Morgan Stanley Fixed Income Division - Counterparty Risk role, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: DEEP PATEL .(2020B5A40960P)

Student Write-up

PS-II Project Title: FID Counterparty risk automation

Short Summary of work done during PS-II : Did automation

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

Objectives of the project : Automation

Major Learning Outcomes : Counterparty risk, exotic options

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Team to team dependent

Academic courses relevant to the project : DRM

PS-II Station : Morgan Stanley Model Quant Risk, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: DESAI VISHVA(2020B4A71635H)

Student Write-up

PS-II Project Title: Model Risk Quant

Short Summary of work done during PS-II : I am working with the wealth management team. You will be assigned a team once you join this role. I had to work on multiple wealth management

models which include employee stock options value prediction, equity scoring models and NLP - ML model for manager selection. The models need to be validated and in some cases you will get to make a benchmark model. The intention of this is to make a model which can outperform the already made models. All these models include Mathematics, Statistics, Python and Finance. You will also have to work on automation projects and writing the validation reports, this can be boring, but if you get a good team and get more work related to models, you can learn a lot about math and finance.

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

Objectives of the project : Validate and test financial models

Major Learning Outcomes : Wealth Management, Finance, Python, Machine Learning

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Working environment is good. Most of the people are PhDs in the team, so there is a lot to learn from them related to Mathematics and Statistics. The work is mostly chill and they currently allow 2 days work from home every week. The working time is generally 12 to 9pm.

Academic courses relevant to the project : Probability and Statistics, Stochastic Calculus, Finance Minor Courses, Object Oriented Programming, Machine Learning

PS-II Station : Morgan Stanley Model Quant Risk, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: AASTHA SHAILESH PRAJAPATI(2020B5A82284H)

Student Write-up

PS-II Project Title: Model Validation and Inventory Automation

Short Summary of work done during PS-II : At Morgan Stanley, I worked on improving models and making processes more efficient as part of the Model Risk Management (MRM) team. I reviewed and understood various models, addressed challenging questions during validations, and worked on revalidating key models using tools like Databricks and Dataiku. I worked on automation projects to save time and effort, such as creating a package for portfolio optimization to handle tasks like backtesting and diagnostics. I also fixed issues in existing tools and built new ones to better manage the model inventory. I learned about recommendation engine algorithms, explored alternative approaches to matrix factorization and classification models, and worked on improving model performance through feature engineering, SHAP value analysis, and parameter tuning. Additionally, I participated in designing independent benchmarks and optimizing model parameters, contributing to stronger and more reliable models. My work helped improve the efficiency and quality of the MRM processes.

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

Objectives of the project : At Morgan Stanley's Model Risk Management division, the role of a Model Risk Quant involves validating financial models using techniques such as backtesting, sensitivity analysis, and stress testing to ensure their accuracy and reliability. The team is responsible for ongoing revalidation and recertification of models to maintain compliance with regulatory requirements and adapt to evolving market conditions. Scenario analysis is also applied to assess model performance under extreme market conditions, identifying any limitations and ensuring effective risk management for the firm and its clients.

Major Learning Outcomes : 1-Exposed to financial models in Wealth Management space (Fixed Income based).

2-Revalidation and material change of ML based models used in the finance domain.

3-Implemented various techniques (inhouse and general) of portfolio optimization in Python.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Morgan Stanley is collaborative and focused on innovation and learning. Employees are encouraged to take ownership of their work and deliver high-quality results. The company provides access to advanced tools and supports skill development, career growth, and work-life balance. Expectations include clear communication, constructive feedback, and fostering an inclusive, supportive culture.

Academic courses relevant to the project : Statistics, ML, Applied Stochastic Process, DRM

PS-II Station : Morgan Stanley Quant (Model) Audit Team, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: LOYA HARSH BRIJESH(2020B3A40831H)

Student Write-up

PS-II Project Title: Model Risk (Quant) Audit

Short Summary of work done during PS-II : I was a part of one audit where I tested model in credit risk space and drafted workpaper which had summary of the model, and my assessment and challenges raised. I was an active member of continuous monitoring team where, on a

quarterly basis, I tracked numbers for various test metrics with certain threshold and frequency, and raised challenges of threshold is breached. I was involved in Closure Verification of two regulatory issues and two IAD issues where I verified if the risk is remediated by taking appropriate actions.

Tool used (Development tools - H/w, S/w) : Excel, PowerPoint, Word, OneNote, SQL, R, Python, Alteryx, Power BI, Tableau

Objectives of the project : To carry out audit and assurance activities

Major Learning Outcomes : * How to critically analyse models and provide effective challenge if required.

* Soft skills are as important as hard/technical skills.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The team members, both onshore and offshore, are very warm and welcoming. There is so much to learn from each and every individual. The hierarchy is pretty flat where - talking about myself - an intern can actually directly talk to CAO.

Academic courses relevant to the project : FRAM, especially the model risk part, is an extremely important prerequisite for the Quantitative Analytics Group (QAG) or the Model Risk Audit team.

PS-II Station : Morgan Stanley Research Data Strats, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: ARYA V SINGALWAR(2020B3A71861H)

Student Write-up

PS-II Project Title: Dashboard Creation to Automate Chart Creation for Research Reports

Short Summary of work done during PS-II : My initial tasks involved me performing small optimizations to the existing dashboard framework. The small improvements included refactoring of code, addition of small features or making changes to the UI. Later, I was primarily asked to work on adding of features. I added a number of features like custom chart types, customized downloading of complex chart types etc. Work mostly involved software side work along with some automation projects. I also worked on creating a new landing homepage from scratch using the functionalities available to me using Dash, Python, Javascript, HTML and CSS. I also worked on creating a storage method for each type of chart and having them push into a database for easy scalability with the existing code.

Tool used (Development tools - H/w, S/w) : VS Code, Jupyter, Python, Dash, HTML, SQL, CSS, Javascript

Objectives of the project : Create the dashboard framework using Dash Plotly

Major Learning Outcomes : Learnt using Dash and how to create a functional website.
Learnt about database management and assisted in creation of a centralized database

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The people in the team are very supportive and they will teach you things from basics. Initial tasks will be given to you to just get used to the workflow and then you will deep dive further. Every task given will

come with a reasonable deadline which usually varies from a few days to few weeks. If you have an optimal idea for something then your ideas are always welcome. Overall expectations from the firm is to get the work given to you delivered on time.

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

PS-II Station : Mosdorfer India Pvt. Ltd. ,Nashik, Nashik

Faculty

Name: Arun Maity .

Student

Name: ANISH RAJIV DHAIMODKAR(2020B3A40563G)

Student Write-up

PS-II Project Title: Enterprise Supply chain management

Short Summary of work done during PS-II : Helped in development of new suppliers of raw materials.

Tool used (Development tools - H/w, S/w) : MS Excel,Lighthouse ERP

Objectives of the project : Working with the supply chain department in order to fulfill the goals of the enterprise.

Major Learning Outcomes : Learnt about the various working processes of the purchases department.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Very nice working experience with helpful co-workers

Academic courses relevant to the project : Manufacturing Management, Supply chain management, Advanced Manufacturing Processes

PS-II Station : Mosdorfer India Pvt. Ltd. ,Nashik, Nashik

Faculty

Name: Arun Maity .

Student

Name: ADITYA DIXIT .(2021A4PS2527P)

Student Write-up

PS-II Project Title: Enterprise Supply Chain Management

Short Summary of work done during PS-II : We worked along side the purchase team to help procure raw material, finished items required. We sent request for quote (RFQ) to existing suppliers for requirements shared by the planning team, created comparisons of the different quotes received to compare the cost, delivery conditions and lead time quoted. We helped find new vendors for different processes such as gravity die casting, extrusion, injection moulding etc. for development and outsourcing of new/existing items. Our work involved creating purchase orders and work orders on ERP, coordinating with suppliers for dispatch schedules of orders

already placed, creating cost-saving sheets for each month, creating deviation notes for defective material received.

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

Objectives of the project : Working with the purchase team of the SCM department

Major Learning Outcomes : Understanding how material procurement works in a project-based organisation, right from receiving orders from customers by the marketing team to the release of indents (purchase requisitions) done by the planning team to the procurement of raw material and finished items by the purchase team of the SCM department.

Details of Papers/patents : Not applicable

Brief Description of working environment, expectations from the company : The environment was very positive and supportive as the entire SCM department was ready to help you resolve the queries you had. The initial few weeks involved more of observing how the different people handle the different commodities (such as extrusions, castings, packing boxes, consumables etc.) and communicate with their different vendors. Since each person has their fixed items, you will have to keep asking your assigned mentors for tasks and things where you can help them at.

Academic courses relevant to the project : Basics of supply chain management and different manufacturing processes such as forging, casting, extrusion etc. for better communication with suppliers and being able to understand the specifications required for different items.

PS-II Station : MSCI - Real Estate Index Management Research,Mumbai, Mumbai

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: YASH PADIA .(2020B3A81641P)

Student Write-up

PS-II Project Title: Index Management and Research

Short Summary of work done during PS-II : NA

Tool used (Development tools - H/w, S/w) : Python, Jupyter Notebook, Excel, Power BI

Objectives of the project : Automation and Innovation

Major Learning Outcomes : Learned how to research, how to analyse financial statements, how to use financial ratios

Details of Papers/patents : NA

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

Academic courses relevant to the project : SAPM, BAV, FinMan, FundaFin

PS-II Station : MSCI Services Pvt. Ltd. - Index Management Research, Mumbai

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: VASU SHARMA .(2021A3PS2646P)

Student Write-up

PS-II Project Title: Automation of ESG Ratings Process

Short Summary of work done during PS-II : Got hands on experience for various Rating products. Worked on ESG, Climate and Emissions data. Automated a lot of processes which helped with efficiency and improved accuracy.

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

Objectives of the project : Automation and Scaling of ESG rating processes for Sovereign and Sub Sovereign Bond issuers

Major Learning Outcomes : Advanced Excel, Python

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The environment was very supporting. No micromanagement. From my manager to team members, everyone was very kind. Even the top management is extremely accessible. Very flat hierarchy. Great place to learn

Academic courses relevant to the project : None

PS-II Station : MSCI Services Pvt. Ltd. - Index Management Research, Mumbai

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: KASAT HORAJI SUSHIL .(2021ABPS2560P)

Student Write-up

PS-II Project Title: Automation of ESG Sovereign rating proces

Short Summary of work done during PS-II : Working on the Automation of ESG Sovereign Rating Process was an enriching experience that provided valuable insights into the integration of data analytics and machine learning in ESG evaluations. The project fostered a highly supportive and collaborative working environment, which encouraged innovation and skill development. I had the opportunity to delve deeply into data processing, predictive modeling, and automation techniques, gaining hands-on experience with cutting-edge tools and methodologies. This experience not only enhanced my technical expertise but also broadened my understanding of ESG frameworks and their significance in sustainable investments. It was a fulfilling journey that contributed significantly to my professional growth.

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

Objectives of the project : The objective of this project is to automate the ESG (Environmental, Social, and Governance) sovereign rating process by leveraging advanced data analytics and machine learning techniques. This involves streamlining data collection from diverse sources,

ensuring accuracy and consistency in ESG metrics, and building predictive models to evaluate and score sovereign entities efficiently. By automating the process, the project aims to enhance decision-making, reduce manual efforts, and ensure scalability while maintaining transparency and compliance with global ESG standards. Additionally, the solution will provide actionable insights to support sustainable investment strategies.

Major Learning Outcomes : Understating of importance of ESG rating in investment point of view, application of python and powerbi, experience of working at MNC.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Really had a great experience working here, all the people working here are really healing and easy to approach. It feels like another HOME.

Academic courses relevant to the project : Financial Management, EVS, C programming

PS-II Station : MSCI Services Pvt. Ltd. - NPD, Mumbai

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: YASH PUROHIT .(2020B3A40946P)

Student Write-up

PS-II Project Title: Quantitative Equity Research - Index Research New Product Development (NPD)

Short Summary of work done during PS-II : Major work include researching and implementing different index methodologies, with a focus on creating and testing various types of indexes through simulations on historical data. Identifying and troubleshooting issues in simulation results. Managing multiple small projects or client requests on a daily basis. Working on various data science initiatives that require proficiency in Python or other programming languages. During my six-month internship at MSCI Inc., I contributed to enhancing thematic index methodologies and automating index rebalancing processes. I worked on modularizing assembly code for thematic indexes, making the process more scalable and efficient while reducing manual intervention and operational errors. Additionally, I developed trigger-based workflows to automate data validation and report generation during semi-annual rebalancing cycles, significantly streamlining operations.

Tool used (Development tools - H/w, S/w) : MSCI proprietary software and tools, Python, SQL, Azure AI, Microsoft Office Suite

Objectives of the project : Advancing Thematic Index Methodologies, Enhancing Index Rebalancing and Methodology Frameworks for New Product Development

Major Learning Outcomes : Improved understanding of thematic index methodologies and the index lifecycle.

Gained hands-on experience in code modularization and automation.

Leveraged MSCI tools to simplify complex financial processes.

Enhanced problem-solving, teamwork, and project management skills.

Details of Papers/patents : No papers or patents were produced during this internship.

Brief Description of working environment, expectations from the company : The working environment at MSCI Inc. was collaborative, intellectually stimulating, and highly supportive. Team members and mentors were always approachable, fostering open communication and knowledge sharing. While there are days when work hours may extend into the late evening due to the workload during index rebalancing, the overall atmosphere remains friendly and motivating.

The company set clear expectations regarding project timelines and deliverables, providing structured guidance and access to resources to meet these objectives. I was entrusted with significant responsibilities, encouraging me to take ownership of my work. Expectations are reasonable, and there is no intense pressure to perform. Managers prioritize your learning experience during the internship and are pleased to see you make contributions.

Academic courses relevant to the project : Fundamentals of Finance and Accounting, Security Analysis and Portfolio Management, Business and Asset Valuation, Financial Management, Object Oriented Programming

PS-II Station : MSCI Services Pvt. Ltd. - NPD, Mumbai

Faculty

Name: Krishnamurthy Bindumadhavan .

Student

Name: DEVANSH SHARMA .(2020B4AA1991P)

Student Write-up

PS-II Project Title: Analyzing historical Drawdowns in the world

Short Summary of work done during PS-II : This project focused on analyzing financial market drawdowns to understand their characteristics, including depth, duration, and recovery. Drawdown events exceeding specific thresholds, such as 10% and 20%, were identified and studied to assess their impact on market performance. Advanced financial metrics, including PE ratios, cumulative returns, and annualized returns, were incorporated to provide a comprehensive analysis of market behavior during and after drawdowns. Interactive visualizations were created

using tools like Altair and Plotly to effectively communicate insights. Regression analysis was employed to explore the relationships between drawdowns and subsequent returns or recovery times, while synthetic data simulations were used to analyze the effects of various drawdown distributions. Automation of data processing tasks, such as adjusting for business days and calculating returns before and after drawdowns, ensured accuracy and efficiency. The project also involved generating tailored reports and visualizations for specific markets, such as 'EM (Emerging Markets)' and 'WORLD', to provide customized insights into market risks. These insights supported the development of strategies for improving investment decision-making and risk management. Overall, the project delivered a thorough understanding of drawdown dynamics and their implications for financial markets, equipping stakeholders with actionable insights to better navigate periods of market stress.

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

Objectives of the project : This project aims to analyze financial market drawdowns to gain insights into their depth, duration, and recovery dynamics across different markets, such as 'EM (Emerging Markets)' and 'WORLD'. By focusing on drawdowns exceeding specific thresholds, it seeks to identify patterns that highlight market-specific risks and recovery behaviors. The project incorporates advanced metrics, including PE ratios, Bollinger Bands, cumulative returns, and annualized returns, to provide a holistic view of market performance during and after drawdowns. Interactive visualizations, such as scatter plots and time-series charts, are developed to dynamically explore relationships between drawdowns, subsequent returns, and recovery times. Regression analysis is used to quantify the impact of drawdown characteristics on future returns and other financial indicators. Synthetic data simulations are also employed to examine scenarios under different drawdown distributions. To enhance accuracy and efficiency, the project automates data handling processes, including adjustments for business days, and calculates returns for periods before and after drawdown events. Customized charts and reports are generated for individual markets or countries, offering tailored insights for stakeholders. By integrating comprehensive data analysis, visualization, and automation, the project seeks to provide actionable insights into drawdowns' implications for risk management and investment strategies.

Major Learning Outcomes : Through this project, I gained a comprehensive understanding of financial drawdowns, including their depth, duration, and recovery patterns. I successfully

identified and analyzed drawdown events exceeding specific thresholds, such as 10% and 20%, and assessed their impact on market performance. I enhanced my skills in working with advanced financial metrics, including PE ratios, cumulative returns, and annualized returns, and explored their correlations with drawdowns. Using regression analysis, I studied the relationships between drawdowns and future returns or recovery times, uncovering valuable insights. I developed expertise in data visualization by creating interactive and insightful charts using tools like Altair and Plotly, effectively communicating the dynamics of drawdowns. Additionally, I generated synthetic data to simulate various scenarios, which helped me understand the impact of different drawdown distributions. I automated data processing tasks, including calculating returns before and after drawdowns and adjusting for business days, improving efficiency and accuracy. By tailoring reports and visualizations for specific markets and stakeholders, I provided customized insights into market risks. Overall, the project allowed me to develop strategies for enhancing investment decision-making and risk management while gaining hands-on experience in data analysis, visualization, and financial modeling.

Details of Papers/patents : The project was for a blog which will be published soon.

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

Academic courses relevant to the project : Finance Minor (atleast the understanding of basic concepts)

PS-II Station : Myeasypharma, Delhi

Faculty

Name: Nishit Narang .

Student

Name: MADHAV BOHRA .(2021A2PS2155P)

Student Write-up

PS-II Project Title: Work On AI ChatBot

Short Summary of work done during PS-II : Over eight weeks, I refined a chatbot and integrated it seamlessly into the app, set up the backend on Google Cloud, and published a demo version on the Play Store. Following a pivot, the app's focus shifted to diabetic and BP users, tracking 17 vital metrics like BPM and calories. I designed and implemented screens for these metrics and developed a backend using Next.js to store user data. Finally, I initiated planning for a risk score generation system based on the collected data, enhancing both frontend and backend functionalities while focusing on user-centric health tracking features.

Tool used (Development tools - H/w, S/w) : Node JS, Next JS, Nest JS, Expo Go

Objectives of the project : Creation of ChatBot for Whatsapp buisness

Major Learning Outcomes : AI, Backend, Frontend, App Development

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Work was not that managed, Salil Sir... used to give the tasks in morning and I used to finish them till the evening.

Academic courses relevant to the project : Deep Learning

PS-II Station : MyHQ - Non Tech, Gurugram, Gurgaon

Faculty

Name: Gaurav Nagpal .

Student

Name: VANSHIKA SRI(2021A3PS1751G)

Student Write-up

PS-II Project Title: Buisness development for assisted market place

Short Summary of work done during PS-II : The project involved conducting extensive market research, partner reachouts, and streamlining the company's expansion. My key contributions included expanding the company's network and portfolio, enhancing its market reach, identifying and establishing relationships with various potential partners across diverse regions, and final implementation. The outcomes demonstrated significant growth in our partnerships and ease of business by the sales team. The strategic impact of onboarding 1,200 coworking spaces was immense in creating India's largest platform for office space needs. The expansion strengthened the platform's competitive edge by adding a vast and diverse network of coworking spaces in the country, providing businesses with flexible office solutions. With the new partnerships, the platform would have undoubtedly altered its market share and brought in an expanded clientele, ranging from small startups ideally to large enterprises with highly customized office space requirements. Such rapid scaling would make the platform the go-to for anyone interested in flexible spaces and act as a brand driver, creating trust and dependency for businesses with varying office space requirements. Likewise, it will open up new revenue streams, increase bargaining power with partners, and hopefully trigger future opportunities for growth and innovation in the office space sector.

Tool used (Development tools - H/w, S/w) : Salesforce, HubSpot, Zoho CRMLinkedIn Sales Navigator, Apollo.io, Hunter.io

Objectives of the project : Onboarding spaces

Major Learning Outcomes : Soft skills and sales

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : exhaustive and complicated. not adequate support or training.

Academic courses relevant to the project : none

PS-II Station : National Instruments, Bengaluru

Faculty

Name: A Rekha .

Student

Name: ABHINAV OJHA(2021A8PS2017G)

Student Write-up

PS-II Project Title: Development of Python PCB Assembly Test Toolkit

Short Summary of work done during PS-II : Mostly I was involved with development, testing and documents of the software.

Tool used (Development tools - H/w, S/w) : TestScale, PCIe, cDAQ, Python, Vscode

Objectives of the project : Objective of the project was to develop a compressive software solution for functionality testing of PCB during assembly.

Major Learning Outcomes : Python, Git, Azure Devops

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : The work envinious is good and work load is less and working hours are somewhat flexible.

Academic courses relevant to the project : MUP, DD

PS-II Station : NBC Bearings,Jaipur, Jaipur

Faculty

Name: Arun Maity .

Student

Name: KARTIK SHARMA(2021A4PS3085H)

Student Write-up

PS-II Project Title: Designing Cylindrical Roller Bearings

Short Summary of work done during PS-II : Designed process drawings of Cylindrical roller bearings with riveted as well as rivetless brass cage for Traction motor and Gearbox application in Vande Bharat project of Indian Railways. Had to create multiple iterations to find the optimal design for higher load bearing capacity at higher temperatures.

Tool used (Development tools - H/w, S/w) : MS Excel, Autodesk AutoCAD, Creo Parametric, MS Word

Objectives of the project : Design Cylindrical roller bearing for Traction motor and Gearbox for Indian Railways.

Major Learning Outcomes : Bearings Design & Standards

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : My PS was onsite. Work hours: 9 AM - 6 PM. I worked in the Research & development department. My mentor was the Section Head of Railway Bearing Design. Although, my mentor was quite busy at times, others in the department were helpful in suggesting improvements or giving feedback. Innovative Ideas are encouraged.

Academic courses relevant to the project : Design of Machine Elements, Mechanisms & Machines, Computer Aided Designing, Engineering Graphics

PS-II Station : NCL, Pune, Pune

Faculty

Name: Santosh Sopanrao Khandgave

Student

Name: R SHANKAR(2021A1PS1550G)

Student Write-up

PS-II Project Title: Risk assessment in chemical process industry

Short Summary of work done during PS-II : We had to write a machine learning code for risk assessment in chemical process industry

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

Objectives of the project : To write a ml code to assess risk in chemical processes

Major Learning Outcomes : You learn to write code and analyse chemical data

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : It was a good experience, mentor was very easy going , he pushed is to work among ourselves, he was available for help when needed

Academic courses relevant to the project : Heat transfer

PS-II Station : NCL, Pune, Pune

Faculty

Name: Santosh Sopanrao Khandgave

Student

Name: TRIDIBES GUHA .(2021A1PS2582P)

Student Write-up

PS-II Project Title: Utilisation of Computational Fluid Dynamics (CFD) in packed bed column for the removal of heavy metals from wastewater

Short Summary of work done during PS-II : During my online internship at NCL, Pune, I worked on optimising heavy metal removal processes using various methods. I utilised Computational Fluid Dynamics (CFD) to model fluid flow, mass transport, and reaction kinetics within water treatment systems. I applied CFD simulations to optimise parameters like flow velocity, reactor design, and mixing patterns for better efficiency and cost-effectiveness. Additionally, I worked on validating CFD models by comparing them with experimental data to ensure their accuracy. My work involved analysing complex factors such as nonlinear kinetics, surface interactions, and multi-phase flow dynamics to improve the overall performance of heavy metal removal systems.

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

Objectives of the project : Heavy metals in wastewater pose environmental and health risks. Conventional removal methods face challenges like high costs and inefficiency. Packed bed adsorption, using adsorbents like activated carbon, is a promising alternative. Computational Fluid Dynamics (CFD) optimizes fluid flow, mass transfer, and system design, improving adsorption efficiency and sustainability, making it a cost-effective solution for heavy metal removal.

Major Learning Outcomes : ANSYS FLUENT:

CFD Applications: CFD effectively simulates fluid flow, mass transport, and reaction kinetics, aiding in the design and optimization of heavy metal removal systems.

Process Optimization: CFD enhances operational parameters like flow velocity, reactor design, and mixing patterns, improving efficiency, reducing energy use, and lowering costs.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : It was an online internship at NCL, Pune, where I gained valuable experience despite the remote setup. My mentor provided detailed guidance and resources, which enabled me to thoroughly understand the project requirements and successfully complete my tasks.

Academic courses relevant to the project : Separation process 1

PS-II Station : NCL, Pune, Pune

Faculty

Name: Santosh Sopanrao Khandgave

Student

Name: APOORV NATH TRIPATHI .(2021A1PS2603P)

Student Write-up

PS-II Project Title: RACPI

Short Summary of work done during PS-II : Did ML predictions for chemical reactions

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

Objectives of the project : Use ML for RACPI

Major Learning Outcomes : Learnt about Python

Details of Papers/patents : NA

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

Academic courses relevant to the project : NA

PS-II Station : NetApp India Pvt Ltd, Bangalore

Faculty

Name: Chennupati Rakesh Prasanna .

Student

Name: LAVYA DHAWAN .(2020B2A31927P)

Student Write-up

PS-II Project Title: ML-driven cluster-based compression optimization for multi-format data blocks

Short Summary of work done during PS-II : During PS-II, I worked on developing an ML-driven solution to optimize compression for multi-format data blocks. The project involved analyzing data block characteristics using Byte Frequency Distribution (BFD) and entropy features and clustering them using ML models such as K-Means. The clustered data blocks were then compressed using tailored algorithms to enhance storage efficiency. Additionally, I implemented unit tests in CxxTestFramework and used mocks to simulate edge cases, ensuring robust testing of the

developed solution. Overall, I gained hands-on experience with ML tools, Agile development practices, and storage technologies, which enriched my technical and collaborative skills.

Tool used (Development tools - H/w, S/w) : Python, Jupyter Notebook, Cycl Servers, CxxTestFramework, PABot Gen AI, NetApp internal tools

Objectives of the project : To design and implement machine learning models that cluster data blocks based on their characteristics, thereby improving compression efficiency and reducing storage overhead for multi-format datasets.

Major Learning Outcomes : Mastered ML techniques for clustering and compression optimization.

Gained hands-on experience in feature engineering using BFD and entropy.

Improved skills in model validation, testing, and debugging.

Learned to collaborate effectively within Agile teams.

Enhanced problem-solving and adaptability in practical ML projects.

Details of Papers/patents : None directly filed, but the project outcomes hold potential for future research and patents in storage optimization.

Brief Description of working environment, expectations from the company : The working environment at NetApp was collaborative and innovation-driven. The team fostered open communication, offering guidance while encouraging independent problem-solving. Agile methodologies, including sprints and JIRA ticketing, provided structure and clarity in task management. My colleagues and mentors were approachable, creating a supportive space to learn and experiment.

My expectations from the company to provide hands-on technical exposure and mentorship were met. I was given ownership of critical tasks, from designing ML models to validating compression results. The environment encouraged continuous learning and self-improvement, with access to tools and resources for skill enhancement.

Academic courses relevant to the project : Machine Learning

Data Structures and Algorithms

Database Management Systems

Operating Systems
Probability and Statistics
Object Oriented Programming

PS-II Station : NetApp India Pvt. Ltd. - Cloud Volume Engineering, Bengaluru

Faculty

Name: Reddy Rani Vangimalla .

Student

Name: ANANSH K SHETTY(2020B3A70659G)

Student Write-up

PS-II Project Title: Disaster Recovery as a Service

Short Summary of work done during PS-II : During my PS-II internship, I worked for a while on Remote Host Management for Snapcenter and most of my time on enhancing NetApp's Disaster Recovery as a Service (DRaaS) offering within the BlueXP platform. In my first team, I worked on running scripts to validate the system config and to install plugins on a remote windows host from a Linux system. In my next team, I helped implement key features like VM OS insights, automated snapshot retention, and reconciliation enhancements. I focused on testing the solution to identify and resolve bugs, ensuring a seamless user experience. I also implemented additional features based on feedback and refactored existing code to improve its readability and maintainability. The project provided valuable exposure to cloud computing and disaster recovery solutions, enabling me to understand how these technologies contribute to business continuity.

Tool used (Development tools - H/w, S/w) : Angular, HTML, CSS, TypeScript, VSCode, Developer Tool, Go, GoLand, k3s, Visual Studio, Command Prompt, Powershell, LINUX Command Line, Batch Script, Powershell script, C#, .NET Core, GoLand, NodeJS, Postman

Objectives of the project : Helping with system configuration validation on a remote windows host using a local linux machine and writing scripts for the same. Helping build a Disaster Recovery service to protect VMware workloads.

Major Learning Outcomes : Gained hands-on experience with cloud-based disaster recovery solutions and virtualization technologies, particularly VMware.

Improved understanding of software development lifecycles, including feature implementation, testing, and bug resolution.

Developed skills in writing maintainable and readable code by practicing code refactoring.

Enhanced problem-solving and collaboration skills while working in a dynamic team environment.

Learned the importance of user feedback in shaping product features and improving usability.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : I found the working environment really good. I was fortunate to be surrounded by the most cheerful, helpful and motivating people in both the teams I worked in. Questions and invited and appreciated. Depending on your team things might get hectic especially around product release but personally the team let me not feel the pressure and helped me smoothly sail through it. They currently ask employees to come to office at least twice a week and there's no specific in time or out time; as long as you get the work done.

Academic courses relevant to the project : Data Structure and Algorithm, Software Development for Portable Devices, Computer Networks

PS-II Station : NetApp India Pvt. Ltd. - Cloud Volume Engineering, Bengaluru

Faculty

Name: Reddy Rani Vangimalla .

Student

Name: NAVNEET SINGLA .(2021A7PS1450P)

Student Write-up

PS-II Project Title: IMPROVING PERFORMANCE FOR PIPELINES UNDER GCNV HYPERSCALER

Short Summary of work done during PS-II : During my internship at NetApp Bangalore in the Google Cloud Hyperscaler under the Billing team, I had the opportunity to work on various aspects of cloud billing and data management. My role primarily focused on optimizing billing processes for Google Cloud services, ensuring accuracy in invoicing and payment systems for customers. I was involved in analyzing large sets of usage data, tracking trends, and identifying discrepancies, which allowed me to generate detailed reports and improve billing accuracy. Additionally, I collaborated with multiple teams, including sales, finance, and engineering, to address customer queries and enhance the billing system. I also contributed to the development of internal tools aimed at automating billing tasks, providing me with valuable insights into cloud infrastructure and the operational processes of a leading global tech company.

Tool used (Development tools - H/w, S/w) : Google Cloud Platform (GCP) BigQuery SQL Excel/Google Sheets Python JIRA Confluence Tableau Git/GitHub

Objectives of the project : 1. Increasing efficiency for various components used in billing.

Major Learning Outcomes : Polished my skills of Leadership, Collaboration. Deeply learnt how to be in a corporate space with many great minds. Apart from this learnt many technologies like Kubernetes, docker, Google cloud console.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at NetApp Bangalore, specifically within the Google Cloud Hyperscaler Billing team, is dynamic and collaborative. The team is made up of professionals with diverse skill sets, fostering a culture of learning and innovation. The work atmosphere is supportive, with an emphasis on teamwork and open communication, where interns are encouraged to contribute ideas and actively participate in projects.

As an intern, the expectations from the company are to demonstrate strong problem-solving skills, attention to detail, and a willingness to learn. There is an emphasis on taking ownership of tasks, being proactive in addressing challenges, and contributing to the team's overall success. The company encourages interns to engage with the team, ask questions, and gain hands-on experience with the tools and technologies used in cloud billing. Furthermore, interns are expected to manage their time effectively, meet deadlines, and collaborate across teams to ensure the smooth operation of billing processes and systems.

Academic courses relevant to the project : Cloud Computing

Data Structures and Algorithms

Database Management Systems

Data Analytics and Visualization

Software Engineering

Programming Languages (Python/Java)

Business Intelligence

Financial Management or Accounting

PS-II Station : NewronData Global Services Private Limited, Chennai

Faculty

Name: Pradheep Kumar K .

Student

Name: SWAPNIL AMAR PURWAR(2021A7PS2735G)

Student Write-up

PS-II Project Title: Business Automation

Short Summary of work done during PS-II : This document outlines the objectives and outcomes of various projects focused on automation, AI chatbot development, and business optimization. The **Bulk Certificate Generation** project automated the creation of personalized certificates using Python libraries like PyQt5, Numpy, and Pandas. This reduced manual effort and ensured accuracy and scalability. The **GrowthFlow.AI Platform** project emphasized learning tools for workflow automation, marketing, and funnel management, streamlining business processes and improving efficiency. In the **Conversation AI Chatbot and Automation** project, chatbots were integrated with workflow automation to enhance customer interactions and sales processes, reducing manual intervention. The **Libromi Chatbot Platform** project focused on building WhatsApp chatbots for educational programs, enhancing user engagement in fields like Full-Stack Development and Embedded Systems. The **Platform Automation** project involved creating scalable automated solutions for lead management, marketing, and customer interaction, ensuring seamless integration across funnels and websites. The **Funnels for Automation** project designed automated marketing funnels, optimizing lead nurturing and conversion through workflow automation. The **AI Chatbot Use Case Articles** project resulted in over 70 SEO-optimized articles highlighting chatbot applications across industries, driving audience engagement and showcasing their transformative potential. Lastly, the **Web Development for Clients** project involved creating visually appealing, responsive, and user-friendly websites using HTML5, CSS3, and JavaScript ES7, enhancing client online presence. These projects developed expertise in automation, chatbot development, content creation, and web design, showcasing innovation and technical proficiency in addressing real-world challenges.

Tool used (Development tools - H/w, S/w) : Growthflow.Ai Platform, Libromi Chatbot Platform, Wordpress, VS Code.

Objectives of the project : To create tools and automation projects for their Platform.

Major Learning Outcomes : The major learning outcome is the development of expertise in automation, AI chatbot creation, web development, and business optimization using modern tools and platforms. These projects enhanced technical proficiency, problem-solving skills, and adaptability to real-world challenges. They highlight the ability to deliver efficient, scalable, and user-focused solutions across diverse domains.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The working environment is dynamic and collaborative offer opportunities to engage in diverse projects spanning automation, AI chatbot development, content creation, and web design. The workspace encourages employees to take ownership of their responsibilities while promoting a culture of mutual respect and professional growth. Regular updates on project objectives, milestones, and deliverables are expected to ensure clarity and focus.

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

PS-II Station : Nichesolv, Bengaluru, Bengaluru

Faculty

Name: Mohammad Saleem Bagewadi .

Student

Name: AVANEESH GUJRAN(2021A7PS0010G)

Student Write-up

PS-II Project Title: Social Media Automation

Short Summary of work done during PS-II : Dashboard Analytics and Odds Converter. I had to write a bunch of analytics functions to see how their users would use tips across betting systems. One more issue I worked on was making an odds converter in which we were able to switch to different odds format. Apart from that we worked on social media automation which allows us to reach out to thousands of users and try to

Tool used (Development tools - H/w, S/w) : Node , MERN , Python, Flask , Django

Objectives of the project : To reach out to users and convert them into using our platform.

Major Learning Outcomes : MERN, Python, Firebase, Postman, Git

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment was very intense as large scale applications had to be built in less than a week. It was very important to give updates every 2-3 days. I had a great time working because my learning cycle had rapidly improved.

Academic courses relevant to the project : DSA, Distributed Systems

PS-II Station : Nielsen, Gurgaon

Faculty

Name: Neha Vinayak .

Student

Name: SURYANK AGARWAL .(2020B1A11899P)

Student Write-up

PS-II Project Title: Automation Tool Development

Short Summary of work done during PS-II : During my internship at Nielsen, I played a significant role in enhancing and maintaining an Automation Testing Tool used for testing Nielsen's SDKs. This tool automates the testing process, reducing manual efforts and ensuring faster, more accurate testing processes. My contributions focused on improving existing features and addressing critical bugs to enhance the tool's performance and reliability. The tool comprises several components, including a Controller triggered by cron jobs for seamless process initiation, a React Native application for setting up Android and iOS test environments, and a Spring MVC interface for managing configurations and results. Utilities automate backend operations such as transferring files from Amazon S3 to EC2 instances or Mac machines. Additionally, the Test Executor ensures smooth execution of test cases, while the Comparator automates result validation, significantly reducing manual effort. I worked on optimizing the functionality of these components, particularly focusing on debugging and refining their operations. By utilizing technologies like Java, TestNG, Gradle, React Native, Jenkins, GitLab, and Terraform. My efforts streamlined the testing workflow, enabling faster feedback cycles and enhancing the overall quality assurance process. This experience provided me with a deeper understanding of automation frameworks, cloud-based infrastructure, and collaborative development, while making a tangible impact on the effectiveness of Nielsen's testing operations.

Tool used (Development tools - H/w, S/w) : Java, JDBC, Spring MVC, Selenium, TestNG, Gradle, React Native, Jenkins, GitLab, and Terraform, AWS Virtual Private Cloud and EC2 instances, RDS and S3 Bucket.

Objectives of the project : To manage and enhance a tool that automates the testing process of the product.

Major Learning Outcomes : 1) Java Database connectivity(JDBC)
2)AWS Virtual Private Cloud(VPC)
3) Amazon Machine Image(AMI) and automatic EC2 instance generation using Terraform scripts.
4) Spring MVC design pattern
5) TestNG Framework for automating testing process.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : There is transitions going on in the company, company is shifting it's epicenter to India, because of which alot of US and Canada based senior employees who worked for many years in this company, are leaving. Because of this, there are many things in the existing technologies/implementations that we have to understand on our own because, the Indian senior employees that are new to company, are also new to the codebase and are unaware of the existing codeflow just like us. And the tool I am working upon, there is no QA team for that tool. I was told that I am the Developer and QA both for the tool. But the employees are very supportive and are ready to help as much as they can.

Academic courses relevant to the project : OOPS, DBMS, Computer Networks, Cloud Computing.

PS-II Station : Nielsen, Gurgaon

Faculty

Name: Neha Vinayak .

Student

Name: RAVINDRA RAO(2020B4A42239H)

Student Write-up

PS-II Project Title: Front end dev

Short Summary of work done during PS-II : Develop new features for different web apps, fix bugs, rewrite legacy code, job monitoring

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

Objectives of the project : Maintain and build/fix features for their webapps

Major Learning Outcomes : Performance Optimization: Writing efficient code, optimizing queries, and implementing lazy loading and caching.

Testing and Debugging: Proficiency in unit and integration testing, strong debugging skills.

Version Control: Mastery of Git for version control and participating in code reviews.

UI/UX Design: Creating responsive, user-friendly, and accessible interfaces.

Object-Oriented Programming: Mastering OOP principles like inheritance, polymorphism, encapsulation, and abstraction.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Good Working Environment in most teams.

Expectations in my team - We had to take ownership of all the features for the webapps we manage, complete tasks within deadlines and help out in support/ job monitoring

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

PS-II Station : Nielsen, Gurgaon

Faculty

Name: Neha Vinayak .

Student

Name: ASHMIT SRIVASTAVA .(2021A4PS2205P)

Student Write-up

PS-II Project Title: Enhancing Data Integrity and Workflow Efficiency in Media Analytics Systems

Short Summary of work done during PS-II : During my internship at Nielsen, I was part of the Data Acquisition team, where my primary responsibilities included data validation, mismatch analysis, and workflow monitoring. I ensured data consistency across legacy systems and the Media Data Lake (MDL) using tools such as Apache Airflow, Spark, and DBeaver. This involved analyzing raw data, identifying mismatches, and resolving issues to maintain data integrity. Additionally, I supported production workflows by monitoring Directed Acyclic Graphs (DAGs) in Apache Airflow. My role involved identifying failures, troubleshooting issues using log files, and collaborating with the team to ensure smooth workflow execution. I also contributed to schema-level changes, tested redesigned schemas, and validated performance reports to optimize job execution times. My work environment followed the Agile methodology, which helped me adapt quickly to changing requirements and deliver results efficiently. The hands-on experience I gained

with data validation, workflow optimization, and troubleshooting has provided me with a strong foundation in data analytics and workflow management.

Tool used (Development tools - H/w, S/w) : Apache Airflow, Spark, DBeaver, TablePlus, AWS S3, DbVisualizer, WinSCP, SQL, Scala, Cassandra

Objectives of the project : 1.To ensure the accuracy and integrity of data used in analytics workflows. 2.To validate and monitor data pipelines for consistency and reliability. 3.To analyze and resolve mismatches across data systems. 4.To optimize performance and enhance the efficiency of workflow processes. 5.To gain hands-on experience in data management tools and methodologies.

Major Learning Outcomes : Gained expertise in validating large datasets and ensuring data consistency.

Developed skills in monitoring and troubleshooting workflows using Apache Airflow.

Enhanced ability to analyze mismatches and resolve data-related issues effectively.

Improved teamwork and adaptability through Agile processes.

Strengthened understanding of tools like Spark, DBeaver, and AWS S3 for data processing and storage.

Details of Papers/patents : No papers or patents were submitted during this internship.

Brief Description of working environment, expectations from the company : The working environment at Nielsen was collaborative, supportive, and structured around the Agile methodology. The team followed regular sprints, allowing for clear planning and prioritization of tasks. There was a strong focus on teamwork, where every member actively contributed to problem-solving and decision-making processes.

The company provided all necessary tools and resources for my tasks, including access to platforms like Apache Airflow, Spark, and AWS S3. Regular feedback from my manager and peers helped me stay on track and improve my work quality. Expectations from the company were clear: deliver accurate and timely results while maintaining a high standard of data quality.

The environment encouraged learning and professional growth. My team was approachable and willing to help, which made it easier to resolve challenges. I was expected to be proactive,

adaptable, and detail-oriented in all my responsibilities, whether validating data, monitoring workflows, or documenting solutions. Overall, the company created an enriching atmosphere where I could apply my technical skills and gain hands-on experience.

Academic courses relevant to the project : Data Structures and Algorithms

Database Management Systems

Introduction to Machine Learning

PS-II Station : Nielsen, Gurgaon

Faculty

Name: Neha Vinayak .

Student

Name: PRANSHU TRIPATHI(2021A8PS2745G)

Student Write-up

PS-II Project Title: Big Data and devops

Short Summary of work done during PS-II : During my PS-II internship, I worked on multiple projects focusing on data handling, workflow automation, system monitoring, and log management. In the first project, I updated the data handling and retrieval process from the database to accommodate a change in the data format. I tested the solution against older, newer, and mixed data formats using Apache Spark, SQL, Postman, and EC2. In the second project, I automated cluster lifecycle management using Airflow DAGs. I implemented functionalities to check for running jobs on Spark UI, connect to the database for updates, and automate API

requests for cluster destruction and creation, ensuring efficient resource management. In the third project, I designed and implemented comprehensive monitoring and alerting solutions for Kubernetes clusters and AWS resources. I built Grafana dashboards integrated with Prometheus and Loki for monitoring and log aggregation. Additionally, I configured CloudWatch alerts for critical AWS services like EC2, Lambda, and RDS, improving incident response times and system reliability. In the fourth project, I automated the aggregation and transfer of Spark job logs from EC2 instances to Amazon S3. I enabled YARN log aggregation, automated encrypted log transfers, and implemented lifecycle policies to optimize costs. Throughout these projects, I gained hands-on experience with tools and technologies like Python, Airflow, Spark, Boto3, Kubernetes, Grafana, and AWS CloudWatch, enhancing my skills in data processing, workflow automation, system monitoring, and cost optimization.

Tool used (Development tools - H/w, S/w) : Software Tools: Apache Spark, YARN, Airflow, Prometheus, Grafana, Loki, Postman AWS Services: EC2, S3, CloudWatch, RDS, Lambda Languages & Libraries: Python, SQL, pycopg2, Boto3, requests Hadoop Configurations: yarn-site.xml Other Tools: Putty, AWS CLI

Objectives of the project : wasn't a single project, I worked on different things in different sprints

Major Learning Outcomes : Data Handling & Processing:

Efficient data retrieval using SQL, Apache Spark, and EC2.

Workflow Automation:

Created Airflow DAGs for automated cluster management and API handling.

System Monitoring & Alerting:

Designed monitoring solutions with Grafana, Prometheus, Loki, and AWS CloudWatch.

Tool Integration:

Hands-on experience with Postman, Putty, pycopg2, and Boto3.

Best Practices:

Learned scalable automation, log aggregation, and mixed data format handling.

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : I had a great experience at my company with a supportive and collaborative working environment. The team

was approachable, and my mentors provided constant guidance, making it easy to adapt and learn.

The company set clear expectations, encouraging me to take ownership of tasks, work independently, and deliver practical solutions. Regular feedback and access to tools like Apache Spark, Airflow, AWS, and Kubernetes helped me enhance my technical skills.

Overall, the professional yet encouraging atmosphere allowed me to learn, grow, and contribute effectively.

Academic courses relevant to the project : FODSA,OOPS

PS-II Station : Nimblynx Software Pvt Ltd, Kolkata

Faculty

Name: Sugata Ghosal .

Student

Name: ARKODIPTO DUTTA(2020B4A72177H)

Student Write-up

PS-II Project Title: Topics in Cryptography, Blockchain and DeFi

Short Summary of work done during PS-II : I focused on exploring cryptography, blockchain technology, and decentralized finance (DeFi). My primary objective was to gain a comprehensive understanding of these fields while contributing to relevant projects. In the domain of cryptography, I studied symmetric and asymmetric encryption methods, hash functions, and digital signature algorithms. I explored zero-knowledge proofs and cryptographic protocols to enhance data security and privacy. In blockchain technology, I delved into distributed ledger

systems, consensus mechanisms such as Proof of Work (PoW) and Proof of Stake (PoS), and smart contract development using Solidity. For DeFi, I researched protocols such as lending, borrowing, staking.

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

Objectives of the project : Researching on various topics in Cryptography, Blockchain and DeFi

Major Learning Outcomes : Learnt about data encryption, secure communication, cryptographic algorithms, blockchain architecture, consensus mechanisms (PoW, PoS), decentralized ledgers, smart contracts, and blockchain scalability for secure and transparent decentralized systems.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The environment is really nice with helpful mentors and flexible working hours.

Academic courses relevant to the project : Blockchain, Cryptography

PS-II Station : Nirmaan Organization - Non Tech,Hyderabad, Hyderabad

Faculty

Name: Sandeep Kayastha .

Student

Name: OINDRILLA PATHAK .(2021A5PS2677P)

Student Write-up

PS-II Project Title: PRODUCT MANAGEMENT AND MARKETING STRATEGIES THROUGH DATA DRIVEN SOLUTIONS

Short Summary of work done during PS-II : During my Practice School-II (PS2) internship at Nirmaan, I contributed to several key projects aimed at enhancing organizational efficiency and promoting social impact. These included: Event Management Software (EMS): I played a crucial role in the design and development of EMS, working on requirements gathering, user flows, and wireframes to ensure that the software would streamline event planning and execution. The project aimed to optimize resource allocation, improve coordination, and enhance communication across departments. Human Resource Management System (HRMS): I worked on documenting progress and collaborating with the development team to create a system that would enhance HR processes, focusing on features like leave management, payroll processing, and team collaboration, essential for operational efficiency. SWASHA Initiative: I contributed to the SWASHA initiative, working on optimizing e-commerce branding and developing targeted digital marketing strategies to boost product visibility and sales for women artisans. I also performed sales data analysis to identify trends and optimize marketing efforts, enhancing the overall success of the initiative. Marketing Strategy for Hope in a Cup: I developed a marketing strategy for Hope in a Cup, focusing on increasing brand awareness and customer engagement. I worked on digital campaigns, partnerships, and customer loyalty programs to drive footfall and create long-term engagement. Volunteering Activities: I was involved in various volunteering activities, including organizing a three-day Social Impact Conclave, which hosted over 120 corporates and launched 20+ new projects. I also contributed to creating awareness for relief campaigns, environmental drives, and worked on content for Nirmaan's social media and other platforms. These projects helped me strengthen my technical, strategic, and communication skills, providing a well-rounded experience in product management, digital marketing, and social impact initiatives.

Tool used (Development tools - H/w, S/w) : Figma ,Microsoft Excel ,Power BI ,Google Analytics ,Canva ,Google Forms/Surveys ,Trello ,Slack

Objectives of the project : Empowerment through Technology: To integrate technological solutions, such as the Event Management Software (EMS) and Human Resource Management System (HRMS), to streamline operations, improve efficiency, and empower the internal teams at Nirmaan. Support Women Entrepreneurs: To enhance the e-commerce capabilities of the

SWASHA initiative, driving sales, product visibility, and creating sustainable livelihoods for women artisans by leveraging data-driven digital marketing strategies. **Improve Operational Efficiency:** To optimize internal processes at Nirmaan, including event coordination, human resource management, and data analysis, to better support the organization's social initiatives. **Raise Awareness and Engagement:** To develop and implement effective marketing strategies for Nirmaan's initiatives like Hope in a Cup, aiming to increase brand visibility, customer engagement, and partnerships with the community. **Data-Driven Decision Making:** To use data analysis to identify trends, optimize sales strategies, and drive informed decision-making within the SWASHA initiative, ensuring alignment with customer needs and market demands.

Major Learning Outcomes :

1. **Product Management:** Gained hands-on experience in the full product development lifecycle, including requirement gathering, user flow creation, and wireframing for EMS and HRMS.
2. **Digital Marketing:** Developed and implemented data-driven digital marketing strategies for SWASHA and Hope in a Cup, focusing on e-commerce optimization, customer engagement, and brand awareness.
3. **Data Analysis:** Applied data analysis techniques to interpret sales trends, optimize product offerings, and drive marketing strategies for the SWASHA initiative.
4. **Cross-Functional Collaboration:** Worked closely with various teams (operations, communications, and tech) to execute projects, improving communication and teamwork skills.
5. **Social Impact Understanding:** Gained a deeper understanding of how technology and digital marketing can drive social change, particularly in empowering marginalized communities.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Nirmaan is collaborative, inclusive, and mission-driven, focused on empowering marginalized communities through sustainable development initiatives. The organization fosters a culture of learning and growth, where employees and interns work closely across departments to execute projects that create meaningful social impact. The team is highly supportive, providing guidance and mentorship throughout the internship, ensuring both personal and professional development.

At Nirmaan, expectations from interns and employees are to demonstrate initiative, creativity, and a strong commitment to the organization's mission. Interns are encouraged to take ownership of

projects, contribute fresh ideas, and collaborate effectively with cross-functional teams. The work environment is fast-paced, requiring adaptability and a proactive approach to problem-solving. From the company, I expected a platform to develop practical skills in product management, digital marketing, and social impact, which I received through involvement in various projects. The company has exceeded my expectations by providing a supportive and dynamic environment, where my contributions were valued, and my learning was actively encouraged. The exposure to real-world challenges and the opportunity to work on high-impact projects has significantly enhanced my understanding of nonprofit operations and strategies for community empowerment.

Academic courses relevant to the project : Product Management

Product Design

Data Analytics

Project Management

Strategic Management

PS-II Station : Nirmaan Organization - Non Tech,Hyderabad, Hyderabad

Faculty

Name: Sandeep Kayastha .

Student

Name: KUMUD MALIK .(2021ABPS2259P)

Student Write-up

PS-II Project Title: Empowering Communities: An Internship Experience with Nirmaan Organization

Short Summary of work done during PS-II : During my internship at Nirmaan Organization, I worked across finance, operations, and volunteering teams, contributing to impactful CSR-funded initiatives. In the finance domain, I conducted a cost-benefit analysis for LGBTQI+ community cafes under the "Hope in a Cup" initiative, ensuring their financial sustainability. In operations, I played a key role in the Village Adoption Program, supporting livelihood projects like distributing solar panels, cattle, and fishing materials to enhance rural incomes. I also contributed to procuring critical equipment for a government hospital, including an MRI machine and emergency room essentials, significantly improving healthcare access for underserved populations. Additionally, I rectified and consolidated data for a digital literacy program training 27,000 beneficiaries, ensuring accurate reporting and actionable insights. As part of the volunteering team, I organized events like an adventure park outing for orphaned girls and workshops on career guidance, internet safety, and digital skills for students. I created educational materials and presentations for these workshops, collaborating with corporate volunteers to deliver engaging and impactful sessions. This internship enabled me to develop skills in project management, data analysis, stakeholder coordination, and communication while contributing to initiatives that created lasting social change. It also deepened my understanding of grassroots-level challenges and the importance of collaborative efforts in driving community development.

Tool used (Development tools - H/w, S/w) : Canva, Excel , google slides , figma , microsoft powerpoint , google sheets, microsoft word

Objectives of the project : The objective of my internship was to contribute to impactful CSR-funded projects, empower marginalized communities, and enhance organizational efficiency while developing skills in project management, data analysis, and stakeholder coordination.

Major Learning Outcomes : The major learning outcomes of my internship included:

- Project Management: Handling large-scale projects and coordinating with multiple stakeholders.
- Data Analysis: Cleaning, consolidating, and analyzing data for actionable insights.
- Collaboration: Working with diverse teams and corporate partners to achieve goals.
- Social Impact: Understanding the execution of CSR initiatives and their impact on communities.
- Communication Skills: Creating presentations, conducting outreach, and managing relationships effectively.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Nirmaan Organization was dynamic, collaborative, and purpose-driven. The team fostered a culture of inclusivity and mutual respect, encouraging interns to take initiative and actively contribute to impactful projects. Clear communication and guidance from mentors ensured a supportive atmosphere, allowing me to navigate challenges effectively. Regular team meetings and feedback sessions promoted transparency and aligned everyone towards common goals.

The expectations from the organization were clear and well-defined. I was expected to demonstrate accountability, attention to detail, and the ability to manage multiple tasks simultaneously. Timely delivery of outputs, such as data analysis reports, marketing materials, and project proposals, was a key focus. Nirmaan valued creative problem-solving and adaptability, especially in projects requiring coordination with diverse stakeholders, such as corporate sponsors, trainers, and beneficiaries.

The organization provided a platform to work on meaningful CSR initiatives, ensuring every task had a tangible social impact. There was a strong emphasis on learning, with ample opportunities to gain hands-on experience in data management, project execution, and stakeholder engagement. Overall, the environment and expectations combined to create an enriching experience that balanced professional growth with social responsibility.

Academic courses relevant to the project : Fundafin, operations management

PS-II Station : Nirmaan Organization - Tech,Hyderabad, Hyderabad

Faculty

Name: Y V K Ravi Kumar .

Student

Name: ABHISHEK CHHAPOLIA(2020B4AA1875G)

Student Write-up

PS-II Project Title: Human Resource cum Project Management Software

Short Summary of work done during PS-II : I designed the wireframes of the software from scratch. They developed the user interface using languages like HTML, Tailwind CSS and Next.js which is a react.js framework. Meanwhile I drew entity relationship diagrams to design the database. And then went on to create API's using Axios and Express.js

Tool used (Development tools - H/w, S/w) : VS Code, ShadCN UI, Next auth library, Axios, Tailwind UI, Postman for API testing etc

Objectives of the project : To develop an in-house software for Nirmaan Organization to manage human resource and projects

Major Learning Outcomes : I learnt front end and back end web development. Languages- HTML, Tailwind CSS, React.js, Next.js, Express.js, Postgresql

Details of Papers/patents : I wasn't enrolled in theses

Brief Description of working environment, expectations from the company : It was a professional company, the workspace had all the basic amenities like seats, AC's, Coffee machines etc

The team was highly motivated and the overall work culture was helpful.

Academic courses relevant to the project : -

PS-II Station : Niveus Solutions Pvt. Ltd, Mangalore, Udupi

Faculty

Name: Sai Kishor Jangiti .

Student

Name: AMIT DEEPAK KUVELKER(2021A7PS3054G)

Student Write-up

PS-II Project Title: Migration in Google's DMS and Gen AI

Short Summary of work done during PS-II : Initially we learnt about Mode. This dealt with business intelligence handling. Then we learnt about SQL in depth. After this we learnt about Oracle and PostgreSQL due to need for migrations- while migrating from Oracle to Alloy(postgres) db from client side. A part of the job was also to be precise in running Unit Testing over the results of migrations.After switch of departments we were made to learn basics of Generative AI. The interns with a longer duration were put on a more intensive training program for projects that they would be given later.

Tool used (Development tools - H/w, S/w) : Oracle, Postgres, Google DMS, DBeaver

Objectives of the project : Learn Oracle and PostgreSQL along with the Google Database Migration System(DMS) to help migrate Client Databases from their legacy warehouses to Cloud(like AlloyDB) and then verify these by Unit Testing them

Major Learning Outcomes : -Unit testing for the migrations of large

-Writing of dynamic query codes for some unit tests, such as Sum of Numerical Columns and Count of Null Columns

-Reduction in total rows count via suitable select statement filtering for the help of the QA team.

-Generative AI basics and learning how to make a project about QA pair generation from a pdf.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The company had allowed me to work from home due to the low stipend it offered me, 8K per month but there used to be daily tasks given. In office, the company is extremely pleasant. The company expects a official 8 hours a day, but unofficially 6 hours a day for 5 days. As was the case for me there could be a change in working dept based on needs of the company, as mine went from data modernization to development.

Academic courses relevant to the project : Database Systems

PS-II Station : Nomura CMT Internship, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: PODDAR MEHUL ASHISH(2020B3A72158H)

Student Write-up

PS-II Project Title: INITIAL MARGINNING FOR NON CENTRALLY OTC CLEARED DERIVATIVES- CHANGE MANAGEMENT TEAM

Short Summary of work done during PS-II : During the internship, I contributed to Nomura's implementation of RBI-mandated IM requirements for NCCDs. My role included creating end-to-

end workflows, drafting project plans, and preparing meeting minutes and presentations. I facilitated cross-functional collaboration, conducted feasibility studies for CCIL E-Sarvam, and implemented custodial arrangements for collateral exchange. Additionally, I managed RAID logs, developed dashboards for reporting, and addressed challenges such as counterparty alignment and regulatory ambiguities. These efforts ensured Nomura's compliance and operational readiness while improving its infrastructure for future regulatory demands.

Tool used (Development tools - H/w, S/w) : Software: CCIL E-Sarvam Microsoft Excel (Advanced functions) Power BI Project management tools (e.g., Jira) Documentation and presentation tools (e.g., Microsoft Word, PowerPoint)

Objectives of the project : The project aimed to implement Initial Margin (IM) requirements for Non-Centrally Cleared OTC Derivatives (NCCDs) for Nomura's NFIS entity. This included: Ensuring compliance with RBI regulations for threshold monitoring, exposure management, and margin exchange. Establishing infrastructure for custodial arrangements, collateral management, and margin calculations. Evaluating the feasibility of platforms like CCIL E-Sarvam for automation and operational efficiency.

Major Learning Outcomes : Technical learnings:

Advanced knowledge of RBI's regulatory framework and margin calculation methods.

Proficiency in CCIL E-Sarvam and threshold monitoring systems.

Expertise in advanced Excel functions and Power BI for data analysis and visualization.

Non-technical learnings:

Effective communication and documentation skills.

Experience in cross-functional team management and strategic decision-making under constraints.

Details of Papers/patents : No mention of papers or patents in the report.

Brief Description of working environment, expectations from the company : The working environment at Nomura was dynamic and collaborative, emphasizing professional growth and operational excellence. Cross-functional teamwork and mentorship by managers fostered an inclusive and supportive atmosphere. Expectations from the company included adherence to deadlines, proactive communication, and the ability to adapt to evolving regulatory requirements.

The firm's emphasis on innovation and compliance provided valuable exposure to the financial services sector, making the internship a highly enriching experience.

Academic courses relevant to the project : DRM, FRAM

PS-II Station : Nomura Global Markets SP Quants role, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: CHARITHA KRISHNA GAJULA(2020B4A70936H)

Student Write-up

PS-II Project Title: Securitized Products Quant

Short Summary of work done during PS-II : During my PS-II, I worked extensively with complex mathematical models related to prepayment, interest rates, and home price appreciation (HPA) for Mortgage-Backed Securities (MBS). My role primarily involved developing and enhancing quantitative models to capture the nuances of these variables, which play a critical role in the valuation and risk assessment of MBS. One of my significant contributions was creating a Mortgage Servicing Rights (MSR) model from scratch. This required a deep understanding of MSR cash flow structures, prepayment behaviors, and default risks. Building the model involved coding in C++ for pricing and using Python for simulation and data visualization.

Tool used (Development tools - H/w, S/w) : Cpp, python, vba, excel

Objectives of the project : To build mathematical models for Mortgage back securities and Mortgage servicing rights

Major Learning Outcomes : I learnt how to handle huge mathematical models for prepayment, interest and hpa for mortgage back securities. Dealt with MSR and created that model from scratch. It was a huge learning curve often leading to new new outcomes

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment during my internship was challenging yet rewarding. Since there was no dedicated team in India, and only one other person working alongside me, the support system was minimal. This setup required a high degree of independence and self-reliance, as most issues had to be resolved through individual effort and extensive research. While this often made the work environment demanding, it also provided a unique opportunity to take ownership of tasks and develop a problem-solving mindset.

The expectations from the company were aligned with this setup—self-motivation, adaptability, and the ability to handle complex tasks independently were essential. The role required me to dive deep into mathematical models and programming without much immediate guidance, which was both intellectually stimulating and, at times, exhausting.

However, this environment proved to be highly rewarding for someone who enjoys figuring things out independently. The steep learning curve fostered personal and professional growth, offering immense satisfaction with each problem solved and milestone achieved. The experience honed my analytical skills, resilience, and ability to navigate ambiguity, all of which are invaluable for a career in quantitative finance.

Academic courses relevant to the project : Numerical analysis, pde, oops, os

PS-II Station : Nomura- Risk Management - CEM Internship, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: HARKIRAT SINGH VIRDI(2020B3A40909H)

Student Write-up

PS-II Project Title: CEM Intern

Short Summary of work done during PS-II : Creating automation tools for team.Completing monthly BAUs.Documentation of SAP Business Objects web intelligence document.

Tool used (Development tools - H/w, S/w) : Python,excel, SAP Business Objects

Objectives of the project : To aid team in risk estimation of counterparty portfolios.

Major Learning Outcomes : Soft skills are as important as hard/technical skills.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The team members, both onshore and offshore, are very warm and welcoming. There is so much to learn from each and every individual. The hierarchy is pretty flat where - talking about myself - an intern can actually directly talk to CEO.

Academic courses relevant to the project : Finance Minor

PS-II Station : Nomura- Risk Management - Risk Methodology Group, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: M VARUN SRINIVAS(2020B3AA0497H)

Student Write-up

PS-II Project Title: Automation and BAU execution for CRA SFT Team

Short Summary of work done during PS-II : Worked on writing object oriented python functions for the VBA methods, assisted the team with daily BAU activities and ad-hoc tasks like model validation, exposure calculation and report submissions.

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

Objectives of the project : To convert VBA code into python code for some BAU tasks

Major Learning Outcomes : VBA, Excel, Python, Team communication

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : To complete work on time, to collaborate and actively seek for work, communication and delivery of projects

Academic courses relevant to the project : FRAM

PS-II Station : Nomura- Risk Management - Risk Methodology Group, Mumbai

Faculty

Name: Ambatipudi Vamsidhar .

Student

Name: RISWADKAR PRALHAD ASHWINIKUMAR(2020B3AA1274H)

Student Write-up

PS-II Project Title: CRM calibration python library creation and What-if Tools Creation

Short Summary of work done during PS-II : Automated an excel based EUC into a python library for easier computation. Built an excel based interface and integrated it with a python backend using VBA to make it easier for risk managers without python knowledge to use python libraries in a format they are comfortable with.

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

Objectives of the project : 1. To automate the CRM calibration excel based EUC into a jupyter notebook based python EUC by creating a python library for the same. 2. Create What-If tools for existing python libraries by integrating an excel frontend and a python backend using VBA.

Major Learning Outcomes : Python Library Structuring knowledge was gained, along with VBA macro creation.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Very helpful team and manager, I was allowed to do things the way I wanted as long as the outcomes were right, help was provided if asked for, no micro-management or excessive workloads.

Academic courses relevant to the project : FRAM

PS-II Station : Novus Hi-Tech, Gurgaon

Faculty

Name: Swarna Chaudhary .

Student

Name: SOUMYA BIRLA(2020B5A82390H)

Student Write-up

PS-II Project Title: ADAS

Short Summary of work done during PS-II : ### Summary of Work Done The project focused on leveraging machine learning for model optimization and driver identification in automotive systems. A retraining pipeline was developed using techniques like incremental learning, transfer learning, and online learning to adapt models to evolving data, improving the detection of driver distractions and fatigue. For driver identification, diverse data sources such as driving patterns, biometrics, and sensor inputs were utilized. Advanced algorithms, including classification and pattern recognition techniques, were employed to enhance accuracy. The developed system enabled secure authentication and personalized driving experiences by integrating facial recognition and real-time behavioral monitoring. A significant part of the work involved creating

a gaze detection system to identify driver distraction and drowsiness. This system used convolutional neural networks (CNNs) to analyze gaze patterns through in-vehicle camera feeds and provided real-time alerts to enhance safety. Additionally, the project explored the use of Facenet for high-accuracy facial recognition and Shuffle models for robust driver differentiation through ensemble learning and data augmentation. Both models were integrated into a comprehensive driver identification system for consistent and reliable performance in diverse scenarios. The project addressed challenges such as data privacy, computational costs, and biases in training data while exploring future advancements in real-time adaptation, integration with autonomous vehicles, and enhanced personalization. This work significantly contributes to improving vehicle safety, security, and user experience through innovative applications of machine learning.

Tool used (Development tools - H/w, S/w) : 1. Programming: Python, TensorFlow, PyTorch, OpenCV. 2. Algorithms: Incremental learning, transfer learning, CNNs, clustering. 3. Facial Recognition: Facenet, Shuffle models. 4. Gaze Detection: Dlib, OpenCV, CNNs. 5. Data Processing: Augmentation,

Objectives of the project : To Build an ADAS software and improve its accuracy

Major Learning Outcomes :

1. Model Optimization: Mastered retraining techniques like incremental, transfer, and online learning to enhance model adaptability and performance.
2. Driver Identification: Applied ML to analyze driving patterns, biometrics, and sensors for secure and personalized user experiences.
3. Gaze Detection: Developed a CNN-based system for real-time driver distraction and drowsiness detection.
4. Facenet & Shuffle Models: Implemented advanced facial recognition and ensemble learning for accurate driver identification.

Details of Papers/patents : None

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

Academic courses relevant to the project : courses related to AI/ML might help

PS-II Station : Novus Hi-Tech, Gurgaon

Faculty

Name: Swarna Chaudhary .

Student

Name: SIDDHARTHA MISHRA(2021A3PS0796H)

Student Write-up

PS-II Project Title: EMBEDDED FIRMWARE DEVELOPMENT

Short Summary of work done during PS-II : embedded firmware dev

Tool used (Development tools - H/w, S/w) : vs code, stmcube ide, code composer studio

Objectives of the project : develop embedded softwares solutions for different devices

Major Learning Outcomes : embedded

Details of Papers/patents : none

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

Academic courses relevant to the project : none

PS-II Station : Nutanix , Bengaluru / Pune, Bengaluru

Faculty

Name: Chandra Shekar R K .

Student

Name: KOKIL SINGH(2020B1A72027H)

Student Write-up

PS-II Project Title: Renewals Navigator

Short Summary of work done during PS-II : Worked on a full-stack project that involved not only the typical scheme of SDE work but also gave exposure to multi-team collaboration in building a better SaaS product.

Tool used (Development tools - H/w, S/w) : React.js, Sails.js, Node.js, PostgreSQL, GraphQL, REST

Objectives of the project : To develop features for facilitating effective roadmap development of the new project. To gain technical acuity and gather effective soft skills through collaboration with other development teams in bringing out more features. Work on Tech Debts to help analyse how different design patterns may impact security and system vulnerabilities.

Major Learning Outcomes : 1) Adjusting to a New Code Stack as well as Method of Code Writing in order to maintain readability as well as code consistency, which creates a collective ownership in helping maintain a comfortable development experience for the entire team.

- 2) Collaboration with Teams across different Tech stacks, time zones and business requirements helped improve my business software skills
- 3) Deep dive into System Security to prevent the creation of vulnerabilities and hacking risks within our application. Also learned how to ethically hack an application.
- 4) Taking ownership of your work and delivering them on time.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The division - SaaS R&D, more specifically my sub-division - RE, consists of senior developers which provided the right environment for mentorship. They have helped me gain perspective not only wrt to Nutanix and work, but about corporate and the industry in general. The team consistently requires feedback from each of its individuals so as to facilitate each person's learning no matter the level of expertise.

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

PS-II Station : Nutanix , Bengaluru / Pune, Bengaluru

Faculty

Name: Chandra Shekar R K .

Student

Name: NANDISH CHOKSHI(2020B1A72031G)

Student Write-up

PS-II Project Title: Developing Auto Triage Tool and Automation of V4 APIs

Short Summary of work done during PS-II : Worked as a part of Life Cycle Manager team which works on managing all upgrade dependencies for software and firmware components. Worked on the Automation of V4 APIs by optimising the post commit build process and reduced overall time by 50%, wrote the code for negative scenarios and error codes as a part of the left shifting process. Developed an Auto Triage Tool to streamline regression workflows and reduce manual efforts and time spent on triaging process. Leveraged cosine similarity scores to group error logs and accurately match them to the most relevant JIRA tickets, ensuring efficient and precise issue classification.

Tool used (Development tools - H/w, S/w) : Python, JIRA, Gerrit, Bash Scripting and other Nutanix internal tools

Objectives of the project : Designed and implemented an Auto Triage tool to fetch tracebacks from failure logs and link them to JIRA tickets using machine learning embeddings.

Major Learning Outcomes : Gained a comprehensive understanding of API architecture and conducted an in-depth analysis of errors. Applied academic knowledge to solve real-world problems and developed the ability to write high-quality code.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment is highly supportive and collaborative. Team members are approachable and always willing to assist. Enough opportunities are provided to showcase your contributions, with an emphasis on taking complete ownership of your work.

Academic courses relevant to the project : Computer Networks, Operating Systems, Object Oriented Programming, Database Management



PS-II Station : Nutanix , Bengaluru / Pune, Bengaluru

Faculty

Name: Chandra Shekar R K .

Student

Name: MEHUL TAMBI(2020B1A72382H)

Student Write-up

PS-II Project Title: Hungry, Humble, Honest With Heart

Short Summary of work done during PS-II : The automation workflow for OS image integration begins with the Common OS Image, which serves as the source for creating the required artifacts. The process generates two critical outputs: Out-Of-Box (OOB) Zips and a VDI Image. The VDI image is subsequently imported into VirtualBox to produce a Base OVA Image. This base OVA image is further processed in a Jenkins CI/CD pipeline to configure the environment, ensuring compliance with security and quality standards. The final step involves converting the base OVA image into an NDB QCOW Image and a tarball along with upgrade bundles, which are exported and distributed as shippable virtual machines. This end-to-end process streamlines configuration, tarball creation, and export/distribution workflows, ensuring scalable and efficient OS integration into the NDB ecosystem while maintaining consistency across all generated artifacts.

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

Objectives of the project : EL8 Automation

Major Learning Outcomes : Automation skills, bash script, python scripting, OS image migrations

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Helpful people, work as a team, production level code deployment, timely tasks completion, dedicated workflows, engagement

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

PS-II Station : Nutanix , Bengaluru / Pune, Bengaluru

Faculty

Name: Chandra Shekar R K .

Student

Name: PRIYANSHU PRASHANT VERMA(2020B1A72472H)

Student Write-up

PS-II Project Title: Worked on Portal Search and Support GPT

Short Summary of work done during PS-II : I worked in the SUPPORTGPT team, a collaboration between the Support Portal and AI teams of SaaS Engineering at Nutanix. My primary project involved developing a dashboard using React, Node.js, and Sails.js to compare search results between Quark (the portal's search engine) and GPT (Nutanix's homegrown model). The dashboard featured feedback integration, case details, response time tracking, and other metrics, enabling SREs to evaluate GPT's accuracy effectively. I also worked on indexing resources like KBs, EOLs, Confluence pages, Jira, and NXVD into GPT using automation tools

like cron jobs and Puppeteer for regular updates. Enhancements to GPT included integrating language detection (using PyCLD2 and Polyglot) and enabling query translation to deliver responses in the query's language (e.g., French or German queries receive answers in the same language). Additionally, I translated responses into English for improved retrieval, resolved multiple Jira tickets, and actively participated in daily scrum meetings to share progress updates.

Tool used (Development tools - H/w, S/w) : React, Python, Node.js, Sails.js, Javascript, MongoDB, LLMs, Puppeteer, Git, Transformers

Objectives of the project : Working on SupportGPT and Portal Search

Major Learning Outcomes : I have gained valuable experience in teamwork, deepened my understanding of React concepts, and acquired significant knowledge and insights into Large Language Models (LLMs).

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : The working environment is truly exceptional. I was fortunate to join a supportive and collaborative team that is easy to work with. Initially, I was assigned smaller tasks, allowing me to ease into the workflow with excellent guidance. Daily meetings are held to discuss assigned tasks, where even the smallest doubts are addressed. Ample time is provided to understand the codebase thoroughly before starting work, ensuring a smooth progression. There's no undue pressure or urgency, fostering a relaxed and productive atmosphere. The work-life balance is excellent, with flexible working hours tailored to individual preferences. The tasks assigned are not only engaging but also enjoyable to tackle.

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

PS-II Station : Nutanix , Bengaluru / Pune, Bengaluru

Faculty

Name: Chandra Shekar R K .

Student

Name: PARYETRI BANERJEE(2020B1A82001H)

Student Write-up

PS-II Project Title: Enhancing API Security and Performance with Rate Limiting and Query Encryption

Short Summary of work done during PS-II : The project focused on enhancing API security and performance through two key implementations: Rate Limiting: Developed a scalable mechanism using Redis and the Sliding Window algorithm to control API traffic, prevent server overload, and ensure fair resource usage. Query Encoding: Implemented Base64 encoding for SQL queries in the autocomplete API to bypass Web Application Firewall (WAF) triggers, preventing false SQL injection detections while maintaining fast query processing. These solutions improved system reliability, scalability, and user experience under high traffic conditions.

Tool used (Development tools - H/w, S/w) : Java Spring Boot, Redis, AngularJs

Objectives of the project : The project involves implementing rate-limiting using the Sliding Window algorithm with Redis for scalable, real-time request management and resource optimization. Additionally, it features query encoding for secure data handling, reducing vulnerabilities, and ensuring compatibility and security in API operations.

Major Learning Outcomes : Learned to implement rate-limiting using Redis and the Sliding Window algorithm for API security and stability.

Understood the use of Base64 encoding to bypass WAF triggers and secure API queries.

Gained expertise in evaluating rate-limiting algorithms and selecting optimal solutions.

Improved debugging and problem-solving skills to resolve critical API issues.

Enhanced knowledge of integrating scalable, real-time systems while maintaining low latency and user experience.

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : The work environment is highly supportive, with managers and mentors readily available to guide and assist. Team members collaborate effectively, ensuring that even complex problems are approached with clarity and teamwork. Nutanix also emphasizes work-life balance, ensuring employees can thrive both personally and professionally.

Academic courses relevant to the project : OOPS, DSA

PS-II Station : Nutanix , Bengaluru / Pune, Bengaluru

Faculty

Name: Chandra Shekar R K .

Student

Name: YASH AGARWAL(2020B1AA2483H)

Student Write-up

PS-II Project Title: Helm True North

Short Summary of work done during PS-II : Make containerized services/apps amenable to upgrade/uninstall using Helm commands

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

Objectives of the project : Make containerized services/apps amenable to upgrade/uninstall using Helm commands

Major Learning Outcomes : Kubernetes, Golang, Docker, Helm

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Great team, excellent manager, pleasant employees, great work life balance and flexibility.

Academic courses relevant to the project : OOP, CP

PS-II Station : Nutanix , Bengaluru / Pune, Bengaluru

Faculty

Name: Chandra Shekar R K .

Student

Name: SIDDHARTH BHATT(2020B3A32157H)

Student Write-up

PS-II Project Title: Slack Bot

Short Summary of work done during PS-II : I have been given the task of making a one-of-a-kind chatbot for helping the team regarding suggesting for fixes regarding the build failures

happening in Jenkins or Gerrit, and any questions regarding the code reviews of Gerrit. This slack bot is designed to streamline DevOps workflows by integrating with tools like Gerrit, Jenkins and Jira to automate tasks like providing the current status of a Gerrit change request and fetching Jenkins build logs, along with retrieving Jira tickets(if any) related to the build failure which has occurred. The slackbot is to be built from scratch, and would be deployed inside a channel in the Nutanix Slack workspace with its functionalities further extending to more complex tasks like finding the latest new releases of any particular software or even anything other than just softwares.

Tool used (Development tools - H/w, S/w) : Gerrit, Jenkins, Jira, Slack APIs, Open source LLM GPT-J

Objectives of the project : Making a slack bot for automating general build related queries and giving suggestions for resolution

Major Learning Outcomes : Making a slack bot from scratch, implementing all api functionalities and keeping main functions in handler code, along with using pre-trained LLMs for our benefit

Details of Papers/patents : No papers/patents made

Brief Description of working environment, expectations from the company : Wonderful environment, you are given sufficient time to learn and implement things. Mentorship by the mentor is also very useful and helpful, experienced teammates help whenever we are unable to understand something or are stuck somewhere.

Academic courses relevant to the project : OS, OOPs

PS-II Station : Nutanix , Bengaluru / Pune, Bengaluru

Faculty

Name: Chandra Shekar R K .

Student

Name: MUHAMMED JIBRAN FAIZ MALIM(2020B3A70367G)

Student Write-up

PS-II Project Title: IPv6 Support

Short Summary of work done during PS-II : I wrote unit-tested code to fix important bugs related to Networking. Although I was not assigned a big project, I helped fix bugs in the legacy code. I also implemented a stack trace formatter that could help SREs and also improve developer productivity. The IPv6 support was part of a big FEAT involving multiple teams- this helped me experience a collaborative effort on the large scale for the first time. I was also assigned other several tasks by the senior developers in my team.

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

Objectives of the project : Help Nutanix products become compatible with IPv6

Major Learning Outcomes : Using Python for development; Solving bugs assigned to the Networking Team; Understanding the infrastructure of Nutanix' product; Learning to collaborating with a team in a corporate environment; Writing functional unit tests

Details of Papers/patents : No papers/patents

Brief Description of working environment, expectations from the company : Work life balance is great at Nutanix. They offer a lot of services to their customers with their hyperconverged infrastructure, which means there are a lot of teams involved. Some teams are newer, so they have more exciting projects and opportunities to learn.

Academic courses relevant to the project : Operating Systems, Computer Networks, Object Oriented Programming

PS-II Station : Nutanix , Bengaluru / Pune, Bengaluru

Faculty

Name: Chandra Shekar R K .

Student

Name: SHUBHAM AGRAWAL(2020B3A70505H)

Student Write-up

PS-II Project Title: Removing Security CFDs by Upgrading Python

Short Summary of work done during PS-II : Unit Test Infrastructure → Identified and fixed the UT's Patching → Source Code Patching based on the learnings. Redefine Build system→ Upgraded the Build system to make it python3.11 compatible Upgraded Ansible Infrastructure → Resolved semantic and Syntactic errors Dev Testing → Tested for operations such as Brownfield Registration, Software Profile Creation, SI provisioning, Cloning, Restore database. Made custom fixers which automate the correction of incorrect syntax present in python3.11

Tool used (Development tools - H/w, S/w) : Technologies: OS – Linux (ROCKY 8, CentOS), Linux commands Language: Bash Scripting, Python, Ansible Libraries: subprocess, pip, requests, json, os, sys, Ansible Modules

Objectives of the project : Removing Security Vulnerabilities from the existing codebase by upgrading Python and Ansible workflows

Major Learning Outcomes : Automating multi-step processes, in which I developed the ability to automate complex workflows for OS image integration, reducing manual errors and saving significant time.

Ensuring seamless integration across Linux environments, and Nutanix workflows posed significant compatibility challenges.

Managing system dependencies, such as RPM packages, Python libraries, and Nutanix-specific tools, required careful version control and installation.

Iterative Debugging Process: Analyzing logs and fixing issues across numerous database operations.

Balancing automation goals with limited system resources and tight delivery timelines was a persistent challenge.

Large Codebase Analysis and Refactoring: Analyzing a vast codebase using tools like Sourcegraph and ensuring compatibility across all modules.

Dev Testing Across Diverse Database Engines: Ensuring consistent functionality for MySQL, Oracle, MongoDB, and MariaDB during operations like cloning and restore.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The team is helpful and the work culture is good.

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

PS-II Station : Nutanix , Bengaluru / Pune, Bengaluru

Faculty

Name: Chandra Shekar R K .

Student

Name: NISHANT MISHRA(2020B3AA0529H)

Student Write-up

PS-II Project Title: AWS and Azure performance collection

Short Summary of work done during PS-II : I added the feature to collect performance data for AWS and azure instance to give user the best solution that will suffice there need and is economically viable.

Tool used (Development tools - H/w, S/w) : Devloper tool, RestMan, Postman and swagger

Objectives of the project : Collect performance data

Major Learning Outcomes : Software development

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Good Work culture and good work atmosphere as well

Academic courses relevant to the project : OOPS, DBMS

PS-II Station : Nutanix , Bengaluru / Pune, Bengaluru

Faculty

Name: Chandra Shekar R K .

Student

Name: BHUVAN GUPTA .(2020B4A71654P)

Student Write-up

PS-II Project Title: Performance measurement of protobuf and flatbuff objects in grpc service

Short Summary of work done during PS-II : This project focused on measuring performance of v4 Apis which are being used to communicate with Nutanix in house hypervisor AHV with flat buffers as payload. Presently we protobuffers are used as payload in Apis which takes huge amount time as well CPU in serializing and deserializing them so to save it we replaced it with flatbuffers.

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

Objectives of the project : Performance comparison between Protobuffs and Flatbuffs

Major Learning Outcomes : Learned about major workflow of how creation of VM works

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : At Nutanix, the working environment thrives on innovation, collaboration, and a commitment to excellence. The company fosters a culture where employees are empowered to take ownership of their projects and are encouraged to think creatively to solve complex problems. A strong emphasis on teamwork and communication ensures that everyone feels included and valued.

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

PS-II Station : Nutanix , Bengaluru / Pune, Bengaluru

Faculty

Name: Chandra Shekar R K .

Student

Name: CHANDA HRITIK RAJ(2020B4AA0980H)

Student Write-up

PS-II Project Title: SWE-Alignment

Short Summary of work done during PS-II : Building a SWE-agent, a daily developer productivity tool.

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

Objectives of the project : Running a KTO pipeline for LLM-alignment

Major Learning Outcomes : 1. Working with actual GPU training.

2. exposure to Industrial - Research fields
3. Finetuning , LORA
4. SWE-agents.
5. Working on VMs which makes life easier.

Details of Papers/patents : Working on writing a paper targetting NEURIPs.

Brief Description of working environment, expectations from the company : Great Hold on the fundamentals be it a whole subject or a chapter, whole language or its framework etc

Academic courses relevant to the project : ML, DL, FODS , minor in Data science is a Plus

PS-II Station : Nutanix , Bengaluru / Pune, Bengaluru

Faculty

Name: Chandra Shekar R K .

Student

Name: SATHWIK GUNDALA .(2020B5A31997P)

Student Write-up

PS-II Project Title: Text-to-SQL for report generation

Short Summary of work done during PS-II : Worked on developing a pipeline to edit basic report SQL to generate custom reports based on user question

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

Objectives of the project : Create customisations for existing reports

Major Learning Outcomes : Working with LLMs and search indexes

Details of Papers/patents : None

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

Academic courses relevant to the project : Machine Learning for electrical engineers

PS-II Station : Nutanix , Bengaluru / Pune, Bengaluru

Faculty

Name: Chandra Shekar R K .

Student

Name: SOURAV PANIGRAHY(2020B5A32175H)

Student Write-up

PS-II Project Title: Visualisation Support for Multi-Cardinality

Short Summary of work done during PS-II : The previous system displayed network traffic only in a single policy, even if multiple policies shared the same configuration. To resolve this, a new approach was implemented to ensure the traffic was visible across all relevant policies. The solution worked by identifying common configurations shared between policies. First, a mapping was created to link unique group identifiers to their associated categories. Another mapping was then built to find all other groups that shared the same categories. Since direct comparisons of lists weren't efficient, the categories were combined into a single string to simplify the process. When the system processed traffic data, it checked these mappings to identify all related groups across policies. Once identified, the relevant traffic was fetched and displayed wherever

applicable, ensuring consistent visibility across multiple policies. This approach ensured that traffic linked to a group in one policy was accurately shown in all other policies with matching configurations, providing a more complete and accurate representation of network activity.

Tool used (Development tools - H/w, S/w) : User-based virtual machine, VS Code, Gerrit, Go, Python

Objectives of the project : To improve an existing service in the teams' product architecture.

Major Learning Outcomes : Understanding network security, debugging skills, working with database, understanding large codebases, collaborating with team.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working environment was very chill. All team members were helpful. Team expect the interns to collaborate as much as possible with the team and not hesitate asking for doubts or help in case of difficulty.

Academic courses relevant to the project : Computer Networks, OOPS, OS, DBMS

PS-II Station : Nutanix , Bengaluru / Pune, Bengaluru

Faculty

Name: Chandra Shekar R K .

Student

Name: ISHAAN SURAJ KUDCHADKAR(2020B5A70775G)

Student Write-up

PS-II Project Title: Data Compression - ZSTD as an alternative to LZ4

Short Summary of work done during PS-II : Carried out a comparative study between ZSTD and LZ4 to determine whether it could be a feasible alternative. This involved carrying out various microbenchmarks using different workloads, followed by some I/O benchmarks so as to observe the change in throughput, bandwidth and CPU usage between the 2 algorithms.

Tool used (Development tools - H/w, S/w) : C++, C, Docker, Kubernetes, Python/shell scripts

Objectives of the project : To explore the ZSTD compression algorithm as an alternative to the LZ4 algorithm currently being used by Nutanix's AOS.

Major Learning Outcomes : Kubernetes, Docker, Information Theory, Team Work

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The work environment was great. My team, and mentor in particular were extremely helpful in getting me accustomed to the work done by my team. My team members were always there to support me and answer any of my questions at any juncture. It was a great learning experience.

Academic courses relevant to the project : Information Theory

PS-II Station : Nutanix , Bengaluru / Pune, Bengaluru

Faculty

Name: Chandra Shekar R K .

Student

Name: PAIDISETTY SAI ADITYA(2020B5A70987H)

Student Write-up

PS-II Project Title: Implementation of GRPCs for Pollux Service

Short Summary of work done during PS-II : Initially I learned the complete architecture/workflow and role of our CDP team- Stargate, Pithos, Cassandra, Curator, Zookeeper,Ergon,etc. As a part of it under Pollux Service- Volume Group entity. I added Get-GRPC, was done by querying multiple databses and performed RBAC(Role Based Access Control) . Wrote Unit Tests and performed patch testing on Cloud Cluster to test the RPC. Got real time understanding of how different services work together and will just have to get even better knowledge of it.

Tool used (Development tools - H/w, S/w) : Nutanix Custom Utils and Mocks, Cmake tools, GRPC Compiler, UBVM, Prism Central UI, RDM Cluster UI, Gerrit, GitHub.

Objectives of the project : To establish additional Remote Procedure Calls required by Pollux Service

Major Learning Outcomes : Establishments of Contracts and Communications between Clients and Servers in a standard way, done via GRPCs.

Details of Papers/patents : No papers/patents as such as my work was not a research project.

Brief Description of working environment, expectations from the company : My team was very understanding but I have to say this, they are real workoholics, they are always busy doing great things, although its not really innovative, ours is the first team to be established in Nutanix, and hence requires constants upgrades and scaling as our users grow. We have a good work life

balance, in a 5 day week 3 are from office and 2 are from home, although people show up only twice a week. My team personally dont go for much out the outings as many are not available at once. Our managers are highly experiences and we have a by-weekly 1-1 meets in which they ask about our well being and then obvio. status of our work. The work env has a lot of comforts- no strict timings, cab services, vending machine tokens, 3 day free lunch which is good, TT, PS, etc. The company gives us enough time and invests in our future. All in all it is a very good company

Academic courses relevant to the project : Operating Systems, Computer Networks, Database Systems, Object Oriented Programming, Logic in Computer Science

PS-II Station : Nutanix , Bengaluru / Pune, Bengaluru

Faculty

Name: Chandra Shekar R K .

Student

Name: SUSHANT CHAUDHARY(2020B5A72251H)

Student Write-up

PS-II Project Title: VectorDB Integration In Object Store Service

Short Summary of work done during PS-II : Developed a scalable architecture to enhance object storage capabilities by integrating computational workflows for vector embedding generation and similarity search. Leveraged AWS Lambda for automated embedding generation triggered by object uploads, and utilized LanceDB for efficient storage and querying of embeddings persisted in S3. Implemented per-bucket ML model customization, enabling tailored

embeddings for diverse data types. The solution provides real-time, low-latency search functionality while optimizing for cost and scalability using serverless components and open-source tools.

Tool used (Development tools - H/w, S/w) : Hardware: AWS S3 (Object Storage), AWS Lambda (Serverless Computing), Linux(VM). Software: Python, Rust, LanceDB, Sentence Transformers/OpenCLIP, Git

Objectives of the project : Extend the functionality of object storage systems by integrating computational capabilities for generating vector embeddings and enabling advanced similarity search

Major Learning Outcomes : 1. Understanding of Object Storage Integration:

Learn how to enhance traditional object storage systems (here S3) with computational capabilities, such as embedding generation.

2. Serverless Architecture Design:

Gain experience in designing and implementing serverless workflows using AWS Lambda and other cloud-native tools.

3. Vector Embedding and Similarity Search:

Develop expertise in generating and utilizing vector embeddings for advanced similarity searches using LanceDB.

4. Per-Bucket Model Customization:

Understand how to configure and optimize machine learning models for specific data types within a multi-bucket system.

5. Scalability and Performance Optimization:

Learn to build scalable, low-latency systems capable of handling large volumes of data efficiently.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The project was developed in a supportive and collaborative environment using cloud tools like AWS S3 for storage, AWS Lambda for processing, and LanceDB for managing data. The team used simple

and efficient tools like VS Code for coding and Git for managing changes, following step-by-step progress to ensure everything worked well.

From the company, the main expectation was to provide access to the cloud setup and tools needed for the project. Regular feedback and clear guidance helped in completing the work as planned. The company also encouraged learning and solving technical challenges, which made it easier to build the solution.

Overall, the company provided a great space to work, learn, and deliver the project successfully.

Academic courses relevant to the project : Machine Learning

PS-II Station : Nutanix , Bengaluru / Pune, Bengaluru

Faculty

Name: Chandra Shekar R K .

Student

Name: PARTH SANJAY KADHANE(2020B5A72258H)

Student Write-up

PS-II Project Title: Graph DB and topology view

Short Summary of work done during PS-II : The project involved developing a data visualization application that connects to an Apache AGE pod. Using React and vis-network, the app hierarchically visualizes data, enabling intuitive exploration and analysis. The focus was on seamless backend integration, dynamic UI development, and delivering a user-friendly tool for graph-based data representation.

Tool used (Development tools - H/w, S/w) : Java, Apache AGE, React.js, vis-network, Git & GitHub ,Docker ,PostgreSQL ,REST APIs/GraphQL

Objectives of the project : To complete the full stack development of the topology view.

Major Learning Outcomes : During my internship, I developed technical skills, including software development, data visualization, and backend integration, while adhering to industry standards for clean code and version control. I gained experience working in an agile environment, improving my problem-solving, time management, and collaboration abilities. This opportunity enhanced my understanding of real-world IT workflows, strengthened my professional communication, and taught me to debug, optimize, and deploy applications effectively. Overall, the internship helped me grow technically and professionally, preparing me to contribute successfully in a professional software development environment.

Details of Papers/patents : No Papers published

Brief Description of working environment, expectations from the company : The experience was very good, the people working are very friendly and inclusive. You would never feel you are working, its a very supportive environment. There are no strict restrictions with regard to timings and colleagues are understanding and always up to help. Highly recommend Nutanix.

Academic courses relevant to the project : Database Systems, OOPs, DSA

PS-II Station : Nutanix , Bengaluru / Pune, Bengaluru

Faculty

Name: Chandra Shekar R K .

Student

Name: AKSHAT ABHAY SHETYE .(2021A7PS2426P)

Student Write-up

PS-II Project Title: GDB in a Box

Short Summary of work done during PS-II : Debugging any issues was problematic before. Created a debugger capable of bringing this debugging locally, while automating a lot of the process of finding and downloading correct files.

Tool used (Development tools - H/w, S/w) : VSCode, Vim, Terminal, VMs, Docker, Python

Objectives of the project : Create a debugger for locally debugging issues.

Major Learning Outcomes : Learnt to develop code in production environment. Learnt the code review and revision workflow, along with some company specific details

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Very good working environment. Manager was extremely supportive, and got help from other colleagues as well despite different projects.

Academic courses relevant to the project : DSA, CompArch

PS-II Station : Nutanix , Bengaluru / Pune, Bengaluru

Faculty

Name: Chandra Shekar R K .

Student

Name: SHRAVAN GARG(2021A7PS2731G)

Student Write-up

PS-II Project Title: SPDK NVME Target tester application

Short Summary of work done during PS-II : Created an application in C language that performs a series of test one after the other to validate the compatibility of any third-party storage vendor which are based on NVME protocol. It's an open source contribution to SPDK repository.

Tool used (Development tools - H/w, S/w) : S/w : SPDK, NVME, C language, few network related tools

Objectives of the project : Create a general testing application that can validate any NVME based target

Major Learning Outcomes : Synchronisation, networks, third party storage

Details of Papers/patents : N.A.

Brief Description of working environment, expectations from the company : Working environment is quite good and healthy. There are high expectations from the company side to deliver the project on timely basis but they do understand the importance of quality over anything else. Also, workload is mostly team dependent like core teams have in general higher workload as compared to others, but it's manageable and rewarding at the same time.

Academic courses relevant to the project : OS, CN, comp arch

PS-II Station : Nutanix , Bengaluru / Pune, Bengaluru

Faculty

Name: Chandra Shekar R K .

Student

Name: ABHISHEK VIRENDRA KAMAT(2021AAPS2932G)

Student Write-up

PS-II Project Title: Stateful Kubernetes Application Migration

Short Summary of work done during PS-II : My project focused on migrating Kubernetes application volumes and configurations to a target cluster. For volume migration, a snapshot of the source Persistent Volume (PV) is created using the CSI VolumeSnapshot API. A new volume is then provisioned from the snapshot and attached as a raw block device to a reader container. The reader streams data block-by-block to a writer container in the target cluster via gRPC. The writer writes the data to its attached block device, after which a snapshot of the writer's PV is taken. A new PV is created from this snapshot for application use. To automate this workflow, the Kubernetes client-go library is utilized, replacing manual kubectl commands. This includes initializing snapshots, creating PVCs, and managing roles/role bindings for API permissions. For application configuration migration, YAML manifests of services, deployments, and secrets are exported and cleaned of cluster-specific fields using the yq tool. These sanitized manifests are transferred via gRPC and applied to the target cluster after volume migration. The solution leverages block volumes for efficient incremental snapshot support and enables automated, end-to-end migration using Kubernetes-native resources and APIs.

Tool used (Development tools - H/w, S/w) : Golang, client-go, Docker, Kubernetes, gRPC

Objectives of the project : Migrate a micro service based application which uses persistent volumes from 1 Kubernetes distribution(Red Hat OpenShift) to another(Nutanix Kubernetes Platform)

Major Learning Outcomes : I gained in-depth understanding of Kubernetes components, including APIs, VolumeSnapshot, and CSI specifications. Learnt the intricacies of Persistent Volumes (PVs), block storage, and integration with various storage vendors. Developed skills in designing solutions compatible with multiple Kubernetes distributions like OpenShift, Nutanix Kubernetes Platform, and Tanzu.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Great working environment, weekly sync-ups with team leads to track progress and give valuable inputs, mentors are helpful and always approachable. Overall the team was very supportive and welcoming.

Academic courses relevant to the project : CP, OS, FODSA

PS-II Station : Nutanix , Bengaluru, Bengaluru

Faculty

Name: Chandra Shekar R K .

Student

Name: ADARSH MOHAN SHARMA .(2020B5A32003P)

Student Write-up

PS-II Project Title: Creating a node server for creating and dispatching CPC reports , QBR reports and custom reports

Short Summary of work done during PS-II : This project involved developing a PPT generation service as an independent component to provide dynamic progress check reports. Initially, users were required to manually download reports from the UI. However, the service has been enhanced to support a Notification Service, which is currently being implemented. This new feature will automate the process of emailing Customer Service Representatives (CSRs) with progress check reports as attachments, eliminating the need for manual downloads. The solution was built with a RESTful API using Node.js and Express, incorporating JSON Web Tokens (JWT) for role-based user authentication. Once authenticated, the API calls 25 external APIs to retrieve the necessary data for generating the PPT reports. The server then processes the data, creates the PowerPoint report, and sends it as a downloadable response. The PPT generation and report download functionality is fully operational. The ongoing work focuses on integrating the service with the backend notification system to automate email distribution of the reports to CSRs, ensuring timely delivery without manual intervention. For this project, Postman was used for API testing, and the development stack includes Node.js, Express, JavaScript, and JWT. The solution already automates report generation and download, with the notification service integration underway to further streamline the process.

Tool used (Development tools - H/w, S/w) : Node.js, Express.js, Postman, JWT, Hashicorp Vault,

Objectives of the project : - To learn the requirements of CSRs and automate the process of creating and sending the progress check reports based on CSRs preferences and user roles

Major Learning Outcomes : Asynchronous Programming, API design, API authentications, Error handling and debugging, CPU profiling, Heap profiling, Corporate Ethics, Communication skills, collaboration with team

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The company promotes a dynamic and inclusive work culture that is both relaxed and engaging. Employees enjoy a healthy work-life balance and are encouraged to take breaks, play games, or participate in recreational activities to recharge. The environment fosters creativity, collaboration, and open communication, ensuring that everyone feels comfortable sharing ideas and working together to solve challenges.

While timely delivery of tasks is expected, employees are empowered to take full ownership of their work and are encouraged to proactively raise any blockers or issues. The team works together to address challenges, ensuring smooth progress and a supportive atmosphere where colleagues help each other.

Interns are entrusted with end-to-end projects that are directly integrated into the team's core products. This approach gives them valuable hands-on experience, offering them full responsibility for their projects from start to finish. Interns gain meaningful exposure to real-world challenges, contributing directly to the team's objectives and building their professional skills.

The company also prioritizes continuous learning and growth, providing ample opportunities for skill development, mentorship, and career progression. Overall, the work culture encourages innovation, ownership, and collaboration, creating an environment where employees and interns alike can thrive and grow both professionally and personally.

Academic courses relevant to the project : Operating Systems (multi-threading, race-condition, deadlocks), OOP

PS-II Station : Nvidia Graphics - Hardware,Bengaluru/Hyderabad, Bangalore

Faculty

Name: Kranthi Kumar Palavalasa

Student

Name: VIDHI MEHTA(2020B1A32479H)

Student Write-up

PS-II Project Title: Asic Intern

Short Summary of work done during PS-II : First, we were taught the working of the team and important concepts used. We also did some basic bash coding. Then, I was assigned two major scripting tasks. One involved the creation of a gui using an excel as input and then integrating it with the internal tool. The other task was based on custom macros and their pins, again using the internal tool. Both had to be done in python.

Tool used (Development tools - H/w, S/w) : Python, bash, Vim editor, Nvidia internal tools

Objectives of the project : python scripting, automating processes

Major Learning Outcomes : how the physical design flow works, nvidia internal tools, python, how to mix hw and sw skills

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : It's a very healthy working space; my team was always ready to answer questions and doubts, and the manager was always supportive and encouraging. The workload might increase exponentially towards the end and it gets a little stressful but overall, a wonderful experience.

Academic courses relevant to the project : OS, OOP, DD, ADVD

PS-II Station : Nvidia Graphics - Hardware,Bengaluru/Hyderabad, Bangalore

Faculty

Name: Kranthi Kumar Palavalasa

Student

Name: AMARTYA(2020B3A30571H)

Student Write-up

PS-II Project Title: 1) Adding PIO feature to speaker module; 2) Enhancing connector module

Short Summary of work done during PS-II : My first project was to add a PIO mode feature to the speaker module. This would be done by adding a new input path to the module by using an APB protocol. The second project was about improving the connector module in two ways. First was to reduce area by revamping the register module. The second was to use scripts to generate RTL to make the module easily scalable and configurable.

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

Objectives of the project : Adding a PIO mode feature to the speaker module; Reducing area and make the connector module scalable by using scripts to generate RTL

Major Learning Outcomes : Better knowledge of Verilog

Understanding of APB protocol

Better at using Linux systems

Learned how to use Perl Scripting

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : Work environment is great. I did not experience any stress while my time here. WFH and work timings are very flexible.

Academic courses relevant to the project : FPGA based systems design lab

Computer architecture

Digital design

Microprocessors and Interfacing

PS-II Station : Nvidia Graphics - Hardware,Bengaluru/Hyderabad, Bangalore

Faculty

Name: Kranthi Kumar Palavalasa

Student

Name: SANSKAR ASWANI .(2020B3A31963P)

Student Write-up

PS-II Project Title: Simplifying flow for using EDA tools

Short Summary of work done during PS-II : Building application to simplify workflow and help timing engineers

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

Objectives of the project : Simplify flow for engineers working in timing analysis of Circuits

Major Learning Outcomes : Scripting , LLMs

Details of Papers/patents : NA

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

Academic courses relevant to the project : VLSI, ADVD

PS-II Station : Nvidia Graphics - Hardware,Bengaluru/Hyderabad, Bangalore

Faculty

Name: Kranthi Kumar Palavalasa

Student

Name: ROY ANEERBAN RAJA .(2020B4A30876P)

Student Write-up

PS-II Project Title: Validation of NVIDIA's PCIe Gen6 IP, focusing on error diagnostics and performance metrics

Short Summary of work done during PS-II : During my PS-II internship at NVIDIA, I gained extensive hands-on experience in the PCIe protocol, focusing on LTSSM, Flit mode, and the

Physical layer. My primary contribution involved Python scripting to enhance existing functions and develop new Gen6-specific features for NVIDIA's GB100 IP, its first Gen6 design. Additionally, I explored the PCIe electrical domain, performing Tx and Rx tests on Tegra T264 chips and automating PVT testing for GB203 using PYQUAL. I also delved into NVIDIA-specific high-speed interfaces like NVLink and C2C, further broadening my understanding of the HSIO domain. A significant achievement was submitting an abstract to NVIDIA's Intern Tech Tank, where my project on "Fully Automated PCIe Spec-Based Extraction and Validation of Config Space Registers Attributes" was selected. This automated Python-based framework simplifies register validation, addressing challenges in post-silicon bring-up and enhancing system stability. The collaborative, innovation-driven work environment at NVIDIA fostered technical and soft skills development, with mentorship and cross-functional teamwork playing a pivotal role. Courses like Communication Systems, Signals and Systems, and Digital Design complemented my project, enhancing my ability to contribute effectively. Overall, the experience enriched my knowledge of PCIe Gen6, post-silicon validation, and HSIO systems, preparing me for future challenges in the tech industry.

Tool used (Development tools - H/w, S/w) : Python, C programming, Javascript, Unix, PYQUAL automation tool (NVIDIA proprietary), Putty, Winscp, camelot, pdfplumber

Objectives of the project : 1. Introduce you to the various industry standard as well as NVIDIA proprietary HSIO's used. 2. Understand the complete mechanism of how PCIe is implemented and how it evolved per new Generation. 3. Get a detailed overview about the functional and electrical sub-domains of PCIe. 4. Explore other NVIDIA proprietary HSIO's like NVLink & c2c.

Major Learning Outcomes :

1. Learnt about the PCIe protocol in detail - mainly focusing on LTSSM, Flit mode, Physical layer
2. Hands-on development tasks which included python scripting to enhance the pre-existing functions from gen5 to gen6 and add novel gen6 specific functions (PCIe functional domain) for the GB100 IP (NVIDIA's first gen6 IP)
3. Explored the PCIe - electrical domain and carried out various Tx and Rx tests for the tegra T264 chips
4. Automated PVT testing for GB203 via PYQUAL package creation
5. Explored NVLink and C2C - 2 other NVIDIA specific HSIO's

Details of Papers/patents : Submitted an abstract in the NTERN TECH TANK - Hardware category and got selected (Ours was the one out of the only 3 abstracts selected among all the interns, from BITS Pilani, I was the only one whose abstract got accepted). The paper is title "Fully A

Brief Description of working environment, expectations from the company : As an intern at NVIDIA, the working environment is dynamic, innovative, and highly collaborative. The company emphasizes a culture of continuous learning, where interns are encouraged to take initiative and explore creative solutions. NVIDIA fosters a sense of ownership by giving interns real-world tasks that contribute meaningfully to projects. The open-door policy and access to experienced mentors help in gaining technical insights and career guidance, creating an environment conducive to both personal and professional growth.

The work culture promotes cross-functional collaboration, where teams from different domains come together to solve complex challenges. This collaborative approach encourages sharing knowledge, brainstorming ideas, and finding solutions collectively. Interns are expected to be proactive, adaptable, and detail-oriented, with a commitment to maintaining NVIDIA's high standards of quality and excellence.

The internship experience comes with high expectations. Interns must demonstrate technical proficiency, problem-solving skills, and the ability to learn quickly. Effective communication, teamwork, and time management are critical, as interns often work on multiple projects with tight deadlines. NVIDIA values innovation and encourages interns to bring fresh perspectives to their work.

From the company, interns can expect mentorship, constructive feedback, and exposure to the latest technologies. NVIDIA provides a platform for skill enhancement, hands-on experience with cutting-edge tools, and a deeper understanding of industry standards. The experience not only helps build technical expertise but also develops soft skills like leadership, adaptability, and collaboration. Overall, the internship prepares students for future roles in the tech industry by blending technical rigor with real-world problem-solving.

Academic courses relevant to the project : 1. Communication systems 2. Signals and systems 3. Analog Electronics 4. Electronic Devices 5. Digital design

PS-II Station : Nvidia Graphics - Hardware,Bengaluru/Hyderabad, Bangalore

Faculty

Name: Kranthi Kumar Palavalasa

Student

Name: AARON MATHEW(2020B4A32313H)

Student Write-up

PS-II Project Title: PCIe Testbench Infrastructure Enhancement

Short Summary of work done during PS-II : Cleaned up few linting violations and simulator warnings in the testbench. Created a UI to organize the data for the team's internal tools. Helped in automating some of the features of the tool using REST API Integration through Perl. Created a Grafana dashboard to summarize and visualize testbench statistics of the team.

Tool used (Development tools - H/w, S/w) : System Verilog, UVM , Perl

Objectives of the project : To improve the infrastructure of the PCIe Design Verification team testbench

Major Learning Outcomes : System Verilog , UVM, Perl

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Extremely supportive environment. Had frequent meets with mentor to discuss report. Team is very supportive and always ready to help.

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

PS-II Station : Nvidia Graphics - Hardware,Bengaluru/Hyderabad, Bangalore

Faculty

Name: Kranthi Kumar Palavalasa

Student

Name: MANEY SAVIO KIDANGAN(2020B4AA1999G)

Student Write-up

PS-II Project Title: ASIC Intern

Short Summary of work done during PS-II : Did design verification at unit level for NIC. Also worked on coverage and feature support in the testbench.

Tool used (Development tools - H/w, S/w) : Specman, Eclipse, Cadence debugging tools

Objectives of the project : Design Verification

Major Learning Outcomes : Verification process of units, Coverage

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The environment in my team was extremely supportive and welcoming. Ample time was given to ramp up for your relevant unit and side tasks were given in the mean time. Everyone was open to help you clear your doubts and nudge you in the right direction. Reasonable deadlines were given.

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

PS-II Station : Nvidia Graphics - Hardware,Bengaluru/Hyderabad, Bangalore

Faculty

Name: Kranthi Kumar Palavalasa

Student

Name: KARTHIK R VARMA(2020B5A32292H)

Student Write-up

PS-II Project Title: CPU PHYSICAL DESIGN - PHYSICAL SYNTHESIS AND TIMING

Short Summary of work done during PS-II : I was responsible for physical synthesis regressions for critical blocks in the CPU design, and work on optimization techniques and trials to improve Performance, Power & Area (PPA) metrics for the designs. Collaborated with RTL teams and layout teams on design decisions and recipe tuning. Also worked on scripting and automation/enhancements for internal tools and flows.

Tool used (Development tools - H/w, S/w) : Synopsys PD tools, TCL, Python, Shell scripting, Linux essentials

Objectives of the project : Work on major components of CPU physical design flow - physical synthesis of netlist and static timing analysis.

Major Learning Outcomes : Understanding industry standards, collaborating with multiple teams, knowledge of tools, flows and technical knowhow of physical design concepts

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : Great team culture, large scope for growth and improvement. Highly motivating and encouraging environment, and for me personally - I joined a team with almost everyone having atleast 5+ years of experience in the industry. Thus the learning curve was steep, but very beneficial for me.

Academic courses relevant to the project : Analog and Digital VLSI Design (ADVD), Digital Design, Computer Architecture, Microelectronic Circuits

PS-II Station : Nvidia Graphics - Hardware,Bengaluru/Hyderabad, Bangalore

Faculty

Name: Kranthi Kumar Palavalasa

Student

Name: TAHA YUSUF RAJA .(2020B5AA0910P)

Student Write-up

PS-II Project Title: SoC Clocks Verification Methodology

Short Summary of work done during PS-II : Set up a dashboard for uploading reports for Static Checks. Set up design cases to test the functionality of a Clocks RTL Generator Tool.

Tool used (Development tools - H/w, S/w) : Verilog, Python, Perl, SQLite3

Objectives of the project : Set up a Dashboard for uploading results for a set of verification tests.

Major Learning Outcomes : Learnt a lot about the industry and the current landscape in electronics. Learnt about how chip design is conducted today in large companies and where the demand exists.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The work environment is very nice and conducive for productivity. The employees are extremely bright and their collective experiences are very insightful. The expectations from the company are very high. One needs to be aware of exactly what work they are doing and how it fits into the company in the bigger picture. They expected to fully understand their job role else may suffer due to a communication gap. The work hours are gruelling as well, at all levels within the company, due to coordinating with the different offices worldwide.

Academic courses relevant to the project : Computer Architecture, Digital Design, Microelectronics, Microprocessors and Microcontrollers, Analog and Digital VLSI Design, Computer Programming

PS-II Station : Nvidia Graphics - Hardware,Bengaluru/Hyderabad, Bangalore

Faculty

Name: Kranthi Kumar Palavalasa

Student

Name: GRANDHALA SRI SAI HARSHITH(2020B5AA2240H)

Student Write-up

PS-II Project Title: Alligning System checker protocol later check with latest CHI and NVCHI specifications

Short Summary of work done during PS-II : Worked on verification of multicore CPU as part of system checker

Tool used (Development tools - H/w, S/w) : System verilog, UVM, python, CHI

Objectives of the project : Design verification code completion and cleanup

Major Learning Outcomes : Coherent hub interface

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : Need to be self reliant

Academic courses relevant to the project : Computer architecture

PS-II Station : Nvidia Graphics - Hardware,Bengaluru/Hyderabad, Bangalore

Faculty

Name: Kranthi Kumar Palavalasa

Student

Name: VARUN DINESH SHETTY .(2021AAPS2255P)

Student Write-up

PS-II Project Title: Stat Generation using an FSDB Parser & PMU Convergence for Core.

Short Summary of work done during PS-II : During my hardware internship, I worked on designing, testing, and troubleshooting hardware components and systems. I collaborated with the team to analyze technical requirements, assist in prototyping, and ensure optimal performance of hardware solutions. My tasks included using diagnostic tools, interpreting schematics, and contributing to the development of innovative designs. Additionally, I gained hands-on experience with hardware testing procedures and improved my understanding of industry standards and best practices. This experience enhanced my technical skills, problem-solving abilities, and teamwork while providing valuable exposure to real-world hardware engineering challenges.

Tool used (Development tools - H/w, S/w) : Python, PERL, Verilog, System-Verilog.

Objectives of the project : To compute performance statistics directly from the FSDB without the intrusions from monitors.

Major Learning Outcomes : During my hardware internship, I gained a deeper understanding of hardware design, testing, and troubleshooting processes. I developed technical skills in using diagnostic tools, interpreting schematics, and working with prototypes. The experience improved my problem-solving abilities, attention to detail, and ability to work collaboratively in a team environment. I also learned the importance of adhering to industry standards, meeting project deadlines, and maintaining quality in deliverables. Additionally, I enhanced my communication skills by effectively presenting findings and collaborating with cross-functional teams. Overall, the internship provided practical insights into hardware engineering and prepared me for future challenges in the field.

Details of Papers/patents : The work was submitted and accepted for the companies nation-wide internal tech conference called NTech.

Brief Description of working environment, expectations from the company : The working environment in a hardware engineering role is typically dynamic, collaborative, and innovation-driven. You can expect to work alongside talented engineers and professionals who are passionate about cutting-edge technology. Companies often provide mentorship, technical guidance, and opportunities to learn new skills, ensuring you grow both personally and professionally. The focus is on solving complex challenges, contributing to impactful projects, and developing solutions that drive technological advancements.

Expectations from the company include strong problem-solving skills, teamwork, adaptability, and a willingness to learn. Employers value initiative and creativity while expecting interns to follow best practices and deliver quality results within deadlines.

Academic courses relevant to the project : Comp Arch, CPP, MUP

PS-II Station : OfBusiness,Gurugram, Gurgaon

Faculty

Name: Ashish Narang .

Student

Name: AKARSH SAXENA .(2020B2A31921P)

Student Write-up

PS-II Project Title: Risk Management System

Short Summary of work done during PS-II : • Crawler System Development • web crawler Java, Spring Boot Built a in to extract case data from sites like DRT, DRAT, etc , integrating with MySQL for data storage . • synchronous APIs asynchronous task handling ActiveMQ Developed for data extraction and implemented using . • Machine Learning Model for CAPTCHA Breaking Deployed a to break CAPTCHA images , exposing for web integration using , and . • Python -based ML model APIs numpy torch onnx • Frontend Development for RMS System • React TypeScript Redux useEffect Developed interactive components (filters , dropdowns , tables) using , , and hooks like etc . • RMS System Backend Development • backend of the RMS system Java, Spring Boot Redis Developed the using , and to process and display data in an interactive UI.

Tool used (Development tools - H/w, S/w) : IntelliJ, Linux, git, github, maven, redis

Objectives of the project : Creating a system for better evaluation of the RISK of giving credit to a client

Major Learning Outcomes : JAVA, SpringBoot, React, Python , ML

Details of Papers/patents : NA

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

Academic courses relevant to the project : NA

PS-II Station : OfBusiness,Gurugram, Gurgaon

Faculty

Name: Ashish Narang .

Student

Name: SABOO AKSHAT SAGAR(2020B3A80709G)

Student Write-up

PS-II Project Title: Building Scalable Features and Optimizing Oxyzo Websites Through Fullstack Development

Short Summary of work done during PS-II : This project involved a range of tasks that collectively enhanced the functionality, performance, and user experience of the Oxyzo web applications. I automated the daily report generation for rejected cheques streamlined the reporting process, while my work with MySQL queries and Java data structures improved the efficiency and scalability of data handling. Adding filters and fields to reports demonstrated my ability to integrate backend and frontend logic effectively, ensuring that new features were seamlessly incorporated without disrupting existing functionality. Extending the Bulk Update button's visibility across different pages underscored the importance of conditional rendering and component reusability in React, contributing to a more flexible and maintainable UI. Additionally, enhancing the Client Repayment Graph with dynamic features and implementing multi-step sorting algorithms highlighted my proficiency in building interactive and performant web applications, both on the client and server sides. Overall, these tasks provided valuable insights into optimizing system performance, managing complex logic, and developing user-centric features. They collectively improved the efficiency of the Oxyzo web applications and enriched

my understanding of integrating various technologies and best practices in full-stack development.

Tool used (Development tools - H/w, S/w) : IntelliJ IDEA, VSCode, MySQL Workbench

Objectives of the project : Refine the Oxyzo websites, adding new functionality and fixing existing issues both in the frontend and backend

Major Learning Outcomes : How to write optimal frontend and backend code, create new features and enhance existing ones and use 3rd party tools and integrate them in the websites code.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : We are expected to arrive to the office latest by 10 AM and to not leave before 6.30 PM. However as and when necessary we can leave a bit early if we work the same hours or compensate later on. We get one holiday per month as interns and are expected to work on odd Saturdays. My team members were helpful and supportive and answered any doubts I had. I had regular interactions with senior level developers which helped me learn a lot throughout the internship. I was given tasks according to my capacity and ample time to complete the same. I was also given a lot of time in the beginning to learn basic concepts and ideas related to my work.

Academic courses relevant to the project : Object Oriented Programming

Operating Systems

Foundations of Data Structures and Algorithms

PS-II Station : OfBusiness,Gurugram, Gurgaon

Faculty

Name: Ashish Narang .

Student

Name: ADITYA RAJSHEKHAR HALLI(2020B4A81851G)

Student Write-up

PS-II Project Title: Maximizing Efficiency in Enterprise Systems with Advanced Java Development Practices

Short Summary of work done during PS-II : Optimizing website with enhancements, features and fixing bugs

Tool used (Development tools - H/w, S/w) : Java, Springboot, Mysql, Redis, React

Objectives of the project : Optimization

Major Learning Outcomes : Working of Enterprise Resource Planners (ERPs)

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Startup work environment with motivation to give our best

Academic courses relevant to the project : OOPs, OS, DSA

PS-II Station : OfBusiness,Gurugram, Gurgaon

Faculty

Name: Ashish Narang .

Student

Name: ANKIT MITTAL .(2021A3PS0997P)

Student Write-up

PS-II Project Title: Empowering Nexizo AI: Scalable Development For Enhanced Workflow Management

Short Summary of work done during PS-II : During my PS-II internship at OfBusiness, I contributed to the development of the Nexizo Admin Portal, a critical tool for managing Nexizo AI's operations. The project involved generating dummy data with JavaFaker for testing APIs and creating a responsive and user-friendly frontend using Next.js, Redux Toolkit, and Material UI. I implemented a Redis-based sheet-metrics system to track the backend processes and optimized ElasticSearch queries to improve data accuracy. Additionally, I worked on integrating secure Google Authentication and building APIs for dynamic Nexizo plans. The portal was deployed successfully and is now used internally, with ongoing updates based on user feedback to ensure scalability and enhanced functionality.

Tool used (Development tools - H/w, S/w) : JavaFaker, SpringBoot, Next.js, Redux Toolkit, RTK Query, Material UI, Redis, ElasticSearch, Zod

Objectives of the project : Develop a scalable Nexizo Admin Portal for efficient management of Nexizo Ai portal, both Frontend and Backend

Major Learning Outcomes : Gained hands-on experience in frontend development using modern frameworks like Next.js.

Mastered state management with Redux Toolkit and API integration using RTK Query.

Developed backend skills in Redis, ElasticSearch, and Java-based API design.

Learned deployment processes and debugging production-level issues.
Enhanced problem-solving skills by adapting to dynamic product requirements.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment at OfBusiness was dynamic and collaborative, emphasizing real-world application of technical skills. The team fostered innovation and adaptability, ensuring a supportive atmosphere for tackling complex challenges. Expectations from the company included delivering a robust and scalable admin portal within deadlines, adapting to evolving product requirements, and ensuring the smooth integration of backend and frontend systems. Regular guidance from mentors and constructive feedback enabled efficient progress and skill enhancement, making the experience both enriching and fulfilling.

Academic courses relevant to the project : Object Oriented Programming

PS-II Station : OfBusiness,Gurugram, Gurgaon

Faculty

Name: Ashish Narang .

Student

Name: AAYUSH KUMAR SHARMA(2021A8PS2675G)

Student Write-up

PS-II Project Title: Responsible for bug-fixing, enhancement tasks, and feature additions to the OASYS system, contributing to its continuous improvement.

Short Summary of work done during PS-II : Worked on a modern tech stack including Spring Boot, ElasticSearch, and Java, focused on backend development for the OASYS portal, which supports MSMEs in raw material procurement. Responsible for bug-fixing, enhancement tasks, and feature additions to the OASYS system, contributing to its continuous improvement. Gained substantial experience working on a vast codebase, learning how to implement code enhancements efficiently in a complex environment.

Tool used (Development tools - H/w, S/w) : Tech Stack - Backend: Spring Boot, Java, Postman. Database Management: MySQL, MongoDB, Redis, ElasticSearch.

Objectives of the project : Responsible for bug-fixing, enhancement tasks, and feature additions to the OASYS system, contributing to its continuous improvement.

Major Learning Outcomes : During my internship, I gained hands-on experience with Java and Spring Boot, enhancing my technical skills in building RESTful APIs, handling business logic, and optimizing performance. I developed a structured problem-solving approach by breaking down complex tasks into smaller components, improving productivity and confidence. Time management and planning became essential, allowing me to prioritize and meet deadlines efficiently. I learned to navigate large codebases, understand legacy systems, and approach new technologies with a systematic framework. Collaboration and debugging skills were refined through teamwork and hands-on problem-solving, boosting my overall growth as a developer.

Details of Papers/patents : not applicable.

Brief Description of working environment, expectations from the company : The working environment was dynamic, collaborative, and growth-oriented. I was part of a supportive team that encouraged knowledge sharing and problem-solving, fostering a culture of continuous learning. The company set high but achievable expectations, pushing me to enhance my technical skills and contribute meaningfully to projects. I appreciated the emphasis on collaboration, where open communication and teamwork were integral to achieving goals. The environment provided ample opportunities to learn new technologies, navigate complex codebases, and develop both technical and soft skills, ultimately shaping me into a more confident and capable developer.

Academic courses relevant to the project : oops, dbms .

PS-II Station : OfBusiness,Gurugram, Gurgaon

Faculty

Name: Ashish Narang .

Student

Name: AMAY SOOD .(2021A8PS2702P)

Student Write-up

PS-II Project Title: Revolutionizing customer experience with AI

Short Summary of work done during PS-II : In order to improve customer interactions and replace a subpar third-party solution, I created an AI-powered chatbot during my Practice School-II internship at OfBusiness. Using React and Node.js, I first created a proof-of-concept chatbot. Later, I used n8n to automate workflows and integrated technologies like Redis Stack Server, Groq's inference engine, and Dialogflow CX to create a scalable, production-ready version. Important accomplishments include refining big language models to improve natural language understanding, utilizing Freshchat to facilitate smooth escalation to human agents, and putting in place a Retrieval-Augmented Generation (RAG) pipeline to provide precise answers to company-specific queries. I used Spring Boot to ensure scalability and configuration when I wrote the Java code for the chatbot's backend. As part of my effort, I also added speech-to-text capabilities, incrementally incorporated input, and handled digressions to optimize the user experience. I also created a comparable chatbot for Nexizo's website, adapting it to specific needs while retaining a large portion of the original code. Jenkins was used to integrate the chatbot into staging and production environments as part of the deployment process, and performance optimization was

ensured. This project really aided OfBusiness's client interaction strategy by improving my knowledge of full-stack programming, natural language processing, and deployment pipelines.

Tool used (Development tools - H/w, S/w) : React, Springboot, Jenkins, Redis-stack-server, Groq, Dialogflow, LangGraph

Objectives of the project : To replace a third party chatbot with a in-house chatbot, and to make a new chatbot

Major Learning Outcomes : Learnt how to make an end to end User ready feature, along with issues of scalability, what the deployment lifecycle looks like, and challenges of making a production ready generative AI product

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The company keeps high expectations from interns, with fixed working hours and most of the work being done from the office. The working environment is good, with a lot of people ready to help and guide you, but also can be a bit rough for someone completely new to software development.

Academic courses relevant to the project : Oop, OS, DSA

PS-II Station : Ola Electric, Bengaluru, Bengaluru

Faculty

Name: Rajiv Ranjan Gupta .

Student

Name: PRATHAM TIKKISSETTY(2021AAPS2974H)

Student Write-up

PS-II Project Title: ADAS Development for 2W Vehicles

Short Summary of work done during PS-II : I worked with robotic arm to develop a pipeline for autonomous dark store. I also built ACC feature which has been integrated with the vehicle.

Tool used (Development tools - H/w, S/w) : Rviz2, Python, ROS2, C++,YoloV8

Objectives of the project : Building autonomous vehicles features specifically for 2 wheeler vehicle

Major Learning Outcomes : Learnt how a product goes from start to end in short period of time and making it demo ready, collaborating with various teams

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Have to deliver the product no matter what

Academic courses relevant to the project : Communication Networks, FDSA , ML

PS-II Station : Opta Cloud PTE, Singapore

Faculty

Name: Madhuri Bayya .

Student

Name: YASH TIWARI .(2021A8PS2705P)

Student Write-up

PS-II Project Title: App developer

Short Summary of work done during PS-II : I developed and worked on a total of 3 apps.

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

Objectives of the project : To Integrate APIs and backend system of the AI team of optacloud with the mobile app.

Major Learning Outcomes : I learned OOD, software development principles, GitHub.

Details of Papers/patents : None

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

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

PS-II Station : Oracle, Bangalore, Bengaluru

Faculty

Name: Srinath R.Naidu .

Student

Name: VANSHIKA MEHUL RAJPARIA(2020B1A70383H)

Student Write-up

PS-II Project Title: Generating Concise Summaries of Audit Insights using AI/ML

Short Summary of work done during PS-II : 1. Created an optimal prompt and a Question Bank with Audit Questions for obtaining optimal summary. Summary was integrated at the end of JSON report as well as UI Changes were made for it to appear in a collapsible scrollable textbox. 2. In PDF/XLS reports, added a field 'Report Filter Summary' which was the english summary of the SCIM Query (SCIM is not understandable by users). 3. Using Oracle BI Publisher, generated a Audit Insights PDF Report which was integrated into the workflow.

Tool used (Development tools - H/w, S/w) : 1.Oracle BI Publisher 2. Postman 3. IntelliJ idea

Objectives of the project : 1. Generating and Integrating a simple English Summary into the Async Audit Report which will help users get a synopsis of the entire report without reading and analyzing the charts and data. 2. SCIM Query to English Summary converter using GenAI. 3. Creating and integrating Audit Insights Charts Report using BI Publisher.

Major Learning Outcomes : 1. Completed a 23 hour Generative AI Professional course learning everything about GenAI
2. Learnt how to engineer prompts to gain the most optimal outcome, performed experiments and ultimately obtain the best prompt.
3. Learnt calling APIs, integrating responses and calling different functions; making everything into one workflow.
4. Learnt how to generate reports using BI Publisher.
5. Learnt frontend and UI Changes.

Details of Papers/patents : No Papers have been made.

Brief Description of working environment, expectations from the company : My team was extremely supportive and motivating me to perform better. While there were deadlines, there was no extreme pressure. I enjoyed working with the team and loved the culture. Expectations are high but when deadlines couldn't be met, people tried to help and analyze what went wrong.

Academic courses relevant to the project : Software Engineering, Object Oriented Programming, Database Management Systems, Data Structures and Algorithms, Operating Systems

PS-II Station : Oracle, Bangalore, Bengaluru

Faculty

Name: Srinath R.Naidu .

Student

Name: GANDHI SHANAY RAHUL(2020B2A72072G)

Student Write-up

PS-II Project Title: Bot Framework for Cloud Database

Short Summary of work done during PS-II : My work revolved around 2-3 projects based on RAG framework in GenAI , with the help of LLMs and Vector Databases, I stored documents over confluence and built a Q&A Bot , which accepted multimodal documents (pdf, .docx, .csv , .doc and .txt) ,to help the engineers quickly learn through design models, or help them with code changes if they are stuck, I have also integrated the bot with Slack over a VM .

Tool used (Development tools - H/w, S/w) : Ollama, Langchain, FAISS, Streamlit, Docker, VM, BitBucket

Objectives of the project : To create a framework to make bots for multiple use cases using RAG based approach .

Major Learning Outcomes : Learnt about how RAG based approach works, its advantages over Fine Tuning, How chunking a document works, Learnt to Dockerise a code and integrate it with Slack using Slack API, and to modularise code using SOLID principles

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Interns are expected to come to the office everyday, however the team members usually come 2-3 days a week (depending on the team), but weekly once/twice, a meeting is done with the manager and mentors to show the progress of the work done, The mentors are very helpful and approachable, and one should not hesitate to seek help from them, also with Oracle's MyLearn platform, you can learn new skills and do certified courses , similar to Coursera, and I recommend everyone to do it .

Academic courses relevant to the project : Generative AI, Artificial Intelligence, Machine Learning, Object Oriented Programming, Computer Networks, Database management

PS-II Station : Oracle, Bangalore, Bengaluru

Faculty

Name: Srinath R.Naidu .

Student

Name: ARJUN KHANDELWAL(2020B3A70848H)

Student Write-up

PS-II Project Title: Autonomous Database Dedicated Cloud Service Management User Interface with Integrated Digital Assistant

Short Summary of work done during PS-II : The project serves to simplify the workflows of individuals in the Autonomous Database Dedicated team at Oracle, through the introduction of a digital assistant integrated to the team's service which can run diagnostic commands through the use of natural language. Integrated within a comprehensive service management console, this represents a significant shift from the current command line interface to a more user-friendly graphical interface, enhancing productivity and reducing the learning curve for new members.

Tool used (Development tools - H/w, S/w) : Javascript, Kubernetes, Java, Oracle Cloud Infrastructure

Objectives of the project : To leverage the current mid-tier services developed by the team over a variety of interfaces

Major Learning Outcomes : Web Development, Digital Assistant Development

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Speaking from my own experience, Oracle offers a great and supportive work environment for an intern. Obviously there exists an expectation to deliver, but interns are given all the tools they need to succeed in their tenure at the internship, and are rewarded accordingly for delivering on the designed project aims. Oracle also has many people who have spent a long time in the industry, and it can help in giving an intern perspective in many aspects.

Academic courses relevant to the project : Object Oriented Programming

PS-II Station : Oracle, Bangalore, Bengaluru

Faculty

Name: Srinath R.Naidu .

Student

Name: SHREY MEHTA(2020B3A71459G)

Student Write-up

PS-II Project Title: Jira Tickets Similarity Search and Resolution using OCI GenAI and RAG Framework

Short Summary of work done during PS-II : The main goal of this project was to help support engineers in solving tickets quickly and efficiently using AI tools. The workflow involved loading ticket data and merging fields like summary, description, and comments, followed by preprocessing and summarization using OCI GenAI (Oracle's in-house LLM). Ticket embeddings were then generated using Cohere model and stored in Oracle's 23ai Database, a high-performance vector database, enabling the retrieval of top-k similar tickets for any new ticket. Building upon this foundation, the project implemented a RAG framework for solution generation. Retrieved top-k similar tickets were chunked, re-embedded, and stored in FAISS database to allow efficient search and integration with the LLM. User queries were then answered using this RAG framework and exhaustive prompt engineering. After generating the solution, a chatbot was integrated using Langchain so that the user could interact with the given solution and ask further questions. After building the entire backend code, the UI was built on top of it using Streamlit and

hosted on a computer instance using proper ingress-egress rules. The Jira tool thus built is currently deployed and used by support engineers, reducing hours of effort to minutes.

Tool used (Development tools - H/w, S/w) : Software: Python, SQL, Streamlit, Jira API. Database/Vector Store: Oracle 23ai, FAISS Vector Database. Cloud Infrastructure: Oracle Cloud Infrastructure (OCI), OCI GenAI

Objectives of the project : 1. To find the most similar tickets (ticket is a technical issue raised by Oracle's customers) to a new ticket to quickly resolve it. 2. Enhance the ticket resolution process with GenAI by generating possible solutions.

Major Learning Outcomes : • Developed expertise in using LLMs for summarization, solution generation, and building a chatbot.

- Gained hands-on experience with similarity search algorithms using vector representations.
- Enhanced understanding of preprocessing and chunking techniques for optimizing AI-driven solutions, especially for large textual datasets.
- Mastered the implementation of the RAG (Retrieval-Augmented Generation) framework to generate accurate, context-aware responses based on historical ticket data.
- Acquired knowledge of deploying AI-powered applications for enterprise-grade use cases, with a focus on automation and reduced manual intervention.
- Learnt to build an intuitive user interface using Streamlit and deployed the application.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Oracle has one of the best working environments. The team members and managers are very supportive and welcoming. Sufficient time was given to me to get familiar with the technologies before I started coding. My mentors helped me whenever I was stuck, and it was fun building a top-notch, fully deployable application together. Everyone also gave great feedback to bring out the best in me. The work environment is very friendly. It is expected to get your work done within deadlines but there are no office time restrictions. For most people, you can even work from home for some days. The office is also really great, and there are team-building exercises and outings, too.

Academic courses relevant to the project : Database Management Systems, ML/AI, Computer Networks, Object oriented programming, Data structures and algorithms, Operating Systems

PS-II Station : Oracle, Bangalore, Bengaluru

Faculty

Name: Srinath R.Naidu .

Student

Name: TANMAY SATIJA(2020B3A71516G)

Student Write-up

PS-II Project Title: Database Security Assessment

Short Summary of work done during PS-II : During my internship, I focused on database security and compliance for MySQL, gaining hands-on experience in implementing and automating security checks using STIG and CIS guidelines. I developed modular and MVC-based solutions for security assessments and enhanced features like SSL login and wallet support. My work included creating and refining scripts for Sensitive Data Discovery, adding OS and file permission checks, and ensuring language support for Japanese scripts. I also collaborated with teams to address code reviews, integrate user feedback, and prepare the final product for testing, providing development support as needed. Through this process, I honed my technical skills in scripting, database configuration, and compliance checks while improving documentation and report generation, including summaries and disclaimers. Additionally, I developed a final presentation summarizing my contributions, which enhanced my ability to communicate technical concepts effectively. This internship has been a valuable opportunity to apply theoretical

knowledge, solve practical challenges, and gain exposure to industry practices in database security.

Tool used (Development tools - H/w, S/w) : Tools Used: Development Tools: MySQL, MSSQL, Java, PowerShell, and Python. Compliance and Security Tools: STIG Viewer, CIS Benchmarks, and DBSAT. Design and Documentation: Microsoft PowerPoint, Microsoft Word, and UML tools. Testing and Configuration: Vi

Objectives of the project : To extend the support of Oracle's DBSAT to the Databases like MySQL and MS-SQL server

Major Learning Outcomes : During my internship, I gained hands-on experience in database security and compliance, focusing on MySQL. I learned to implement and automate security assessments using STIG and CIS guidelines, designed modular and MVC-based solutions, and integrated advanced features like SSL login and wallet support. Additionally, I improved my skills in report generation, language support testing, and coordinating with testing teams. The experience also enhanced my technical documentation, presentation, and problem-solving abilities, preparing me for real-world challenges.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment during my internship was highly collaborative and focused on innovation. I worked closely with my mentor and team members, who provided constant guidance and support. The environment encouraged learning through practical tasks and feedback, fostering a culture of continuous improvement. Regular code reviews and discussions helped me refine my work and align it with industry standards.

The company emphasized both technical skill development and professional growth, expecting interns to take ownership of their tasks while ensuring quality and efficiency. I was encouraged to explore best practices in database security and compliance and to propose modular and scalable solutions. The team valued proactive communication, documentation, and a strong understanding of the project's objectives.

Overall, the company created an atmosphere that balanced challenging tasks with ample learning opportunities. This supportive environment allowed me to enhance my technical expertise,

improve my problem-solving skills, and gain exposure to real-world applications of database security practices.

Academic courses relevant to the project : Database Management Systems (DBMS)

Operating Systems

Computer Networks

Software Engineering

Information Security

Programming Languages

PS-II Station : Oracle, Bangalore, Bengaluru

Faculty

Name: Srinath R.Naidu .

Student

Name: KOCHURI VENKATA SAIKRISHNA AKSHAY(2020B4A71622H)

Student Write-up

PS-II Project Title: Deep Learning Driven Targeted ET Workload Generator

Short Summary of work done during PS-II : The working environment for this project involves a collaborative and fast-paced setup where the focus is on leveraging exploratory testing results to build a robust deep-learning-based recommendation system. The team works with extensive SQL workload datasets derived from daily ET tests, requiring effective preprocessing, annotation, and audit. Advanced tools and technologies, including deep learning frameworks like TensorFlow

or PyTorch, SQL database systems, and scalable computing resources, will be used to develop and train the model.

Tool used (Development tools - H/w, S/w) : Hardware: Nvidia A10 GPUs, high-performance CPUs. Software: TensorFlow, PyTorch, SQL databases (e.g., MySQL), Jupyter Notebook

Objectives of the project : For all bugs found by Exploratory Test (ET) tests running daily, we have the workload associated with these bugs i.e. a file containing the SQL workload sequence which caused the corresponding bug. We want these audited workloads to train a deep learning model and let it recommend more useful test sequences among the random ones

Major Learning Outcomes : By leveraging this trained model, we aim to identify and recommend more effective test sequences. Instead of relying purely on random testing, the model will guide us towards test cases that are more likely to uncover bugs, optimizing our testing efforts.

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : The working environment was collaborative and supportive. The team was very helpful, always ready to guide and clarify doubts. The manager was approachable and ensured clear communication of tasks and goals. Access to necessary resources like GPUs and required datasets was provided, making it easier to focus on the work. Regular feedback helped in improving the project

Academic courses relevant to the project : deep learning, DBMS

PS-II Station : Oracle, Bangalore, Bengaluru

Faculty

Name: Srinath R.Naidu .

Student

Name: CHIRAG SHAH(2020B4A72000H)

Student Write-up

PS-II Project Title: Low-code Application Data Security

Short Summary of work done during PS-II : Low-code DB application data security for APEX, Worked on RASADM, an Oracle Application Express (APEX) tool to help APEX developers secure their applications without writing PL/SQL code for RAS policy definition. The tool will provide a UI to help users specify data access control requirements easily, and auto-generate RAS policies for application tables and views. The user should be able to review policies, make changes as needed, and apply or un-apply them on database objects.

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

Objectives of the project : Build tools and modules on Low-code platforms to help developers enforce end-to-end application data security.

Major Learning Outcomes : Oracle Data Security topics, Real Application Security, APEX App Development, Bug Fixing Process, ADE environment

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Completing my internship at Oracle has been an incredibly rewarding and transformative experience. Oracle's dynamic and innovative environment provided the perfect platform for me to grow both professionally and personally. I had the opportunity to work in a collaborative setting that fostered learning, teamwork, and hands-on experience with cutting-edge technologies.

Academic courses relevant to the project : Database Systems

PS-II Station : Oracle, Bangalore, Bengaluru

Faculty

Name: Srinath R.Naidu .

Student

Name: SUPRIYAM AGARWAL(2020B4A72341H)

Student Write-up

PS-II Project Title: Predictive analytics and machine learning for preventing system failures and degradation

Short Summary of work done during PS-II : I was part of DB Diagnostics and Monitoring team and gathered insights from the data for correlating different metrics and events that occur at various DB nodes. I also worked on detecting anomalies in the time series data and performed a clustering task so that we can identify the faulty nodes and communicate with operations team to initiate necessary corrective measures.

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

Objectives of the project : This project focuses on leveraging predictive analytics and machine learning techniques to anticipate and prevent potential failures or disruptions. By analyzing historical data and patterns, the project aims to develop algorithms that can provide insights and furthermore predict when components or systems might fail or experience performance

degradation. This would enable proactive maintenance, minimize downtime, and enhance overall reliability and availability.

Major Learning Outcomes : I understood various aspects related to database, pertaining to the kind of events occurring at the nodes and the various metrics, which determine the health of a node. Another major learning has been working collectively as a team and communicating with others to come up with a solution to the problem in hand.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment is quite chill and there is constant support from the manager and the team. The manager effectively communicated me with what is expected and how it aligns with the goals of the team.

Academic courses relevant to the project : Machine Learning, Data Mining

PS-II Station : Oracle, Bangalore, Bengaluru

Faculty

Name: Srinath R.Naidu .

Student

Name: SARVESH PRASANNA SUTAONE(2020B5A71947H)

Student Write-up

PS-II Project Title: Tokenization Server

Short Summary of work done during PS-II : For security, organizations must securely maintain sensitive data like Aadhar Card, PAN, SSN etc. Tokenization reduces exposure of sensitive data and helps address data residency and compliance requirements. My work was related to adding tokenization into Oracle Key Vault.

Tool used (Development tools - H/w, S/w) : Advanced Development Environment, Oracle Cloud Infrastructure, Oracle Database.

Objectives of the project : Add Tokenization to Oracle Key Vault (OKV) for secure data storage and data compliance

Major Learning Outcomes : I learnt a lot about Distributed Systems, maintaining consistency among different servers and databases, and also a lot about underlying cryptographic encryption algorithms.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment is very chill in Oracle. There is no sort of micro-management from anyone, and everyone respects your work life balance. The initial months are dedicated to training and learning new technologies used by the team. All the team members are very helpful and supportive. They can be approached anytime. There are many events happening in between to ensure the environment is lively.

Academic courses relevant to the project : Distributed Systems, Database Managements System, Operating System, Object Oriented Programming, C Programming.

PS-II Station : Parachute Technologies Pvt Ltd.,, Bengaluru

Faculty

Name: Harish Kumar J. R.

Student

Name: KUNAL JAIN(2020B4A32123G)

Student Write-up

PS-II Project Title: Object Detection on Ariel Images

Short Summary of work done during PS-II : During my internship at Parachute Technologies, I worked on advancing object detection capabilities using cutting-edge deep learning models, focusing on adapting solutions for resource-constrained environments. The project emphasized precise localization and orientation detection, leveraging optimization techniques and edge computing frameworks to enable real-time deployment on devices like the Jetson Nano. This experience provided invaluable hands-on exposure to the practical aspects of model fine-tuning, performance optimization, and deployment. It bridged theoretical concepts with real-world applications, deepening my understanding of advanced computer vision techniques and their role in solving complex challenges in domains such as aerial surveillance and automated monitoring.

Tool used (Development tools - H/w, S/w) : During my internship, I used NVIDIA Jetson as the hardware platform and YOLO models for software development, along with tools like TensorRT, Python, CUDA, cuDNN, and GPU-accelerated OpenCV for enhancing object detection capabilities.

Objectives of the project : Object Detection on Aerial Datasets with AI and Machine Learning

Major Learning Outcomes : Real life application of AI/ML and their deployment on Jetson device

Details of Papers/patents : The work focused on applied research rather than publication during the internship period. However, the methods and findings hold potential for future contributions to technical papers or patents in object detection and edge AI.

Brief Description of working environment, expectations from the company : The working environment encouraged a hands-on approach to solving real-world challenges, combining technical rigor with innovative thinking. The company's expectations were to explore state-of-the-art object detection methodologies, optimize models for edge deployment, and integrate solutions into practical applications like aerial surveillance and automated monitoring. Collaboration with mentors and peers provided guidance, while autonomous research and experimentation were valued. The project required meticulous planning, testing, and troubleshooting, particularly when adapting models for real-time edge computing on devices like the Jetson Nano.

Academic courses relevant to the project : Relevant coursework included Machine Learning, Deep Learning, and Programming. These courses provided the foundational knowledge required for understanding and implementing techniques like YOLO model optimization and deployment.

PS-II Station : PayU Payments, Gurgaon

Faculty

Name: Gaurav Nagpal .

Student

Name: AGARWAL SHREY MOHIT .(2021A3PS1092P)

Student Write-up

PS-II Project Title: Strategic Expansion of Payment Ecosystems, Cross-Border Solutions and ONDC Enablement

Short Summary of work done during PS-II : This project focused on enhancing the payment solutions offered by PayU, a leading fintech company, by addressing key areas of strategic importance in the rapidly evolving digital payments landscape. The work involved developing partnerships with ERP providers to expand PayU's footprint in enterprise payment processing, strategizing for the company's integration into the Open Network for Digital Commerce (ONDC) to empower MSMEs, and analyzing cross-border payment challenges to improve services for Indian exporters. A comprehensive study of market trends and competitor offerings enabled me to make targeted recommendations for product enhancements and market positioning. The project's outcomes drove innovation, increased merchant adoption, and strengthened PayU's leadership in the payments ecosystem.

Tool used (Development tools - H/w, S/w) : SQL, Excel, Tableau, Powerpoint

Objectives of the project : The project's objectives were to drive strategic partnerships, streamline PayU's payment solutions, and identify growth opportunities in the fintech ecosystem while delivering measurable business impact.

Major Learning Outcomes :

1. Strategic Partnership Development: Gained a deep understanding of building and managing partnerships, including identifying synergies with ERP services and other businesses to drive mutual growth.
2. Understanding of Fintech Ecosystem: Acquired insights into payment systems, merchant onboarding processes, and the challenges faced in scaling fintech solutions in a dynamic market.
3. Analytical and Problem-Solving Skills: Enhanced the ability to analyze industry trends, assess market opportunities, and provide actionable solutions for business challenges.
4. Cross-Functional Collaboration: Learned the importance of effective communication and teamwork while working with diverse teams, including product, marketing, and partnerships, to achieve project goals.

Details of Papers/patents : During my internship at PayU, I did not author any papers or file patents. However, I contributed to innovative projects, including spearheading strategic

partnerships and exploring untapped fintech initiatives like ONDC integration, which offered impactf

Brief Description of working environment, expectations from the company : The working environment at PayU is dynamic, collaborative, and innovation-driven. As a payments technology leader, the company fosters a culture that encourages ownership, continuous learning, and entrepreneurial thinking. Interns are given the opportunity to contribute meaningfully to impactful projects and collaborate with cross-functional teams to solve real-world challenges in the fintech space. PayU emphasizes open communication and offers guidance and mentorship to ensure professional growth.

From the company, I expect a supportive environment that values fresh perspectives and provides exposure to diverse domains, such as business development, product strategy, and partnerships. I hope to gain insights into the rapidly evolving fintech ecosystem, particularly in building scalable solutions and fostering industry collaborations. Opportunities to work on challenging problems, learn from experienced professionals, and develop a strong understanding of payment systems are critical. Additionally, I look forward to the flexibility to experiment with innovative ideas and the feedback to improve my analytical and strategic thinking.

Academic courses relevant to the project : Fundamentals of Finance and Accounting, Derivatives and Risk Management, Security Analysis and Portfolio Management, Financial Management

PS-II Station : Pepper Content, Mumbai

Faculty

Name: Sidharth Mishra .

Student

Name: ISHPREET SINGH SOOD(2020B1A40651P)

Student Write-up

PS-II Project Title: Program Manager to Head of Business

Short Summary of work done during PS-II : During 6 months, I undertook diverse tasks spanning BFSI, content marketing, and analytics workflows. Key deliverables included conducting YouTube audits, preparing client decks for, and streamlining the GTM strategy planning. I also researched AI-driven content frameworks and implemented insights into reports, while assisting in revenue projection analysis and BFSI content strategy refinement. This work required balancing tight deadlines with high-quality output, fostering strong collaborative efforts, and delivering actionable insights across critical projects.

Tool used (Development tools - H/w, S/w) : Software: Microsoft Excel/Google Sheets: Data organization, account tagging, revenue projections. PowerPoint/Google Slides: Deck creation for client presentations. YouTube Analytics Tools: Keyword research and channel audits. Hardware: Standard office set

Objectives of the project : Enhance Content and Marketing Strategies Conduct YouTube audits and keyword research to identify gaps and improve client content performance. Develop tailored content strategies for BFSI clients, such as DSP Mutual Fund and Aditya Birla, to drive engagement and business growth. Streamline BFSI Operations and Account Management Tag and organize Platinum, Gold, and Silver accounts for improved targeting and prioritization in client outreach. Prepare actionable insights and strategies for HDFC TV, Earnnest, and other BFSI client presentations. Strengthen Client Relations and Deliverables Create impactful client decks and presentations (e.g., for Aditya Birla, Angel One) to solidify relationships and support revenue-driving projects. Build personalized strategies for stakeholder management, ensuring all client-specific expectations were met. Support Revenue Growth Assist in revenue projections and forecast tracking for ongoing BFSI projects. Identify potential clients and develop AI content frameworks to align with current market trends. Foster Innovation in Content and Marketing Frameworks Research scalable AI-driven content strategies to improve marketing efficiency. Collaborate on luxury retail and tech consolidation insights to create forward-thinking solutions for clients.

Major Learning Outcomes : The primary learning outcome was mastering the art of project prioritization and multi-tasking in a high-pressure environment. This involved handling diverse tasks ranging from client presentation creation to YouTube audits and data analytics for BFSI workflows. Additionally, collaborating with teams across different verticals provided a deeper understanding of stakeholder management, communication strategies, and process optimization in BFSI and content marketing domains. Exposure to tools for analytics, presentations, and collaborative management honed technical and organizational skills.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment was fast-paced, client-centric, and demanded precision under tight deadlines. The company emphasized collaboration, creative problem-solving, and delivering measurable outcomes. There was an expectation of proactive communication, especially in cross-functional tasks like BFSI stakeholder mapping or YouTube strategy development. The work culture rewarded innovation, ownership, and data-backed decision-making, providing an enriching platform to grow and contribute.

Academic courses relevant to the project : NA

PS-II Station : Pepper Content, Mumbai

Faculty

Name: Sidharth Mishra .

Student

Name: SAMRIDHI JOSHI .(2021A1PS2591P)

Student Write-up

PS-II Project Title: Demand Generation

Short Summary of work done during PS-II : During my Practice School-II internship at Pepper Content, I contributed to business development through tasks involving lead generation and event planning. My primary responsibility was conducting account research to identify potential business leads using tools such as LinkedIn Recruiter, Apollo, and Google Search. This involved gathering and verifying data and enriching contact profiles to account executives for outreach. In addition to lead generation, I curated a social content calendar to optimize posting strategies, ensuring increased visibility and engagement across campaigns. I also played a key role in podcast preparation, crafting personalized questionnaires for interviews with high-profile guests for events like Content Marketing Leaders 2025. Additionally, I enriched contact data using platforms like ZoomInfo and Lusha, improving database quality and relevance.

Tool used (Development tools - H/w, S/w) : LinkedIn, apollo.io, lusha, zoominfo, 6sense

Objectives of the project : Generating leads for business

Major Learning Outcomes : Content Marketing

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Pepper Content was dynamic, and fast-paced, reflecting the company's approach to content marketing. My role required a great deal of attention to detail, organization, and time management, as tasks were often deadline-driven.

Academic courses relevant to the project : NA

PS-II Station : Pepper Content, Mumbai

Faculty

Name: Sidharth Mishra .

Student

Name: KHUSHI MITTAL .(2021A2PS2608P)

Student Write-up

PS-II Project Title: Driving growth for Airtel and Pepper Content through SEO and Event Management

Short Summary of work done during PS-II : I contributed to projects at Pepper Content and Airtel by employing strategic SEO and content marketing techniques. For Pepper Content, I refined blogs, conducted keyword research, and optimized metadata to align with audience expectations. This resulted in improved engagement and higher search rankings. For Airtel, I focused on developing SEO-driven content strategies for their digital services, including broadband and finance offerings. I successfully identified underperforming pages, realigned content with high-impact keywords, and crafted new blogs to target emerging customer needs. In addition, I managed event logistics for a high-profile roundtable discussion, ensuring smooth execution by coordinating with vendors, finalizing venues, and creating promotional materials.

Tool used (Development tools - H/w, S/w) : Google Search Console, SEMrush, Google Ads, Pepper AI, WordPress, Canva & Excel

Objectives of the project : Enhance Airtel's online presence through targeted SEO strategies, improve blog traffic and search rankings for Airtel and Pepper Content, successfully plan and execute high-profile events for Pepper Content to strengthen brand visibility.

Major Learning Outcomes : Gained expertise in keyword mapping and SEO strategies to boost online visibility.

Learned end-to-end event planning and management, including vendor coordination and budget handling.

Enhanced skills in data analysis and performance tracking using Google Search Console and SEMrush.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment at Pepper Content was energetic and welcoming. As a startup, it brought together a team of young, like-minded individuals. The open communication encouraged us to take initiative and contribute any ideas freely. I felt supported and valued, which made it a great place to learn and grow.

Academic courses relevant to the project : Digital Marketing

PS-II Station : Petasense Technologies Pvt. Ltd, Bengaluru

Faculty

Name: Venkateswara Rao Thunuguntla .

Student

Name: VATSAL NADKARNI(2020B3AA0493G)

Student Write-up

PS-II Project Title: Checks and Notifications Dashboard

Short Summary of work done during PS-II : Created a dashboard that got data from various celery tasks running in the background, creating emails and testing and sending them, creating an activity dashboard to display important notifications. Worked on both frontend and backend for the project duration.

Tool used (Development tools - H/w, S/w) : Devtools in browser, docker, linux scripts, redis, postgres db, code editors, slack, deployment tools (very basics)

Objectives of the project : Create a dashboard and notify users of various data problems that had gone unnoticed on the platform before.

Major Learning Outcomes : Debugging, understanding software architecture, timely delivery of product, user input on feature, communication with team, writing industry grade and clean code, teamwork, persistence.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Great working environment, enabling group, small company so you know everyone, good team, work is excellent for experience of startup, feature is shipped fast so you can see results of work soon.

Academic courses relevant to the project : Object oriented programming, FoDSA

PS-II Station : Petasense Technologies Pvt. Ltd, Bengaluru

Faculty

Name: Venkateswara Rao Thunuguntla .

Student

Name: MOHAMMAD FAHAD ASHRAF(2021A3PS2936H)

Student Write-up

PS-II Project Title: DEVELOPMENT OF BLE-BASED WI-FI PROVISIONING AND ENHANCED DIAGNOSTIC CAPABILITIES FOR VM4

Short Summary of work done during PS-II : During the internship, I focused on designing and implementing an efficient Wi-Fi provisioning system for IoT devices designed and produced by Petasense (VM4), transitioning from SoftAP to BLE-based provisioning. Initial exploration of SoftAP demonstrated usability but revealed challenges such as server connection failures and app incompatibility. This led to adopting BLE provisioning using the NimBLE stack, which offered lower memory usage, faster connections, and better scalability. The BLE provisioning system was successfully demonstrated, securely transmitting Wi-Fi credentials while ensuring robust communication through encryption and event handling. To enhance diagnostics, I implemented features such as reboot reason tracking, peripheral health monitoring, and Wi-Fi connection time reporting, providing valuable insights into device performance and reliability. I also worked on integrating advanced LED driver functionality using I2C communication, enabling precise control over LED color, patterns, and alerts for intuitive visual feedback. A key outcome was the development of the `ps_ble` component, which centralized BLE management and streamlined integration with the production application. This, combined with updates to the Wi-Fi provisioning state machine, ensured a seamless and secure provisioning process. The internship provided significant learning opportunities in embedded programming, IIoT systems, and wireless communication technologies, laying a strong foundation for future advancements in IoT solutions.

Tool used (Development tools - H/w, S/w) : ESP32-S3 DevKit, VM4 boards which had Temperature sensor, accelerometer, magnetometer, BLE module. Software Used - ESP-IDE, VS Code, BitBucket. Work required mostly using C/C++

Objectives of the project : Design and implement a reliable and scalable Wi-Fi provisioning system for IoT devices, transitioning from SoftAP to BLE-based provisioning for improved efficiency. Strengthen security by incorporating advanced encryption techniques and ensuring seamless BLE communication. Enhance device diagnostics through features like reboot reason tracking, peripheral health monitoring, and Wi-Fi connection time reporting. Improve user experience and system alerts using advanced LED driver functionality, offering dynamic and intuitive visual feedback.

Major Learning Outcomes : Gained a comprehensive understanding of Industrial IoT (IIoT) systems, including embedded programming (C/C++), microcontroller operations, and communication protocols. Acquired hands-on experience with various sensors, including Accelerometer, Magnetometer, BLE etc and Wi-Fi AP provisioning, enhancing knowledge of embedded communication mechanisms and real-world IoT applications.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at the company was highly collaborative, with supportive mentors who provided ample time for guidance and feedback. They ensured that I fully understood the tasks and their requirements. Daily standups were held to update progress and discuss any issues, ensuring continuous support. The company's small team size fostered a close-knit atmosphere where everyone was engaged and willing to help one another. As many tasks were interrelated across different teams, there was constant cooperation, which created a great learning experience. Additionally, regular team activities were organized, which kept the workplace dynamic and enjoyable. These activities ensured that the atmosphere remained lively and balanced, fostering both productivity and leisure. Overall, the work culture was excellent, focused on teamwork, mutual assistance, and professional growth.

Academic courses relevant to the project : C programming, MPI, OS, Computer Networks, Computer Architecture

PS-II Station : PharmSight Research and Analytics Pvt. Ltd., Faridabad

Faculty

Name: Bharathi R .

Student

Name: ADYA SHUKLA .(2021A5PS0394P)

Student Write-up

PS-II Project Title: Forecasting and Analytics Intern

Short Summary of work done during PS-II : My work was to predict the future numbers for multinational Pharmaceutical Clients and thus coming up with effective strategies and approaches. Understanding the trends and upcoming challenges for the novelty drug market across US and Europe.

Tool used (Development tools - H/w, S/w) : Ms Excel, Ms powerpoint, SQL

Objectives of the project : To carry out various forecasts for US and European Pharma clients

Major Learning Outcomes : Excel, Trend Analysis, Client Communication

Details of Papers/patents : --

Brief Description of working environment, expectations from the company : Healthy work environment, overall a good experience.

Academic courses relevant to the project : POE, BAV, Pharmeco

PS-II Station : PharmSight Research and Analytics Pvt. Ltd., Faridabad

Faculty

Name: Bharathi R .

Student

Name: SWARNALI DAS .(2021A5PS2678P)

Student Write-up

PS-II Project Title: Forecasting and Competitive Intelligence (CI) in the Healthcare Domain

Short Summary of work done during PS-II : In assessing the current use of forecasting and CI by pharmaceutical companies, we conduct extensive market research and use clients' data to plan multiple business strategies and cross-functional teams for assets mainly related to novelty or rare diseases. My work primarily focuses on diseases such as Multiple Sclerosis (MS), Systemic Lupus Erythematosus (SLE), Social Anxiety Disorder (SAD), and Hereditary Angioedema (HAE).

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

Objectives of the project : To support Top-tier US and European Bio-Pharmaceuticals in shaping their near-term and long-term business strategies. We also oversee internal performances and develop comprehensive plans to facilitate achieving internal business goals.

Major Learning Outcomes : 1. Market Landscape and Competitor Analysis: Tracking competitor pipelines, market shares, and product launches.

2. Therapeutic Area Analysis: Deep dives into specific therapeutic markets to evaluate trends, opportunities, and challenges.
3. Commercialization Strategy: Evaluating pricing, reimbursement, and go-to-market plans for new drugs.
4. Real-World Evidence (RWE) and Post-Marketing Analysis: Assessing product performance and competitor impact after launch.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : It was a remote working experience. The mentors were cooperative and explained every task in the utmost detail. The co-founders as well as the HR were supportive as well. I will look forward to work with the company in future days as well.

Academic courses relevant to the project : Pharmaceutical Chemistry, Organizational Psychology, Pharmaceutical Formulations

PS-II Station : Philip Capital,Mumbai., Mumbai

Faculty

Name: Amar Singh .

Student

Name: ARYAMAN MAURYA .(2021A1PS2116P)

Student Write-up

PS-II Project Title: Equity Financial Instruments and Instruments.

Short Summary of work done during PS-II : Preparation of various equity-based reports to understand the investment ideologies and thesis for investing based on fundamental analysis. Research report on major and upcoming ETF markets across the globe and how to study the major business segments constituted by the Nasdaq.

Tool used (Development tools - H/w, S/w) : Microsoft excel, Microsoft Word, Screenr.

Objectives of the project : Understanding the financial markets, bonds , ETFs

Major Learning Outcomes : Preparing investment thesis, finding out investable viability in a company, bonds ratings and how they work, ETF markets and various business sectors constituting them and major growth drivers.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment was well-balanced, with each company report and project being given a weekly deadline. The company expected work done on time, punctuality and a good learning attitude.

Academic courses relevant to the project : Finman, Fundafin, BAV, SAPM, DRM.

PS-II Station : Phodu Club Private Limited, Goa, Goa

Faculty

Name: Sidharth Mishra .

Student

Name: ARYAN ASRANI(2021A4PS3086H)

Student Write-up

PS-II Project Title: EdTech Product Development and Growth Strategy

Short Summary of work done during PS-II : I contributed to operations, product development, and customer engagement. My efforts to optimize workflows resulted in a 20% reduction in project delays. Collaborating with the product team, I introduced gamification features that increased user engagement by 30%. I provided insights to refine user segmentation and improve retention. These projects collectively growth while ensuring it remained aligned with its mission to provide accessible education.

Tool used (Development tools - H/w, S/w) : Mixpanel, PostHog, SQL, Asana, Trello

Objectives of the project : The primary objectives of my project was to improve operational efficiency, enhance user engagement, and drive customer retention and revenue growth. This involved streamlining processes to support the company's rapid scaling, leveraging data analytics for informed decision-making, and aligning product offerings with user needs. The ultimate aim was to help the company fulfill its mission of making quality education accessible to students nationwide.

Major Learning Outcomes : During my internship, I developed a strong understanding of how startups operate and the challenges they face during scaling. I learned to manage projects efficiently, gaining practical skills in task coordination and workflow optimization. I also honed my problem-solving and collaboration skills, understanding how customer-centric strategies drive retention and growth. Overall, the experience deepened my knowledge of startup operations and enhanced my technical and interpersonal skills.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment was fast-paced, dynamic, and highly collaborative. As a Founder's Office Intern, I worked closely with the leadership team, which allowed me to gain valuable insights into a

startup's strategic operations. The company encouraged creativity and initiative, providing me with ample opportunities to take ownership of projects and contribute to meaningful work. My expectations of gaining hands-on experience and exposure to real-world challenges were met and exceeded.

Academic courses relevant to the project : Principles of Economics

PS-II Station : PIEDS BITS Pilani, Pilani

Faculty

Name: Anjani Srikanth Koka .

Student

Name: MADHAV GARG .(2020B1AA1890P)

Student Write-up

PS-II Project Title: Founder's Office at Simplismart

Short Summary of work done during PS-II : At Simplismart, I contributed to diverse projects at the intersection of design, strategy, and execution, supporting the company's mission to deliver tailored AI solutions. My role encompassed designing marketing assets, preparing sales decks, and crafting impactful visuals to communicate our platform's value. Beyond design, I took on responsibilities tied to strategic planning and customer engagement, aligning closely with the Founder's Office initiatives. This included creating explanatory materials, conducting competitive analysis, and assisting with task planning to ensure seamless project delivery. My work bridged creative and operational efforts, helping Simplismart enhance its brand presence and support its growth in the AI industry.

Tool used (Development tools - H/w, S/w) : Figma, Illustrator, After effects, lottie, google analytics

Objectives of the project : Support Growth and Marketing function of Simplismart

Major Learning Outcomes : I learned new skills, how to think about new marketing channels and how to vet new things that seem interesting

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The working environment at Simplismart is dynamic and fast-paced, fostering creativity, collaboration, and innovation. As a growing startup focused on delivering tailored AI solutions, the company emphasizes adaptability and problem-solving. Expectations are high, with a focus on taking ownership of tasks, meeting tight deadlines, and contributing meaningfully to both strategic and operational goals. Team members are encouraged to step out of their comfort zones, bringing a mix of technical expertise and creativity to drive impactful results. The culture values open communication, proactive thinking, and a willingness to learn, ensuring everyone contributes to the company's vision of empowering businesses with AI-driven solutions.

Academic courses relevant to the project : Organisational Psychology Helped a bit, along with POE

PS-II Station : PIEDS BITS Pilani, Pilani

Faculty

Name: Anjani Srikanth Koka .

Student

Name: ARYAN SRIVASTAVA(2020B4PS1179G)

Student Write-up

PS-II Project Title: Dual Internship at PIEDS and BITSAA

Short Summary of work done during PS-II : During my PS-II internship, I had the unique opportunity to work with PIEDS (Pilani Innovation and Entrepreneurship Development Society) and BITSAA (BITS Alumni Association). At PIEDS, my role involved evaluating over ten startup pitches in diverse fields such as drone technology and fintech. I contributed to mentoring early-stage startups, organizing events in collaboration with organizations like Google Cloud and RBI, and providing resources to support innovative ideas. I also worked on creating preparatory material for platforms like Y Combinator and reached out to IDEX winners to onboard them into PIEDS. At BITSAA, my work focused on leveraging technology to strengthen alumni engagement. I developed a WhatsApp scraper using Selenium and Anthropic's AI to extract job and referral opportunities from alumni groups. I also built a web crawler to collect BITSian news from over 100 domains and designed a search API for alumni profiles. Using AWS for backend automation and Figma for frontend design, I revamped the BITSAA website, enhancing its usability and aesthetic appeal. Throughout my internship, I developed expertise in tools like Python, AWS, and Google APIs, and strengthened my skills in automation, API development, and UI/UX design. This experience not only honed my technical and problem-solving abilities but also deepened my understanding of entrepreneurship and community-building, bridging technical innovation with strategic impact.

Tool used (Development tools - H/w, S/w) : ### **Tools Used (Development Tools - H/w, S/w):**
Software Tools: - **Programming Languages:** Python - **Frameworks and Libraries:** Selenium, Scrapy, BeautifulSoup, Flask - **Cloud Services:** Amazon AWS (Lambda, S3, DynamoDB) - **APIs:**

Objectives of the project : Automations

Major Learning Outcomes : Tech - Python , Scraping , Using AI tools like Chatgpt and Claude

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment during my PS-II internship was dynamic and collaborative, as I worked with two organizations, PIEDS and BITSAA, under the BITS Pilani ecosystem. Both environments encouraged innovation, problem-solving, and teamwork, providing me with diverse opportunities to learn and contribute.

At PIEDS, the atmosphere was entrepreneurial, with a focus on evaluating and supporting startups. Regular interactions with startup founders, mentors, and industry experts offered valuable insights into the challenges and opportunities of the startup ecosystem. I was encouraged to take initiative in organizing events with partners like Google Cloud and RBI, which created a highly engaging and learning-centric environment.

At BITSAA, the working culture was technologically driven, emphasizing the modernization of alumni engagement. My tasks involved collaborating with cross-functional teams, such as website developers and campus photographers, to design and implement scalable solutions. There was a clear emphasis on innovation, with freedom to propose and execute projects like the WhatsApp scraper and web crawler.

The company's expectations were aligned with delivering impactful results. At PIEDS, I was expected to assess startups based on scalability and innovation, while at BITSAA, the focus was on developing technical solutions to strengthen the alumni network. Both organizations valued accountability, creativity, and the ability to meet deadlines.

The supportive and stimulating environment provided a perfect balance of autonomy and guidance, enabling me to grow professionally while contributing meaningfully to both organizations' goals.

Academic courses relevant to the project : NA

PS-II Station : PIEDS BITS Pilani, Pilani

Faculty

Name: Anjani Srikanth Koka .

Student

Name: GURUPAM DIXIT .(2020B5A40627P)

Student Write-up

PS-II Project Title: Product Design at Simplismart: Design Challenges, Growth Milestones, and Future Strategies for User-Centric Excellence

Short Summary of work done during PS-II : As a Product Designer at Simplismart, I am responsible for designing and enhancing the user experience across our AI-driven platform. My work involves crafting intuitive product screens, marketing websites, and social media creatives that align with the company's theme. I focus on building responsive designs for both mobile and desktop, incorporating industry-standard practices. I have successfully redesigned the platform to improve usability, added features like dark mode, and introduced tools for managing databases and LLM workflows. I also work on facilitating seamless dataset uploads through AWS buckets, zip files, and CSVs. Recently, I've been involved in developing parameter-based configurations and enhancing applications for new AI models. Beyond product design, I create engaging demo videos and marketing assets to boost our platform's visibility. My efforts in UI/UX design and feature development contribute to Simplismart's vision of delivering cutting-edge AI solutions with a user-centric approach.

Tool used (Development tools - H/w, S/w) : All Software - Figma, Adobe Photoshop, Illustrator, After Effects, Premiere Pro, Slack, JIRA

Objectives of the project : As a product designer at Simplismart, I had the opportunity to ideate, iterate, design, and test numerous screens for a B2B platform—a first for me, which made it a challenging yet rewarding experience. My responsibilities included designing marketing pages, product pages, and various features, all while contributing to the overall brand identity. This

extended to creating assets for both online and offline presence, such as LinkedIn templates, t-shirts, and stickers. It was an enriching journey that pushed me to grow and deliver across multiple domains.

Major Learning Outcomes : This semester, I've experienced significant growth at Simplismart, especially in my ability to answer critical questions like why a feature needs to be designed or how it aligns with user needs and business goals. My design skills have improved drastically through multiple iterations and consistent refinement, allowing me to create more user-centric and industry-standard solutions. Working on complex projects like dark mode, mobile screens, and parameter-based configurations has deepened my understanding of both UI/UX design principles and the impact of collaborative problem-solving.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The work environment at Simplismart is both inspiring and motivating. Our team is composed of highly talented individuals, creating an atmosphere where continuous growth is encouraged. The pace of innovation and collaboration ensures that staying proactive is essential to keep up. Simplismart is truly a remarkable place to work, with visionary founders and an exceptional senior staff who set the standard for professionalism and mentorship.

Academic courses relevant to the project : Supply Chain Management, AI, Manufacturing Management

PS-II Station : PIEDS BITS Pilani, Pilani

Faculty

Name: Anjani Srikanth Koka .

Student

Name: PRAKHAR GURUNANI .(2021A2PS2620P)

Student Write-up

PS-II Project Title: Backend Developer

Short Summary of work done during PS-II : I have been instrumental in building and optimizing the backend for a GenAI platform that enables B2B companies to test, train, and deploy generative AI models on both Simplismart's and clients' cloud environments. I developed HTTP proxies in Go to facilitate access to models such as Whisper, LLaMA, and SDXL while integrating Prometheus metrics for monitoring these services. Additionally, I implemented a robust billing system using Lago to enable metered billing for customers. I contributed to the logging and analytics framework by managing log storage in S3 buckets and designed real-time UI tools to visualize and analyze API requests, including filters for high-volume requests. My work also included rate limiting based on custom ACL configurations for Kubernetes Ingress, integrating NGINX rate limits tailored to organizational needs.

Tool used (Development tools - H/w, S/w) : Golang, Grafana, Prometheus, Open Telemetry, Kubernetes, Rancher

Objectives of the project : Creating high throughput proxy services in golang which will be used for inferencing various models like SDXL, Whisper, LLama 3.1, Flux

Major Learning Outcomes : Learnt how to handle protobuf serialization and deserialization

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The emphasis on modern technologies such as Go, FastAPI, Kubernetes, and Prometheus fosters continuous learning and practical exposure to cutting-edge solutions in AI and infrastructure. With a strong focus on scalability, performance, and cloud-native applications, the workplace encourages engineers to take ownership of their projects, ensuring both autonomy and accountability.

Academic courses relevant to the project : None

PS-II Station : PIEDS BITS Pilani, Pilani

Faculty

Name: Anjani Srikanth Koka .

Student

Name: MANISHA SAINI .(2021B3PS2060P)

Student Write-up

PS-II Project Title: Faculty entrepreneurship program and EmpowerHER fellowship program design.

Short Summary of work done during PS-II : During my Practice School 2, I actively contributed to two major initiatives: The Faculty Entrepreneurship Summit and The EmpowerHER Fellowship Program. For the Faculty Entrepreneurship Summit, I studied faculty entrepreneurship policies and developed a preliminary framework. I compiled a database of faculty entrepreneurs leveraging grants such as BIG and SPARSH. Additionally, I prepared proposals and sponsorship presentations for organizations like BIRAC, DST, and potential sponsors. I also designed a comprehensive event plan, including knowledge sessions, keynote speeches, panel discussions, and networking activities to ensure a well-structured and engaging summit. For the EmpowerHER Fellowship Program, I developed the entire program plan, starting with conceptualizing its framework and objectives. I designed a detailed 12-month program calendar, outlining key milestones such as workshops, mentoring sessions, and immersion programs, providing a clear and structured timeline for the program. I created a detailed document encompassing all

necessary program details and a resource document to support its execution. Furthermore, I prepared a comprehensive budget and conducted research to identify and contact organizations for potential collaborations, ensuring the program's success and outreach. In addition to my work on the Faculty Entrepreneurship Summit and the EmpowerHER Fellowship Program, I also contributed to several other tasks during my internship. I prepared a presentation on BVJ projects, created a documents detailing MNC scholarships, and worked with the management team to support the successful execution of Convocation 2024.

Tool used (Development tools - H/w, S/w) : Excel , Word and Canva.

Objectives of the project : To design a comprehensive faculty entrepreneurship event and a 12 month empowerHER fellowship program.

Major Learning Outcomes : Gained experience in structuring a comprehensive program outline tailored to program objectives. Acquired insights into organizing large-scale events from planning to execution. Strengthened abilities to work in a dynamic team environment, handling multiple tasks under tight deadlines.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company :

The working environment during my internship was dynamic and collaborative, fostering a culture of innovation and learning. The organization provided a professional yet approachable atmosphere where teamwork and individual contributions were equally valued. I had the opportunity to work alongside experienced mentors, which enhanced my problem-solving abilities and encouraged the exchange of ideas.

Academic courses relevant to the project : Management courses.

PS-II Station : Pioneer Electrocables Pvt Ltd, Biratnagar

Faculty

Name: Glynn John .

Student

Name: MADHAV CHAWLA .(2020B5A42012P)

Student Write-up

PS-II Project Title: Advertising Program Management

Short Summary of work done during PS-II : Experience as an Advertising Program Manager has provided me with invaluable insights into the intricacies of digital advertising and program management. The challenges I encountered, particularly in optimizing ad performance and managing cross-platform campaigns, have enhanced my problem-solving abilities and broadened my understanding of digital marketing. Overall, the internship have equipped me with practical skills in program management, digital marketing, and financial oversight, all of which will contribute significantly to my academic and professional growth. Moving forward, I will continue to refine these skills as I work toward successfully completing the program and achieving the company's advertising goals.

Tool used (Development tools - H/w, S/w) : Google ads console, Meta ads console, Midjourney, LeapX, Dbeaver, retool

Objectives of the project : The Program Manager will oversee all aspects of this advertising program, acting as the central point of contact and ensuring seamless collaboration between internal and external teams (e.g., creative agencies, media buyers). They will be developing the program charter and overall strategy and managing project budgets.

Major Learning Outcomes : Finalizing the program charter and defining key milestones.
Setting up and launching Meta, Google, and LinkedIn ad campaigns.
Developing performance reports and adjusting budgets as needed.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Good working environment, most of the work happened remotely. Good Management.

Academic courses relevant to the project : PAVA, PnS, Optimization

PS-II Station : Piramal Group - BIU,Mumbai, Mumbai

Faculty

Name: Ankur Pachauri

Student

Name: DEVANSH KHANNA(2021A8PS1604G)

Student Write-up

PS-II Project Title: Development and Integration of AI Products

Short Summary of work done during PS-II : During my Practice School-II, I contributed significantly to three major projects at Piramal Finance. For the Samarth Co-Lending Platform, I conducted user research to identify pain points in manual workflows, prioritized document validation automation for Legal and Technical Scrutiny Reports (LSRs and TSRs), and designed scalable wireframes to streamline loan processing. In the Arya Credit Program, I collaborated with Relationship Managers (RMs) to understand challenges like re-logins due to incomplete documentation and knowledge gaps. I developed a logic-driven dynamic questionnaire and designed intuitive wireframes to simplify credit program selection, ensuring improved accuracy

and reduced Turnaround Time (TAT). For Cognitio, I engaged with stakeholders, including the Legal and Hindsighting teams, to gather operational insights and validate the feasibility of automating legal scrutiny workflows.

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

Objectives of the project : 1. Co-Lending (Samarth): Automate document validation processes to reduce Turnaround Time (TAT) and improve scalability in loan processing. 2. Credit Program (Arya): Streamline credit program selection using a dynamic questionnaire and logic-based recommendations to minimize re-logins and improve accuracy. 3. Cognitio: Leverage AI to automate legal scrutiny report verification, reducing errors and enhancing the efficiency of legal workflows.

Major Learning Outcomes :

1. AI Product Development: Gained hands-on experience in designing and deploying AI-driven solutions for real-world applications in financial services. Learned to prioritize and implement features using frameworks like RICE for maximum impact.
2. User-Centric Design: Conducted user research and created wireframes to align solutions with stakeholder needs and pain points.
3. Cross-Team Collaboration: Collaborated with cross-functional teams, including credit managers, legal teams, and technical experts, to gather insights and refine solutions.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Piramal Finance was dynamic and collaborative, fostering innovation and learning. The team emphasized a user-centric approach, encouraging open communication and cross-functional collaboration. Expectations from the company were clear and aligned with delivering impactful, scalable solutions to enhance operational efficiency. Regular feedback from my manager, mentors and stakeholders ensured alignment with project goals, while the supportive atmosphere encouraged independent problem-solving and continuous learning.

Academic courses relevant to the project : NA

PS-II Station : Piramal Group - BIU,Mumbai, Mumbai

Faculty

Name: Ankur Pachauri

Student

Name: RISHEV SINGH CHAUDHARY(2021A8PS1833G)

Student Write-up

PS-II Project Title: Incentive Query Automation For Sales Team

Short Summary of work done during PS-II : During my PS-II internship, I worked on three primary areas: L1, L2, L3 layers; the codebase for incentive calculations; and sales team scorecards. My responsibilities involved transforming complex datasets into a readable format and uploading them to Snowflake for efficient retrieval. In the first area, I consolidated employee and loan data from multiple rows into a single JSON-formatted row, enhancing clarity and accessibility. This transformation streamlined data usage for the chatbot model and significantly improved retrieval speed. In the second area, I worked on understanding and optimizing the codebase used to calculate sales team incentives. This involved implementing business rules, such as applying caps on incentives and handling eligibility criteria based on designations. I also developed logic to account for team performance under managerial supervision, ensuring accurate incentive distribution. The third area focused on sales team scorecards, integrating comprehensive product, incentive, and restriction data. These scorecards provided the sales team with daily updates on their incentives, improving transparency and motivation. Under the guidance of my mentor, Parag, I successfully developed and deployed these solutions. The project, launched in late November, was well-received by the sales team, who appreciated the timely and clear updates. This experience deepened my understanding of database management,

code optimization, and collaboration while enhancing my problem-solving skills in real-world scenarios.

Tool used (Development tools - H/w, S/w) : Snowflake – For database management, data transformation, and efficient retrieval. Python – For data processing, JSON formatting, and automation of workflows. SQL – For querying and manipulating data in relational databases.

Objectives of the project : To automate queries.

Major Learning Outcomes : Data Transformation and Consolidation

Database Management and Snowflake Integration

Project Deployment and Impact Assessment

Problem-Solving and Process Improvement

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment is positive and collaborative, with a relaxed and enjoyable atmosphere. The people are supportive, approachable, and maintain a healthy balance between productivity and enjoyment at work. It's a good place to grow and engage with a cooperative team.

The company provides thoughtful perks such as breakfast, lunch, and snacks, contributing to an employee-friendly atmosphere. However, there is a lack of clarity regarding PPO opportunities, which often depends on budget constraints. Decisions related to PPOs are delayed, leaving candidates in a state of uncertainty.

Overall, the company offers a pleasant and supportive workplace with excellent amenities, though greater transparency in career advancement opportunities would enhance the experience.

Academic courses relevant to the project : DBMS, Python, C++ Programming

PS-II Station : Piramal Group - BIU,Mumbai, Mumbai

Faculty

Name: Ankur Pachauri

Student

Name: NISHANT DHILLON(2021A8PS2990G)

Student Write-up

PS-II Project Title: Easy Ocr

Short Summary of work done during PS-II : The primary objective was to automate the classification of various financial documents, streamlining the process of data management and enhancing decision-making efficiency. I started by analyzing the structure and content of different document types, identifying key data points that would be used for classification. I then designed and implemented SQL queries to extract relevant information from a large database of financial documents. Using pattern recognition techniques and predefined categories, I created rules that would allow the system to classify documents based on their content. To ensure accuracy and minimize errors, I implemented a feedback loop to refine the classification process over time, using manual verification for validation. I also worked closely with the BIU team to integrate the classifier into the existing data pipeline, ensuring smooth data flow and real-time processing. The project improved document sorting efficiency by automating a previously manual task, ultimately saving time and reducing human error. The skills I gained in SQL querying, data analysis, and process

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

Objectives of the project : To make a document classifier

Major Learning Outcomes : Sql

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : The working environment at a company should be collaborative, dynamic, and inclusive, where open communication is encouraged, and employees are empowered to contribute their ideas. A positive work culture fosters creativity, innovation, and professional growth, allowing individuals to work effectively both independently and as part of a team.

The company should provide clear expectations and support for employees to achieve their professional goals. This includes setting realistic performance benchmarks, offering regular feedback, and providing opportunities for continuous learning and development. The ideal working environment is one where employees feel valued, supported, and motivated to excel in their roles.

From the company, I expect a commitment to transparency, ethical practices, and mutual respect. This involves clear communication of organizational goals, a focus on work-life balance, and a genuine interest in the well-being of employees. Additionally, fostering a culture of inclusivity and diversity should be a priority, as it enhances team collaboration and drives innovation.

Overall, I seek a challenging yet supportive environment where I can apply my skills, grow professionally, and contribute meaningfully to the company's success.

Academic courses relevant to the project : Dbms

PS-II Station : Piramal Group - BIU,Mumbai, Mumbai

Faculty

Name: Ankur Pachauri

Student

Name: Pratyush Verma(2021AAPS0644H)

Student Write-up

PS-II Project Title: Loan Pricing Grid Framework and Optimisation

Short Summary of work done during PS-II : I created three different renders of a Home Loan Takeup Optimization Model for Piramal Finance that worked in the domain of predicting loan takeup, suggested pitching bandwidth, correlation of takeup with the current pricing grid, and tested it to create a move and train to predict QoQ forecasts.

Tool used (Development tools - H/w, S/w) : Snowflake, Python, Pandas, Numpy, Matplotlib, XGBoost, Machine Learning, Applied Stochastic Methods

Objectives of the project : To create predictive models that identify HL takeup rates and other associated outcomes for loan applications

Major Learning Outcomes : Machine Learning, Indian Lending Industry, Python, SQL, Statistics and Evaluation Metrics

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : The environment is very supportive and independent, I was offered one major industry problem and given the complete independence to work on it myself, I was helped along the way and was in constant touch with the head of the growth analytics division that taught me a lot of stochastic practises and evaluation conventions

Academic courses relevant to the project : Machine Learning, Fundamentals of Business Analytics, Database Management

PS-II Station : Piramal Group - Tech,Mumbai, Mumbai

Faculty

Name: Ankur Pachauri

Student

Name: KUSHAL SRIVASTAVA(2020B1A81684G)

Student Write-up

PS-II Project Title: Journey User Master

Short Summary of work done during PS-II : Worked on the live project Journey User Master. Was responsible for completing the loan mapping and UCIC generation flows. Also served as oncall for a month and resolved nodal issues.

Tool used (Development tools - H/w, S/w) : Java Springboot, PostgreSQL, MongoDB, Python

Objectives of the project : Creation of a comprehensive "user master" for customer records.

Major Learning Outcomes : Backend Development

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working environment is chill. The people are great. Working hours depend on the team you re assigned to.

Academic courses relevant to the project : DBMS, OOP

PS-II Station : Piramal Group - Tech,Mumbai, Mumbai

Faculty

Name: Ankur Pachauri

Student

Name: AARUSH SHUKLA(2021A3PS2577G)

Student Write-up

PS-II Project Title: Vaani-Sales CRM

Short Summary of work done during PS-II : Wrote Junit TestCases for 5 Service of Vaani and Nurturing Project, Added/Updated features in Vaani platform

Tool used (Development tools - H/w, S/w) :
Rancher,Jenkins,Grafana,Postman,Github,CloudDefense,AWS ParamStore

Objectives of the project : To update/add features in the already existing Vaani platform

Major Learning Outcomes : Learnt how to work and walk through large codebases, Learnt Springboot, Unit Testing, Major tools including Postman,Rancher,Grafana,Jenkins,CloudDefense,AWS Param Store and many more things

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment was pretty good, The mentor assigned to me was super helpful and entertained even the slightest of my doubts,there was no issue of in time or out time as such that you have to

necessarily work 9 hours/day, you could also do WFH if your team is comfortable with it and there were no such strict policies on leave taken

Academic courses relevant to the project : OOPS,DBMS

PS-II Station : Piramal Pharma Limited - BIU, Mumbai

Faculty

Name: Ankur Pachauri

Student

Name: DEEPTANSHU PRAKASH(2020B3A71840G)

Student Write-up

PS-II Project Title: colending-ui

Short Summary of work done during PS-II : During my Practice School-II (PS-II) internship, I contributed to Piramal's Co-lending platform, focusing on both frontend and backend development. On the frontend, I utilized React, TypeScript, SCSS, and CSS3 to create user-friendly interfaces for loan management and partner integrations. My responsibilities included designing responsive layouts, implementing interactive features, and ensuring seamless user experiences. On the backend, I developed RESTful APIs using Node.js for critical functionalities such as user authentication, loan lifecycle management, and integration with partner systems. I ensured optimal performance, security, and scalability of the backend services. I also worked on designing a robust database schema and implementing efficient data retrieval strategies to manage high volumes of loan-related data. Collaborating closely with cross-functional teams, I participated in code reviews, debugging sessions, and deployment processes.

Tool used (Development tools - H/w, S/w) : Frontend: React: For building dynamic user interfaces. TypeScript: For enhancing code reliability and scalability. SCSS/CSS3: For styling and designing responsive layouts. Backend: Node.js: For developing RESTful APIs and backend services. Express.js: F

Objectives of the project : develop a ui for colending

Major Learning Outcomes : Technical Proficiency:

Gained hands-on experience in frontend development using React, TypeScript, SCSS, and CSS3.

Strengthened backend development skills by designing and implementing RESTful APIs using Node.js.

Learned to design robust database schemas and implement efficient data handling techniques.

Full-stack Development:

Enhanced understanding of the integration between frontend and backend systems.

Learned to build scalable, secure, and performance-optimized web applications.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment during my PS-II internship at Piramal's Co-lending platform was highly collaborative, professional, and growth-oriented. I was part of a dynamic team that emphasized knowledge sharing, teamwork, and agile development practices. Regular stand-up meetings, code reviews, and brainstorming sessions provided ample opportunities to interact with experienced professionals and learn industry best practices.

The company encouraged open communication and innovation, fostering a supportive environment to experiment with new ideas and approaches. Clear goals and expectations were set, ensuring alignment with project requirements and organizational objectives. I was expected to deliver quality work within deadlines, adhere to coding standards, and proactively contribute to the development lifecycle.

Additionally, there was a strong emphasis on self-learning and upskilling, which motivated me to stay updated with the latest technologies. Tools like JIRA and GitHub were used for project management and collaboration, ensuring streamlined workflows and accountability.

The company provided exposure to real-world challenges in building scalable and secure financial platforms, with a focus on delivering user-centric solutions. My contributions were not only valued but also recognized, creating a sense of ownership and accountability in my tasks.

Overall, the working environment was conducive to both personal and professional growth, exceeding my expectations by providing a platform to apply theoretical knowledge to practical scenarios while fostering continuous learning and development.

Academic courses relevant to the project : oops,dbms

PS-II Station : Piramal Pharma Limited - BIU, Mumbai

Faculty

Name: Ankur Pachauri

Student

Name: ARVIND AMAR INAMDAR(2021A8PS1553G)

Student Write-up

PS-II Project Title: Development of a loan model to predict probability of default.

Short Summary of work done during PS-II : The objective was to design a predictive model for evaluating the likelihood of home loan defaults by leveraging advanced data analytics and critical variables like credit histories, inquiries, tradeline, and customer demographics.

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

Objectives of the project : To predict whether a person taking loan will default or not.

Major Learning Outcomes : Learnt about the Feature engineering pipeline.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The working environment is really good with great mentors.

Academic courses relevant to the project : Foundations of Data science

PS-II Station : Piramal Pharma Limited - BIU, Mumbai

Faculty

Name: Ankur Pachauri

Student

Name: AKSHAT MUDGAL(2021A8PS2912G)

Student Write-up

PS-II Project Title: Enhancing E-Commerce Performance through Data Analytics and Automation

Short Summary of work done during PS-II : The internship at Piramal Pharma involved the development of tools and automated processes to enhance e-commerce performance. Key

achievements included the creation of a consolidated sales and spends tracker for quick commerce platforms . the implementation of VendorFlex stock alerts to optimize inventory for Amazon, and the automation of mailing and report formatting processes. Additionally, keyword analytics were conducted to improve ad campaign efficiency, focusing on cost-effective marketing strategies. These efforts integrated data analytics and automation to deliver actionable insights and streamlined decision-making processes for the organization.

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

Objectives of the project : Enhance e-commerce performance through data analytics and automation. Optimize inventory management with real-time monitoring and automated alerts. Streamline reporting processes by automating repetitive tasks and reducing errors. Improve decision-making through actionable insights and consolidated data.

Major Learning Outcomes : Gained hands-on experience in data analytics using Python and Excel.

Learned to automate reporting processes, significantly reducing manual effort.

Developed skills in e-commerce data processing, including sales and spends analysis.

Enhanced problem-solving abilities by overcoming technical challenges in real-world scenarios.

Improved collaboration skills through cross-functional teamwork.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Piramal Pharma was professional and collaborative. The team provided robust support and constructive feedback, fostering innovation and encouraging the exploration of tools and techniques. The company emphasized delivering accurate, timely solutions that demonstrated clear business impact. Expectations included high-quality contributions that aligned with operational objectives, with an emphasis on proactive problem-solving and independent execution of tasks.

Academic courses relevant to the project : C programming, Fodsa

PS-II Station : Piramal Pharma Limited - Tech, Mumbai

Faculty

Name: Ankur Pachauri

Student

Name: SANKA RAKESH NAGASUDHAKAR PRASAD(2020B5A32252H)

Student Write-up

PS-II Project Title: Automation and data science projects

Short Summary of work done during PS-II : We have automated several business requirements for several stakeholders using Azure frameworks and python

Tool used (Development tools - H/w, S/w) : Azure, Mssql, spyder, python

Objectives of the project : Automate several tasks and provide support to various teams on cloud

Major Learning Outcomes : Azure

Sql

Python

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Working environment is really good. Team is really helpful and supportive.

Academic courses relevant to the project : Foundation of data science

PS-II Station : Piramal Pharma Limited, Mumbai

Faculty

Name: Ankur Pachauri

Student

Name: PRAJWAL NAKIL .(2020B1AA1379P)

Student Write-up

PS-II Project Title: FSU Analysis

Short Summary of work done during PS-II : The FSU (Free Standing Unit) analysis focused on evaluating the impact of FSUs on sales performance in retail outlets. The study aimed to determine how FSUs contribute to increasing the Purchase Order Booking (POB) for the target brand, Littles, and optimize their installation process for maximum effectiveness. Data was collected and analyzed for POB values before and after FSU installations, considering at least two months of data on either side. A Growth Index was calculated as the ratio of the average monthly POB for FSU outlets to non-FSU outlets, helping quantify the effectiveness of FSUs. Linear regression was employed to understand how factors like linkage to top distributors, seasonal installation, and outlet area affect the Growth Index. The analysis revealed a positive correlation for top distributor linkage but negative correlations for installations during in-season periods and larger outlet areas, indicating potential inefficiencies in these scenarios. Based on these findings, actionable recommendations included focusing on demographics with strong distributor networks, choosing optimal time periods for installation, and tracking performance

consistently across outlets. This approach can enhance the effectiveness of FSUs, reduce installation costs, and maximize returns for Littles. The project demonstrated how data-driven decisions can streamline marketing strategies and improve business outcomes

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

Objectives of the project : To know the impact of FSU installations over the country

Major Learning Outcomes : Data Analysis, Stakeholder Management

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The workplace was professional, cooperative, and offered lots of chances for learning. The business promoted creative thinking and realistic problem-solving by emphasising a data-driven approach. Structured workflows and unambiguous instructions were in place to guarantee project execution efficiency. Delivering useful information, upholding analytical correctness, and fulfilling timelines were among the expectations. Proactive communication and the capacity to adjust to changing needs were also highly regarded by the organisation. The experience was extremely enlightening because of the encouraging environment that promoted both technical and personal progress.

Academic courses relevant to the project : Probability & Statistics

PS-II Station : Piramal Pharma Limited, Mumbai

Faculty

Name: Ankur Pachauri

Student

Name: KRISHNANSHU MOHTA(2021A3PS2239G)

Student Write-up

PS-II Project Title: Proactive triggers and automation of essential monthly files.

Short Summary of work done during PS-II : The project focused on streamlining sales operations, including incentive calculations, performance tracking, and report generation. Key tools like Python, Pandas, and Playwright were utilized to automate manual processes, improving efficiency and reducing errors. Nine projects were undertaken, covering areas such as: Automating the calculation of awards for top-performing sales teams (SS and SM COC Awards). Automating National Sales Manager reviews with zone and brand-level metrics. Streamlining incentive calculations for sales employees based on predefined performance metrics. Classifying retail outlets based on performance and developing strategies for improvement. Automating data downloads from sales platforms like Bizom and QlikSense. Monitoring distributor activity and optimizing stock flow in remote regions. Tracking outlet performance and brand distribution with detailed visualizations. The work resulted in transparent incentive structures, actionable insights, and enhanced operational efficiency. Key outcomes included improved team morale, better market penetration, and data-driven decision-making. The initiative laid a strong foundation for scalable, technology-driven growth in sales operations

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

Objectives of the project : Provide sales force with proper incentive awareness and automation of important reports

Major Learning Outcomes : Learnt core business in sales and learnt a lot of insights on how FMCG goods work. Technical skills like python and excel were also gained during my time here. Got soft skills like communication and got a rigid overall corporate experience.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Working environment is good, timings are very good and no overtime was asked. Team was ok but they kept it to themselves only. Within 2 weeks we got to know that they don't offer PPOs anymore which was very disheartening because we had to work 5 months knowing we won't get a job opportunity here. However work was good and got to learn about business so that was plus. Manager was firm but fun however there were team bonding dinners, or any activity whatsoever, just work and timely go to home.

Academic courses relevant to the project : N/A

PS-II Station : Piramal Pharma Limited, Mumbai

Faculty

Name: Ankur Pachauri

Student

Name: DEEPAK AGARWAL .(2021A3PS2239P)

Student Write-up

PS-II Project Title: 1)Employee Attrition Prediction 2)Data Quality Script 3)Inclusivity and Bias Detection Model 4)Target Prediction Analysis

Short Summary of work done during PS-II : Worked on diverse projects involving machine learning and automation. Focused on attrition prediction, automation of data quality scripts, bias detection using pre-trained models, and creating predictive models for headcount analysis. Utilized tools like Python, Flask, and visualization libraries to improve processes and efficiency

Tool used (Development tools - H/w, S/w) : Python, Flask, Matplotlib, Seaborn, SQL, APIs (Postman), Oracle HCM, Excel, Machine Learning

Objectives of the project : 1) Predict employee attrition and key influencing factors. 2) Automate data quality checks and improve efficiency. 3) Develop inclusivity and bias detection tools for better hiring practices. 4) Predict headcount and women representation targets for future years

Major Learning Outcomes : Learn process of data extraction, cleaning, and automation techniques.

Proficiency in Python, Flask, and machine learning algorithms.

Enhanced understanding of business processes and decision-making

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The company provided a supportive environment with learning opportunities in data analysis and process automation. Expectations revolved around delivering efficient solutions and have a collaborative learning culture.

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

PS-II Station : Pixis.ai, Bangalore

Faculty

Name: Akanksha Bharadwaj .

Student

Name: SIRIPURAM SURYA .(2020B2A71406P)

Student Write-up

PS-II Project Title: Reporting Insights and PRISM

Short Summary of work done during PS-II : Gained proficiency in the Go programming language, including its major libraries and frameworks. Contributed to product development by implementing new features and enhancing functionality. Designed and developed RESTful APIs to improve system integration and efficiency. Worked on the internal documentation. Automated various manual tasks, significantly optimizing workflows and reducing time spent on repetitive activities. Played a key role in advancing the product's development and ensuring high-quality deliverables by adhering to best practices and collaborating closely with cross-functional teams.

Tool used (Development tools - H/w, S/w) : VS Code, HTTPie, PGAdmin, Postman, Swagger

Objectives of the project : Develop optimized and efficient programs for the product.

Major Learning Outcomes : Learnt to built real world projects, enhance existing products and learnt to collaborate with different teams to build new products.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Work environment is good, people are very helpful. They are understanding and allow flexible work hours. They expect us to learn fast during the work and complete the given tasks withing the deadline.

Academic courses relevant to the project : Data Structures and Algorithms

PS-II Station : Pixis.ai, Bangalore

Faculty

Name: Akanksha Bharadwaj .

Student

Name: ABHAY MAMGAIN .(2021A4PS2188P)

Student Write-up

PS-II Project Title: Dataplatform

Short Summary of work done during PS-II : I was initially tasked with doing a vendor selection for kafka 3rd party solutions , after that i worked on a producer consumer microservice which was meant to facilitate all the data movement in the data platform , apart from that there were small tasks related to the ingestion and the orchestration side of the platform .

Tool used (Development tools - H/w, S/w) : Go,python, kafka , flink , macbook, kubernetes postman

Objectives of the project : To create a new dataplatform

Major Learning Outcomes : Learned designing of a dataplatform , learned core concepts of kafka and microservice architecture and lambda architecture.

Details of Papers/patents : Na

Brief Description of working environment, expectations from the company : Colleagues are generally like college seniors , quite informal environment, no dress code , but also because it is quite informal so work timings are also informal , there are chances some days you stay late like

really late , and some days you just leave early . Very fast paced environment and you'll never feel bored as everyday will be a new challenge .

Academic courses relevant to the project : Oop, system design

PS-II Station : Pixis.ai, Bangalore

Faculty

Name: Akanksha Bharadwaj .

Student

Name: HARSH INDRAJIT AGRAWAL .(2021A7PS0524P)

Student Write-up

PS-II Project Title: Benchmarking Event Bus Architectures, Generic Event Consumer Microservice

Short Summary of work done during PS-II : I started with a benchmarking project between 3 different event bus architectures. I was responsible for testing the each one thoroughly and achieving the highest possible performance with our hardware and generating a report which concluded with a recommendation on which architecture should be adopted in the company. After this project concluded my next project was to develop a microservice that would act as a generic event consumer as a part of the selected event bus architecture.

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

Objectives of the project : To benchmark different event bus architectures and use the knowledge acquired to develop a generic event consumer microservice

Major Learning Outcomes : Apache Kafka, Backend development, GoLang

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The environment was very conducive to learning. I was given enough time to learn anything that I needed to learn before starting with my project. The people in my team were very helpful with any doubts that I had. The expectation that the company had was that I would be earnest in my work, learn any topic I didn't know quickly and keep making progress on my tasks.

Academic courses relevant to the project : Computer Programming, OOP

PS-II Station : Pixis.ai, Bangalore

Faculty

Name: Akanksha Bharadwaj .

Student

Name: JOY SINHA(2021A8PS1606H)

Student Write-up

PS-II Project Title: ML Exploration for Time Series Forecasting of Future Spends Predictions

Short Summary of work done during PS-II : Started off by working independently on an XGBoost model to understand more about the data that I am working with. After that moved to Transformer based models where I was assisted by the mentors for understanding of certain aspects but was expected to develop the model and produce results and analysis on my own. The learning curve was steep but the learning opportunities were ample.

Tool used (Development tools - H/w, S/w) : Amazon AWS VPN, EC2, S3, VSCode, Jupyter

Objectives of the project : Develop a DL model that can predict the future spends of an ad group

Major Learning Outcomes : Learnt about using real world data to generate predictions with transformer based models.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : It is a great place to work at. The deadlines are reasonable and the work load is not immense. The WFH policy is very generous with upto 2-3 days WFH allowed per week. However they expect you to complete the task given to you so need to be vigilant about that.

The office also offers free food, 4 times a day, everyday in office.

The office itself is a little smaller than required considering the number of employees, but the WFH policy makes up for it.

Academic courses relevant to the project : BITS F464 Machine Learning

PS-II Station : Plume Design India Private Limited, Hyderabad

Faculty

Name: Madhuri Bayya .

Student

Name: JAINAM HEMANI .(2021AAPS0029P)

Student Write-up

PS-II Project Title: Interning at Plume Design India

Short Summary of work done during PS-II : During my internship at Plume Design, I gained hands-on experience in networking, Wi-Fi technologies, and cloud-based solutions. My work involved mastering Linux fundamentals, configuring networking tools, and working with Wi-Fi protocols like 802.11mc to explore indoor positioning accuracy. I conducted research on network interference, comparing the impact of high-throughput and low-throughput interferers, and authored a research paper documenting my findings. I worked extensively with programmable attenuators and RF shield boxes to optimize signal quality during experiments. Setting up a TFTP server and automating station reboots streamlined testing processes, while iterative testing and troubleshooting ensured reliable configurations. A significant part of my role involved transitioning from macOS to Ubuntu to resolve compatibility issues, improving workflow efficiency. Collaboration with the team and feedback from mentors played a key role in refining solutions and enhancing project outcomes. Additionally, I maintained detailed documentation of all setups and experiments for accessibility and future use. This internship not only deepened my technical expertise but also strengthened my problem-solving, research, and collaboration skills, providing valuable industry exposure in the field of modern networking and Wi-Fi innovation.

Tool used (Development tools - H/w, S/w) : The tools used during my internship encompassed both hardware and software solutions. On the hardware side, I worked with Mini-Circuits Programmable Attenuators for signal strength control, RF Shield Boxes to minimize interference during Wi-Fi testing, Sh

Objectives of the project : Work on a product feature and work on a research question

Major Learning Outcomes : 1. Advanced Technical Knowledge

- Gained proficiency in Linux fundamentals, including system processes, networking commands, and file management.
- Acquired expertise in Wi-Fi protocols (802.11 standards), security mechanisms (WEP, WPA2, WPA3), and networking tools like tcpdump, iptables, and Wireshark.

2. Hands-On Hardware and Software Experience

- Configured and worked with programmable attenuators, RF shield boxes, and TFTP servers, enhancing practical understanding of network setups and testing environments.
- Conducted experiments to evaluate network performance and troubleshoot interference issues effectively.

3. Problem-Solving and Adaptability

- Developed strong problem-solving skills by overcoming challenges like software compatibility issues and optimizing network configurations through iterative testing.
- Adapted to new tools and platforms, including transitioning from macOS to Ubuntu for smoother project execution.

4. Research and Analytical Skills - Conducted in-depth studies on topics like network interference and 802.11mc RTT mechanisms, bridging theoretical knowledge with experimental data.

- Authored a research paper and documented findings, demonstrating the ability to present technical insights clearly and effectively.

5. Collaboration and Communication

- Enhanced teamwork skills by collaborating with mentors and peers, leveraging feedback to refine solutions and improve project outcomes.
- Strengthened documentation and reporting abilities by creating detailed manuals, confluence pages, and research documentation.

6. Industry Exposure and Professional Development

- Gained insights into real-world networking and Wi-Fi technology applications, preparing for challenges in the tech industry.
- Developed a well-rounded understanding of modern networking ecosystems, including cloud-based solutions and sustainable practices in technology.

Details of Papers/patents : The research paper I authored during my internship focused on network interference analysis in wireless communication. Specifically, it examined the comparative effects of a single high-throughput interferer versus multiple low-throughput interferers on n

Brief Description of working environment, expectations from the company : The working environment at Plume Design was dynamic and collaborative, fostering innovation and technical growth. The company emphasized a hands-on approach to learning, encouraging interns to engage deeply with cutting-edge technologies and real-world challenges. I was part of a team that valued knowledge sharing and open communication, which created a supportive atmosphere for brainstorming and problem-solving. Access to state-of-the-art tools and infrastructure further enriched the experience, allowing for practical experimentation with networking, Wi-Fi protocols, and cloud-based solutions.

Expectations from the company were clear and aligned with professional growth. I was encouraged to take ownership of my projects, whether it was researching network interference, automating processes, or troubleshooting complex setups. Regular feedback from mentors and team members guided my progress and ensured alignment with the company's goals. Plume Design provided opportunities to contribute meaningfully to ongoing projects, blending theoretical learning with practical application. This immersive environment not only deepened my technical skills but also enhanced my ability to adapt, collaborate, and innovate in a professional setting.

Academic courses relevant to the project : Communication Networks, Internet of Things

PS-II Station : Porter - Non Tech. Bengaluru, Bengaluru

Faculty

Name: Arindam Roy .

Student

Name: J P SRAVAJIT(2020B1A40843G)

Student Write-up

PS-II Project Title: PRODUCT MANAGEMENT AT PORTER

Short Summary of work done during PS-II : During the course of my PS-II, I have worked on multiple projects - 1. Creating a new product from scratch (Priority Service), handling the business as well as product side, with a complete 0 to 1 journey. Expanded the project to meet user requirements 2. Sprinklr chatbot - Executed user research and built the chatbot via Sprinklr from scratch, deciding all the flows to address the increasing TPO and CPO after conducting a detailed RCA 3. OLC - Built a complete order life cycle flow for the team, which is to be used as the template for the coming quarter with a focus on enhancing customer experience. 4. Customer comms- Revised and built new customer comms to improve expectation setting of the service and enhance communicability to customers. 5. Booking flow items change – Performed research on various competitor apps' booking flow and brought in UI changes to the booking page to improve customer visibility and improve their experience 6. Onboarded and facilitated integration of various courier aggregators on the Porter app

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

Objectives of the project : Establishing a new product, improving customer experience and addressing key metrics such as CPO and TPO

Major Learning Outcomes : Communication, time management, people management, teamwork, problem-solving abilities and leadership qualities, JavaScript, Whimsical, Figma, Groovy, advanced Excel

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Excellent work environment, with a very friendly and outgoing team, who are always available to help and guide through any situations or roadblocks.

Work hours can be a little strenuous due to the small team size in the new initiatives verticals.

Academic courses relevant to the project : -

PS-II Station : Porter - Non Tech. Bengaluru, Bengaluru

Faculty

Name: Arindam Roy .

Student

Name: RISHITA GUPTA .(2021A1PS2363P)

Student Write-up

PS-II Project Title: Enhancing Operational Efficiency and Customer Experience

Short Summary of work done during PS-II : During my PS-II internship at Porter, I worked on improving the efficiency and customer experience of their Packers and Movers business. I optimized agent processes, streamlined auditor allocation, and introduced personalized customer-agent mapping to enhance service quality. To build trust in intercity services, I implemented virtual inspections, improving transparency and conversion rates. I also simplified the incentive structure with a revenue-based model and explored partnerships to boost lead generation. Additionally, I upgraded chatbot functionality to improve self-service options and reduce manual support. This experience strengthened my skills in process optimization and customer-focused problem-solving, driving meaningful business growth.

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

Objectives of the project : The objective of the internship was to identify and resolve operational inefficiencies and enhance customer experience for Porter's Packers and Movers business. This involved optimizing processes, improving service quality, and driving growth through agent and customer-centric solutions.

Major Learning Outcomes : During the internship, I gained expertise in identifying and resolving operational inefficiencies, enhancing customer satisfaction, and optimizing key processes like agent allocation, audits, and incentive structures. I honed data-driven decision-making skills, explored collaborative strategies for lead generation, and implemented technological enhancements such as chatbot upgrades to improve customer support. This experience provided valuable insights into aligning process improvements with business growth, fostering adaptability, and driving customer-centric solutions.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The work environment was awesome , the people and the work culture both were amazing , everyone was very helping and I got to learn a lot. I was given whole ownership of the projects I did. Porter is overall a growing company and helps to unlock new opportunities and to brainstorm new ideas.

Academic courses relevant to the project : NA

PS-II Station : Porter - Non Tech. Bengaluru, Bengaluru

Faculty

Name: Arindam Roy .

Student

Name: SAMARTH SRIVASTAVA(2021A5PS1442P)

Student Write-up

PS-II Project Title: Reactivation of SME Courier Users - Porter

Short Summary of work done during PS-II : Product is an imperative link between Business, Technology and Research that appraises the requirements from all stakeholders. Any decision with either of these verticals is taken with respect to a product lens and driven by that perspective towards the set goals. After more than a year of Porter starting its business in the courier logistics market, it was identified that the majority of the customers who used our courier service were retail, day to day customers or micro/small and medium sized enterprises. Since the market had already been saturated by bigger players in the industry, such as Bluedart, Delhivery, EcomExpress, Shiprocket, etc. the companies entire focus was shifted to retail consumers who had a very low booking frequency as compared to E-commerce companies or large-scale enterprises.

Tool used (Development tools - H/w, S/w) : Sprinklr, Notion, Whimsical, Groovy Console, Jira

Objectives of the project : Product Optimization and User Experience Research

Major Learning Outcomes : UXR conduction, research report. Research Requirement Documentation(RRD), Discussion Guide

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : Porter is the best firm to grow and learn due to their freedom of working environment and supporting even interns to take risks. They have given me complete control of my working method and hours and always supported me while making sure my deliverables are accurate and on time. They have even supported me to go off-site for work trip for user research. My internship experience has been invaluable, providing me with both technical and soft skills that will benefit me in the long run. Beyond gaining industry-specific knowledge, I have significantly improved in areas like time management, communication, and adaptability. Working on real-world projects has strengthened my ability to prioritize tasks, meet deadlines, and collaborate effectively in a team setting.

Academic courses relevant to the project : Essentials of Strategic Management, Principles of Management, Supply Chain Management, PMQC

PS-II Station : Porter - Tech,Bengaluru, Bengaluru

Faculty

Name: Monali Tushar Mavani .

Student

Name: UTKARSH GARG(2020B4A71185H)

Student Write-up

PS-II Project Title: : New Initiatives - Backend Dev

Short Summary of work done during PS-II : During my PS-II internship, I worked at a company specializing in backend development using Kotlin , focusing on a microservice based architecture. My primary responsibilities included designing, implementing, and maintaining backend services that were integral to the company's overall system. My main project involved developing new APIs and enhancing existing ones. I utilized Kotlin for writing clean, maintainable code. Additionally, I integrated RESTful APIs to facilitate communication between microservices, ensuring smooth data flow and operational efficiency. I also focused on optimizing performance and implementing best practices for security and data protection. Through rigorous testing and debugging, I ensured the robustness and stability of the services I developed. Throughout the internship, I gained hands-on experience in cloud computing, microservices architecture, and backend development with Kotlin. This opportunity not only enhanced my technical skills but also improved my ability to work effectively in a team, manage time efficiently, and solve complex problems systematically.

Tool used (Development tools - H/w, S/w) : : Development IDE - IntelliJ (Kotlin),GCP Console,psql

Objectives of the project : Develop and manage the backend for Porter's Packer and movers micro service based initiative

Major Learning Outcomes : New programming language (kotlin), backend architecture, microservices based architecture,google cloud platform services

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at the company was dynamic and collaborative, fostering a culture of continuous learning and innovation. The open office layout and regular team meetings facilitated easy communication and idea-sharing among team members. We used agile methodologies, which included daily stand-ups, sprint planning, and retrospectives, ensuring that everyone was aligned with the project's goals and progress.

The company expected high standards of professionalism and a strong commitment to delivering quality work. From the outset, I was encouraged to take ownership of my tasks and contribute actively to the team's objectives. The senior developers and mentors provided valuable guidance, but there was also an emphasis on independent problem-solving and initiative. This balance helped me grow both as a team player and as an individual contributor.

Technical excellence was a key expectation. I was required to write clean, efficient, and maintainable code, following best practices and industry standards. The company placed a strong emphasis on code reviews, ensuring that every piece of code met their stringent quality criteria. Additionally, I was expected to stay updated with the latest technologies and tools relevant to our work, which often involved attending workshops and participating in knowledge-sharing sessions

Academic courses relevant to the project : OOPS,DBMS,DSA,DAA,CN

PS-II Station : Porter - Tech,Bengaluru, Bengaluru

Faculty

Name: Monali Tushar Mavani .

Student

Name: SUTAPALLI LIKHITH BHARGAV(2021A7PS0444H)

Student Write-up

PS-II Project Title: Backend developer

Short Summary of work done during PS-II : I was given many day to day tasks which helps in improving user experience. Debugged many existing bugs, and got good understanding of various told and services

Tool used (Development tools - H/w, S/w) : Git, Kotlin, AWS,gcp, junit

Objectives of the project : I was assigning day to day tasks which will be given by product management team

Major Learning Outcomes : I was got to apply the concept in industrial level which we learn in our course

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The work environment was really good, everyone in the company are very approachable and friendly and supportive in every aspects

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

PS-II Station : Posidex Technologies P Ltd, Hyderabad, Hyderabad

Faculty

Name: Anjani Srikanth Koka .

Student

Name: KARTIK CHITOOR(2020B4A81617H)

Student Write-up

PS-II Project Title: Advanced Techniques for Large Scale Demographic Data Processing Using Machine Learning

Short Summary of work done during PS-II : I created a MasterDB for the company and deploy an AI model which will predict the address and their categories given an input.

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

Objectives of the project : Create a MasterDB for the company and create an AI model which will predict the address and their categories given an input

Major Learning Outcomes : I learnt how raw and disorganized the data is initially and how much processing is necessary. I learnt how to deploy AI models and how to test them too.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : A great learning environment. Everyone is very helpful and they guide you whenever necessary. Even the senior management joyfully helps and nurtures you. It was indeed a beautiful working experience.

Academic courses relevant to the project : Artificial Intelligence
Machine Learning
Database Management Systems

PS-II Station : Prashanu Hospital, Palghar, Maharashtra, Palghar

Faculty

Name: Bharathi R .

Student

Name: RUTVA LINGAPURI .(2020B5A81455P)

Student Write-up

PS-II Project Title: Optimizing Healthcare Resource Utilization and Enhancing Patient Satisfaction through Data-Driven Insights and Market Analysis

Short Summary of work done during PS-II : Collected data through their EHR system, summarized and processed it to then gain insight into previously defined action metrics to optimize resource utilization.

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

Objectives of the project : Collect and analyze inpatient and outpatient visit data to optimize resource utilization and forecast needs. Enhance patient satisfaction by addressing concerns, gathering feedback, and implementing quality improvement strategies. Research local healthcare trends and competitor

Major Learning Outcomes : Learnt tools like PowerBI, data structuring, cleaning and processing through different methods based on the required objective.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Working environment was helpful and supportive, checked in regularly.

Academic courses relevant to the project : -

PS-II Station : Prashanu Hospital, Palghar, Maharashtra, Palghar

Faculty

Name: Bharathi R .

Student

Name: SOHAM SAPRE .(2021A3PS0159P)

Student Write-up

PS-II Project Title: Optimizing Healthcare Resource Utilization and Enhancing Patient Satisfaction through Data-Driven Insights and Market Analysis

Short Summary of work done during PS-II : During my project at Prashanu Hospital, a specialized maternity, gynecology, and dental care center, I focused on analyzing and optimizing healthcare operations using data-driven methods. My primary work involved collecting and analyzing patient data from the Electronic Health Record (EHR) system to identify trends in admissions, waiting times, bed occupancy, and patient satisfaction. I utilized Power BI tools such as pivot tables, line charts, and heat maps to visualize patient flow, identify peak hours, and highlight inefficiencies. For instance, data analysis revealed trends in bed occupancy in the maternity ward and waiting times in the dental department, enabling recommendations for resource allocation. I also conducted time-series analysis to forecast patient inflow and suggested scheduling improvements to reduce waiting periods and enhance patient satisfaction. Collaborating with hospital management and IT teams, I ensured secure access to data and aligned my findings with operational goals. The project emphasized how data analytics can improve decision-making, resource utilization, and the overall patient experience. This hands-on experience strengthened my analytical, problem-solving, and technical skills, while also providing a deeper understanding of healthcare management.

Tool used (Development tools - H/w, S/w) : Power BI, MS Excel.

Objectives of the project : Aid in optimizing resource utilization through analysis of current and previous patient data.

Major Learning Outcomes : Through this project, I gained valuable insights into the role of data analytics in optimizing healthcare delivery. I learned to leverage tools like Power BI for analyzing patient flow, resource allocation, and performance metrics across departments. The project enhanced my ability to interpret trends using visualizations such as pivot tables, line charts, and heat maps. I understood the importance of Electronic Health Records (EHR) in capturing critical patient data and how it aids decision-making. Additionally, I developed problem-solving skills by identifying inefficiencies in patient wait times and bed occupancy. This experience also improved my ability to collaborate with healthcare professionals and apply data-driven strategies to enhance patient satisfaction and hospital operations.

Details of Papers/patents : No papers or patents were published as part of this project. However, the work undertaken involved extensive data collection, analysis, and visualization, which could serve as the foundation for future research in healthcare optimization.

Brief Description of working environment, expectations from the company : The working environment of Prashanu Hospital was extremely professional and cooperative. It was a great balance between learning and hands-on experience. I had the opportunity to interact with doctors, hospital management, and IT teams, which provided valuable insights into healthcare operations. The supportive mentorship from senior staff, combined with a focus on data-driven decision-making, created an environment conducive to skill development and knowledge sharing. This exposure enhanced my ability to adapt and contribute effectively in a multidisciplinary setting.

Academic courses relevant to the project : Computer Programming

**PS-II Station : Project44 Software Services Pvt. Ltd.,Bengaluru,
Bengaluru**

Faculty

Name: Chetana Anoop Gavankar .

Student

Name: BALGOVIND S(2020B3A70418G)

Student Write-up

PS-II Project Title: Connection Manager Approval Flow.

Short Summary of work done during PS-II : The work I did over the course of my internship involved a series of enhancements and optimizations aimed at improving system performance, approval workflows, and resource management across multiple areas. The Modifications to

Approver System introduced role-based access control enhancements by adding new fields like mode, service, entityId, and canApproveStable to the PostgreSQL database using Liquibase. These changes ensured that approvers could only approve connections specific to their expertise, improving security and accountability. Updates were also applied to the Approver Toolshed, a Python-based Streamlit application, to support the additional fields. The Changes to Approval Flow addressed the issue of automatic deployment upon approval, which previously caused authors to lose track of deployment timelines. The process was redesigned so that connections would remain in an "Approved" state until deployed by the author. This was implemented through API modifications and a feature flag using LaunchDarkly, enabling backward compatibility with the old flow while introducing the new functionality. To address API rate-limiting issues caused by high log volumes, Batch Processing for Google Cloud Storage was implemented using Apache Kafka. Logs generated by an auditing service were collected into Kafka topics. A Kafka consumer, configured with MAX_POLL_RECORDS_CONFIG, read messages in batches and consolidated them into a single API request before sending them to Google Cloud Storage, significantly reducing request overhead. Lastly, the ArcESB Migration project involved replacing ArcESB with an internal unified integrations platform. A Python-based script was developed to analyze, bucketize, and migrate connections, reducing reliance on third-party tools, cutting infrastructure costs, and improving maintainability. These improvements collectively enhanced system efficiency, scalability, and control while streamlining workflows and resource management.

Tool used (Development tools - H/w, S/w) : Postman, Postgres, IntelliJ(IDE for java).

Objectives of the project : The objective of this project is to enhance the Connection Manager's approval process by introducing more specific approval permissions for approvers based on connection attributes like mode, service, and entityId. This ensures that only knowledgeable or authorized approvers can approve changes for specific connections. Additionally, the project improves the approval flow by introducing an "approved state," where approved connections are no longer deployed automatically. Instead, the deployment is controlled by the author, ensuring better visibility and control over the deployment process. These enhancements reduce errors, safeguard high-value connections, and streamline the deployment workflow.

Major Learning Outcomes : Learned and worked on java backend development. Additionally worked with postgresql, and used postman to test APIs. Also worked with kafka to read and write messages to kafka topics.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment was very good. All the seniors were extremely helpful and helped me find my feet in this new environment. They struck the perfect balance between letting me figure things out on my own and stepping in and providing the correct solution or advice. Because of this I was able to make meaningful contributions to my team's tasks. Overall, I am very happy with my experience at project44.

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

**PS-II Station : Project44 Software Services Pvt. Ltd.,Bengaluru,
Bengaluru**

Faculty

Name: Chetana Anoop Gavankar .

Student

Name: SHARAN NARAYAN ADDALA(2021A7PS0335H)

Student Write-up

PS-II Project Title: Ocean Legacy Workflow Deprecation

Short Summary of work done during PS-II : During my PS-II internship at Project44, I contributed to improving the scalability, reliability, and efficiency of services in the Ocean team, focusing on ocean logistics workflows. A significant aspect of my work was **deprecating a legacy

workflow** inherited from an acquired company, ensuring a seamless transition to modern systems for enhanced operational accuracy. I optimized alert systems by fine-tuning thresholds and integrating notifications with tools like Grafana, Observe, Slack, and PagerDuty. I monitored service health using Datadog and addressed bottlenecks by scaling infrastructure, increasing Kafka partitions, and optimizing Redis configurations. Additionally, I configured Helm charts and successfully migrated services from QA/int to production environments. To enhance service visibility, I integrated the Datadog Service Catalog for 17 repositories and implemented LaunchDarkly flags to enable dynamic configurations, reducing redundant API calls. I developed a new data ingestion service to process third-party API data, leveraging unit testing and logging to ensure reliability. Throughout the internship, I collaborated with mentors and team members, learning industry best practices and gaining hands-on experience with tools like FastAPI, Kafka, Redis, and Helm. My contributions strengthened the reliability and scalability of Project44's ocean logistics services, providing valuable experience in optimizing workflows and integrating advanced tools to address complex challenges in real-world production environments.

Tool used (Development tools - H/w, S/w) : Python, FastAPI, Kafka, Poetry, Git, Github, Docker, Datadog, Snowflake

Objectives of the project : The objective of my internship project at Project44 was to design and develop efficient systems for the Ocean team. I focused on building and integrating APIs, creating a new data ingestion service, and ensuring reliability through comprehensive unit testing. Deployment tasks included configuring Helm charts and migrating services from QA/int to production environments. Monitoring and optimizing service health was another key focus, involving proactive scaling, improving infrastructure, and addressing bottlenecks to ensure smooth operations. These efforts contributed to enhancing the development, deployment, and monitoring of ocean logistics workflows.

Major Learning Outcomes : During my internship at Project44, I gained significant insights into building scalable and efficient systems for ocean logistics. I learned how to monitor and improve service health using tools like Datadog, Grafana, and Observe and effectively scale infrastructure by optimizing resources such as Kafka partitions and Redis memory. I deepened my understanding of tool integrations, including implementing the Datadog Service Catalog and LaunchDarkly flags, to enhance service management and configuration flexibility. Developing a new data ingestion service taught me the importance of designing workflows within API

constraints while maintaining reliability through unit testing and logging. Deprecating a legacy workflow allowed me to understand the challenges of transitioning outdated systems to modern solutions. Additionally, I honed my problem-solving skills and collaborative abilities by working closely with my team, gaining hands-on experience with technologies like FastAPI, Kafka, and Helm, and understanding the critical role of proactive monitoring and dynamic configuration in ensuring smooth production operations.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Project44 was supportive, collaborative, and focused on maintaining a good work-life balance.

My team members were friendly and always ready to help. They guided me whenever I faced challenges and provided valuable feedback that helped me improve. Regular interactions with my manager, mentor, and peers created a positive and open atmosphere for learning and collaboration.

The company expected quality work, ownership, and accountability, but the supportive environment ensured it never felt stressful. I was encouraged to ask questions, take initiative, and confidently contribute to projects.

Overall, the combination of a helpful team, clear expectations, and focus on employee well-being made Project44 a great place to work and learn.

Academic courses relevant to the project : OOPS, DBMS,



PS-II Station : Quadrant Technologies, Hyderabad, Hyderabad

Faculty

Name: Suparna Chakraborty .

Student

Name: PRANAV RAJ SOMA .(2021AAPS0023P)

Student Write-up

PS-II Project Title: ML-Powered Customer Segmentation and AI-Driven Document Insights

Short Summary of work done during PS-II : Gained hands-on experience in the end-to-end process of building machine learning products, from data collection and cleaning to model deployment. Built a small scale customer segmentation project, applying machine learning techniques to analyze and categorize customer data. Additionally, I worked on a data-driven product that analyzed uploaded files to extract meaningful insights and provided intelligent responses to user queries.

Tool used (Development tools - H/w, S/w) : S/w: Jupyter Notebook, Google Colab, Python(Libraries- Pandas, Matplotlib, Plotly), VSCode, FastAPI, Langchain

Objectives of the project : -Customer Segmentation: Use ML algorithms (e.g., K-means) to segment customers and tailor services to each group. -Data Analysis and Insight Generation: Use RAG pipeline with PyMuPDF to extract data from uploaded files, analyze content, and provide intelligent, query-based responses.

Major Learning Outcomes : Acquired a comprehensive understanding of the end-to-end ML product lifecycle, from data acquisition and model development to deployment and monitoring. Developed skills in Exploratory Data Analysis (EDA) using Pandas, Matplotlib, Plotly, and Seaborn

Utilized FastAPI for building APIs and deploying ML models.

Worked with Langchain and RAG to enhance model outputs.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The work environment is good, colleagues here are helpful and offer great guidance and advice regarding

skills, interviews and careers in the AI space. Knowledge of Python is expected. Time to self learn relevant skills is given and resources to do so is given.

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

PS-II Station : Razorpay - Data Analytics, Bengaluru

Faculty

Name: Seetha Parameswaran .

Student

Name: PRIYANSHU RAJ(2020B1A41937G)

Student Write-up

PS-II Project Title: Razorpay Rize

Short Summary of work done during PS-II : Worked on Tableau Migration of multiple business Dashboards (15+) , which involved learning all about Tableau, a powerful Data visualization tool . Initially had to learn SQL (Presto) , after which was allowed to handle few QC(quality check) for some tables which were being created as DWH (Data warehouse) tables,to act as central data repositories. Then worked on analyzing data flow between the RIZE website and backend(Batchsheet & Salesforce) , was tasked with finding out which of these 2 is more accurate data source , which I completed successfully. Overall, handled lot of data requests from Stakeholders and Team members, while also working on several Dashboards creation in Tableau from Scratch.

Tool used (Development tools - H/w, S/w) : SQL (Presto/Trino) , Querybook, Tableau

Objectives of the project : To handle several data requests using SQL, building several Dashboards using Tableau

Major Learning Outcomes : Learned all kind of work that goes into analytics from tracking metrics to handling Dashboards deployment

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working culture is nice , team members were quite helpful . Even if someone gets stuck in an issue, one can approach people from associated teams, and they would help almost immediately. Overall, good and flexible work culture .

Academic courses relevant to the project : NA

PS-II Station : Remit2Any, Bengaluru, Bengaluru

Faculty

Name: Anjani Srikanth Koka .

Student

Name: SHUBHAM SHARMA(2020B2A42540H)

Student Write-up

PS-II Project Title: Engagement Product Management Intern

Short Summary of work done during PS-II : Analyzed user data to uncover pain points and key user metrics, providing actionable insights into the customer journey. Conducted a thorough analysis of the customer funnel to understand user behavior, identify errors, and optimize touchpoints. Introduced strategic website changes to enhance user acquisition and revamped the homepage design for improved usability. Implemented a chat widget with chatbot triggers to deliver timely support, ensuring seamless user interactions. Leveraged customer journey insights to develop a Product Requirement Document (PRD), create low-fidelity wireframes, design screens, and redefine user flows. These efforts collectively boosted engagement and significantly improved acquisition metrics.

Tool used (Development tools - H/w, S/w) : Microsoft Excel, Figma, Google Analytics, Microsoft Clarity

Objectives of the project : To increase engagement, acquisition, retention and activation of the product

Major Learning Outcomes : Product Management, Product sense, User journeys, Product design

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The work environment at Remit2Any is great, promoting teamwork and innovation. The leadership is supportive, encouraging growth and valuing employees' contributions. With a focus on inclusivity and personal development, it provides a positive and collaborative atmosphere, making it a great place to work and achieve success.

Academic courses relevant to the project : Business Analysis and Valuation

PS-II Station : Remit2Any, Bengaluru, Bengaluru

Faculty

Name: Anjani Srikanth Koka .

Student

Name: AYUSH MISHRA .(2020B4A21993P)

Student Write-up

PS-II Project Title: ANALYZING RETENTION AND REFERRAL METRICS, AND STRATEGIC INITIATIVES FOR ENHANCED USER ENGAGEMENT

Short Summary of work done during PS-II : At Remit2Any, I spearheaded initiatives to enhance user retention and drive referrals, leveraging data-driven insights to optimize engagement strategies. By analyzing transaction patterns and retention rates, I identified critical drop-off points, especially within the first 30 days of signup, and developed early engagement campaigns using personalized email and WhatsApp messaging. These efforts improved user retention by 15% over six months. I also revamped the referral program by introducing tiered rewards, gamification elements like leaderboards, and optimized referral links for social media virality. These enhancements boosted referral participation by 30%, especially during promotional periods. My campaigns targeted segmented user groups—new, infrequent, and frequent users—offering tailored incentives such as cashback, competitive exchange rates, and loyalty rewards. Continuous A/B testing ensured campaign optimization, achieving 40% email open rates and 20% click-through rates. Overall, my work contributed to strengthening customer loyalty, enhancing organic growth, and positioning Remit2Any as a trusted and engaging platform for cross-border remittances.

Tool used (Development tools - H/w, S/w) : google Colab, Teams, Microsoft Power BI, Python, Google Analytics, Mailchimp, WhatsApp Business API, Slack, Jira, Canva, Facebook Ads Manager, LinkedIn Campaign Manager, Microsoft Clarity.

Objectives of the project : The objectives of this project include: 1. Improving User Retention: Analyze existing data to identify user behavior and formulate strategies to retain users who have become inactive or transacted irregularly. 2. Enhancing the Referral Program: Strengthen the referral system to incentivize users to bring in new customers, using tiered rewards and gamification. 3. Data-Driven Campaign Development: Utilize data insights to craft effective email and WhatsApp campaigns, targeting user retention and referrals. 4. Gamification & Viral Tactics: Introduce gamification techniques and viral marketing strategies to create excitement around the referral program. 5. Tracking and Measuring Success: Set up analytics to measure the effectiveness of retention and referral campaigns over time.

Major Learning Outcomes : 1.Data-Driven Insights: Identified user behavior trends using cohort analysis, highlighting retention challenges and opportunities.
2.Effective Retention Strategies: Early engagement campaigns and exclusive rewards improved user retention by 15%.
3.Gamified Referral Success: Enhanced referral rates by 30% through tiered rewards, leaderboards, and viral marketing tactics.
4.Personalized Campaigns: Tailored email and WhatsApp campaigns achieved high engagement with 40% open rates and 20% click-through rates.
5.Strategic Growth: Recommendations for gamification, loyalty programs, and international expansion to sustain momentum.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Remit2Any is dynamic, collaborative, and innovation-driven, emphasizing data-driven decision-making to solve complex problems. Cross-functional collaboration between product, marketing, and design teams is encouraged to ensure seamless execution of campaigns and product enhancements.

The company fosters a culture of ownership, empowering individuals to take the initiative in driving growth and delivering measurable results. Performance expectations are clear, focusing on delivering user-centric solutions, meeting campaign targets, and improving customer satisfaction. Innovation is highly valued, with opportunities to experiment with gamification techniques, viral marketing strategies, and advanced analytics to enhance user retention and acquisition.

Remit2Any expects employees to be proactive, adaptable, and committed to continuous learning. The company encourages leveraging cutting-edge tools and industry best practices to optimize workflows and achieve objectives. A strong emphasis is placed on meeting user needs through personalized experiences, ensuring a competitive edge in the remittance market. Overall, the environment balances professionalism with creativity, providing the resources and autonomy needed for employees to thrive and contribute to the company's mission of simplifying cross-border remittances.

Academic courses relevant to the project : Applied Statistical Methods: For analyzing transaction data, user behavior, and retention trends.
Machine Learning: To identify patterns and predict user engagement and retention.
Optimization: For developing efficient strategies to improve referral progr

PS-II Station : Remit2Any, Bengaluru, Bengaluru

Faculty

Name: Anjani Srikanth Koka .

Student

Name: KRISHNANGSHU BHATTACHARJEE(2021A3PS2823G)

Student Write-up

PS-II Project Title: Growth PM focussing on acquisition metric alongwith content strategy, brand positioning, and building organic communities

Short Summary of work done during PS-II : I was responsible for developing and implementing digital marketing strategies to drive user acquisition for the Remit2Any platform. The role involved

collaborating with marketing agencies, creating compelling content, and leveraging AI platforms to generate quality funnels. I focused on organic user acquisition through content marketing and user-generated content. Additionally, I was responsible for attributing user growth to the right channels and ensuring the platform throttles effectively to maximize user acquisition. Responsibilities included developing and executing digital marketing strategies, collaborating with agencies to ensure campaigns are on track, focusing on content marketing and user-generated content, devising content strategies to attract users organically, leveraging AI platforms to create quality acquisition funnels, attributing user growth to the right marketing channels, ensuring throttling on the most effective platforms to optimize user growth. Skills Needed: Knowledge of digital marketing and content creation, experience with content strategy, strong collaboration and communication skills, basic understanding of AI platforms for marketing, ability to analyze user acquisition data and attribute growth to specific channels, experience with analytics frameworks (Google Analytics + MS Clarity)

Tool used (Development tools - H/w, S/w) : Google Analytics, MS Clarity, Amazon Connect, Lemlist, Apollo, AiSensy, Google Sheets & MS Excel, Chatgpt, Canva, Whimsical, Powerpoint, Figma, MS Teams, Semrush, Meta Business Suite

Objectives of the project : I was responsible for developing and implementing digital marketing strategies to drive user acquisition for the Remit2Any platform. The role involved collaborating with marketing agencies, creating compelling content, and leveraging AI platforms to generate quality funnels. I focused on organic user acquisition through content marketing and user-generated content. Additionally, I was responsible for attributing user growth to the right channels and ensuring the platform throttles effectively to maximize user acquisition. Responsibilities included developing and executing digital marketing strategies, collaborating with agencies to ensure campaigns are on track, focusing on content marketing and user-generated content, devising content strategies to attract users organically, leveraging AI platforms to create quality acquisition funnels, attributing user growth to the right marketing channels, ensuring throttling on the most effective platforms to optimize user growth. Skills Needed: Knowledge of digital marketing and content creation, experience with content strategy, strong collaboration and communication skills, basic understanding of AI platforms for marketing, ability to analyze user acquisition data and attribute growth to specific channels, experience with analytics frameworks (Google Analytics + MS Clarity)

Major Learning Outcomes : - Got hands-on experience in Product Management and Product Building

- Got an idea about building startups
- Got to realise that I want to build a career in Product Management

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Very flexible working environment, supportive colleagues, WFH internship, sometimes had to work in US time, Sat and Sun off, very high ownership - felt like I was the actual PM instead of an intern, good experience from an internship POV

Academic courses relevant to the project : Principles of Management, Fundamentals of Finance and Accounting

PS-II Station : Remit2Any, Bengaluru, Bengaluru

Faculty

Name: Anjani Srikanth Koka .

Student

Name: VIKHYAT GIRI .(2021A4PS2670P)

Student Write-up

PS-II Project Title: 1: Increase the user activation and engagement.

Short Summary of work done during PS-II : I joined in as a PM. My role was to increase the activation rate end to end from the point user lands in the website to the point he engages in first transfer. I redesigned the entire funnel process and marketing campaign that minimised the leakages in the funnel and increased the number of users who initiated the first transaction.

Tool used (Development tools - H/w, S/w) : Whimsical, Google Analytics, Microsoft Clarity, Google slides, Google Doc, Python

Objectives of the project : 1: To increase the user onboard on the website and minimise the leakages in the activation funnel.

Major Learning Outcomes : In depth knowledge of the fintech industry and how things work in building 0-1 tech products

Details of Papers/patents : None as such

Brief Description of working environment, expectations from the company : Communication is a big problem since most of them speak Telugu and hardly understand English. Also the development team should ideally work under the product managers but we had no control over the development team which delayed so many things. They do not have the license to carry out financial transactions so they majorly depend on banking partners which result in payment delay and customer disappointment. I joined in as a PM but did all the customer care work sales work initially

Academic courses relevant to the project : None

PS-II Station : RIGI - Software Development, Bengaluru

Faculty

Name: Febin A Vahab .

Student

Name: SUBHRAMIT BASU BHOWMICK .(2020B1A70611P)

Student Write-up

PS-II Project Title: Rigi Backend

Short Summary of work done during PS-II : Most of my work is confidential, but I mostly worked on modular courses, media converters, some other microservices. I helped the ops team reduce manual workload a lot by making APIs that are frequently used. I had to often fetch data to deliver things such as certificates to the user, or their progression in courses, or help reduce the reconversion load of uploaded course videos. I also briefly worked on JWT (authentication token generation).

Tool used (Development tools - H/w, S/w) : JavaScript, TypeScript, MongoDB, Node.js, Express.js, NestJS, Redis, AWS

Objectives of the project : Work on several problem statements pertaining to Rigi Backend

Major Learning Outcomes : Knowledge of how a large backend infrastructure works at a startup, tools, technologies and design aspects of the same

Details of Papers/patents : NA, development work only

Brief Description of working environment, expectations from the company : Working environment was very supportive and growth-oriented, while being considerate that we are interns. My expectations were a non-toxic workplace with great mentors and a decent stipend - Rigi checked all those boxes.

Academic courses relevant to the project : None

PS-II Station : RIGI - Software Development, Bengaluru

Faculty

Name: Febin A Vahab .

Student

Name: ABHINAV MISHRA .(2021A7PS0706P)

Student Write-up

PS-II Project Title: Backend API Designing

Short Summary of work done during PS-II : Designed Backend APIs, wrote CRON Jobs, worked with AWS S3 and SQS, wrote mongoDB aggregation pipelines, Redis for caching, Stream for Chat Application

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

Objectives of the project : Backend APIs

Major Learning Outcomes : JavaScript, MongoDB, AWS

Details of Papers/patents : N/A

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

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

PS-II Station : RIGI - Strategy, Bengaluru

Faculty

Name: Ramesh Venkatraman .

Student

Name: BHUMAN PANDITA .(2021A2PS2605P)

Student Write-up

PS-II Project Title: Market Research on Financial Markets and Data Analysis Using Metabase

Short Summary of work done during PS-II : During my PS-II internship at Rigi, I focused on data analysis, automation, and visualization tasks. Using PostgreSQL, I wrote and debugged queries for creator cohort analysis, reward analytics, and GMV prediction models. I automated ledger processes with Python, improving the efficiency of financial workflows. Additionally, I created dashboards in Metabase and TablePlus to visualize app metrics like user signups and payment preferences. Throughout the internship, I also mentored my intern on query optimization and database schema design, enhancing both my technical expertise and collaborative skills.

Tool used (Development tools - H/w, S/w) : S/w - > Metabase, Tableplus, PostgreSQL, Python

Objectives of the project : The objective of the project is to analyze, optimize, and automate data processes for enhanced insights, operational efficiency, and seamless database migration.

Major Learning Outcomes : During my internship, I developed skills in data analysis using PostgreSQL for tasks like creator cohorts and reward analytics. I automated ledger processes with Python and created dashboards in Metabase and TablePlus, enhancing data visualization and strategic decision-making.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Rigi was collaborative and dynamic, encouraging constant learning and growth. As an intern, I was given the opportunity to work closely with both technical and strategic teams, allowing me to contribute to a variety of tasks, from data analysis to automation and dashboard creation. Expectations from the company included developing advanced technical skills, particularly in PostgreSQL and Python, and applying them to solve real-world challenges.

Academic courses relevant to the project : Applied Statistical Methods, Foundations of Data Science

PS-II Station : RIGI Digital Marketing, Bengaluru

Faculty

Name: Ramesh Venkatraman .

Student

Name: HARSH KUMAR DIXIT(2021AAPS2935G)

Student Write-up

PS-II Project Title: Data Analytics and Digital Marketing Projects at RIGI

Short Summary of work done during PS-II : During my PS-II internship, I contributed significantly to enhancing the company's marketing efficiency and operational workflow. My efforts included designing sophisticated dashboards via Metabase, streamlining data from Meta and Google ads with internal metrics, and elevating database performance through optimized queries utilizing materialized views. I played a key role in the database migration process by pinpointing crucial tables and their interdependencies. Furthermore, I initiated the development of a web scraper to extract valuable analytics data such as views and subscribers. Collaborating closely with the product manager, I worked on resolving data inconsistencies between internal and external sources, ultimately delivering actionable insights that shaped the company's marketing strategies and decision-making processes.

Tool used (Development tools - H/w, S/w) : Metabase, SQL, Python (Beautiful Soup, Selenium), Google Analytics, Canva, Adobe Stock, Spreadsheet tools.

Objectives of the project : To analyze and optimize digital marketing strategies through data-driven insights and tool integration.

Major Learning Outcomes : Gained expertise in SQL optimization, Python, dashboard creation, data analysis, and resolving data discrepancies.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at RIGI was highly collaborative and growth-oriented, fostering a culture of continuous learning and innovation. The team was approachable and supportive, providing valuable mentorship that greatly enhanced my technical and analytical skills. Regular feedback and constructive discussions with my mentor and colleagues helped me navigate complex challenges and refine my problem-solving abilities.

Academic courses relevant to the project : Object Oriented Programming

PS-II Station : Rite Water Solutions (I) Pvt. Ltd.,Nagpur, Nagpur

Faculty

Name: Benu Madhab Gedam .

Student

Name: SOMANI RISHABH MANISH(2020B1A42122G)

Student Write-up

PS-II Project Title: Web Scraping and Data Automation

Short Summary of work done during PS-II : A six-month long internship as a Software Engineering Intern at Rite Water Solutions, a leading large-scale water solutions provider in India. With the company planning to expand itself after the success of their pilot project AMRITGRAM, I developed this scraper which played a crucial role in data capture and storage. I used selenium, an open source framework which is used for interaction with web elements dynamically. There were others such as BeautifulSoup and Scrapy but they are only used for parsing and extracting data. Selenium is more dynamic since it can be used to click buttons, fill forms and navigate pages. The scraper also stored WhatsApp session data so that login was not required every time it was used. It was built with scalability to different verticals in check. It scraped data from WhatsApp by interacting with the DOM using XPath to find different chats with specified data and then parsing them using Python to be filled in Google sheets using Google APIs. Overall it was a good experience since I had no prior knowledge of scraping, but continuous research and support from the team help me build this from scratch.

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

Objectives of the project : To automate capture of data from whatsapp using a Python script and fill into google sheets using Google APIs

Major Learning Outcomes : Web Scraping and Automation, Selenium framework for automated testing of web applications, implementation of google APIs

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : A decent working environment, with six working days per week, and fine management. I was lucky to come at a time when I could work on this automation project else theres no need for a software project. A company with good potential and future growth but downsides of not enough relevant exposure to real life and considerable projects that aid students during placements, that assist in improving employability later.

Academic courses relevant to the project : OOP

PS-II Station : Rivigo, Gurgaon

Faculty

Name: Sidharth Mishra .

Student

Name: AVI SANCHETI .(2021A4PS1702P)

Student Write-up

PS-II Project Title: Shop Floor Management

Short Summary of work done during PS-II : 1. Gained hands-on experience in shop floor management, including taking projects from 0 to 1 by identifying inefficiencies, streamlining processes, and implementing innovative solutions. Developed a deep appreciation for last-mile logistics, including the operational challenges faced by ground staff and strategies to optimize delivery performance. Practical Application of Process Optimization 2. Implemented process improvements through effective coordination with diverse teams, enhancing operational efficiency and reducing downtime. Designed and executed training modules for ground staff, fostering knowledge transfer and ensuring seamless execution of newly implemented strategies. Analytics and Problem-Solving Skills 3. Utilized data-driven decision-making to evaluate supply chain bottlenecks, ensuring alignment with organizational KPIs. Strengthened analytical skills by tackling real-world logistics challenges, such as fleet management and inventory tracking, leveraging tools to monitor and optimize these systems. Leadership and Team Collaboration

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

Objectives of the project : To manage shop floor across different PCs and improve their compliance for following of Auto Audit Task

Major Learning Outcomes : Comprehensive Understanding of Supply Chain Dynamics

1. Gained hands-on experience in shop floor management, including taking projects from 0 to 1 by identifying inefficiencies, streamlining processes, and implementing innovative solutions. Developed a deep appreciation for last-mile logistics, including the operational challenges faced by ground staff and strategies to optimize delivery performance.

Practical Application of Process Optimization

2. Implemented process improvements through effective coordination with diverse teams, enhancing operational efficiency and reducing downtime.

Designed and executed training modules for ground staff, fostering knowledge transfer and ensuring seamless execution of newly implemented strategies.

Analytics and Problem-Solving Skills

3. Utilized data-driven decision-making to evaluate supply chain bottlenecks, ensuring alignment with organizational KPIs.

Strengthened analytical skills by tackling real-world logistics challenges, such as fleet management and inventory tracking, leveraging tools to monitor and optimize these systems.

Leadership and Team Collaboration

4. Successfully coordinated cross-functional teams, fostering collaboration between shop floor staff, supervisors, and managers.

Demonstrated strong leadership by taking ownership of key deliverables and ensuring alignment between stakeholders during project execution.

Application of Engineering and Finance Principles

5. Applied mechanical engineering principles to optimize machine utilization and workflow efficiency.

Leveraged knowledge of financial metrics to assess the impact of logistical decisions on cost savings and ROI.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment at Rivigo Mahindra is dynamic, innovation-driven, and focused on operational excellence. Company emphasize fostering a culture of learning, collaboration, and problem-solving.

Expectations from the company include a structured framework for professional growth, access to mentorship, and opportunities to take ownership of impactful projects. A work culture that values innovation, inclusivity, and hands-on experience is vital. Additionally, exposure to cross-functional teams, leadership insights, and the chance to drive sustainable solutions would enrich the learning experience.

Academic courses relevant to the project : Supply Chain Mgmt, Data Analytics related courses

PS-II Station : Rivigo, Gurgaon

Faculty

Name: Sidharth Mishra .

Student

Name: SAMEER KOOLIYAT(2021A4PS2349H)

Student Write-up

PS-II Project Title: Business Partner cost optimization

Short Summary of work done during PS-II : At Rivigo, I was responsible for onboarding business partners and refining the onboarding process to ensure efficiency and scalability. I conducted in-depth analyses of the cost per kilogram to provide actionable insights for optimizing operational costs. Additionally, I developed intuitive dashboards that facilitated clear data visualization, enabling better decision-making and performance tracking across various parameters. This multifaceted role involved blending analytical skills with strategic process improvements to enhance overall operational effectiveness.

Tool used (Development tools - H/w, S/w) : Microsoft Excel, MySQL, Microsoft Power BI

Objectives of the project : Understand the process of onboarding business partners, find abnormalities in cost and bring them in line.

Major Learning Outcomes : Understood tools used in analytics and communication skills required in corporate

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The work environment was fairly lax with some engagement between managers and us. Tasks were asked for and not followed up with. The work was interesting but the office was very inertial about implementing changes.

Academic courses relevant to the project : Engineering Optimization

PS-II Station : Rivigo, Gurgaon

Faculty

Name: Sidharth Mishra .

Student

Name: PRAGYAN NATH(2021A4PS3092H)

Student Write-up

PS-II Project Title: Network Optimisation

Short Summary of work done during PS-II : Spearheaded a 33% improvement in regional transit time (TAT) for the Bajaj client by identifying efficiency gaps and leveraging strong analytical skills. Developed a Streamlit app in Python to visualize a 6-month provision report, enabling data-driven decisions that reduced costs and improved TAT. Conducted a load distribution analysis using a 16x16 matrix and k-NN algorithm, optimizing a national hub-and-spoke network, reducing transportation costs by 12% and improving TAT by 11%. Designed a network for a newly planned FTL service targeting the FMCG and electronics industry, introducing a real-time vehicle routing system to efficiently assign vehicles for shipment deliveries. For Rivigo's air shipment expansion, designed a pan-India air movement plan with 35 Air Operational Units (OUs) and 216 lane connections. Integrated Flexi Vehicles ensured intra-city deliveries within two hours, while existing long-haul routes streamlined longer distances. The plan optimized speed and cost efficiency, achieving a cost-per-kilogram (CPKG) as low as ₹1.538, aligning with organizational goals for operational excellence and customer satisfaction.

Tool used (Development tools - H/w, S/w) : Excel, Google Colab, Streamlit

Objectives of the project : Redesign the existing network to achieve a balance between cost reduction and maintaining or improving Network TAT

Major Learning Outcomes : I gained hands-on experience in network analysis and troubleshooting while learning strategies for cost optimization and balancing cost with service levels. I also developed essential project management and communication skills, preparing me for real-world challenges.

Details of Papers/patents : N.A

Brief Description of working environment, expectations from the company :

The working environment at the company is dynamic, collaborative, and fast-paced, with a strong emphasis on innovation and continuous improvement. Teams are encouraged to share ideas and work together to solve complex problems, fostering a culture of open communication and mutual respect. Employees are empowered to take ownership of projects, with a focus on results and accountability. The company values adaptability and agility, understanding that the business landscape is constantly evolving. This environment promotes a blend of independent and team-based work, allowing individuals to take initiative while also relying on the collective expertise of their colleagues.

Academic courses relevant to the project : Manufacturing Management , DBMS, Machine Learning, Engineering Optimisation

PS-II Station : RT Vision Technologies Pvt. Ltd, Greater Noida

Faculty

Name: Harish Kumar J. R.

Student

Name: MUKUND KUMAR CHOUDHARY(2020B5A30779G)

Student Write-up

PS-II Project Title: Development of a Photo Tag System for Indian Railways using YOLO and EASYOCR

Short Summary of work done during PS-II : During my PS-II internship at RT Vision Technologies, I worked on developing a photo tagging system for Indian Railways to automate the detection and recognition of railway coach numbers. The project aimed to enhance operational efficiency through advanced image processing and machine learning techniques. Initially, YOLOv10 was utilized to detect bounding boxes for coach numbers, and EasyOCR was integrated to extract text from the detected regions. This two-stage pipeline demonstrated robust performance under diverse conditions, achieving a mean Average Precision (mAP) of 99.3% on an augmented dataset. Building on this foundation, I transitioned to YOLOv11 for direct end-to-end detection of coach numbers, eliminating the need for a separate OCR step. The iterative development process included extensive dataset preparation, preprocessing (e.g., grayscale conversion, contrast enhancement), and applying augmentation techniques to improve model robustness. Successive iterations of the YOLOv11 model achieved high accuracy metrics, with the final model obtaining an mAP of 99.3%, precision of 98.6%, and recall of 98.7%. Additionally, I addressed challenges such as low-light conditions and image noise by implementing preprocessing techniques tailored for night images. I also explored alternative approaches like contour detection for digit extraction, which provided valuable insights despite limited success. This project enhanced my understanding of deep learning, computer vision, and AI-driven solutions, equipping me with skills to design scalable, real-time systems for practical applications in transportation and beyond.

Tool used (Development tools - H/w, S/w) : Tools Used Hardware: NVIDIA Tesla T4 GPU (16 GB) for training and inference. Infrared Cameras for capturing images under low-light conditions.

Software: Development Environment: Python 3.10.12 Deep Learning Frameworks: PyTorch (Torch 2.3.1), YOLOv1

Objectives of the project : The objective of this project is to develop an automated photo tagging system for Indian Railways to detect and recognize coach numbers using YOLO for object detection and EasyOCR for text recognition. The system aims to enhance railway operations by providing accurate and real-time tagging under diverse conditions, including day and night, with the help of infrared cameras. By integrating advanced AI techniques, the project seeks to streamline the tagging process, optimize performance metrics such as mAP, precision, and recall, and improve yard management and geolocation capabilities. Additionally, the system is designed to handle diverse environmental conditions and large datasets, ensuring scalability and adaptability for real-world deployment.

Major Learning Outcomes : The major learning outcomes of this project include:

1. Gained hands-on experience in implementing and fine-tuning state-of-the-art object detection models like YOLO for real-world applications.
2. Acquired skills in integrating object detection with OCR tools such as EasyOCR for seamless text recognition in diverse conditions.
3. Developed expertise in preprocessing techniques and data augmentation to enhance model performance under challenging scenarios.
4. Improved understanding of deep learning concepts, including model training, evaluation metrics (mAP, precision, recall), and optimization strategies.
5. Learned to handle large datasets, perform annotations, and implement robust pipelines for real-time deployments.
6. Enhanced problem-solving skills by transitioning from a two-stage detection process to an end-to-end model for improved efficiency and accuracy.
7. Gained knowledge in practical applications of AI in transportation systems, contributing to smart yard management and operational automation.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Work environment is good. You are assigned individual project. No training is given prior to project. So you only have to try and test everything. Some task are redundant. One task that I had to do was

update coach number every single day which was very redundant. You need to have to update coach number any time of the day. The GUI where coach number had to be updated was very slow. It doesn't felt like I was learning anything doing this task.

Academic courses relevant to the project : Digital Image Processing, Artificial Intelligence, Machine Learning, Deep Learning

PS-II Station : RT Vision Technologies Pvt. Ltd, Greater Noida

Faculty

Name: Harish Kumar J. R.

Student

Name: SAMARTH TIWARI(2021A3PS2875G)

Student Write-up

PS-II Project Title: Calibration for Wheel Profile Measurement System (WPMS)

Short Summary of work done during PS-II : During my PS-II, I worked on calibrating cameras and lasers for a Wheel Profile Measurement System (WPMS). The project involved performing Internal Calibration (IC) to calculate intrinsic parameters and Global Calibration (GC) to align monoblocks with the World Coordinate System (WCS). Additionally, I explored advanced techniques like mosaic calibration and single-target calibration for improving workflows. My responsibilities included validating transformation matrices, ensuring image consistency, and optimizing calibration workflows. I also developed scripts to visualize and export calibration data for further analysis. On-field deployment required careful handling of monoblocks to prevent

misalignment during transportation, along with comprehensive system checks to ensure functionality. These efforts ensured accurate calibration and system readiness for deployment.

Tool used (Development tools - H/w, S/w) : H/w :XARM Bot, Dobot, Halcon Calibration Plates.
S/w :Halcon, Python, CSV Data Processing Tools

Objectives of the project : To ensure accurate intrinsic and extrinsic parameter calibration of cameras and lasers in WPMS, and to explore new methods of calibration.

Major Learning Outcomes : Enhanced understanding of intrinsic and extrinsic camera calibration.

Practical knowledge of Halcon software for image processing and calibration.

Experience in validating and optimizing calibration workflows for real-world deployment.

Details of Papers/patents : None, but explored concepts from: Li, X., Zhang, W., & Song, G. (2022). Calibration method for line-structured light 3D measurement based on a simple target. Photonics, 9(4), 218.

Brief Description of working environment, expectations from the company : The working environment was very supportive and technically driven. As an intern you are expected to learn new things and apply them keeping in mind their relevance to your own project

Academic courses relevant to the project : Digital Signal Processing, Foundations of Data Structures and Algorithms, Computer programming, Linear algebra

PS-II Station : Rusk Media Pvt. Ltd - Business Analyst, Mumbai, Mumbai

Faculty

Name: Pravin Yashwant Pawar .

Student

Name: SHUBH NEMA .(2021A1PS2602P)

Student Write-up

PS-II Project Title: Consumer Research and insights.

Short Summary of work done during PS-II : The consumer research and insights team was responsible for all kind of research and analysis done before, between and after the production of any kind of content created within the organisation. From doing market sizing before the beginning of production to scrapping user reviews from social media for detailed data and sentiment analysis after the content is released, all this was undertaken by the CR&I team. The work demanded both technical skills like python, natural language processing, data analysis as well as non technical skills like TAM, SAM estimation, market sizing etc.

Tool used (Development tools - H/w, S/w) : Excel, Python, VS Code, Google Colab, Perplexity AI, Liner AI, Statista

Objectives of the project : To find out the audience perspective regarding the content created by the company, using analytical and creative approaches, and aid in all kinds of data analysis required within the organisation.

Major Learning Outcomes : Data analysis, Data visualization,Business intelligence, problem solving .

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment is awesome. The team is very supportive and there is seamless communication

within the team. We got to directly work with the founding team. The company expected us to be creative and take leadership, and to think out of the box to solve problems.

Academic courses relevant to the project : Computer programming, Machine learning, Artificial intelligence, principles of economics.

PS-II Station : Rusk Media Pvt. Ltd - Business Analyst, Mumbai, Mumbai

Faculty

Name: Pravin Yashwant Pawar .

Student

Name: SATHVIK NAMA(2021A3PS2699G)

Student Write-up

PS-II Project Title: Business Analyst- Consumer Research & Insights

Short Summary of work done during PS-II : All research and analysis conducted before to, during, and following the creation of any type of material produced within the company was within the purview of the consumer research and insights team. The CR&I team handled everything from market sizing prior to production to gathering user feedback from social media for comprehensive data and sentiment analysis following the distribution of the content. The job required both non-technical skills like TAM, SAM estimation, market sizing, etc., and technological abilities like Python, natural language processing, and data analysis.

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

Objectives of the project : Collecting and analyzing data so different stakeholders in the company can make data driven decisions

Major Learning Outcomes : Data Analysis, Data Visualization, Problem Solving

Details of Papers/patents : --

Brief Description of working environment, expectations from the company : Good working environment, horizontal leadership structure, you are allowed to talk to anybody in the office. A proper startup culture where things move fast. Requires high ownership.

Academic courses relevant to the project : Computer Programming, Critical Analysis Of Literature & Cinema, PoE

PS-II Station : Samsung R & D Institute -,Bengaluru, Belgaum

Faculty

Name: Lucy J. Gudino

Student

Name: GARVIT ARORA(2020B2A72113G)

Student Write-up

PS-II Project Title: Development of Tools and Techniques for memory Optimization in Android Systems

Short Summary of work done during PS-II : Development of automated systems on memory management

Tool used (Development tools - H/w, S/w) : System call, Linux. Android Development

Objectives of the project : Memory management on android device and development of automated tools

Major Learning Outcomes : Linux and android kernel

Details of Papers/patents : No

Brief Description of working environment, expectations from the company : Developed interface and system-level solutions to improve performance in Samsung smartphone products, enhancing user experience and efficiency.

Implemented advanced memory optimization strategies to improve system efficiency and reduce memory usage in Samsung devices.

Designed and built systems for tracking and benchmarking memory optimization, ensuring continuous performance monitoring and improvement.

Implemented advanced memory optimization strategies that resulted in a 10% improvement in memory efficiency for Samsung devices.

Academic courses relevant to the project : Sdpd, OS, Comp Arch

PS-II Station : Samsung R & D Institute -,Bengaluru, Belgaum

Faculty

Name: Lucy J. Gudino

Student

Name: DIVYAM SRIVASTAVA(2020B2A82103G)

Student Write-up

PS-II Project Title: Memory and CPU Optimization

Short Summary of work done during PS-II : Worked on Memory Management, performance analysis and Compiler Optimization for Samsung Devices.

Tool used (Development tools - H/w, S/w) : Linux, perf, CMake, Shell Script, Android SDK, Android NDK

Objectives of the project : Optimize

Major Learning Outcomes : Learnt a lot about cross-platform development and testing on Linux and Android.

Details of Papers/patents : N.A.

Brief Description of working environment, expectations from the company : Good working environment with little to no work pressure, just need to maintain 45 working hours per week. 2 days WFH and 3 days mandatory WFO.

Academic courses relevant to the project : Operating Systems

PS-II Station : Samsung R & D Institute -,Bengaluru, Belgaum

Faculty

Name: Lucy J. Gudino

Student

Name: ANIMESH KUMAR AGRAWAL(2020B4A32030H)

Student Write-up

PS-II Project Title: ML models for next generation of Galaxy Devices

Short Summary of work done during PS-II : Build an classification model, the focus will be on designing a lightweight, efficient architecture compatible with on-device deployment. The model will leverage edge computing principles, optimized for low latency, minimal power consumption, and high accuracy.

Tool used (Development tools - H/w, S/w) : GPU-enabled system, Python, OpenCV, Albumentations, TensorFlow, PyTorch, CUDA/cuDNN for GPU acceleration

Objectives of the project : Build A classification model for the upcoming Galaxy Devices

Major Learning Outcomes : Developed and refined advanced techniques for training and optimizing deep learning models, including fine-tuning hyperparameters, implementing dropout and regularization strategies, and leveraging data augmentation to improve model robustness. Enhanced proficiency in managing extensive datasets, implementing effective data augmentation strategies, and utilizing performance monitoring tools to ensure robust model generalization and stability.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment is dynamic, innovation-driven, and focused on cutting-edge technology, fostering collaboration and creativity. The company also values excellence, innovation, and a proactive approach to problem-solving.

Academic courses relevant to the project : Machine Learning

PS-II Station : Samsung R & D Institute -,Bengaluru, Belgaum

Faculty

Name: Lucy J. Gudino

Student

Name: POLA SRI SAI MALLIKHARJUNA ABHIRAM GUPTA(2020B4A70967H)

Student Write-up

PS-II Project Title: Persona Analysis with Cross device knowledge extraction

Short Summary of work done during PS-II : The project focused on leveraging Knowledge Graphs and the RDFox Semantic Engine to process and analyze conversational data for enhancing user personalization. Key activities included refining and preprocessing datasets to improve data quality, extracting critical 4W components (What, Where, When, Who) from conversations, and feeding structured data into AI models to optimize their accuracy. Additionally, scalable solutions were developed for deployment on OnDeviceAI platforms, ensuring efficient data handling and seamless integration with end-user systems. This work emphasized semantic representation, model optimization, and the application of state-of-the-art AI techniques.

Tool used (Development tools - H/w, S/w) : Software Tools: RDFox Semantic Engine: For creating and querying Knowledge Graphs. Python: For data preprocessing, refinement, and

automation tasks. Jupyter Notebook: For iterative development and visualization of data analysis.
TensorFlow/PyTorch (if ap

Objectives of the project : Enhancing Personalization: Develop advanced user-personalization techniques by leveraging Knowledge Graphs and the RDFox Semantic Engine to process and analyze conversational data effectively. Improving Data Quality: Implement data refinement and preprocessing techniques to enhance the quality and relevance of conversational datasets, ensuring accurate extraction of 4W's (What, Where, When, Who). Model Optimization: Increase the accuracy of AI models by optimizing training and testing data pipelines, utilizing semantic data representations to enhance performance. Scalable Solutions: Design scalable solutions for OnDeviceAI that integrate seamlessly with end-user systems, ensuring efficient data processing with minimal resource consumption.

Major Learning Outcomes : Data Analysis and Processing: Gained hands-on experience in refining and preprocessing large conversational datasets to improve data quality and relevance for AI applications.

Semantic Knowledge Representation: Learned to utilize Knowledge Graphs and RDFox Semantic Engine for structuring and analyzing unstructured data effectively.

4W Extraction Framework: Developed proficiency in extracting actionable insights (What, Where, When, Who) from conversational data for enhanced user personalization.

AI Model Optimization: Acquired skills in training and testing AI models, focusing on optimizing accuracy and performance using semantic data.

Scalable Solution Design: Enhanced ability to design scalable and efficient AI systems for OnDeviceAI platforms, ensuring seamless integration with end-user applications.

Team Collaboration: Improved communication and teamwork skills by collaborating with a multidisciplinary team to meet project milestones.

Problem-Solving with Innovation: Learned to address real-world challenges in data processing and model optimization through innovative approaches and technologies.

Details of Papers/patents : Comprehensible Artificial Intelligence on Knowledge Graphs
Interesting Scientific Idea Generation Using Knowledge Graphs and Language Models

Brief Description of working environment, expectations from the company : The working environment at Samsung provided a blend of cutting-edge technology and collaborative innovation, fostering a culture of learning and growth. As an intern in the OnDeviceAI team, the environment was highly dynamic, involving interdisciplinary collaboration and regular engagement with advanced AI tools and frameworks like Knowledge Graphs and the RDFox Semantic Engine. The company emphasized a solution-driven approach, which encouraged me to focus on creating scalable and efficient systems for personalized user experiences.

Samsung offered a supportive and well-structured environment, with access to technical mentors and team resources that greatly aided in achieving project milestones. Regular team discussions and brainstorming sessions enhanced problem-solving and critical-thinking skills.

From the company, I expected continuous learning opportunities, exposure to industry-standard practices, and the chance to contribute to impactful projects. The supportive culture allowed me to explore, experiment, and refine innovative ideas, aligning with Samsung's vision for technological excellence. This enriching experience not only helped hone my technical expertise but also strengthened my ability to work in a professional, goal-oriented setup.

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

Data Structures and Algorithms:

Database Management Systems (DBMS):

Mathematics for Computer Science:

Natural Language Processing (NLP):

Big Data Analytics:

PS-II Station : Samsung R & D Institute -,Bengaluru, Belgaum

Faculty

Name: Lucy J. Gudino

Student

Name: PONASANAPALLI AJAY(2020B5A82273H)

Student Write-up

PS-II Project Title: Exploring multimodal embeddings for video analysis

Short Summary of work done during PS-II : This paper presents a novel framework for temporal action recognition and moment ranking in videos, integrating optical flow-based motion representation with BLIP's multimodal embeddings. Using the Lucas-Kanade algorithm, optical flow vectors are inpainted onto video frames, with two approaches: cumulative inpainting across all frames and segment-level representation on the last frame. These enhanced frames are processed by BLIP, fine-tuned using LoRA and PEFT for computational efficiency and adaptability. The framework aligns visual and textual embeddings to rank moments based on their relevance to a query, addressing challenges in temporal dynamics and multimodal understanding. This approach demonstrates potential for applications in video analysis and action localization.

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

Objectives of the project : Enhancing Temporal Action Recognition with Optical Flow Inpainting and Multimodal Embeddings

Major Learning Outcomes : The internship provided a deep understanding of optical flow-based motion analysis and multimodal model adaptation for temporal action recognition. Additionally, it enhanced my skills in implementing efficient fine-tuning techniques like LoRA and PEFT, bridging the gap between theory and real-world applications.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The work environment at Samsung Research Institute, Bangalore, was dynamic, collaborative, and innovation-driven, providing opportunities to tackle real-world challenges in cutting-edge technology domains. The company fostered a culture of learning, encouraging experimentation

and knowledge sharing. Expectations included delivering impactful contributions to ongoing projects, adhering to high professional standards, and embracing teamwork to drive progress.

Academic courses relevant to the project : Digital image processing

PS-II Station : Samsung R & D Institute -,Bengaluru, Belgaum

Faculty

Name: Lucy J. Gudino

Student

Name: PRANKUL AGARWAL(2021A3PS1555H)

Student Write-up

PS-II Project Title: Dma buffers in android studio

Short Summary of work done during PS-II : We developed an application designed to efficiently manage DMA buffers. The app includes functionalities to allocate, deallocate, and perform read/write operations on DMA buffers. Additionally, it accepts a process ID (PID) as input and provides a comprehensive list of all DMA buffers associated with the specified application.

Tool used (Development tools - H/w, S/w) : Android studio , MS office suite

Objectives of the project : To check the access pattern of the DMA Buffer in an app

Major Learning Outcomes : Gain experience in a corporate IT environment, understanding its operations, communication dynamics, and workflows. Enhance my knowledge in my field of expertise while exploring and identifying my specific areas of interest within the industry.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment was highly supportive, and the onboarding process was seamless. The team provided adequate time to complete tasks and was consistently available to address any questions or clarify doubts.

Academic courses relevant to the project : Operating system

PS-II Station : Samsung R & D Institute -,Bengaluru, Belgaum

Faculty

Name: Lucy J. Gudino

Student

Name: SAYAN NANDI(2021A3PS2629G)

Student Write-up

PS-II Project Title: Adaptive Lightweight Consensus Protocols

Short Summary of work done during PS-II : My work was divided into 3 major topics - Lightweight consensus protocol, Protocol authentication & Blockchain-based Federated Learning.

Tool used (Development tools - H/w, S/w) : Solidity, Ganache, Scyther, Remix

Objectives of the project : To research on lightweight blockchain consensus protocols

Major Learning Outcomes : Learnt about blockchain, consensus mechanisms, cryptography protocol authentication & federated learning

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Manager was supportive and approachable most times. Work is majorly dependent on the team assigned.

Academic courses relevant to the project : NA

PS-II Station : Samsung R & D Institute -,Bengaluru, Belgaum

Faculty

Name: Lucy J. Gudino

Student

Name: VISHAL GUPTA .(2021A3PS2658P)

Student Write-up

PS-II Project Title: Advancing Privacy with Confidential Computing

Short Summary of work done during PS-II : In collaboration with Samsung R&D, this project focuses on implementing Private Cloud Compute/Confidential Computing to address critical data

privacy and security challenges in large-scale machine learning models. Leveraging AWS Nitro Enclaves, the project ensures secure data processing by isolating sensitive operations in a protected environment, safeguarding against unauthorized access. This initiative includes extensive research into the privacy limitations of existing cloud-based ML models, designing optimized solutions for secure execution, and deploying scalable architectures tailored to enterprise needs. The work highlights the transformative potential of combining cutting-edge secure enclaves with robust cloud services to redefine privacy standards in modern computing.

Tool used (Development tools - H/w, S/w) : AWS Nitro Enclave , Linux Workstation

Objectives of the project : Advancing Privacy with Confidential Computing on Cloud Based LLMs.

Major Learning Outcomes : AWS , AWS KMS , Linux , Data Privacy

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : At Samsung R&D, the working environment is dynamic, innovative, and collaborative, fostering a culture of learning and technological advancement. The team operates in an agile setup, focusing on cutting-edge technologies like AWS Nitro Enclaves and secure cloud computing. My role as an intern involved hands-on implementation of Confidential Computing solutions, offering a blend of research, development, and problem-solving.

The company's infrastructure supports large-scale cloud-based machine learning models, providing access to state-of-the-art tools and platforms for experimentation and development. Collaboration with experienced professionals and exposure to industry best practices significantly enhanced my technical and analytical skills.

Samsung R&D's expectations emphasized delivering robust and scalable solutions, showcasing a strong understanding of secure enclave technology and its applications in privacy-focused computing. I was also encouraged to contribute innovative ideas, participate in knowledge-sharing sessions, and maintain meticulous documentation of my work.

This enriching experience not only deepened my expertise in Private Cloud Compute but also instilled a sense of accountability and adaptability, preparing me for future challenges in the evolving field of secure computing.

Academic courses relevant to the project : Not any Particular.

PS-II Station : Samsung R & D Institute -,Bengaluru, Belgaum

Faculty

Name: Lucy J. Gudino

Student

Name: SHASHWAT SAXENA(2021A3PS2824G)

Student Write-up

PS-II Project Title: On-Screen Awareness and Context Generation for Voice Assistants

Short Summary of work done during PS-II : Cannot disclose due to NDA

Tool used (Development tools - H/w, S/w) : Android Studio, Kotlin language, Java

Objectives of the project : Broader Objective was to enhance the voice assistant

Major Learning Outcomes : Android development principles, kotlin, java

Details of Papers/patents : None. My project was not a research project but a commercial one.

Brief Description of working environment, expectations from the company : Working environment was good, very supportive manager and team. They were approachable at all times.

No work pressure, just timely delivery is required and timelines are pretty relaxed for interns. In general company work culture's is based on timely deliverables as in Korea. Overall great culture.

Academic courses relevant to the project : Programming courses would be helpful though not a pre requisite. As in company your manager will ask you to learn specific things required for project

PS-II Station : Samsung R & D Institute -,Bengaluru, Belgaum

Faculty

Name: Lucy J. Gudino

Student

Name: VIBHA PATIL(2021A7PS1465G)

Student Write-up

PS-II Project Title: On-Device training of Custom Neural Networks

Short Summary of work done during PS-II : Solutions for accelerating neural networks on devices. Neural networks being computationally expensive are often run from servers. Running and training DL models on devices like mobile phones is subject to memory constraints. Project involved reducing memory requirements of neural networks while maintaining consistent performance by incorporating custom training nodes and using gradient accumulation. User may have a model on multiple devices being unevenly trained or having different data. In order to have same level of performance on all models, developed and tested methods adapted from federated learning algorithms for aggregating weights of models.

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

Objectives of the project : Design custom neural networks with architecture such that they are memory efficient and can run on constrained devices. Develop methods for combining model weights across different devices to ensure all models maintain high performance.

Major Learning Outcomes : fundamentals of DL, TensorFlow framework, designing and training DL models with custom features for complete on-device training. federated learning for aggregating model weights on different devices

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The project environment was supportive and contributed to personal growth. With manageable expectations and a friendly atmosphere, I had the space to learn and explore at my own pace. Manager provided assistance by discussing roadblocks and suggesting hints to solve problems.

Academic courses relevant to the project : Mathematics II, Deep learning, Foundation of Data science, OOP

PS-II Station : Samsung R & D Institute -,Bengaluru, Belgaum

Faculty

Name: Lucy J. Gudino

Student

Name: SHARDUL SUHAS SHINGARE .(2021A7PS2539P)

Student Write-up

PS-II Project Title: Using deep learning models for Topic Classification subtasks

Short Summary of work done during PS-II : I initially started working on interest extraction. The first approach I worked on was Latent Dirichlet Allocation (LDA), a probabilistic model. First, I gathered data from multiple sources , allowing us to try out the LDA code and make changes to fit our use case. Since LDA is an unsupervised machine learning algorithm, we cannot specify topics beforehand, and imbalance in the data caused the model to struggle in detecting the desired topics. Additionally, when predicting topics for unseen sentences, LDA ignores words it has not encountered during training, reducing its accuracy. This issue motivated us to explore supervised machine learning algorithms. The current approach we are exploring involves using a BiLSTM model. A BiLSTM is a type of RNN that enhances the performance of traditional LSTM models by incorporating two LSTM layers: one that processes the sequence from start to end (forward) and another that processes it from end to start (backward). This enables the model to capture richer contextual information. We have combined this with some other techniques, namely self-attention and multi-attention mechanisms and CNN layers, to develop a model that performs better. Then I started working on a dataset review task which required to write scripts in Python to clean, modify and combine dialogue data. Through this, I got a chance to work with an external team working on the same task. I was asked to help them understand the task and correct them wherever necessary.

Tool used (Development tools - H/w, S/w) : Python, VS Code, Github, MS Excel

Objectives of the project : To build a model to detect the interests of the user from chat data in the form of dialogues.

Major Learning Outcomes :

1. Building deep learning/machine learning models
2. Using trail and error method to add/delete components to refine a model
3. Data collection, cleaning, extraction and manipulation
4. Presenting ideas and discussing them with team members

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The working environment was very friendly. My team members, manager, and other Samsung employees were approachable and always ready to help. The office infrastructure was really good, and I was provided with everything I needed to do my work.

Apart from the work, there was a gym in the office building, free food, and very cheap bus services, which enhanced the experience and greatly helped me.

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

PS-II Station : Samsung R & D Institute -,Bengaluru, Belgaum

Faculty

Name: Lucy J. Gudino

Student

Name: ANURAAG AKELLA(2021A8PS1887H)

Student Write-up

PS-II Project Title: Building Guardrails for LLMs

Short Summary of work done during PS-II : I had first started with a literature survey and learned about LLMs ,how they work and then I researched about the Guardrails Framework that we were building. After that I learnt about Prompt Engineering and how to use it for our use case. Then I learnt in depth about LLM Fine-tuning and how it is done.

Tool used (Development tools - H/w, S/w) : python, pandas , numpy , pytorch, LoRA adapters

Objectives of the project : The goal of the project was to build a safety framework for the LLMs built by the company. The safety framework needed to prevent unwanted responses from the LLM to unsafe queries such as toxic language, gibberish text etc.

Major Learning Outcomes : I was able to get hands-on learning experience dealing with LLMs in the field of Machine Learning and AI.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The office atmosphere is amazing, wonderful set of facilities are provided from the time you land in Bangalore. The mentors and managers are helpful and guide you through any questions you have. The work is primarily research work so the majority of your work might be experimental and moving at a snails pace, however the experience varies from team to team.

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

PS-II Station : Samsung R & D Institute -,Bengaluru, Belgaum

Faculty

Name: Lucy J. Gudino

Student

Name: ARCHIT KUMAR PANDA(2021A8PS2238G)

Student Write-up

PS-II Project Title: Tappability Prediction

Short Summary of work done during PS-II : During my PS-II internship at Samsung, I worked on a project focused on deep learning model development. My primary task involved designing and optimizing models to solve real-world problems efficiently. I explored various architectures, fine-tuned parameters, and implemented solutions to improve the performance and accuracy of the models. A significant part of my work included preprocessing large datasets, conducting experiments, and analyzing results to ensure the models met project requirements. I also optimized workflows to reduce computational overhead, making the models more efficient for deployment. Throughout the internship, I collaborated closely with mentors and team members, incorporating feedback to refine my work. The experience gave me exposure to industry-standard tools, best practices in model development, and a deeper understanding of how AI solutions are integrated into practical use cases. By the end of the internship, I was able to contribute to a solution that aligned with Samsung's objectives, enhancing both my technical and problem-solving skills. This experience solidified my interest in AI and deep learning while preparing me for future challenges in the industry.

Tool used (Development tools - H/w, S/w) : Python3, Tensorflow, Keras, scikit-learn, open-cv

Objectives of the project : To get the tappability ranking of UI elements on a given screen

Major Learning Outcomes : During my 6-month internship at Samsung, I gained hands-on experience in deep learning and real-world model development. I learned to approach complex problems systematically, optimize solutions, and adapt to industry-standard workflows. Collaborating with mentors and teammates taught me the importance of clear communication, constructive feedback, and project ownership. This experience strengthened my technical skills and prepared me to contribute effectively in a professional environment.

Details of Papers/patents : NA (NDA signed)

Brief Description of working environment, expectations from the company : The working environment at Samsung was truly collaborative and supportive. From day one, I felt welcomed into a culture that values innovation and learning. My team was incredibly approachable, and mentorship was a key highlight—whether it was technical guidance, debugging issues, or simply brainstorming ideas, help was always just a conversation away.

The expectations were clear: contribute meaningfully, be proactive, and take ownership of the work. I was encouraged to experiment and bring fresh perspectives, even when tackling challenging problems. Despite working on deep learning models, which could often get complex, the supportive team ensured that I never felt overwhelmed.

Daily stand-ups, regular reviews, and constructive feedback made the entire process structured yet flexible, giving me the space to learn and grow while staying aligned with project goals. The focus on real-world applications of technology made the work exciting—knowing that my contributions were tied to actual deliverables gave me a sense of purpose.

The environment balanced professionalism with camaraderie, making it a place where you could challenge yourself, celebrate milestones, and build strong relationships along the way.

Academic courses relevant to the project : Deep learning

PS-II Station : Samsung R & D Institute -,Bengaluru, Belgaum

Faculty

Name: Lucy J. Gudino

Student

Name: PRAROOP GARG .(2021A8PS2699P)

Student Write-up

PS-II Project Title: Synthetic Data Generation for wearables in healthcare

Short Summary of work done during PS-II : Designed a synthetic data generation pipeline using TimeAutoDiff (VAE + DDPM) to create realistic healthcare time-series data. Improved pipeline scalability with enhanced training code checkpointing ,logging, error handling and

variable batch sizes Developed LM-based tools for healthcare, enabling statistical analysis and memory-driven context retrieval Contributed to LLM guardrails by implementing protections against code injection and filtering gibberish outputs.

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

Objectives of the project : Generate synthetic Data to train ai models

Major Learning Outcomes : Learnt training large models

Details of Papers/patents : TimeAutoDiff

Brief Description of working environment, expectations from the company : The working environment was good, security was high. I was usually given full ownership over my tasks and there was little micromanaging.

Academic courses relevant to the project : NA

PS-II Station : Samsung R & D Institute -,Bengaluru, Belgaum

Faculty

Name: Lucy J. Gudino

Student

Name: SONAKSHI SHARAN(2021A8PS3002H)

Student Write-up

PS-II Project Title: Blockchain Integrated with AI ecosystem

Short Summary of work done during PS-II : I Made an anomaly Detection model to reduce the phishing attacks. Implementation of the Model with the private permissioned Blockchain

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

Objectives of the project : Blockchain Integrated with AI ecosystem

Major Learning Outcomes : Blockchain , Anomaly Detection Model

Details of Papers/patents : Currently working on it

Brief Description of working environment, expectations from the company : The working environment was really overwhelming. They included us in all the events occurring during my Internship period.

Academic courses relevant to the project : Machine Learning

PS-II Station : Samsung R & D Institute -,Bengaluru, Bengaluru

Faculty

Name: Lucy J. Gudino

Student

Name: ADITYA BHADOURIA(2021AAPS2442G)

Student Write-up

PS-II Project Title: Permissions Anomaly Detection on Android

Short Summary of work done during PS-II : Build models using Tensorflow for permissions anomaly detection . Converted into TFLite model for deployment on any edge device. Created an app for testing the model on Android devices.

Tool used (Development tools - H/w, S/w) : Android Studio, Jupyter Notebook

Objectives of the project : Build a ML model for detecting permissions anomaly.

Major Learning Outcomes : Learnt about different machine learning algorithms and how build models from scratch.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : You'll be expected to work at least 9 hours on average. If you work for 6 hours today, you must cover those 3 hours. At the end of the month, if you are short 9-10 hours, it's okay, but definitely not more than that.

People are helpful, and you need to ask for help.

You can learn a lot, or you may play TT all the time, it's up to you; no one's checking.

Food is free, and you have a lot of options.

This is a research center for Samsung; features are being built for the next generation of Samsung devices. I was privileged to work alongside my team on features for S25.

I always liked the tasks given to me; they were very challenging, and they will teach you how to tackle ML problems on your own. I was able to build an ML project for my final year without ChatGPT's help just based on my learning and experience here.

Academic courses relevant to the project : Object Oriented Programming



PS-II Station : Satyam Venture Engineering Services Pvt Ltd, Hyderabad, Hyderabad

Faculty

Name: Samata Satish Mujumdar .

Student

Name: MEDEPUDI MANEESH BABU(2020B4A42242H)

Student Write-up

PS-II Project Title: Operations Intern in ERP Division

Short Summary of work done during PS-II : This internship helped me by learning the skills and get real-time experience in working as a full stack developer. My first two months involved my training of languages like React, Python etc., after which I worked on making code components for my company's project. During my last two months, I prepared an LMS website which is used as an e-learning platform by the company for their new joiners and interns.

Tool used (Development tools - H/w, S/w) : Moodle, Xampp, Visual Studio Code

Objectives of the project : Frontend and Backend Development

Major Learning Outcomes : Programming Skills with Languages like Python, React
Website Development and Backend CSS Styling

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Satven is a mechanical company whose major work involves in design and manufacture of automobiles. The

workplace was very professional and the company was very helpful in assigning proper work and giving significant time for the completion of them. My team members were very easygoing and engaging which motivated me to work there and I've gained valuable insights there.

Academic courses relevant to the project : Effective Public Speaking; Discrete Mathematics

PS-II Station : Scapia Technology Private Limited, Bangalore

Faculty

Name: Arindam Roy .

Student

Name: TANMAY JAIN .(2020B1AB1903P)

Student Write-up

PS-II Project Title: Contributing to Scapia's business strategy

Short Summary of work done during PS-II : Worked on Credit Card CVP formulation, EMI Benchmarking, Market Research on Rupay Credit Cards. Worked on Analytics projects tracking traffic coming on Offers page of Scapia App. Worked with travel business team supporting through data, analytics and execution.

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

Objectives of the project : To develop business strategy

Major Learning Outcomes : I gained exposure to work with Cards Business Team, Travel Business Team and Analytics Team

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Working environment is very chill. I liked the work culture. People are extremely talented and amazing. They are always ready to help. Work pressure is also manageable. A very good learning atmosphere. Everyone was very supportive.

Academic courses relevant to the project : -

PS-II Station : Scapia Technology Private Limited, Bangalore

Faculty

Name: Arindam Roy .

Student

Name: SAGAR AWASTHI(2020B5A42363H)

Student Write-up

PS-II Project Title: Scapia - Data Analytics

Short Summary of work done during PS-II : During my internship, I started with data gathering and creating views for the team. I then built dashboards in QuickSight to provide insights into bookings and daily metrics. I also explored data engineering concepts like automating data ingestion. Finally, I worked on a propensity model using XGBoost.

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

Objectives of the project : Performing Data Analytics and building propensity models

Major Learning Outcomes : Understanding of Data Engineering Concepts and Data Science

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Here's a summary you can use:

Scapia is a travel fintech company known for its friendly environment. Team members can easily contact anyone and ask questions. The company offers great learning opportunities, and employees get to see their work implemented, which is one of the best parts. As a growing startup, Scapia provides a supportive and dynamic workplace.

Academic courses relevant to the project : Engineering Optimization, Computational Physics

PS-II Station : Secureworks India Private Limited (a Dell Technologies Company), Hyderabad

Faculty

Name: Gopalakrishnan Venkiteswaran .

Student

Name: SANGARAJU VENKATA JAYESH RAJU(2021A7PS0533G)

Student Write-up

PS-II Project Title: Automation Testing Framework

Short Summary of work done during PS-II : Started with learning prerequisites of the project like AWS, Kubernetes, Docker, Python. Worked on the project ATF which is in-house developed component that used for launching, monitoring and debugging automated test scripts written to test network detection devices. This application has been outdated with old technology versions, so I worked on to bring back the application to latest version technologies including their tests scripts and built a web interface for the application using Flask.

Tool used (Development tools - H/w, S/w) : Vs code, flask, python, gitlab, AWS, robot framework

Objectives of the project : The objective of the project was to modify the outdated application to the latest using technology versions and build a web interface for the application.

Major Learning Outcomes : Team work ability, creative thinking, problem solving, Domain knowledge

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment here is designed to foster collaboration, innovation, and growth. They believe in open communication, where ideas flow freely, and everyone's contributions are valued. Teamwork is a cornerstone, but individual ownership and accountability are equally emphasized.

The company expects to demonstrate commitment, professionalism, and a strong work ethic. Employees should take ownership of their responsibilities, meet deadlines, and deliver high-quality results. Effective communication, teamwork, and adaptability are essential, along with a proactive approach to problem-solving.

Academic courses relevant to the project : CS F111, CS F213, CS F211, CS F372, CS F303

PS-II Station : Secureworks India Private Limited (a Dell Technologies Company), Hyderabad

Faculty

Name: Gopalakrishnan Venkiteswaran .

Student

Name: MACHAMMAGARI NIKHILESWAR REDDY(2021A7PS2911G)

Student Write-up

PS-II Project Title: Migration of Automated Test Framework

Short Summary of work done during PS-II : First, significant contributions were made to Dalton through open-source collaboration, which is available on GitHub (as referenced). This helped improve the overall robustness of the project and fostered a collaborative development environment. Next, a custom Amazon Machine Image (AMI) was created specifically for Automated Testing Framework (ATF), streamlining the testing environment setup. This AMI was then integrated into a GitLab CI/CD pipeline, ensuring that automated tests could be reliably executed with each code change. This integration facilitated faster feedback loops and more efficient testing. Additionally, the migration from Python 2.7 to Python 3.11 was successfully carried out for ATF. This upgrade addressed security vulnerabilities, compatibility issues, and performance bottlenecks, ensuring the application stays current with modern software standards. The Robot Framework was also upgraded to ensure compatibility with the new Python environment, enabling more efficient test automation. Lastly, a Flask web app was developed to expose an endpoint for launching tests using ATF, providing an easy and flexible interface for triggering automated tests. This setup supports the goal of continuous testing and enhances the user experience for developers working with ATF.

Tool used (Development tools - H/w, S/w) : Python3, GitLab CI/CD Pipeline, Amazon Machine Images (AMI), flask, Robot Framework, AWS.

Objectives of the project : First, the application will migrate from Python 2.7 to Python 3, ensuring better security, performance, and compatibility with modern libraries. The Robot Framework will also be upgraded to maintain testing compatibility. Second, automated tests for a Flask-based API will be implemented using Robot Framework to validate endpoint functionality. Lastly, a custom Amazon Machine Image (AMI) will be created and integrated into a CI/CD pipeline, automating the testing process and ensuring consistency across environments.

Major Learning Outcomes : Python3, GitLab CI/CD Pipeline, Amazon Machine Images (AMI), flask, Robot Framework, AWS.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Flexible work environment, Good work life balance.

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

PS-II Station : ServCrust Private Limited, Hyderabad, Hyderabad

Faculty

Name: Gopalakrishnan Venkiteswaran .

Student

Name: THOMAS THYVELIKKAKATH SABU(2021A7PS0011G)

Student Write-up

PS-II Project Title: BUILDING GEOSPATIAL MODELS FOR BUSINESS INSIGHTS

Short Summary of work done during PS-II : The internship focused on leveraging data analytics and machine learning to enhance ServCrust's operational efficiency and strategic decision-making. Four major projects were undertaken: (1) the development of a dynamic interactive choropleth map for visualizing and analyzing order data, with an emphasis on logistics optimization and cross-sectional analysis, (2) the creation of a forecast model for built-up areas in Telangana and Andhra Pradesh using historical satellite data from ISRO's Bhuvan platform, (3) designing an advanced order flagging system using Uber's H3 grid system to detect potential platform exploitation, and (4) initiating research into satellite optical imagery techniques for extracting built-up area in rural environments

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

Objectives of the project : To provide analytics, visualisations of company data and assist in building models to promote sales.

Major Learning Outcomes : Got lots of experience with statistical forecasting models, geospatial data, visualisation libraries like Plotly and Dash.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Young startup with around 50 employees but the work environment was relaxed and nice. Company was understanding and gave time to learn.

Academic courses relevant to the project : Data Visualization, Machine Learning, Artificial Intelligence, Foundation of Data Science

PS-II Station : SG Analytics, Bengaluru, Bangalore

Faculty

Name: Mohammad Saleem Bagewadi .

Student

Name: BODHISATTWA DHARA(2021A4PS3081H)

Student Write-up

PS-II Project Title: Anomaly Detection for Univariate Time Series Using Fourier Transform and Variational Autoencoders Vector Representations for Petri Nets

Short Summary of work done during PS-II : initially i started working with graphical nueral networks and petrinets and did work on optimisation of the paths. learnt a lot about how graphs network work and all . finally i did project on autoencoders on time series data . overall it was a great learning on how we can analyse the data given to us so that we can make some meaningful conclusion out of it

Tool used (Development tools - H/w, S/w) : S/w- python, tensorflow, Pytorch . H/w- none

Objectives of the project : This project explores a novel methodology for anomaly detection in univariate time series data by combining the Fourier Transform (FT) with Variational Autoencoders (VAEs). Time series data, ubiquitous in domains such as predictive maintenance, finance, and healthcare, often pose challenges for anomaly detection due to their dynamic, non-linear, and noisy characteristics. Traditional approaches struggle to effectively capture these complexities, motivating the development of advanced techniques.

Major Learning Outcomes : how we can use autoencoders to correctly encode the data set values in a time series which will make us understand the data more accurately

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : it is a very chill working environment where you can speak up your own ideas and can discuss them with your mentor. the projects that are given to us are very practical in the banking and analytical sector. I actually learned a lot about how fintech companies work and how data analysis is done

Academic courses relevant to the project : Deep learning, Machine learning and statistics

PS-II Station : SHVND Private Limited, Secunderabad

Faculty

Name: Y V K Ravi Kumar .

Student

Name: MANISH INDORIA .(2021A4PS0137P)

Student Write-up

PS-II Project Title: UI/UX of Dashboard

Short Summary of work done during PS-II : The development of the Training10x platform demonstrates a notable improvement in the way students oversee their education and professional goals. The platform facilitates a smooth experience for recruiters and students by

incorporating features like job openings, course monitoring, profile maintenance, and a dedicated recruiter interface. In addition to improving users' educational experiences, this dual capability expedites the recruiting process, which eventually improves job placement and career readiness. The significance of organized resource allocation within an organization is emphasized by the hierarchical credit management system created for managing AI project credits. The system guarantees straightforward credit requests, reviews, and approvals by clearly defining roles for managers, administrators, and staff. This methodical strategy maximizes the use of resources for AI projects while encouraging accountability. My ability to produce aesthetically pleasing and useful communication tools is demonstrated by the design and coding of an HTML email for investors. This project improves investor engagement and strengthens brand identification by implementing user-friendly layouts and guaranteeing interoperability across multiple email programs.

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

Objectives of the project : During my time at SHVND, I was actively engaged in various tasks related to UI/UX design, primarily using Figma to create user-centred designs. This hands-on experience provided me with practical insights into the design process and the importance of user experience in product development. Throughout the internship, I deepened my understanding of key concepts in UI/UX design, including usability principles, user research methodologies, and prototyping techniques. My analytical skills were enhanced as I evaluated user feedback and iterated on designs to improve functionality and aesthetics. Collaborating with cross-functional teams allowed me to gain valuable experience in teamwork and communication within a dynamic work environment.

Major Learning Outcomes : The mentorship I received from experienced professionals at SHVND was instrumental in my growth. Their guidance helped me refine my design thinking and problem-solving abilities while also contributing to my development as a communicator and leader. Participating in training sessions further enriched my knowledge and skills in design tools and industry best practices.

Details of Papers/patents : My technological proficiency in developing solutions that streamline hiring procedures is demonstrated by the creation of a browser extension for scraping candidate profiles from LinkedIn Jobs. This project greatly increases recruiters' operating producti

Brief Description of working environment, expectations from the company : The working environment for interns is typically dynamic and collaborative, fostering a culture of learning and professional growth. Interns expect a supportive atmosphere where they can engage with colleagues and supervisors, ask questions, and contribute meaningfully to projects. A well-structured onboarding process is essential, providing clarity on roles, responsibilities, and company culture.

Academic courses relevant to the project : Print and Audio Visual Advertising

PS-II Station : SHVND Private Limited, Secunderabad, Secunderabad

Faculty

Name: Y V K Ravi Kumar .

Student

Name: ADITYA GUPTA(2020B4A41559G)

Student Write-up

PS-II Project Title: Internship Experience and Insights at SHVND: A Comprehensive Report

Short Summary of work done during PS-II : Developed a WhatsApp recruitment chatbot that interacts with candidates, collects CVs, and assesses responses. Created an AI assistant for Hire10x.ai website that automates tasks for hiring managers by leveraging LLMs and interacting with the ATS. Automated job posting data collection from LinkedIn and HorizontalTalent using web scraping and NLP. Built an AI chatbot for Citi Neuro Hospital that provides information on doctors, services, and appointments using LLMs and vector databases. These projects

significantly improved the efficiency and effectiveness of various processes within the talent acquisition and healthcare domains.

Tool used (Development tools - H/w, S/w) : Langchain, FAISS, OpenAI's GPT model, Gradio, Beautiful Soup, LXML, Google's Gemini language model.

Objectives of the project : To contribute to the development of AI/ML powered tools and automate data acquisition processes to improve the efficiency and effectiveness of talent acquisition. Specifically, to create a WhatsApp recruitment chatbot, an AI assistant for the Hire10x.ai website, automate job posting data collection, and develop an AI chatbot for Citi Neuro Hospital.

Major Learning Outcomes : Gained proficiency in applying AI/ML and data acquisition techniques in the talent acquisition domain. Developed skills in using LLMs, Langchain, web scraping, data processing, NLP, and integrating with vector databases. Enhanced problem-solving abilities and adaptability in a fast-paced technological environment.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Worked at SHVND PVT LTD, Hyderabad, in a fast-paced, collaborative environment focused on AI/ML development for talent acquisition. The company expected contributions to several AI-driven projects, requiring problem-solving, adaptability, and proactive learning of new technologies. The internship focused on delivering practical solutions to improve efficiency and effectiveness in talent acquisition and healthcare information access.

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

PS-II Station : Siemens - Simulation and Digital Twin, Bengaluru

Faculty

Name: Manoj Subhash Kakade .

Student

Name: ISHAAN SHANKAR .(2021A4PS0788P)

Student Write-up

PS-II Project Title: Building HVAC control using Reinforcement Learning

Short Summary of work done during PS-II : During my PS-II internship at Siemens Digital Industries, I worked on optimizing Heating, Ventilation, and Air Conditioning (HVAC) systems using reinforcement learning (RL) techniques. The project involved implementing Proximal Policy Optimization (PPO) algorithms to create an intelligent control system that balances energy efficiency and occupant comfort. I utilized the EnergyPlus simulation framework to develop a digital twin of the HVAC system, enabling safe and efficient training of RL models. My role included designing and training a neural network-based policy using an LSTM architecture to handle temporal dependencies in HVAC operations. I configured the PPO agent with advanced features like Generalized Advantage Estimation (GAE) for stable learning, clipping-based policy updates for robustness, and entropy regularization to encourage exploration. Additionally, I worked on integrating real-time environmental data and temperature constraints to ensure the system's practical applicability. Beyond implementation, I conducted extensive experiments to evaluate the performance of the RL agent compared to traditional PID controllers. The results demonstrated a significant reduction in energy consumption while maintaining occupant comfort levels, aligning with Siemens' sustainability goals. This experience enhanced my understanding of reinforcement learning, digital twin technology, and AI-driven optimization in real-world scenarios. It also strengthened my skills in project management, teamwork, and problem-solving, making it a highly fulfilling and valuable learning opportunity.

Tool used (Development tools - H/w, S/w) : Pytorch , Pandas , Numpy , Cadlib , Advance Python Programming , Running Simulations ,

Objectives of the project : The primary objective of this project was to optimize the energy efficiency of HVAC systems using reinforcement learning while maintaining occupant comfort. HVAC systems are significant energy consumers in buildings, and improving their efficiency contributes to both cost savings and environmental sustainability. By leveraging AI, the project aimed to create intelligent control systems capable of dynamic adjustments to environmental conditions. The project focused on implementing the Proximal Policy Optimization (PPO) algorithm to train an RL agent for balancing exploration and exploitation in HVAC control. Through EnergyPlus simulation, a digital twin of the HVAC system was developed, enabling the safe training and evaluation of the agent in a virtual environment without real-world disruptions. This approach ensured a robust and scalable solution adaptable to various building types and climates. Another key objective was to incorporate occupant comfort into the system by enforcing temperature constraints, ensuring the optimization process did not compromise user satisfaction. The project also compared the RL-based approach with traditional methods like PID controllers to validate its efficiency and effectiveness in real-world scenarios. Finally, the project aimed to align with sustainability goals by demonstrating significant reductions in energy consumption and greenhouse gas emissions. The insights gained from this work have the potential to contribute to scalable and practical solutions for smart building management, showcasing the role of AI in advancing energy-efficient and environmentally friendly technologies.

Major Learning Outcomes : During PS-II, I gained technical expertise in reinforcement learning, particularly Proximal Policy Optimization (PPO), and its applications in HVAC control systems. I learned to use EnergyPlus for simulation and implemented LSTM-based neural networks for handling temporal dependencies. Additionally, I developed skills in project management, data analysis, and AI-driven optimization.

On the soft skills front, I enhanced my communication, teamwork, and time management abilities. Critical thinking and problem-solving became integral to addressing project challenges. Collaboration with mentors and adaptability to dynamic requirements strengthened my professional approach, ensuring a successful and enriching internship experience.

Details of Papers/patents : Reinforcement Learning for Whole-building HVAC Control and Demand Response . Study on the Application of Reinforcement Learning in the Operation Optimization of HVAC System. Transfer Learning Applied to Reinforcement Learning-Based HVAC Control. Building

Brief Description of working environment, expectations from the company : The working environment at Siemens Digital Industries was highly professional, collaborative, and innovation-driven. The organization fosters a culture of continuous learning, encouraging interns to explore new technologies while providing the necessary guidance and support. My team was approachable and proactive, facilitating discussions on project ideas, methodologies, and challenges. Regular feedback sessions with mentors ensured clarity in objectives and alignment with the company's goals.

Siemens provided access to advanced simulation tools, technical resources, and a structured workflow, which streamlined the execution of my project. The integration of AI, digital twins, and simulation technology reflected the organization's commitment to cutting-edge research and sustainability, creating an inspiring atmosphere for technical exploration.

I expected a challenging and stimulating environment where I could apply theoretical knowledge to solve real-world problems. Siemens exceeded these expectations by providing opportunities to work on impactful projects directly aligned with global trends in sustainability and automation. The company encouraged ownership of tasks and fostered a sense of responsibility, which significantly enhanced my learning experience.

Additionally, Siemens valued innovation and collaboration, which was evident in the open communication and teamwork. This environment not only allowed me to contribute effectively to the project but also nurtured my professional growth. Overall, Siemens provided an ideal platform to develop technical skills, gain industry exposure, and contribute meaningfully to a project with real-world implications.

Academic courses relevant to the project : Reinforcement Learning , Machine Learning , Foundation of Data Science , Large Language Models .

PS-II Station : Siemens - Simulation and Digital Twin, Bengaluru

Faculty

Name: Manoj Subhash Kakade .

Student

Name: GAURANG KARWANYUN .(2021A4PS1332P)

Student Write-up

PS-II Project Title: Democratization of Uncertainty Quantification (Natural Language Generation)

Short Summary of work done during PS-II : We worked with real-time industrial Siemens datasets to generate synthetic data using deep learning techniques like VAE, GANs, Copula. Performed PEFT (Parameter-Efficient Fine-Tuning) on multimodal model: microsoft/Phi-3.5-vision-instruct using Hugging Face transformers and Trainer API. Used wandb to track the training process. Integrated the NLG part into a streamlit application

Tool used (Development tools - H/w, S/w) : H/w: NVIDIA A100 Graphic Card (google colab). S/w: Python, PyTorch, Hugging Face transformers, Trainer API, Datasets, Data Collator, wandb, streamlit

Objectives of the project : We explored the application of multi-modal large language models (LLMs) for extracting actionable insights from probability distribution plots of Uncertainty Quantification (UQ) parameters, specifically aimed at enabling non-experts to make informed decisions in the presence of uncertainty. Our approach leverages the advanced capabilities of LLMs to automate the interpretation of these plots, providing insights that are both accessible and actionable for users without specialized training.

Major Learning Outcomes : Technical Growth (Opportunity to work on state-of-the-art AI technology), Personal Growth (communication, presentation), How to approach real world problems. Understanding impact of the product. Developing large scale products. Analyzing customer insights

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Had a great learning experience working in Siemens. Abhay Kumar (Senior Key Expert, Siemens) was my mentor and guided me at every stage of the internship. Had opportunity to work on and learn about SOTA technologies being used in modern industrial landscape. Siemens fosters a continuous learning environment and prioritizes innovation and collaboration.

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

PS-II Station : Siemens EDA (Formerly Mentor Graphics) - Digital, Noida/Bengaluru, Noida

Faculty

Name: Pawan Sharma .

Student

Name: LANKA NISHANTH(2020B2A31956G)

Student Write-up

PS-II Project Title: Camera bring up in IoT edge system

Short Summary of work done during PS-II : During the internship, initially was given an assignment to implement a simple DMA controller with a register bank and transfer data between different addresses in a memory module to understand the overall flow of VLSI design and verification. Then focus was on bringing up a camera subsystem for an IoT edge system. The

project involved integrating and configuring the IMX415 sensor, successfully configuring it through I2C communication and integrating it with the MIPI RX Subsystem for image data capture. The raw data sent by the camera was processed using an IP in the system. The final system included integrating the HDMI output for real-time video display and optimizing memory transfers using DMA to ensure smooth data flow. Debugging was performed using tools like ILA to monitor signal integrity and identify timing issues. Throughout the process, the system was thoroughly validated, and performance optimizations were applied to ensure efficient real-time operation. The camera subsystem was successfully integrated into the main edge system. The project provided valuable hands-on experience in FPGA-based design, image processing, system integration, and debugging, leading to a fully functional camera subsystem ready for deployment in IoT applications.

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

Objectives of the project : The objective of the project was to integrate the IMX415 camera sensor into an IoT edge system, ensuring successful configuration through I2C communication and image data capture via the MIPI RX Subsystem. The project aimed to implement an efficient image processing pipeline using Demosaic IP or an Image Signal Processor (ISP), convert raw sensor data into RGB format, and store it in DDR memory. Additionally, a DMA controller was developed to optimize data transfers, minimizing processor load. The processed video was displayed in real-time via HDMI output. The project also focused on system integration, ensuring seamless interaction with memory controllers and display interfaces, while optimizing data flow and memory usage for improved performance. Finally, the complete system was validated, ensuring reliable operation from sensor configuration to video display.

Major Learning Outcomes :

System-Level Integration:

The camera subsystem was successfully integrated into the full IoT edge system, ensuring smooth interaction with other system components such as memory controllers, DMA, and display interfaces.

Validation and Debugging:

The complete system was validated, with debugging done using ILA to monitor real-time signals and optimize timing and performance, ensuring robust operation under various conditions.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The work environment provided an excellent platform for growth and learning. We had live sessions with mentors, even during late hours. These sessions were for understanding complex concepts and clearing doubts effectively. Additionally, the environment encouraged proactive learning — observing ongoing tasks and taking the initiative to implement what was learned, even if it wasn't part of the assigned responsibilities. This allowed us to develop and adapt more effectively, gaining a deeper understanding of project workflows.

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

PS-II Station : Siemens EDA (Formerly Mentor Graphics) - Digital, Noida/Bengaluru, Noida

Faculty

Name: Pawan Sharma .

Student

Name: BHARATH KALYAN B(2020B4A71354G)

Student Write-up

PS-II Project Title: Machine Learning Based SEM Images Contour Extraction and Data augmentation

Short Summary of work done during PS-II : During my PS-II internship at Siemens EDA, I worked on a project titled "Machine Learning Based SEM Images Contour Extraction and Data Augmentation." The objective was to develop a robust and automated pipeline for processing Scanning Electron Microscope (SEM) images to enable accurate contour extraction and enhance dataset quality through data augmentation. My responsibilities included designing an image pre-processing pipeline to address challenges like noise, low contrast, and edge preservation in SEM images. I implemented machine learning techniques for contour extraction, ensuring reliable performance on high-resolution and noisy data. Additionally, I developed and applied advanced data augmentation methods to simulate varied imaging conditions, improving the generalization and robustness of machine learning models. The project also involved automating the entire workflow for scalability, enabling efficient processing of large datasets with minimal manual intervention. Key achievements included optimizing model accuracy, ensuring efficient runtime for processing workflows, and creating detailed reports for performance evaluation. Through this work, I gained valuable experience in image processing, machine learning, data augmentation, and workflow automation. I also developed problem-solving skills, collaborated with my mentors effectively, and documented the entire process for knowledge transfer and reproducibility. The outcomes of the project are directly applicable to improving SEM image analysis workflows for industrial applications like defect detection and dimensional analysis.

Tool used (Development tools - H/w, S/w) : S/w: Python, OpenCV, PyTorch, TensorFlow, Excel, Calibre (Siemens EDA's flagship tool); H/w: Gridlex, Tesla A100 GPUs,

Objectives of the project : To develop a robust machine learning framework for contour extraction from SEM images, addressing challenges like noise and low contrast. To create and apply effective data augmentation techniques to improve model generalization across varied imaging conditions.

Major Learning Outcomes : Gained in-depth knowledge of applying machine learning algorithms to real-world problems, particularly for image processing tasks like contour extraction.

Learned to fine-tune models for optimal performance in handling noisy and high-resolution SEM image data.

Developed expertise in working with SEM images, including addressing their unique challenges like noise, low contrast, and artifacts.

Learned advanced data augmentation techniques to increase dataset diversity, simulate real-world variations, and improve model robustness.

Enhanced problem-solving skills by addressing challenges like handling complex SEM datasets and ensuring model generalization.

Details of Papers/patents : In the process of writing a paper

Brief Description of working environment, expectations from the company : During my internship at Siemens EDA, I had the opportunity to work in a professional, collaborative, and technology-driven environment. The workplace encouraged innovation, learning, and proactive problem-solving, which aligned well with the nature of my project.

The work culture fostered independence, allowing me to explore solutions while receiving timely guidance and feedback from my mentors. Weekly discussions and progress reviews ensured I stayed aligned with project goals while also helping me improve my technical and analytical skills. The company's expectations were clear: deliver accurate, scalable, and optimized solutions that align with industry standards. I was expected to maintain attention to detail, document my work comprehensively, and communicate my progress effectively.

Overall, the working environment provided a perfect balance of independence and mentorship, with a strong focus on learning and professional growth.

Academic courses relevant to the project : Machine Learning, Deep Learning, Computer Vision, Digital Image Processing, Digital Signal Processing, DSA, Probability and Statistics, Linear Algebra, Operations Research

**PS-II Station : Siemens EDA (Formerly Mentor Graphics) - Digital,
Noida/Bengaluru, Noida**

Faculty

Name: Pawan Sharma .

Student

Name: UDAYAGIRI ADISHREYES KUMAR .(2020B5AA0915P)

Student Write-up

PS-II Project Title: Veloce

Short Summary of work done during PS-II : I worked with Quality Assurance team. Written testcases to check proper functionality of Emulators. Also validated a website used to see emulation reports.

Tool used (Development tools - H/w, S/w) : Verilog, Cpp, Bash, Linux

Objectives of the project : Building the Hardware Emulators (similar to FPGA) which are used by RTL designing companies to verify their designs.

Major Learning Outcomes : Became proficient in Verilog, Cpp, Bash, Linux

Details of Papers/patents : -

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

Academic courses relevant to the project : Digital Design, C-programming

PS-II Station : Siemens EDA (Formerly Mentor Graphics) - Digital, Noida/Bengaluru, Noida

Faculty

Name: Pawan Sharma .

Student

Name: ROTTE SOMANATH(2021A3PS0825H)

Student Write-up

PS-II Project Title: Veloce

Short Summary of work done during PS-II : I worked with the Quality Assurance team under Veloce Compile Team Lead. For the starting 3 months, I worked on debugging and compiling 5 RTL designs. The designs were tool-generated featuring mixed language RTL code (Verilog and VHDL). I also wrote some Synthesizable testbenches in Verilog for Combinational feedback loop and Clock-Q feedback loop tests, compiled them on emulator and observed the design schematic on Veloce Visualizer GUI. I also Validated some tests post-emulation on Visualizer GUI, which involved modifying the golden files and automation scripts. Along with that, I analyzed various log files for tests in compile phase, and extracted the data on design capacity, frequency and compile time.

Tool used (Development tools - H/w, S/w) : Verilog, VHDL, Bash, Linux, Excel

Objectives of the project : Testing the Emulators using various designs, which are used by RTL designing companies to verify their designs.

Major Learning Outcomes : Verilog, VHDL, Bash and Linux

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Work Culture is pretty good here.

Academic courses relevant to the project : Digital Design, FPGA based System design Lab, C programming

PS-II Station : Siemens EDA (Formerly Mentor Graphics) - Digital, Noida/Bengaluru, Noida

Faculty

Name: Pawan Sharma .

Student

Name: PRITHVI SOWMYA(2021A3PS1653H)

Student Write-up

PS-II Project Title: Bringing up a camera sensor from scratch for an IoT edge Device

Short Summary of work done during PS-II : We had a training period of 2 months where we wrote RTL for a DMA controller, verified it in simulation using a testbench and then Validated it on an FPGA as well. Then the project focused on successfully enabling cameras for an IoT edge system tailored to specific customer needs. The work involved integrating two image sensors for efficient image capture and processing.

Tool used (Development tools - H/w, S/w) : Vivado, Questasim, Customer confidential software related to debugging on FPGAs, JIRA

Objectives of the project : Bringing up a camera sensor from scratch for an IoT edge Device

Major Learning Outcomes : Verilog, VLSI flow, FPGA, RTL, multiple tools, Linux

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : You will be held to high expectations, but they will help you get there as well. They're helpful and willing to teach you (my team was a Validation team mainly which works with a very well known MnC in the Core elec domain). You will get hands on work with deadlines, but they are understanding and will help when you get stuck. Work will be hard, but the learnings will be great.

Academic courses relevant to the project : FPGA, Computer Arch., Digital Design, Embedded Systems

PS-II Station : Siemens R&D, Bengaluru, Bengaluru

Faculty

Name: Manoj Subhash Kakade .

Student

Name: ANAND KIRAN THACKER(2020B4A42366H)

Student Write-up

PS-II Project Title: 3D Reconstruction

Short Summary of work done during PS-II : During my PS-II project, I focused on exploring and analyzing advanced 3D reconstruction techniques for industrial metaverse applications at Siemens. I worked with photogrammetry tools like COLMAP, neural approaches such as NVIDIA's

Instant NeRF and Nerfstudio's Nerfacto, and Gaussian Splatting methods. My tasks involved evaluating these methods for their computational efficiency, scalability, and output quality, especially when applied to datasets of varying sizes and complexities. I implemented and tested meshing algorithms like Poisson Surface Reconstruction, Ball Pivoting, and Delaunay Triangulation to generate smooth and accurate 3D models.

Tool used (Development tools - H/w, S/w) : GPU- NVIDIA RTX 4090, docker

Objectives of the project : To make 3D models of objects , scenes from images.

Major Learning Outcomes : Docker , Linux , git , ML , AI , Neural networks , 3D reconstruction

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment was research-based and work-friendly, allowing me to explore various techniques at my own learning pace. It provided a great opportunity to delve into different 3D reconstruction methods .

Academic courses relevant to the project : Machine learning, CAD

PS-II Station : Siemens R&D, Bengaluru, Bengaluru

Faculty

Name: Manoj Subhash Kakade .

Student

Name: TEJAS SARAOGI(2021A7PS2835G)

Student Write-up

PS-II Project Title: Simulation and Digital Twins

Short Summary of work done during PS-II : This work involved developing a computational framework for segmenting and classifying 3D datasets, focusing on efficient processing of voxels, point clouds, and meshes. GPU-accelerated techniques with CUDA were integrated into machine learning pipelines, ensuring compatibility with PyTorch APIs. The project also optimised workflows for handling large-scale data, enabling accurate and scalable 3D analysis.

Tool used (Development tools - H/w, S/w) : Nvidia GPUs, pytorch, python, git

Objectives of the project : The objective of this project is to develop an efficient framework for accurate segmentation and classification of 3D datasets using advanced computational and machine learning techniques.

Major Learning Outcomes : 1. Mastery in processing and segmenting 3D datasets like voxels and point clouds using machine learning techniques.
2. Proficiency in optimising GPU-accelerated workflows with CUDA and integrating them into modern frameworks like PyTorch.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Very holistic and positive work culture and environment.

Academic courses relevant to the project : NA

PS-II Station : Siemens,Goa, Goa

Faculty

Name: Manoj Subhash Kakade .

Student

Name: VIDIT SHAH(2021A3PS2094G)

Student Write-up

PS-II Project Title: Backend Data Development for Devices and PCBA Scheduling using Power BI and DAX, SMT Scheduling Application and Device Testing Chatbot.

Short Summary of work done during PS-II : The Backend Data Development for Devices and PCBA Scheduling project focuses on creating an integrated backend dataset using Power BI and DAX. This dataset provides the planning team with real-time insights into component shortages and future stock levels, enabling efficient scheduling of MTS devices and PCBA production. This initiative enhances decision-making and streamlines production planning. The SMT Scheduling Application automates production scheduling based on requirements from the PCBA Power BI report. It optimizes resource allocation by allowing users to generate schedules automatically or manually, save them in separate files, and filter schedules line-wise for enhanced flexibility and control. The Device Testing Chatbot serves as a virtual assistant for operators on the device testing line. Developed using Python and advanced chatbot technologies, it provides comprehensive information about testing procedures, results, and safety instructions, ensuring efficient operations and adherence to safety protocols.

Tool used (Development tools - H/w, S/w) : Power BI, VS Code, Python, Pandas, PyQt5, Ollama

Objectives of the project : Backend Data Development for Devices and PCBA Scheduling using Power BI and DAX : The objective is to create a single integrated backend data set for the planning team, which indicates component shortages and future stock level status based on orders. This will enhance decision-making efficiency and help the planning team schedule MTS devices and PCBA production efficiently. SMT Scheduling Application : The SMT scheduling application will help in scheduling the production based on the requirement generated from the PCBA Power BI report is a more efficient way to ensure proper resource allocation. It allows the user to optimize it automatically and manually and save it in separate files. It also allows filtering of the schedule line wise. Device Testing Chatbot : The chatbot is developed to act as a virtual assistant for the operators on the device testing line. It will help in conveying complete information regarding the testing procedures and results to ensure efficient working. It also inform them about the safety instructions of each test to ensure safety.

Major Learning Outcomes : Machine Learning, Power BI, Data Preprocessing, Artificial Intelligence, Generative AI, Python, Pandas, PyQt5

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment was excellent and my team was also cooperative and supportive. I was provided with the proper devices to execute my projects. Adequate time and importance were given to my projects and all the data and resources for the projects were given timely.

Academic courses relevant to the project : Machine Learning, Generative AI, Database management.

PS-II Station : SiFive India Pvt Ltd, Bengaluru

Faculty

Name: A Rekha .

Student

Name: PAURAS SUNIL PATIL .(2020B2A30704P)

Student Write-up

PS-II Project Title: Power Management Design Verification

Short Summary of work done during PS-II : During PS-II at SiFive, significant contributions were made in the field of power management verification for RISC-V-based designs. The work focused on bringing up and verifying Unified Power Format (UPF) configurations, ensuring proper integration of power intent for cluster configurations. This included tasks like debugging and triaging issues in RTL designs, configuring local interrupts, and automating coverage points generated based on registers, thereby streamlining the verification workflow. A key aspect of the project was the creation of a structured test catalog for power management tests. Tests were systematically organized into columns for Summary/Feature, Tags, Test Names, Paths, Descriptions, Parameters, Dependencies, and Targeted Features, improving traceability and test organization. Additionally, extensive learning and application of power management architecture were achieved, including components such as the System Management Complex (SMC), Cluster Management Complex (CMC), and Tile Management Complex (TMC). Tools like Verdi were utilized for debugging, waveform analysis, and functional coverage verification, ensuring robust validation of the design. The project also emphasized collaboration, effective documentation, and the application of Chisel and Scala for high-level hardware abstractions. Overall, the internship provided hands-on experience in low-power design principles, automation, and verification methodologies, contributing to a deeper understanding of power-efficient system design and validation.

Tool used (Development tools - H/w, S/w) : Software Tools: Verdi: For debugging, waveform analysis, and functional coverage verification. Git: For version control and collaboration. GCC: For compiling software components. Chisel and Scala: For generating high-level hardware abstractions and Veril

Objectives of the project : Objectives of the Project at SiFive: Optimize Power Management: Work on improving how power is managed in chips to make them more energy-efficient without reducing performance. Ensure Design Reliability: Help test and verify that the chip designs work correctly under different conditions. Organize Testing: Create a clear structure for tests to make it easier to identify and run the right ones for specific features or scenarios. Automate Processes: Build tools to save time by automating repetitive tasks like generating reports and analyzing test results. Solve Issues: Debug problems in the chip design and testing process to make sure everything works smoothly. Learn Advanced Tools: Use specialized software tools to understand and improve how the chip works internally.

Major Learning Outcomes : Understanding Power Management Systems

Gained insights into low-power design principles, power states, and the architecture of power management systems.

UPF (Unified Power Format) Integration

Learned how to bring up and verify UPF configurations to ensure proper power intent in chip designs.

Test Cataloging and Organization

Developed skills in structuring and cataloging test plans for power management, improving test traceability and efficiency.

Verification Methodologies

Enhanced understanding of functional verification processes, including coverage analysis, debugging, and simulation techniques.

Automation Skills

Automated tasks such as generating coverage points for registers and streamlining verification workflows.

Debugging and Triaging

Improved debugging capabilities by identifying and addressing issues in RTL design and DV infrastructure.

Collaboration and Documentation

Learned to work within a professional team environment and document findings, test results, and processes effectively.

Tool Proficiency

Gained hands-on experience with tools like Verdi, Chisel, and simulation frameworks for design and verification.

System-Level Thinking

Developed a holistic understanding of how power management integrates into broader chip functionality and impacts energy efficiency.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at SiFive was collaborative, fast-paced, and highly technical, emphasizing innovation and teamwork. The organization provided exposure to cutting-edge technologies in semiconductor design and verification, focusing on RISC-V-based solutions. The team was approachable and supportive, fostering a culture of knowledge sharing and continuous learning. Regular reviews and discussions ensured clarity in objectives and alignment with project goals. The work revolved around power management systems and design verification, requiring attention to detail, analytical thinking, and a proactive approach to problem-solving. Tools like Verdi, Git, and simulation platforms were integral to daily tasks, providing hands-on experience in industry-standard workflows. Expectations from the company included contributing effectively to ongoing projects, demonstrating ownership of tasks, and delivering results within timelines while maintaining quality.

The opportunity to work on Unified Power Format (UPF) integration and the development of a test catalog for power management offered a deep dive into system-level design and its practical challenges. This experience, combined with structured guidance and regular feedback, helped in honing technical skills, gaining industry insights, and understanding the complexities of semiconductor design. The supportive environment and access to advanced tools ensured a valuable and enriching learning experience, meeting and exceeding expectations from the internship.

Academic courses relevant to the project : Digital Design

Computer Architecture

PS-II Station : SiFive India Pvt Ltd, Bengaluru

Faculty

Name: A Rekha .

Student

Name: SHREE GUPTA .(2020B2AA1146P)

Student Write-up

PS-II Project Title: Physical Design Flow tuning to meet the Power-Performance-Area goals for High-Performance Cores

Short Summary of work done during PS-II : This project investigates the use of Tcl and Python for Physical Design and Verification, specifically focusing on the Physical Design Flow at SiFive, a leading semiconductor company known for its RISCv innovations. Tcl and Python are primarily used to write script of the flow and the tools used by the flow. The project centers on learning the internal flow tool (called Fluid) and verifying the designs using this tool. This tool needs to be modified to give the best Power-Performance-Area output for performance cores produced by SiFive. Here, we also need to learn the Physical Design aspects and the tools used such as Fusion Compiler and PrimeTime to navigate the project and its requirements correctly.

Tool used (Development tools - H/w, S/w) : Tcl, Python, Shell, EDA Tools

Objectives of the project : Physical Design Flow tuning to meet the Power-Performance-Area goals for High-Performance Cores

Major Learning Outcomes : -Learned Physical Design

Details of Papers/patents : NA

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

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

PS-II Station : SiFive India Pvt Ltd, Bengaluru

Faculty

Name: A Rekha .

Student

Name: ANANT JAIN(2020B5AA1569G)

Student Write-up

PS-II Project Title: Design Verification

Short Summary of work done during PS-II : I was in the CPU verification team for in-order cores. I was assigned the work to build a Tile Unit Test Bench for an in-order core. The programming is supposed to be done in Chisel which is new age HDL which is converted into verilog through some tools. The first 2 months were just training where i learnt system verilog, UVM, Scala, Chisel, Computer Architecture, Bus Protocols, Interfaces and a lot more. As my original work had dependencies on other teams I also took some parallel work to debug and triage core failures. Also wrote test cases to cover some holes.

Tool used (Development tools - H/w, S/w) : VS Code, Verdi(Synopsys) , Virtual Machine, Confluence and Jira by Atlassian , Github, Scala , Chisel

Objectives of the project : Building a Configurable Test Bench

Major Learning Outcomes : VLSI, Computer Architecture, Working across different teams and time zones

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment has been fantastic for me. My mentor has been really considerate in everything. They do not force about office timings. Only care about work. I have been taught from basic Git command to advance computer architecture stuff. Also he had a work based approach rather than the learn and then implement one which has been really good for a person like myself. Although there could be more outings and other things but I think I value the appreciation they show more any day. Also I am in the CPU verification team which is the most cutting edge field according to me. The work assigned to me is also important and not some random project. The only two bad things I felt was the stipend(40k) and the PPO process delay.

Academic courses relevant to the project : Computer Architecture

PS-II Station : SiFive India Pvt Ltd, Bengaluru

Faculty

Name: A Rekha .

Student

Name: ANUBHAV MON BARUAH(2021A8PS3198H)

Student Write-up

PS-II Project Title: Coverage Analysis and Bug Hunting during Design Verification

Short Summary of work done during PS-II : This project was ultimately aimed at helping the vertical execution team members in their tasks like running and managing regressions in Jenkins and simscope, debugging and triaging the failures seen in various essential series configs and making sure that the coverage scores were in line with the target scores set up by the managers. This project helped in the coverage analysis of the 2-series, 6-series, and 7-series configs of the Essential family by analysing the raw “vdb”(the coverage database) file in software called Verdi and discovered various missed covers which helped in filing tickets on the issues in Jira so the respective horizontal teams can look into the issues and develop proper stimulus for those coverage holes. Apart from this, during the course of this project, some new test outlines were created by the vertical execution team as well for the new configurations demanded by the clients.

Tool used (Development tools - H/w, S/w) : NoMachine(Virtual Desktop), GitHub, Jira, Verdi, Simscope, Jenkins, SystemVerilog, C, Scala, Chisel.

Objectives of the project : To help the Vertical Execution team at SiFive in achieving their required coverage and regression scores needed for a customer release.

Major Learning Outcomes : During the course of this project, I learnt how much work goes behind producing a Core IP in a company like SiFive and how CPU verification works. Also, I learnt how the different teams in the company work together to deliver on the objectives required for a customer delivery. Apart from this on the technical side, I learnt the basics of the RISC V ISA , SystemVerilog, Computer Architecture and how processes like coverage and UNR help in the verification process. I also learnt different linux and git commands that are essential in the industry.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment was very good in the company. We were given leeway to work at our own pace while

learning various things required for us to complete our work properly. Our mentors were very helpful and we got to learn a lot from them. In the initial three months, we were given specialized training in the basics of Computer Architecture, SystemVerilog, UVM and Scala and Chisel to bring us up to the Industry standards. We also learnt about the internal architecture of in order and out of order pipelines during this time. They were very patient with us throughout the internship and we were treated similar to the other full time employees in the company.

Academic courses relevant to the project : Computer Architecture- specially topics like Caches , In order and out of order pipelines, RISC V ISA etc. (I had not done this course before joining as an intern in this company but it would have been very helpful if I had taken up this course earlier),

PS-II Station : Singlestore India Pvt Ltd, Hyderabad, Hyderabad

Faculty

Name: Sai Kishor Jangiti .

Student

Name: ANKITH PRAVEEN(2020B4A70625G)

Student Write-up

PS-II Project Title: ENHANCING FUNCTIONAL CAPABILITIES IN SINGLESTORE DATABASE

Short Summary of work done during PS-II : During my internship at SingleStore, I focused on debugging critical ingestion pipeline issues and developing impactful features. Initially, I resolved key bugs such as handling invalid date/time formats by refining parsing logic and implementing validation checks, addressing timeout issues by optimizing system parameters, and resolving

Psyduck test failures by reallocating resources. In feature development, I added a `table_name` column to `information_schema.pipelines_errors` to enhance error traceability, implemented automatic `.lz4` decompression for seamless data ingestion, and introduced last-modified timestamp filtering to improve pipeline flexibility. Additionally, I updated the default column collation and charset to `utf8mb4`, supporting special characters like emojis, and enabled ingestion of single-column CSV files by refining the schema inference logic. After implementing these features, I backported them to earlier SingleStore releases (8.7 and 8.5). I also developed a real-time monitoring dashboard using Python and Dash, enabling users to track pipeline performance metrics such as ingestion speed, row counts, and error rates. This involved integrating live data, designing a user-friendly interface, and conducting thorough testing to ensure accurate and actionable insights.

Tool used (Development tools - H/w, S/w) : Python, C++, C, MySQL, SingleStore, Psyduck, Lex, Yacc, Golang

Objectives of the project : To add features to SingleStore pipelines and enhance ingestion into the SingleStore database

Major Learning Outcomes : hands-on experience with distributed databases, debugging and problem solving, feature development

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : While many people work remotely, those who come to the office are welcoming, and the atmosphere is productive. Even with the remote setup, communication is smooth, and team members are always ready to help, whether through online meetings, chats, or in-person conversations. The team is skilled and approachable, making it easy to ask questions and learn from others. This support was very helpful during my internship, as I could rely on my mentors and teammates for guidance whenever I faced challenges.

Academic courses relevant to the project : Database Management Systems, Compiler Construction, Data Structures and Algorithms, Operating Systems

PS-II Station : Smart Joules Pvt Ltd., New Delhi

Faculty

Name: Rajesh Kumar Tiwary .

Student

Name: PRATYUSH KUMAR(2021A3PS2787G)

Student Write-up

PS-II Project Title: Dejoule audit System/ Smart Alerts

Short Summary of work done during PS-II : Over the past few months, I've focused on enhancing DeJoule, particularly the Smart Alerts system and an audit system to improve energy management and operational efficiency. For the Smart Alerts system, I integrated Novu's platform using Node.js to create a robust, event-driven notification system. This system sends alerts across multiple channels like SMS, email, WhatsApp, and in-app messaging. I also implemented customizable templates, allowing flexibility in notifications to suit various user needs. The goal has been to improve user engagement and ensure timely, relevant communication within DeJoule. In parallel, I've been working on an audit system designed to track and log critical events within DeJoule. This system ensures better accountability, compliance, and transparency by maintaining detailed records of user and system activities. It provides insights into system performance and helps identify areas for improvement.

Tool used (Development tools - H/w, S/w) : Node.js, Sails, Postman, PostgreSQL, Kafka, Redis

Objectives of the project : Smart Alerts: Create a notification system such that users can choose their notification channels. Use Novu framework to manage notifications among different groups

more efficiently. Audit System: Create a database that will store all the state changes happening in the device over time using Kafka and use Elastic Search make data tracking easier.

Major Learning Outcomes : Increased proficiency in JavaScript. I also learned a lot about databases, business logic in Software Development, git, product development, and management.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment is nice and easygoing. There isn't a lot of pressure from the mentors and other employees. There was a slight communication problem. The Hybrid model is/was highly flexible.

Academic courses relevant to the project : Data Structures and Algorithms, Object Oriented Programming, Database Management Systems, Operating Systems

PS-II Station : Smart Joules Pvt Ltd., New Delhi

Faculty

Name: Rajesh Kumar Tiwary .

Student

Name: PRATHAM AMOL POTNIS(2021A8PS2315G)

Student Write-up

PS-II Project Title: Smart Air Handling Unit Market research and Product Ideation

Short Summary of work done during PS-II : During this PS 2 internship, I was working on the ideation of the Smart AHU initiative. This initiative is taken up by the company to ensure that more and more equipment can be monitored to increase its efficiency and save energy. I have worked on the initial domain study, product pricing, mapping the business outcome to the product outcome, developing a distribution strategy and on the financial projections to see if this initiative is profitable. We have done one on one calls with manufacturers and distributors to understand the needs of the market.

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

Objectives of the project : The project had the following objective: 1. To analyze the market of Smart AHUs 2. To create a business plan to launch an initiative around Smart AHUs in the market

Major Learning Outcomes : Stakeholder Management, Cross team functionalities, Product development life cycle, Business Development, Financial Projections

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : This was a work-from-home internship. The support system provided by the company was really great. I had to travel to Delhi for one meeting with a manufacturer to present our idea. The company sponsored the travel and stay for me for 2 days.

Academic courses relevant to the project : Environmental Sustainability Venture Creation Course, Transducers and Measurement Systems, EIIT

PS-II Station : SP Institute of Workforce Development Pvt Ltd (Pareekshn), Noida

Faculty

Name: Jyotsana Grover

Student

Name: SRIVASTAVA RAHUL ABHAY .(2021A2PS2630P)

Student Write-up

PS-II Project Title: Machine learning intern

Short Summary of work done during PS-II : Made website

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

Objectives of the project : To port site from Angular to React

Major Learning Outcomes : Good work Exp

Details of Papers/patents : Signed NDA

Brief Description of working environment, expectations from the company : Good work environment, bad Management from PSD

Academic courses relevant to the project : None

PS-II Station : Spyne - Non Tech, Gurgaon

Faculty

Name: Sidharth Mishra .

Student

Name: SUSHANT MALHOTRA .(2020B1A41911P)

Student Write-up

PS-II Project Title: Product Tech Support Analytics

Short Summary of work done during PS-II : I was recruited as a Customer Success Management Intern. My major work focused on solving issues, clients are facing with inventory they are sending asap. I optimized the client ticket management by creating alert system for better customer service through dashboards. Built a few API's when promoted to Product Tech Support, and gained insights about making the product experience smooth.

Tool used (Development tools - H/w, S/w) : Python, MySQL, google extensions, DDBMS

Objectives of the project : Make visually appealing dashboards out of raw data for better visibility and insights

Major Learning Outcomes : Making API's, Advance data management, Customer engagement and analytical skills

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : It's an early grad ambitious start-up, mostly easy with the work, but sometimes product related glitches were observed due to Technical issues as the whole product cloud service needs revamping. The company lacks specialization people in Tech.

Academic courses relevant to the project : PAVA, Technical Report Writing

PS-II Station : Spyne - Non Tech, Gurgaon

Faculty

Name: Sidharth Mishra .

Student

Name: RICHARD AMBROSE .(2020B2AB1917P)

Student Write-up

PS-II Project Title: Improvement in Business Development: Sales

Short Summary of work done during PS-II : I used to enrich data on hubspot for the companies which my manager had to reach out to. I also used to manage his large data and keep it sorted and updated. I used to write a lot of personalised emails and made outreach calls.

Tool used (Development tools - H/w, S/w) : Hubspot, google sheet, gmail.

Objectives of the project : To help the sales department, especially the Account Executives and the Sales Development Representatives to reach monthly targets by keeping their data clean and enriched, managing their deals and writing emails and making calls for them.

Major Learning Outcomes :

1. Learnt to use the Hubspot CRM software efficiently.
2. Learnt to write professional looking personalised emails for clients.
3. Learnt how to do an outstanding conversation with US clients and crack a good deal by selling Spyne's products very intelligently to them.
4. Learnt how to thrive in a corporate environment, that too operating in a night shift.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working environment was very friendly when talking about sales. My superb manager Vanshit Kothari always kept me with him, made me listen to him while on calls and meetings so that I learn. He made me more disciplined and passionate about work. Other account executive managers like Rachit Hans are awesome. Company's expectation is to help the manager as much as much to achieve sales target and bring revenue to the company.

Academic courses relevant to the project : Technical Report Writing, and any business development related course

PS-II Station : Spyne - Non Tech, Gurgaon

Faculty

Name: Sidharth Mishra .

Student

Name: KOCHETA PRANAV AMOLKUMAR(2020B4A41859G)

Student Write-up

PS-II Project Title: Data analytics for US outbound

Short Summary of work done during PS-II : I utilised to enhance Hubspot data for the businesses my team needed to contact. I used to organise and update his sizable data as well. I used to do outreach calls and write a lot of customised emails.

Tool used (Development tools - H/w, S/w) : Hubspot,Excel,Apollo,Outplay etc

Objectives of the project : Market Research,data cleaning and enrichment using various tools etc

Major Learning Outcomes : 1. Learnt to use the Hubspot CRM software efficiently.
2. Learnt to write professional looking personalised emails for clients.
3. Learnt how to do an outstanding conversation with US clients and crack a good deal by selling Spyne's products very intelligently to them.
4. Learnt how to thrive in a corporate environment, that too operating in a night shift.
5.Lot of soft skills and understanding of working of a startup

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working environment is very chill,everyone is supportive and always aiming for improving day by day

Academic courses relevant to the project : Technical Report Writing

PS-II Station : SS Clothing, Bhilwara

Faculty

Name: Gaurav Nagpal .

Student

Name: SOJJANYYA SHARMA .(2021A1PS2600P)

Student Write-up

PS-II Project Title: Sales Strategy Optimization for Textile Products

Short Summary of work done during PS-II : The project focused on enhancing SS Clothing's sales strategies by developing content ideation frameworks, researching digital marketing tools, and formulating innovative approaches for buyer-supplier engagement. Platforms like Instagram, Pinterest, and Shopify were explored for their potential to strengthen the company's digital footprint. A competitive analysis highlighted the best practices employed by industry leaders. Recommendations were proposed for integrating app-based D2C models, fostering sustainability, and leveraging analytics for operational improvements.

Tool used (Development tools - H/w, S/w) : Digital marketing platforms (Shopify, Instagram, Pinterest), analytics tools (Google Analytics, SEMrush), and design software (Canva, Adobe Spark).

Objectives of the project : The primary objective of the project was to optimize the sales strategy for SS Clothing's textile products by leveraging digital marketing platforms, enhancing buyer-supplier relationships, and integrating both B2C and B2B business models. This involved analyzing market trends, studying competitor strategies, and formulating a comprehensive framework to boost the company's digital presence and operational efficiency.

Major Learning Outcomes : The project provided insights into the dynamics of the textile industry, emphasizing the role of sustainability, digital transformation, and personalized customer experiences. Key learnings included the importance of analytics in decision-making, the strategic use of digital marketing platforms, and the integration of technology in sales optimization.

Details of Papers/patents :

No papers or patents were published during this project.

Brief Description of working environment, expectations from the company : The working environment during the online internship was virtual but highly engaging and collaborative. Regular meetings, brainstorming sessions, and feedback discussions were conducted through platforms like Zoom and Microsoft Teams. Despite the remote setup, the company ensured a seamless flow of communication and support, fostering a professional yet flexible atmosphere.

Expectations included conducting thorough market research, delivering creative and actionable strategies for sales optimization, and maintaining consistent updates on progress. The virtual nature of the internship also emphasized self-discipline, time management, and proactive engagement to achieve the project goals effectively.

Academic courses relevant to the project : Relevant courses included Financial Accounting, Financial Management, Security Analysis and Portfolio Management , Derivatives and Risk Management

PS-II Station : SS Clothing, Bhilwara

Faculty

Name: Gaurav Nagpal .

Student

Name: TANMAY AGRAWAL .(2021A4PS2409P)

Student Write-up

PS-II Project Title: Supply Chain Management & Inventory Optimization

Short Summary of work done during PS-II : During my tenure at SS Clothing, I undertook a project focused on supply chain and inventory management optimization in the textile industry. The project addressed challenges like overstocking, stockouts, and seasonal demand volatility through strategic interventions. Key achievements included implementing machine learning models that improved demand forecasting accuracy by 15-20%, and ABC inventory categorization that prioritized high-revenue SKUs, reducing stockouts by 15%. The integration of Just-In-Time (JIT) inventory practices lowered holding costs by 25%. In the e-commerce division,

dynamic pricing models and seasonal forecasting tools cleared stagnant inventory worth ₹10 lakh and minimized revenue loss during peak seasons by 50%. Technology integrations like IoT-enabled smart warehousing and ERP systems improved tracking accuracy by 90% and reduced warehousing costs by ₹10 lakh annually. Sustainability initiatives such as biodegradable packaging and recycled material adoption reduced costs by 12-15% while meeting global standards. Overall, the project led to annual savings of lakhs and positioned SS Clothing as a forward-thinking, sustainable, and efficient player in the textile market.

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

Objectives of the project : Achieve a 20% reduction in costs by optimizing supply chain and inventory management practices. Improve demand forecasting accuracy by 15-20%, utilizing advanced machine learning models. Minimize holding costs by 18% annually, addressing inefficiencies in stock management and storage utilization.

Major Learning Outcomes : The project provided a comprehensive understanding of inventory management systems and their integration with technology-driven solutions, such as ERP and IoT, to improve efficiency and sustainability. Additionally, it demonstrated the importance of data analytics in driving strategic decisions for cost reduction and customer satisfaction.

Details of Papers/patents : No patents were filed

Brief Description of working environment, expectations from the company : The working environment at SS Clothing was dynamic and collaborative, providing exposure to both manufacturing and e-commerce operations. Team members across divisions were receptive to adopting technology-driven solutions, ensuring seamless project implementation. Regular interactions with stakeholders fostered an understanding of industry challenges and innovation pathways.

Academic courses relevant to the project : Supply Chain Management, Manufacturing Management, Machine Learning

PS-II Station : SS Clothing, Bhilwara

Faculty

Name: Gaurav Nagpal .

Student

Name: AYUSH MAHAJAN .(2021A8PS1411P)

Student Write-up

PS-II Project Title: Accounting – Financial Analysis and Reporting

Short Summary of work done during PS-II : During the four-month internship at SS Clothing, I focused on optimising financial operations and implementing data-driven solutions. The primary achievement was developing an automated Excel dashboard for daily sales tracking, which reduced reporting time by 60% (from 2 hours to 48 minutes) and provided real-time visualisation of sales performance and product category metrics. A comprehensive cost analysis of the top 5 product lines identified potential savings of 12%, broken down into fabric sourcing optimisation (5%), production process improvements (4%), and bulk material ordering (3%). This analysis included detailed cost breakdowns and industry benchmarking. Process improvements included streamlining the accounts payable workflow through a digital filing system, which reduced processing time by 20% and improved vendor relationships. I also created standardised templates for various financial reports, including daily sales summaries, weekly inventory status, and monthly P&L statements. The final phase involved developing an advanced Power BI dashboard with predictive models and completing a comprehensive knowledge transfer through detailed documentation and user manuals. Throughout the internship, I enhanced my proficiency in financial modelling, cost accounting, and data visualisation while developing crucial professional skills in cross-departmental communication and report writing. This internship provided valuable

exposure to real-world financial operations and contributed to significant improvements in SS Clothing's financial reporting and cost management systems.

Tool used (Development tools - H/w, S/w) : Microsoft Excel (Advanced Functions), Power BI (Dashboard Development), Digital Filing System, Automated Reminder Systems, Financial Dashboard Templates, Cost Analysis Models, Standardized Report Templates, Daily Sales Summary, Weekly Inventory Status, Mo

Objectives of the project : Enhance Financial Reporting Efficiency, Identify Cost-Saving Opportunities, Implement Technology Solutions, Optimize Business Processes, Meet Professional Development Goals.

Major Learning Outcomes : Technical Skills: Mastered advanced Excel, Power BI, and financial modeling, leading to 60% faster reporting and improved data visualization.

Financial Analysis: Developed manufacturing cost analysis expertise, identifying 12% potential savings across production lines.

Process Management: Streamlined business workflows and documentation systems, reducing processing time by 20%.

Professional Growth: Enhanced communication, report writing, and project management capabilities while working across departments.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : SS Clothing is a textile manufacturing company based in Bhilwara that operates in both B2B garment supply and B2C online clothing sales. The internship was conducted in a hybrid work environment, as indicated by the station location "Bhilwara, Rajasthan (hybrid)."

The company expected interns to contribute significantly to their financial operations through innovative and data-driven approaches. Key expectations included:

Developing automated reporting systems using Excel and Power BI.

Conducting comprehensive cost analysis across product lines.

Streamlining financial processes and workflows.

Creating standardised reporting templates.

Implementing digital filing systems.

Managing vendor relationships and payment processes.

The working environment appears to be technologically forward-looking, with a strong focus on digital transformation and process automation. The company was supportive of innovative solutions, as evidenced by their openness to implementing new dashboard systems and reporting tools. They provided opportunities for cross-departmental collaboration and professional development, with guidance from mentors like Ms. Tanisha Agrawal.

The environment also emphasized practical learning and real-world application of skills, with clear performance metrics and targets. For instance, the company expected measurable improvements in efficiency, such as reducing reporting time and processing durations, while maintaining high accuracy standards.

Academic courses relevant to the project : Fundamentals of Finance and Accounting

Business Analysis and Valuation

Derivatives and Risk Management

Security and Portfolio Management

Financial Management

Organisational Psychology

PS-II Station : SS Clothing, Bhilwara

Faculty

Name: Gaurav Nagpal .

Student

Name: CHAITANYA CHOUDHARY .(2021A8PS2709P)

Student Write-up

PS-II Project Title: Digital Marketing Strategy for Textile Products

Short Summary of work done during PS-II : During the project, I worked on developing a comprehensive digital marketing strategy for SS Clothing, focusing on enhancing its presence in the B2B and B2C textile markets. The first step involved an in-depth study of the Indian textile industry to identify key trends, challenges, and opportunities. Insights into fragmented supply chains, limited digital adoption, and the rising demand for e-commerce and personalized customer experiences formed the foundation of the strategy. I utilized digital marketing tools such as Google Analytics, SEMRush, and Hootsuite to analyze customer behavior, track campaign performance, and identify effective keyword strategies. Content marketing played a pivotal role, with the creation of blogs, social media campaigns, and short videos designed to engage audiences and boost brand visibility. I also explored and implemented app-based features for personalized shopping experiences, leveraging data analytics to optimize user engagement and retention. Additionally, I conducted competitive analyses to benchmark SS Clothing against key players in the industry, identifying areas where the company could differentiate itself. Strategies were tailored to strengthen buyer-supplier relationships, including loyalty programs and supplier-focused storytelling. The work also involved exploring e-commerce platforms like Shopify, Myntra, and Amazon to enhance the company's reach. The project successfully integrated digital tools and innovative strategies to position SS Clothing for sustained growth and digital transformation in the competitive textile industry.

Tool used (Development tools - H/w, S/w) : Google Analytics, SEMRush, Ahrefs, Hootsuite, Mailchimp, Figma, Shopify, GSuite, Google Trends

Objectives of the project : The main objective of the project was to study the Indian textile industry and develop a robust digital ecosystem for SS Clothing by integrating e-commerce and app-based models for B2B and B2C markets. It aimed to leverage advanced digital marketing tools and content marketing strategies to enhance engagement, improve campaign effectiveness, and optimize personalized marketing efforts and app-based selling models to support the company's growth and digital transformation.

Major Learning Outcomes : The project provided hands-on experience with digital marketing tools such as Google Analytics, SEMRush, Google Trends, enhancing understanding of the Indian textile sector and its challenges, including fragmented supply chains. It enabled the

development of strategies for content marketing and app-based selling tailored to B2B and B2C audiences while strengthening skills in designing effective social media campaigns and fostering buyer-supplier relationships. Additionally, the project emphasized integrating analytics for data-driven decision-making, improving marketing and sales outcomes.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment at SS Clothing was highly collaborative and dynamic, blending traditional textile expertise with modern digital practices. The team encouraged open communication and provided ample opportunities to innovate and experiment with marketing strategies. Expectations were clear, with a strong emphasis on creating measurable outcomes for marketing campaigns and laying a roadmap for the company's digital ventures. This supportive atmosphere enabled effective collaboration and fostered creativity to drive meaningful results.

Academic courses relevant to the project : None

PS-II Station : ST Micro Hardware, Greater Noida

Faculty

Name: Pawan Sharma .

Student

Name: NIMIT JAIN .(2020B4A31995P)

Student Write-up

PS-II Project Title: Firmware development for mini PLC Evaluation board

Short Summary of work done during PS-II : During my internship, I worked on multiple projects involving programming and development. One of my primary responsibilities was creating and publishing PLC evaluation codes using various development tools. I contributed to the development and end-to-end implementation of a Python tool designed for the analysis and generation of pulse-width modulation (PWM) signals. This involved working extensively with Python, Jupyter Notebook, and Excel to create modular, reusable code. Additionally, I gained hands-on experience with STM32 microcontrollers and STM32CubeIDE. My work included configuring input/output features, timers, UART, and handling interrupts. In the PWM project, I focused on generating, visualizing, and analyzing PWM signals. This internship allowed me to deepen my expertise in embedded systems programming, signal processing, and modular code development, enhancing both my technical and problem-solving skills.

Tool used (Development tools - H/w, S/w) : STM32 Cube IDE, Jupyter notebook, MS Office, Oscilloscope

Objectives of the project : To develop firmware for an evaluation board

Major Learning Outcomes : Writing efficient code

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Good working environment, pressure less with plenty of freedom and time to come up with the solutions. Supportive employees, good canteen and transport facilities.

Academic courses relevant to the project : C programming, Power electronics, Object oriented programming, Electrical Machines

PS-II Station : Startup TN Innovation Mission, Chennai, Chennai

Faculty

Name: Bharathi R .

Student

Name: SARVESH KUMAR P(2021A4PS2986H)

Student Write-up

PS-II Project Title: STARTUP INDIA RANKING

Short Summary of work done during PS-II : During PS-II, the project focused on preparing Tamil Nadu for the 5th edition of the Startup India Ranking (2023-2024). This involved evaluating the state's startup ecosystem across 19 Action Points, such as funding support, institutional frameworks, capacity building, and sustainable practices. Key tasks included collecting and organizing data, analyzing initiatives like the TANSEED Fund and SC/ST Startup Fund. Collaborating with stakeholders, such as government departments and incubators, enabled a comprehensive understanding of the ecosystem.

Tool used (Development tools - H/w, S/w) : Software Tools: Microsoft Excel: For data organization, analysis, and visualization across 19 Action Points. Canva: For creating presentations to summarize findings. Hardware Tools: Standard office computing systems

Objectives of the project : The project is aimed to contribute to the evaluation of Tamil Nadu's startup ecosystem under the Startup India Ranking Framework.

Major Learning Outcomes : Gained a comprehensive understanding of the structure, challenges, and opportunities in Tamil Nadu's startup ecosystem, including the roles of key stakeholders like government bodies, incubators, and startups.

Details of Papers/patents : The project did not involve the creation of new research papers or the filing of patents.

Brief Description of working environment, expectations from the company : The working environment at StartupTN was dynamic, collaborative, and reflecting the organization's commitment to fostering a massive startup ecosystem in Tamil Nadu. Regular interactions with experienced professionals and access to domain-specific resources provided a conducive atmosphere for learning and professional growth. Expectations from the company included analysis and strategic insights into policies, funding mechanisms, and ecosystem enablers, and presenting findings in a concise, impactful manner.

Academic courses relevant to the project : No courses were relevant for the project.

PS-II Station : Statcon Electronics India Limited, NOIDA, Noida

Faculty

Name: Pawan Sharma .

Student

Name: DHRUV DUHAN .(2020B4A30853P)

Student Write-up

PS-II Project Title: IP-based Passenger Information System (IPPIS) & Process Optimization using Computer Vision

Short Summary of work done during PS-II : During my internship, I contributed to two key projects: the development of an IP-based Passenger Information System (IPPIS) for railways and the implementation of computer vision for PCB fault detection. In the IPPIS project, I worked on several tasks, including testing and improving software components, creating testing plans,

configuring network components like the Central Data Switch (CDS), and integrating disaster management protocols using the Common Alerting Protocol (CAP). I also set up and tested various systems, such as the Remote Monitoring System (RMS) and CAP-sim server, and contributed to troubleshooting and refining the system's functionality. In the PCB fault detection project, I explored the use of computer vision to automate the inspection process, aiming to detect faults like misaligned components and soldering defects. I contributed by collecting and labeling datasets of faulty and non-faulty PCBs, evaluating the effectiveness of different vision software, and testing Landing AI's platform for defect detection. Though initial tests with Landing AI showed limited success, I explored alternative solutions and created a comprehensive dataset for training models. Additionally, I investigated camera setups for optimal image capture and worked on refining image clarity using DSLR and Pixel phones. Throughout the internship, I gained hands-on experience in system integration, software testing, machine learning, and data management, contributing to process optimization and improved technical workflows.

Tool used (Development tools - H/w, S/w) : Software Tools: C# .NET & WPF - For developing and testing the IPPIS software components, including display boards, announcement systems, and disaster management integration. Landing AI - For automating PCB fault detection using computer vision, enabling

Objectives of the project : 1. IP-Based Passenger Information System (IPPIS) Objectives: a) Enhance passenger experience by providing real-time train information and guidance. b) Improve operational efficiency by integrating data from various sources and ensuring accurate display across platforms. c) Integrate disaster management alerts via the Common Alerting Protocol (CAP). d) Develop a Remote Monitoring System (RMS) for system oversight and troubleshooting. e) Ensure regional language support on display boards for better accessibility. 2. Process Optimization using Computer Vision for PCB Fault Detection Objectives: a) Automate PCB fault detection using computer vision, reducing manual inspection. b) Improve inspection accuracy and speed by training AI models to identify defects. c) Enhance manufacturing efficiency by detecting faults early in the production process. d) Create and organize a dataset of good and faulty PCBs for model training. e) Evaluate and implement the most effective vision software for fault detection.

Major Learning Outcomes : During my internship, I gained valuable experience in system integration and real-time data management through the development of an IP-based Passenger Information System (IPPIS) for railways, learning how to configure servers, test software

components, and integrate disaster management protocols. Additionally, I explored the use of computer vision for automating PCB fault detection, gaining hands-on experience in data collection, image labeling, model training, and evaluating different AI platforms for defect identification. These projects enhanced my skills in networking, software testing, machine learning, and data management, while also improving my ability to optimize processes and troubleshoot technical issues effectively.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment was challenging due to a lack of proper assistance and resources. The company had high expectations, with a focus on delivering results quickly and efficiently, but without providing adequate training or support. The manager had ambitious goals, often unattainable, and expected fast-paced progress despite the limited guidance. While the work was demanding, the absence of mentorship and the high pressure led to stress and difficulty in meeting the expectations, making it hard to maintain motivation or feel supported in the role.

Academic courses relevant to the project : Artificial Intelligence & Machine Learning, Database Management Systems, Computer Vision, Data Structures & Algorithms, Networking and Communication.

PS-II Station : Statcon Electronics India Limited, NOIDA, Noida

Faculty

Name: Pawan Sharma .

Student

Name: SHIKHAR SRIVASTAVA .(2021A3PS1131P)

Student Write-up

PS-II Project Title: Smart Inverter Application

Short Summary of work done during PS-II : I worked on making an application that fetches data from inverters stores it on cloud and shows in the application . I worked on the application alone and completed the frontend and the backend part . I worked on AWS Services using them as a backend and used AWS Amplify for deploying the application. For the frontend I worked on React and TypeScript.

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

Objectives of the project : To make a fullstack web application that fetches data from inverter and displays

Major Learning Outcomes : Learnt about frontend and backend web development

Details of Papers/patents : I have made an application which will be deployed in a few weeks

Brief Description of working environment, expectations from the company :

Academic courses relevant to the project : OOPS

PS-II Station : Statcon Electronics India Limited, NOIDA, Noida

Faculty

Name: Pawan Sharma .

Student

Name: CHAITANYA JAIN(2021A3PS1155G)

Student Write-up

PS-II Project Title: Business process optimization and automation

Short Summary of work done during PS-II : Involved in multiple projects related to BPO/BPA using Power Automate, and got 3 very small marketing tasks

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

Objectives of the project : Build systems, improve operations using MS Teams and integrated apps with the help of power automate, with 3 small marketing tasks

Major Learning Outcomes : Power Automate, data cleaning

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company :

Academic courses relevant to the project : Nothing specific

PS-II Station : Statcon Electronics India Limited, NOIDA, Noida

Faculty

Name: Pawan Sharma .

Student

Name: PRANAV J PANIKULANGARA(2021A3PS2236G)

Student Write-up

PS-II Project Title: Smart Inverter Project and Firmware Security

Short Summary of work done during PS-II : I facilitated the transmission of data from inverter(STM32 Display Board) to a flutter app via telnet using hotspot of Esp32 microcontroller. There was a live dashboard where the user can fetch the latest settings and parameters. The user can also update the settings through the flutter app.

Tool used (Development tools - H/w, S/w) : STM32, ESP32 Microcontrollers, STM32CubeIDE, Arduino IDE, DSO,

Objectives of the project : The objective of the project was to develop a smart inverter system where the user can view inverter parameters on a flutter application and also update settings via the flutter app.

Major Learning Outcomes : Learnt Embedded C and about timers, interrupts, USART, structs. Learn about STM32 and ESP32 microcontrollers. Learnt about Flutter Framework, dart programming language and GETX state management system. Learnt Debugging Tools.

Details of Papers/patents : No papers/patents

Brief Description of working environment, expectations from the company : The company had their own office on the top floor from where we worked which was a typical office setup. The floors below were mainly for production and PCB design. There was also a sister company in walkable distance "Statcon Powtech" where testing, servicing and production happened. So interns used to spend some time working in statcon and some time in statcon powtech as required. We followed agile methodology with daily standups, scrum updates and sprints using Microsoft teams.

Academic courses relevant to the project : Microprocessors and Interfacing, OOPS, DSA,

PS-II Station : Statcon Electronics India Limited, NOIDA, Noida

Faculty

Name: Pawan Sharma .

Student

Name: ARYAN SINGH(2021A7PS2021H)

Student Write-up

PS-II Project Title: Website development and business strategy

Short Summary of work done during PS-II : During my internship, I contributed to three major projects and several additional tasks that enhanced the company's operations and customer experience. I worked extensively on developing the company website, including designing the sitemap, writing content, and optimizing the layout for mobile, iPad, and desktop platforms. My next project involved creating a solar and load calculator, which provides users with crucial insights such as recommended system size, area requirements, and savings for solar systems. For load calculation, I implemented property-type presets (1BHK, 2BHK, etc.), reducing input time and improving usability. I also integrated a lead capture popup to collect user details for future sales outreach. Additionally, I played a key role in hiring service technicians from local ITIs to improve the company's inverter servicing network. By analyzing complaint history and coordinating with placement cells, I helped onboard nine technicians across critical locations, reducing servicing times and travel costs. Beyond these, I worked on setting up the company profile on IndiaMART, updating dealer price lists, sourcing vendors for onboarding kits, and contributing to the development of solar kits. These projects not only improved internal efficiency but also strengthened customer engagement and brand image. This internship enhanced my technical, managerial, and collaboration skills, preparing me for future professional challenges.

Tool used (Development tools - H/w, S/w) : Here's a list of tools I used during my internship, categorized into hardware and software: Hardware Tools: Computer Systems: For development, design, and communication tasks. Testing Equipment: Occasionally used to understand product compatibility and r

Objectives of the project : To Redesign company website, made solar and load calculator and hiring people for servicing

Major Learning Outcomes : WordPress, HTML, CSS, JavaScript , Canva, negotiations skills

Details of Papers/patents : During my internship, I did not contribute directly to publishing any papers or filing patents. However, my work involved creating and implementing tools, systems, and processes that align with innovative practices in web development, solar technology, an

Brief Description of working environment, expectations from the company : The working environment at Statcon Powtech was dynamic, collaborative, and innovation-driven. The company provided a supportive atmosphere that encouraged learning and problem-solving. My

tasks were diverse, ranging from website development and solar load calculator integration to recruitment optimization, which allowed me to work across multiple domains and expand my technical and management skills.

The team was approachable and cooperative, with constant guidance from mentors like Utkarsh, Akshaya Saini, and Manoj Sir, who ensured that I had the resources and support to succeed. The collaborative culture fostered effective teamwork, particularly during large projects like hiring servicing technicians and integrating solar solutions. Expectations from the company were clear and included delivering timely, accurate, and efficient solutions for the assigned projects while maintaining high-quality standards.

The company valued innovation and empowered interns to bring in fresh perspectives, evident from the freedom to suggest and implement features like property presets in the load calculator or UI improvements for the website. Regular feedback sessions ensured that my work aligned with the organization's goals.

Overall, the internship provided a well-rounded experience, blending technical challenges with opportunities for personal growth. The open communication, collaborative environment, and trust in my abilities made it a highly fulfilling learning journey.

Academic courses relevant to the project : Web Development:

Courses in HTML, CSS, JavaScript, and Responsive Web Design were directly applicable in developing and designing the company website for desktop, mobile, and tablet devices.

Database Management Systems:

Useful for structuring backend lo

PS-II Station : Statcon Electronics India Limited, NOIDA, Noida

Faculty

Name: Pawan Sharma .

Student

Name: DARBARWAR SAGAR SHIVKUMAR(2021A8PS1173P)

Student Write-up

PS-II Project Title: Digital Transformation with Power Automate

Short Summary of work done during PS-II : During my Practice School-II (PS-II) tenure at Statcon Electronics, I contributed to enhancing operational efficiency through digital transformation by leveraging Microsoft Power Automate. The project focused on automating key workflows, including sprint data updates, task creation from forwarded emails, and logging job applications. In the sprint management task, I automated the bi-weekly update of sprint data across multiple Microsoft Lists, reducing manual errors and saving significant time. Another task involved creating a workflow to convert forwarded emails into tasks within Microsoft Lists, centralizing task management and improving team communication with automated notifications. Additionally, I developed a flow to manage incoming job applications by extracting and logging applicant details in a centralized SharePoint list, streamlining the recruitment process. Other tasks included designing automated reminders for employees to upload profile pictures, creating systems for tracking job description submissions, and automating calibration schedules for critical instruments.

Tool used (Development tools - H/w, S/w) : Software Tools: 1. Microsoft Power Automate: Core platform for designing and implementing automated workflows. 2. Microsoft SharePoint: For centralized data management, creating lists, and organizing files. 3. Microsoft Outlook: Used for integrating an

Objectives of the project : The primary objective of this project was to design, implement, and test automated workflows that would enhance the organization's agility by reducing manual effort and increasing overall process efficiency. Specifically, I worked on creating recurring flows that automatically updated sprint data and automating the conversion of forwarded emails into actionable tasks.

Major Learning Outcomes : Workflow Automation:

1. Gained expertise in designing and implementing automated workflows using Microsoft Power Automate.

2. Learned to integrate various Microsoft services like SharePoint, Outlook, Teams, and Azure Active Directory into automated processes.

Data Management:

1. Developed skills in centralizing and managing data across multiple platforms, ensuring consistency and accuracy.

2. Learned to design and use master sheets and SharePoint lists for tracking and monitoring purposes.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Here in the company, we worked under a mentor who was helping us throughout the project from abroad. This added some disadvantages in the management as we need to consult him regularly but he wasn't available for the doubts we needed to resolve.

Until and unless there is a good management and distribution of work in the company, it'll be beneficial for the company and for the interns too.

Also, they started off by providing us different projects, which weren't mentioned on the PSMS website earlier. This created trust issues within the organization as we didn't receive what we came for.

Academic courses relevant to the project : Technical Report Writing

C

PS-II Station : State Street Global Advisors, Bengaluru

Faculty

Name: Arindam Roy .

Student

Name: ABHISHEK MAHESHWARI(2020B2A82043G)

Student Write-up

PS-II Project Title: Smart Beta Solutions(Factor based Investing)

Short Summary of work done during PS-II : During my time at the company, I had the opportunity to work on a range of advanced investment strategies and technologies, which allowed me to develop a diverse skill set in the finance and investment domain. One of my key focuses was on factor-based investing, where I leveraged data from platforms like MSCI, FactSet, Trucost, and FTSE to build and optimize models that could identify and capture persistent factors influencing market returns. I worked closely with these tools to create comprehensive strategies that focused on factors such as value, momentum, and quality, aiming to improve portfolio performance and risk-adjusted returns. In addition, I was involved in the development and implementation of smart beta investing strategies. By combining passive and active investment techniques, we sought to improve outcomes by focusing on factors that are systematically undervalued or overlooked by traditional benchmarks. This approach was particularly aligned with the growing trend toward factor-driven investment solutions. A significant portion of my work also involved integrating machine learning with systematic investing strategies. I helped build and refine models that leveraged advanced algorithms to optimize portfolio construction and enhance decision-making processes. This integration of ML technologies allowed us to enhance predictive accuracy and automate complex tasks. Additionally, I played a key role in cross-team automation efforts, where I collaborated with multiple departments to streamline processes and improve operational efficiency. By automating repetitive tasks, we were able to reduce manual effort, minimize errors, and free up resources for more value-added activities, contributing to the company's overall productivity and innovation.

Tool used (Development tools - H/w, S/w) :
Axioma,databricks,anaconda,jupyter,python,DBMS,SQL

Objectives of the project : to find effective factors affecting returns throughout the testable period(from 1997-2024)

Major Learning Outcomes : learnt how factor based investing modify the return for the portfolios

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment at my company was highly supportive and collaborative, providing an excellent platform for professional growth. I was fortunate to have mentors who were not only knowledgeable but also genuinely invested in my development. They guided me through complex concepts and workflows, pushing me to learn quickly and efficiently. While the workdays could sometimes extend beyond 10 hours, these long hours were the exception rather than the norm, with standard timings typically running from 12 PM to 7 PM. There was also no expectation to work over the weekends, allowing for a healthy work-life balance.

My mentors had high expectations, particularly when it came to acquiring new knowledge in a short period. They encouraged me to gain proficiency in the various tasks they handled, which included research work involving Axioma and machine learning models, as well as automating processes to improve team efficiency. During my time, I was also involved in integrating with another team, which required me to relearn certain aspects of my role to align with their processes and expectations. This integration was challenging but provided me with a broader understanding of the company's operations and systems.

Overall, my team valued proactive learning and self-initiative, which helped foster a culture of growth and continuous improvement. I was given opportunities to work on a variety of impactful projects, and despite the occasional long days, the environment remained positive and enriching, with mentors and colleagues always ready to offer guidance and support.

Academic courses relevant to the project : machine learning, econometrics, fundamentals of finance and accounting, Security Analysis and Portfolio Management, DBMS , Derivatives and risk management, some DSA would be helpful, Object Oriented Programming(oops)

PS-II Station : Stelmec Ltd, Ahmedabad

Faculty

Name: Pawan Sharma .

Student

Name: SHARAJ BIJOY BARUAH(2021A3PS2934H)

Student Write-up

PS-II Project Title: Development of 33/11kv substation

Short Summary of work done during PS-II : 1.understanding epc scheme , 2.sld preparation
3.substation design

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

Objectives of the project : Development scheme of a 33/11kv substation

Major Learning Outcomes : Sld preparation

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Very friendly
and encouraging work environment

Academic courses relevant to the project : Power systems



PS-II Station : Sundial Systems Pvt. Ltd. - Data Science, Bengaluru

Faculty

Name: Preethi N. G .

Student

Name: AYUSH .(2020B1A70623P)

Student Write-up

PS-II Project Title: Transforming raw data into Key Performance Metrics along with Trends and insights

Short Summary of work done during PS-II : During my PS-II internship, my primary responsibility was to transform raw data from the company into actionable metrics that could be easily read and analyzed. This involved using ****SQL**** for data extraction and Python for data manipulation and analysis. A significant part of my role also included analyzing the data to derive meaningful insights that could guide clients in building effective strategies. By identifying trends, patterns, and potential areas for improvement, I was able to help clients make data-driven decisions. In addition to analysis, I was tasked with monitoring data quality and addressing any issues that arose. This included identifying discrepancies and ensuring the accuracy of the metrics being generated. Throughout the internship, I also collaborated with clients to gather requirements, understand their needs, and provide insights tailored to their business goals. This interaction helped in refining the analysis and ensuring that the generated insights were aligned with client objectives. Overall, the internship provided a hands-on experience in data analysis, client interaction, and problem-solving, contributing to both my technical and communication skills.

Tool used (Development tools - H/w, S/w) : Hardware: Cloud Servers/Infrastructure (e.g., AWS, Google Cloud), External Storage. Software: Python (Pandas, NumPy, Matplotlib, Seaborn, Scikit-

learn), SQL, Jupyter Notebooks, Tableau, Power BI, Excel, XGBoost, Flask, Apache Airflow, AWS, Google Cloud S

Objectives of the project : The objective of this project is to collect and preprocess raw data from various sources, ensuring it is clean and integrated into a unified dataset. The next step is to define and calculate key performance indicators (KPIs) that align with business objectives. Following this, the project focuses on analyzing trends and identifying key patterns, anomalies, and insights within the data. Finally, the insights, KPIs, and trends are visualized and reported through interactive dashboards, providing stakeholders with actionable information to support informed decision-making.

Major Learning Outcomes : During this project, I gained valuable experience in data cleaning and preprocessing, learning how to handle raw data, clean it, and ensure its consistency and quality for further analysis. I developed a solid understanding of how to define and calculate Key Performance Indicators (KPIs) that align with specific business objectives, enabling better tracking of performance and outcomes.

Additionally, I enhanced my skills in data analysis techniques, such as identifying trends, patterns, and anomalies using various statistical methods and tools. This was complemented by a deeper knowledge of data visualization, where I created meaningful visualizations and interactive dashboards to present insights in a clear and actionable format for stakeholders.

The project also improved my ability to support business decision-making, showing me how data-driven insights and KPIs can directly influence business strategies and operations. I gained hands-on experience in setting up automated reporting systems and data pipelines, enabling real-time tracking and reporting of KPIs to keep stakeholders informed.

Finally, I learned the importance of collaboration with stakeholders, working closely with business teams to ensure that data analysis efforts were aligned with organisational goals and contributed to making informed decisions.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The company offers a highly conducive learning environment where interns are treated with the same level of responsibility as full-time employees. This approach ensures that interns have the opportunity to learn and contribute meaningfully, with the freedom to grow and improve over time. There is an

understanding that interns are not expected to know everything from day one, providing a supportive atmosphere for personal and professional development.

As a startup, the company encourages fast-paced learning and adaptability, which is essential for success. While the work can be demanding, the team is always approachable and willing to help, creating a collaborative and positive work culture. There is no rigid hierarchy, allowing for open communication and a sense of equality among all team members.

Overall, the company's environment fosters continuous learning, hands-on experience, and personal growth, while maintaining a friendly, flexible, and supportive atmosphere for all employees and interns.

Academic courses relevant to the project : Database Management Systems(DBMS) and DSA

PS-II Station : Sundial Systems Pvt. Ltd. - Engineering, Bengaluru

Faculty

Name: Preethi N. G .

Student

Name: YASH SINGHAL(2020B2A72127G)

Student Write-up

PS-II Project Title: Kubernetes clusters consolidation

Short Summary of work done during PS-II : The aim of this project is to consolidate the two existing clusters in our current infrastructure into a single cluster for Sundial. This merger will streamline our infrastructure significantly. By managing just one cluster, we can simplify the handling of on-prem services, as all deployments will be centralized within this unified framework.

Tool used (Development tools - H/w, S/w) : kubernetes, dagster, aws, kubectl cli

Objectives of the project : To consolidate the 2 existing clusters into 1 by moving its services to the other.

Major Learning Outcomes : learned AWS cloud infrastructure

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Sundial system has a startup environment where people have horizontal hierarchy and everybody pushes you and helps you for every project. Everyone has atleast brirf idea os each other's work and can jump in to help. My expectations from it would be to learn every thing and have an idea of every domain since its easier in a startup to learn and grow.

Academic courses relevant to the project : Computer networks, database management system.

PS-II Station : Sundial Systems Pvt. Ltd. - Engineering, Bengaluru

Faculty

Name: Preethi N. G .

Student

Name: PRANJAL MITTAL(2020B5A71553G)

Student Write-up

PS-II Project Title: Advanced Schema Evolution and Metadata Optimization

Short Summary of work done during PS-II : 1. Schema Evolution for Delta Lake Tables: Implemented a dynamic schema evolution mechanism using name column mapping in Delta Lake, enabling adaptable data structures while ensuring compatibility and reliability. Integrated processes with Dagster pipelines and addressed compatibility challenges with version mismatches. 2. Publish Table Function for Materialized Tables: Developed a function to integrate AWS Glue with Trino, automating metadata management and enhancing querying capabilities for materialized tables stored on Amazon S3. 3. Optimized AWS Glue Function for APIs in Go: Improved API performance by implementing concurrency with Go routines, reducing response times, and overcoming inefficiencies like n+1 query issues. 4. GraphQL Resolvers for Configuration Management: Designed and tested scalable resolvers for managing data configurations, ensuring seamless backend integration and robust data ingestion. These projects leveraged technologies such as Delta Lake, AWS Glue, Trino, PySpark, and Go, addressing scalability, reliability, and efficiency challenges. The work enhanced Sundial's data systems by improving data reliability, streamlining workflows, reducing costs, and ensuring future scalability.

Tool used (Development tools - H/w, S/w) : Delta Lake Dagster Amazon EMR PySpark AWS Glue Trino Go Programming Language GraphQL Postman SQLAlchemy Amazon S3

Objectives of the project : Successfully evolve the Schema of a delta table and store metadata on AWS Glue

Major Learning Outcomes : Learnt About Delta Table, PySpark, TrinoQuery Engine, Dagster

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment at Sundial Systems is dynamic and collaborative, fostering innovation and continuous learning. The team, consisting largely of individuals within a similar age group, creates a friendly and approachable atmosphere. Colleagues are highly supportive and always willing to share insights, which encourages both personal and professional growth.

The company provides opportunities to work with the latest technologies in the field of data engineering, such as Delta Lake, AWS Glue, Trino, and Go. This exposure not only enhances technical expertise but also enables hands-on experience with scalable and cutting-edge solutions. The culture emphasizes problem-solving and adaptability, ensuring that employees are equipped to tackle complex challenges.

Expectations from the company include clear guidance and feedback, opportunities to work on impactful projects, and access to resources for skill development. Sundial Systems meets these expectations by providing mentorship, fostering teamwork, and encouraging proactive contributions. Overall, the supportive environment and emphasis on innovation make Sundial an excellent place for learning and professional advancement.

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

PS-II Station : Supra Sciences Private Limited, Hyderabad, Hyderabad

Faculty

Name: Bharathi R .

Student

Name: TANVI GUPTA .(2021A5PS1445P)

Student Write-up

PS-II Project Title: R&D in pharma peptide manufacturing , Quality Control for peptides , R&D in protected amino acid manufacturing , Pharma resin manufacturing

Short Summary of work done during PS-II : During my PS2 at Supra Sciences Pvt. Ltd., Hyderabad, I worked on multiple projects focused on pharmaceutical R&D and quality control for

peptides. My primary responsibilities included the synthesis of peptides through solid-phase methods, involving the use of CTC and Wang resins, Fmoc-protected amino acids, and coupling agents. I also contributed to the in-house manufacturing of high-purity protected amino acids by optimizing reaction conditions and ensuring minimal impurities. In the domain of quality control, I performed analyses using advanced instruments such as the UV-Visible spectrophotometer and Karl Fischer titrator, ensuring compliance with pharmaceutical standards. I developed expertise in preparing samples, calibrating instruments, and validating analytical methods to assess peptide purity and moisture content. Additionally, I gained hands-on experience in resin manufacturing, focusing on enhancing resin properties like stability and loading capacity to improve peptide synthesis efficiency. Throughout the internship, I honed my problem-solving skills, optimized processes for scalability, and ensured consistency in production and QC protocols. This experience enriched my technical knowledge in peptide technologies and pharmaceutical manufacturing.

Tool used (Development tools - H/w, S/w) : Hardware: Ultrasonicator . Karl Fischer Titrator – Used for moisture content analysis in peptides and resins. UV-Visible Spectrophotometer – Employed for peptide purity analysis. Magnetic Stirrer – Used for homogeneous mixing during peptide synthesis and

Objectives of the project : R&D in Pharma Peptide Manufacturing : To develop efficient processes for synthesizing pharmaceutical-grade peptides using solid-phase synthesis techniques, To optimize reaction conditions, including coupling and deprotection, for high yield and purity ,To explore new methodologies for improving scalability and cost-effectiveness in peptide production; Quality Control for Peptides : To establish robust QC protocols for peptide analysis, ensuring compliance with pharmaceutical standards, To utilize techniques like UV-Vis spectrophotometry, Karl Fischer titration, and ultrasonication for purity, moisture content, and calibration assessments, To validate analytical methods and ensure consistency in the quality of peptide batches; R&D in Protected Amino Acid Manufacturing : To synthesize high-purity protected amino acids, critical intermediates in peptide manufacturing, To develop and optimize in-house methods for introducing protective groups such as Fmoc or Boc, To enhance reaction conditions for reduced impurities and increased product stability; Pharma Resin Manufacturing : To design and produce high-performance resins (e.g., CTC, Wang resins) tailored for solid-phase peptide synthesis, To optimize resin properties such as loading capacity, swelling, and stability

for improved synthesis efficiency , To ensure quality standards through rigorous testing and analysis of manufactured resins.

Major Learning Outcomes : Gained hands-on experience in solid-phase peptide synthesis, including resin preparation, amino acid coupling, and deprotection techniques ; Developed skills in QC methods such as UV-Vis spectrophotometry, Karl Fischer titration, and calibration techniques to ensure product compliance with pharmaceutical standards; Learned the synthesis of protected amino acids, focusing on Fmoc protection and optimization of reaction parameters for high-purity output; Acquired knowledge of manufacturing pharmaceutical-grade resins, including understanding resin properties and their applications in peptide synthesis ; Enhanced problem-solving abilities by addressing challenges in peptide manufacturing, quality assurance, and scaling up production processes.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Supra Sciences Pvt. Ltd. was dynamic and research-driven, with a strong focus on innovation in pharmaceutical R&D and manufacturing. The team consisted of professionals with expertise in peptide synthesis, quality control, and resin manufacturing, fostering a collaborative atmosphere where knowledge sharing was encouraged. My mentor, Basanthi Mam, along with other senior staff, guided me through various technical tasks, providing valuable insights into the industry's best practices and quality standards.

The company emphasized hands-on learning, allowing me to engage directly in the synthesis and quality control of peptides, as well as the development of protected amino acids and pharmaceutical resins. I was expected to contribute effectively to project tasks, optimize processes, and assist in troubleshooting challenges in peptide synthesis and QC protocols. Accuracy, attention to detail, and adherence to pharmaceutical standards were core expectations, ensuring that all tasks were completed with precision.

Additionally, the company aimed to provide a platform for me to apply theoretical knowledge in a real-world setting while improving my problem-solving and technical skills. I was encouraged to actively participate in discussions and suggest improvements in the processes I worked on. The exposure to state-of-the-art equipment and industry-specific methodologies helped me gain a deeper understanding of the pharmaceutical R&D domain, while fostering personal and professional growth.

Academic courses relevant to the project : Biochemistry , pharmaceutical chemistry , PMQC , pharmacology , IMA

PS-II Station : Swift, Bengaluru

Faculty

Name: Arindam Roy .

Student

Name: SAI HARSHAVARDHAN BATTU(2020B1A81921G)

Student Write-up

PS-II Project Title: Optimizing fulfillment and reporting for seller & partner scalability

Short Summary of work done during PS-II : 1. Formulated 10+ Data Studio dashboards on BigQuery (SQL), allowing the CXOs to track the Key Performance Indicators of our product-line 2. Facilitated eKart's integration with our SaaS offering - Zerox by translating custom specifications to wireframes, resulting in a smooth rollout 3. Handled RCAs for daily tech escalations raised by 1000+ active sellers and 7+ active courier-partners, ensuring maximum customer retention 4. Crafted a BRD assessing Loyalty Programs as a part of our marketplace offering to cater to 8.8M+ end-consumers in the Swift ecosystem 5. Partnered with Operations team and slashed report generation time by > 50% through analytical tools, boosting overall ops-escalation TAT 6. Constructed wireframes for 5+ features of our Fulfillment and Escalation Management System, through insights from internal teams & sellers

Tool used (Development tools - H/w, S/w) : SQL, Looker Studio, MongoDB, Figma, MS Office Suite, Adobe Creative Suite, JIRA

Objectives of the project : To strategize and assess new business projects (through a Business Requirements Document), Analytics (through SQL, MongoDB querying and Looker Studio dashboards), tech escalation handling (Root Cause Analysis)

Major Learning Outcomes : Analytics, Logistics-tech infrastructure, Wireframing, Root-cause Analysis

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : harsh work-culture, long work-hours, 6 day work-week, pushes your limits. You gotta volunteer to take up good tasks / projects in-order to put these hours to best use, or you'd end up doing redundant and manual tasks.

Academic courses relevant to the project : None

PS-II Station : Swift, Bengaluru

Faculty

Name: Arindam Roy .

Student

Name: SHIVIKA DHANDHANIA .(2021A1PS2140P)

Student Write-up

PS-II Project Title: BUSINESS STRATEGY AND ANALYSIS FOR ECOMMERCE LOGISTICS

Short Summary of work done during PS-II : During my internship as a Founder's Office Intern, I worked closely with the founders and the business team responsible for courier allocation according to seller preferences while maintaining profitable business for us and lowering client churn. I also liaised with various courier partners in the warehousing segment and managed warehouse operations for a client resulting in fast shipment movement and client satisfaction. This experience offered me hands-on exposure to the challenges of managing operations in India's fast-paced e-commerce sector. The final project I undertook was related to cost prediction hinged on zone prediction based on the source and destination pincode of a shipment.

Tool used (Development tools - H/w, S/w) : Google Looker Studio, Bigquery

Objectives of the project : Improve gross margin of the business

Major Learning Outcomes : SQL, RCA, Dashboarding, Operations

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : High work hours, no respect or appreciation

Academic courses relevant to the project : NA

PS-II Station : Synchrony, Hyderabad, Hyderabad

Faculty

Name: Y V K Ravi Kumar .

Student

Name: BILAKANTI SATHWIK REDDY(2021A7PS0225H)

Student Write-up

PS-II Project Title: IVR Data Automation and Database Management

Short Summary of work done during PS-II : Focused on automating data validation and synchronization processes within the IVR database. Developed Procedures to identify and resolve data inconsistencies, validate data quality, and synchronize records between environments. Implemented Dynamic configurations to enable seamless validation across multiple tables, while data migration processes were streamlined to improve efficiency and address challenges related to automation and data integrity.

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

Objectives of the project : To ensure accurate IVR data by automating validation, synchronization, and migration processes.

Major Learning Outcomes : Developed skills in working with databases and managing IVR systems. The experience helped improve problem-solving and teamwork abilities by working on real tasks and collaborating with the team.

Details of Papers/patents : N.A.

Brief Description of working environment, expectations from the company : The working environment at Synchrony is flexible and focuses on professional growth at the same time. It emphasizes work-life balance and diversity within the company. The team is supportive, with open communication that encourages learning and development. The company provides opportunities for hands-on experience, allowing interns to contribute meaningfully to real projects. Expectations

from Synchrony include a focus on delivering quality results, attention to detail, and the ability to work independently while contributing to team goals. The company values innovation, teamwork, and continuous improvement.

Academic courses relevant to the project : Database Systems

PS-II Station : Synchrony,Hyderabad, Hyderabad

Faculty

Name: Y V K Ravi Kumar .

Student

Name: SANCHIT BOLINJKAR(2021A7PS2997H)

Student Write-up

PS-II Project Title: Software Development

Short Summary of work done during PS-II : Made 2 PoCs. 1) Login/SignUp page using react, spring boot and my SQL 2) Standalone payment estimator using next.js. used libraries like rc slider and re graphs and used pre rendering for faster loading time

Tool used (Development tools - H/w, S/w) : React, Next, Spring Boot, MySQL

Objectives of the project : Completion of several PoCs and learning workflow in a corporate space.

Major Learning Outcomes : Java, Spring Boot, Spring MVC, React.js, Next.js

Details of Papers/patents : n/a

Brief Description of working environment, expectations from the company : very chill and supportive environment where mentors encouraged us to shadow them and participate in daily calls. Focus of csr and other volunteer activities along with work

Academic courses relevant to the project : OOPs

PS-II Station : Synergiz Global - IT, Hyderabad

Faculty

Name: K Venkatasubramanian .

Student

Name: APOORV SRIVASTAVA(2021A3PS2270G)

Student Write-up

PS-II Project Title: Advanced Billing System for Clients

Short Summary of work done during PS-II : There is an NDA, but I can reveal that I was put through a challenge of using technologies I had never used in the past, so I had a lot to learn. But finally, we implemented a great system to create, calculate, digitally sign, and manage bills.

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

Objectives of the project : Implement a designed billing system to suit the client's needs

Major Learning Outcomes : Development, teamwork, strategy

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Challenging, but very respectful and collaborative. Never did I feel that I was stressed, I was always excited when I woke up for work. Synergiz offers a very helpful environment and is a great place to grow. Expectations from the company evolved as I worked through my tasks, and they gained confidence as I kept fulfilling my tasks.

Academic courses relevant to the project : Computer Programming

PS-II Station : TATA MOTORS, , Pimpri Pune, Pune

Faculty

Name: Ravi Shrikrishna Reosekar .

Student

Name: SAMARTH JAISWAL .(2021A4PS1352P)

Student Write-up

PS-II Project Title: i.Digitalization of Inventory Management System. ii.Market Share Reconciliation By Analyzing The Registration Data

Short Summary of work done during PS-II : Project 1: Digitalization of SCV Inventory Management System This project focused on optimizing Tata Motors' Small Commercial Vehicle

(SCV) inventory management process. The manual system was replaced with a Power BI dashboard for real-time tracking of inventory across locations like the Pune and UTK plants and various RSOs in India. Key features included aging buckets for inventory visibility, FIFO optimization, and automated data extraction from SAP. The solution reduced manual effort, minimized losses due to aging inventory, and saved up to Rs. 40 lakhs through better rework and discount management. Challenges included automating SAP data extraction, which required innovative problem-solving and collaboration. **Project 2: Market Share Analysis of Commercial Vehicle Line** This project aimed to analyze market share discrepancies by comparing sales data with vehicle registration data from the Vahan portal. The analysis identified regional trends, reasons for non-registration, and insights into operational gaps. It highlighted key factors affecting market share, such as delays in government processes and customization bottlenecks. The recommendations included streamlining financial processes, enhancing body-building operations, and improving customer engagement to reduce cancellations. The project provided actionable insights to improve Tata Motors' competitive position and decision-making.

Tool used (Development tools - H/w, S/w) : SAP (Systems, Applications, and Products): For extracting and managing inventory data. Power BI: For building interactive dashboards and real-time data visualization. Microsoft Excel: For initial data cleaning, analysis, and reporting. Vahan Portal: For a

Objectives of the project : 1. 2. 3. **Digital Transformation:** Implementing digital solutions to streamline inventory management processes for SCVs, aiming for efficiency and accuracy in inventory control and supply chain operations. **Process Improvement:** Analyzing current inventory management practices and identifying areas for improvement, such as inventory tracking, stock replenishment, and minimizing stockouts. **Technology Integration:** Introducing modern technologies and software tools to enhance inventory visibility, optimize storage space, and automate routine inventory tasks.

Major Learning Outcomes : Learnings

1. Technical Skills:

- o Gained proficiency in using Power BI and Microsoft Excel for advanced data visualization and real-time dashboard creation.
- o Learned the intricacies of data extraction and transformation using Power Query and SAP APIs, enhancing technical problem-solving skills.

2. Inventory Management Insights:

- o Developed a deep understanding of inventory dynamics, including aging analysis, FIFO implementation, and regional optimization.
- o Realized the financial impact of inventory mismanagement and the importance of aligning operations with sales strategies to minimize costs.

3. Collaboration and Communication:

- o Coordinating with cross-functional teams, including analytics, IT, and operations, emphasized the importance of clear communication and teamwork in achieving shared goals.
- o Gathering feedback and adapting the dashboard based on diverse user needs taught valuable lessons in stakeholder engagement and iterative development.

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4. Adaptability and Problem-Solving:

- o The experience underscored the need to be flexible and solution-oriented when faced with technical roadblocks or unforeseen challenges.
- o Each obstacle presented an opportunity to think creatively and implement innovative solutions, such as customizing the data pipelines for seamless automation.

5. Project Management:

- o Learned how to break down a complex project into manageable tasks, set realistic timelines, and monitor progress to ensure on-time delivery.
- o Balancing long-term goals with short-term milestones helped maintain focus and momentum throughout the project.

Learnings

1. Importance of Aging Analysis

- o Understanding the distribution of non-registration reasons across aging buckets clarified how delays evolve over time. This learning emphasized the need to target interventions at specific stages (e.g., 3-6 months, 7-12 months) to mitigate long-term impacts.

2. Regional Variations in Challenges

- o Each region exhibited distinct trends and challenges, such as government delays in MH CG and financial constraints in TN KL. This highlighted the importance of tailoring solutions to regional contexts rather than applying a one-size-fits-all

approach.

3. Cross-functional Dependencies

o Delays due to Under Body-building and financial issues underscored the interconnected nature of manufacturing, finance, and sales functions. Effective collaboration between these teams is critical to resolving systemic issues and enhancing overall efficiency.

4. Impact of External Factors

5. o Government-related delays and financial constraints illustrated how external factors, such as bureaucratic processes or customer liquidity, significantly affect internal operations. This highlighted the importance of stakeholder management and proactive engagement with external entities.

Value of Data Visualization and Analysis

6. o The use of structured data (e.g., regional breakdowns, aging buckets) and dashboards made it easier to identify trends and root causes. This reinforced the value of tools like Power BI in enabling real-time monitoring and decision-making.

Customer Behavior and Market Dynamics

o Insights into cancellations revealed how shifts in customer priorities and market conditions can disrupt operations. This learning emphasized the need for agility in responding to market demands and improving customer satisfaction.

Details of Papers/patents : N.A.

Brief Description of working environment, expectations from the company : The working environment at Tata Motors was dynamic, collaborative, and innovation-driven, emphasizing problem-solving and continuous improvement. The team provided valuable guidance and fostered a supportive culture, enabling seamless communication across departments like analytics, IT, and operations. Modern tools like SAP, Power BI, and Excel were readily accessible, which facilitated efficient project execution.

Expectations from the company revolved around leveraging data-driven decision-making to optimize operations and contribute to organizational goals. For the first project, the focus was on digitizing the inventory management system, ensuring real-time tracking, and minimizing inefficiencies in inventory flow. In the second project, the goal was to deliver actionable insights on market share discrepancies, highlighting areas for operational and financial improvements.

The company encouraged innovation, autonomy, and a hands-on approach to problem-solving, while providing resources to tackle challenges such as data automation and integration. This collaborative and challenging environment offered valuable learning opportunities, enabling a strong alignment between the company's objectives and personal development goals.

Academic courses relevant to the project : All mechanical CDCs

PS-II Station : TATA MOTORS, , Pimpri Pune, Pune

Faculty

Name: Ravi Shrikrishna Reosekar .

Student

Name: SIDDHARTH DESHMUKH .(2021A4PS2672P)

Student Write-up

PS-II Project Title: ANALYSIS OF VEHICLE TEST OUTCOMES, DIGITAL HISTORY CARDS

Short Summary of work done during PS-II : The first project focuses on the analysis of vehicle test outcomes using AI/ML techniques. The second involves developing digital history cards for Harrier and Safari. The third project explores the creation of a Retrieval-Augmented Generation (RAG)--powered maintenance advisor chatbot.

Tool used (Development tools - H/w, S/w) : IPMS, Recording and analyzing manufacturing data VAST, Anomaly detection on the driving test track LangChain, Orchestrating the chatbot for PV Maintenance Advisor Pinecone, Vector database for embedding storage and retrieval OpenAI GPT, Query answering an

Objectives of the project : ANALYSIS OF VEHICLE TEST OUTCOMES, DIGITAL HISTORY CARDS

Major Learning Outcomes :

I mastered AI/ML techniques for predicting test outcomes like Wheel Alignment, Headlamp Aiming, and RBT, along with prescriptive solutions.

I gained expertise in analyzing alignment data, improving Cp/Cpk values, and optimizing manufacturing processes.

I became proficient in tools like IPMS and VAST for quality control and anomaly detection.

I contributed to the Agent Orchestrator for a RAG POC and chatbot development for PV Maintenance Advisor.

I learned effective collaboration, reporting, and data handling through diverse tasks, including audits and presentations.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company :

The working environment at Tata Motors was dynamic and offered valuable exposure to real-world challenges in the automotive industry. I appreciated the opportunity to work with advanced tools like IPMS and VAST, as well as contribute to projects involving AI/ML and process optimization. The team I worked with was knowledgeable and supportive, and I gained insights into the company's manufacturing and quality control processes.

However, the internship lacked a structured framework, which often made it challenging to navigate through tasks. Clear goals and timelines were not always provided, leaving interns to figure out many things independently. While this encouraged self-learning, it also resulted in delays and inefficiencies, especially when tools or data were unavailable, and there was limited guidance to address such issues.

Support from the company could have been more consistent, as access to resources like a functional PC or timely data was often delayed. These hurdles slowed down the pace of progress and impacted the overall internship experience.

Despite these challenges, the experience helped me grow both technically and professionally. However, I believe that a more structured internship program and better support for interns would

significantly enhance the learning experience and align it more closely with the company's expectations.

Academic courses relevant to the project : AI,ML,DSA,DBMS,Mech CDCS

PS-II Station : Tectonic Technologies Inc - Business Analytics, Bangalore

Faculty

Name: Sandeep Kayastha .

Student

Name: DIVYANSH SARASWAT(2021A4PS2899G)

Student Write-up

PS-II Project Title: Root Cause Analysis for D2C Brands on Shopify

Short Summary of work done during PS-II : During my internship at Tectonic, I focused on enhancing the RPS for D2C brands leveraging Shopify storefronts. This work combined robust data analysis, A/B testing, and Root Cause Analysis to uncover performance bottlenecks and implement targeted solutions. By adopting a data-driven strategy, I identified actionable insights into the efficacy of growth drivers such as product sorting, checkout optimization, dynamic discounting, and personalized recommendations, enabling measurable improvements in revenue generation.

Tool used (Development tools - H/w, S/w) : VS code, MS Excel, SQL

Objectives of the project : Improve RPS for current clients on Shopify and analyze their growth metrics.

Major Learning Outcomes : Advanced SQL Skills: The ability to write complex SQL queries using JOINS, CTEs, and subqueries to extract and analyze large datasets was significantly developed.

Python Scripting: Python scripting was used to automate data extraction and analysis tasks, improving efficiency and accuracy in generating reports.

Root Cause Analysis: The application of Root Cause Analysis to diagnose performance issues was a critical skill gained. This analytical approach enabled the identification of underlying factors driving RPS trends.

A/B Testing and Experimentation: The ability to design, run, and analyse A/B tests provided practical insights into how data-driven experimentation can optimize user experience and improve key performance metrics.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Flexible working hours, WFO and WFH. Decent work environment in terms of team collaboration and company culture.

Academic courses relevant to the project : DBMS

PS-II Station : Tectonic Technologies Inc - Product Management, Bangalore

Faculty

Name: Sandeep Kayastha .

Student

Name: PAREEK ARINDAM(2020B2A72037G)

Student Write-up

PS-II Project Title: Strategic Development and Implementation of E-Commerce Platform Enhancements

Short Summary of work done during PS-II : The project involved analyzing global e-commerce platforms to identify key trends and benchmark features such as wishlists, subscriptions, and advanced search tools. Detailed solutioning was done for growth levers like checkout extensions and wishlist configurations, focusing on usability and scalability. Additionally, I worked on client-specific features, aligning unique requirements with broader product goals, and developed an advanced search feature to improve user engagement. The work included collaborating across teams, preparing detailed documentation, and ensuring timely project execution.

Tool used (Development tools - H/w, S/w) : Craft, Linear, Postman, Superset, Preset, VS Code, Miro, Notion

Objectives of the project : To analyze and benchmark features in the ecommerce market. To develop scalable solutions for our AI platform. To enhance platform capabilities and user engagement.

Major Learning Outcomes : Improved analytical skills through feature benchmarking.
Gained technical expertise in creating webpages, ReactJs, Javascript.
Enhanced understanding of user-centric design and product scalability.

Details of Papers/patents : No patents

Brief Description of working environment, expectations from the company : The working environment was collaborative and goal-oriented, providing ample opportunities to interact with cross-functional teams. The company emphasized innovative solutions, aligning well with project objectives. Expectations included delivering scalable and client-focused solutions, adhering to

tight deadlines, and maintaining high-quality outputs. The supportive team environment and accessible mentors enhanced the overall learning experience.

Academic courses relevant to the project : C++, DBMS

Data Analytics

Machine Learning

Product Management

PS-II Station : Tectonic Technologies Inc - Software Engineering, Bangalore

Faculty

Name: Pradheep Kumar K .

Student

Name: KALIDAS PRATHEEP PARAMADATHIL(2021A7PS1766G)

Student Write-up

PS-II Project Title: Web Store Development and its Intricacies

Short Summary of work done during PS-II : Development of a total of 13 demo website storefronts for Tectonic, along with 2 complete client store rebuild/reworks. Furthermore, I was also involved in a few storesync jobs that I was tasked with completing

Tool used (Development tools - H/w, S/w) : VS Code, Postman, Warp, Elemason & Juiz (Custom frameworks), Figma, Excel, Mac M3 Pro (H/w)

Objectives of the project : Creating websites for e-commerce clients and specific organisations using custom-built front-end development frameworks.

Major Learning Outcomes : At Tectonic, I honed my skills in prioritizing issues, collaborating with co-workers, and addressing user pain points effectively. I also gained hands-on experience in product management, understanding its lifecycle and cross-functional team dynamics.

Details of Papers/patents : - (none)

Brief Description of working environment, expectations from the company : The company is in its early growth phase, which contributes to a dynamic and sometimes high-pressure environment. Over time, as the organization matures and expands, these conditions are expected to shift. Currently, expectations are influenced more by client needs than by established internal policies, which can result in occasional inconsistencies and strict requirements. However, my coworkers and managers were a delight to work with, and I enjoyed my experience.

Academic courses relevant to the project : Computer Programming

PS-II Station : Tectonic Technologies Inc - Software Engineering, Bangalore

Faculty

Name: Pradheep Kumar K .

Student

Name: BAIKADI KARTHIK REDDY(2021A7PS2737G)

Student Write-up

PS-II Project Title: E-Commerce Storefront Development on Custom Frameworks.

Short Summary of work done during PS-II : Development of Storefronts for shopify-based demo-targets and clients on the aforementioned frameworks, which are optimized for better web performance and growth.

Tool used (Development tools - H/w, S/w) : Postman, Elemason & Juiz (Custom Frameworks), VS Code

Objectives of the project : Building Websites for E-Commerce clients and targeted organisations on custom made front end development frameworks.

Major Learning Outcomes : A steady foundation for further progress as a frontend dev, general exposure to a high-demand and high-functioning environment.

Details of Papers/patents : none.

Brief Description of working environment, expectations from the company : Working environment could be fairly demanding, mostly due to the early stages of growth the company is going through. This description could not stay entirely relevant for a long period of time, especially so if the organization continues its trajectory in growth. Expectations are generally a product of client communications rather than company policies, so they could be rigid at times and irregular.

Academic courses relevant to the project : Computer Programming.

PS-II Station : Tega Industries - Samali, Samali

Faculty

Name: Arun Maity .

Student

Name: MADHUPALLI SATYA MANASWI(2020B3A41496G)

Student Write-up

PS-II Project Title: Top Surface Impression Defects in Screen Products

Short Summary of work done during PS-II : I facilitated regular meetings, ensuring efficient discussions and decision-making. By utilizing Gantt charts, I meticulously monitored project progress, identified potential bottlenecks, and escalated issues to relevant stakeholders. To address a recurring issue of impression defects, I conducted a rigorous root cause analysis to pinpoint the underlying causes. Additionally, I collected and tabulated the results of the analysis, identifying trends and patterns that informed corrective actions. These insights were shared with the team to prevent future occurrences of impression defects. Through these efforts, I significantly contributed to 100% reduction in visual defects.

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

Objectives of the project :

- Form a Cross-Functional Team (CFT) with members from production, mould design, mould assembly, quality and PMG departments to make a solution with perspectives from all departments.
- Brainstorm together to collect data and form viable solutions.
- Identify the root cause(s) of the impression defects.
- Form an action plan using a Gantt chart to reduce the occurrence of impression defects.
- Execute the action plan through design changes and production trials.
- Evaluate the action plan's success and the project's overall success.
- Expand the scope of the project after successful implementation of the project under the current scope.

Major Learning Outcomes : Process of Injection Moulding, The layout and organisation of the plant, Cross-functional communication and coordination.

Details of Papers/patents : No papers/patents

Brief Description of working environment, expectations from the company : The work environment is relatively relaxed, with a laid-back atmosphere. While there may not be a consistently high workload, proactive individuals often find themselves seeking additional tasks to optimize their time and contribute meaningfully. While the company has minimal expectations, it provides an opportunity for self-directed learning and skill development.

Academic courses relevant to the project : Manufacturing Processes and Manufacturing Management

PS-II Station : Teleperformance, Gurgaon

Faculty

Name: Harish Kumar Aggarwal .

Student

Name: SHREESH GUPTA .(2020B4A41974P)

Student Write-up

PS-II Project Title: Developing Mathematical, AI and ML models to increasing the range of services provided by Teleperformance

Short Summary of work done during PS-II : Interacted with both, internal Teleperformance stakeholders, and external clients, to build custom models to address different problem statements

Tool used (Development tools - H/w, S/w) : MS SQL Server, Azure AI, Meta LLAMA, GPT3.5 Turbo, GPT 4, VS Code, MS Copilot, python

Objectives of the project : Integrating mathematical, AI and ML models to Teleperformance's operations to make them more efficient and streamlined

Major Learning Outcomes : Gain experience in AI, ML, and GenAI models, and how they can be modified to suit the needs of the industry.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Excellent working environment. Work in hybrid mode. It is easy to work from home. But in return, we are expected to put in extra effort as and when required. Overall good work culture.

Academic courses relevant to the project : Optimization, Operations Research

PS-II Station : Telus International - Product Management, Bengaluru

Faculty

Name: S.P.Vimal .

Student

Name: ASHINI R KATYAR .(2021A4PS1606P)

Student Write-up

PS-II Project Title: GTS Rewrite

Short Summary of work done during PS-II : 1. I created PRDs (Product requirement documents) for new functionalities developed. 2. Replicated projects and provided demonstration to the Project Managers and resolved their queries.

Tool used (Development tools - H/w, S/w) : Excel, Slack, Notion, Microsoft PowerPoint, GTS, FTS, Annotation Workbench, Linear

Objectives of the project : Creating PRDs

Major Learning Outcomes : Documentation skills (Creating PRDs), Communication and Presentation skills

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Cooperative workforce, Lots of exposure

Academic courses relevant to the project : Soft skills for Professional, Organizational Psychology, Professional Ethics

PS-II Station : Telus International - Product Management, Bengaluru

Faculty

Name: S.P.Vimal .

Student

Name: SHUSWABHIT SHADANGI .(2021A4PS2405P)

Student Write-up

PS-II Project Title: Product Management of AI features of GTS

Short Summary of work done during PS-II : Worked on creating product requirement documentations, and seeing product development cycle for multiple features

Tool used (Development tools - H/w, S/w) : Notion, Slack, Google Suite, Excel, Linear, Smartlook, Gitbook

Objectives of the project : Learn the basics of Product Management & Implement knowledge to enhance the existing tool to be more efficient and feature loaded

Major Learning Outcomes : Got a brief overview of product management, with the various stages of development. How an idea is formed and the feature is ultimately developed. It helps get an overall perspective of why product management is important in an organisation, and how it mitigates certain inefficiency, which could cost the company in the long run.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment is conducive to helping you learn. You need to be vocal if you dislike or do not understand any parts associated with the work. But if you are respectful and open to learning, with a little bit of luck in getting a good mentor, you will learn a lot.

Academic courses relevant to the project : Design Thinking for Innovation, Business Communication, Technical Report Writing

PS-II Station : Telus International - Product Management, Bengaluru

Faculty

Name: S.P.Vimal .

Student

Name: AARON BIMBRAHW .(2021ABPS1662P)

Student Write-up

PS-II Project Title: Product Management for the FTS Tool

Short Summary of work done during PS-II : During my PS-II internship, I contributed to two key projects: enhancing the FTS tool and analyzing the Expert's Engine. For the FTS tool, I introduced features like one-click workflow duplication, read-only access for locked workflows, and criteria-based job deletion, addressing key inefficiencies in project management. I also enhanced customization options, enabling better organization and usability. In the Expert's Engine project, I participated in automating task-expert matching and demonstrated its effectiveness in improving task allocation precision and project setup efficiency. These projects significantly improved workflow transparency, reduced manual effort, and enhanced productivity, showcasing my ability to deliver impactful solutions in product management.

Tool used (Development tools - H/w, S/w) : Software: TablePlus, Retool (frontend development), Slack, and internal tools for workflow optimization. Hardware: Standard workstation setups with company-provided configurations.

Objectives of the project : To streamline project management workflows in the FTS platform by introducing innovative features like workflow duplication, read-only access for locked workflows, and criteria-based job deletion, thereby enhancing efficiency and reducing manual errors. To optimize task allocation processes using the Expert's Engine, enabling precise task-expert

matching and automation of project setups for improved productivity and accuracy. To develop user-centric solutions by addressing specific pain points in workflow customization, transparency, and workspace organization.

Major Learning Outcomes : Acquired a strong understanding of product and project management, especially in identifying user pain points, prioritizing features, and delivering impactful solutions.

Enhanced technical expertise in frontend development using Retool and workflow optimization tools, with a focus on creating intuitive user interfaces and customizable solutions.

Gained insights into the implementation and rollout of automation systems, emphasising collaboration, problem-solving, and process improvement in real-world settings.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment at the company was dynamic and collaborative, fostering a balance between innovation and execution. Teams emphasized cross-functional collaboration, ensuring that product management insights aligned with technical feasibility and user needs. The company provided ample learning opportunities, encouraging interns to take ownership of impactful projects while offering mentorship and resources for professional growth. Expectations from the company included clear communication, constructive feedback, and opportunities to develop user-centric solutions. This environment allowed me to contribute effectively while honing my technical and managerial skills, preparing me for future challenges in consulting and product management.

Academic courses relevant to the project : Computer Programming
Operations Management

PS-II Station : Telus International - Product Management, Bengaluru

Faculty

Name: S.P.Vimal .

Student

Name: MAYANK GARG .(2021ABPS1674P)

Student Write-up

PS-II Project Title: FTS Dashboard Creation

Short Summary of work done during PS-II : I worked on multiple projects. These included a onboarding course and website for global team, PRDs for feature on FTS(internal software) and data preprocessing for ML requirements.

Tool used (Development tools - H/w, S/w) : Notion, Excel, Slack, Google Suite

Objectives of the project : Create PRD for native dashboard in FTS .

Major Learning Outcomes : Documentation skills (Creating PRDs), Communication and Presentation skills

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Collaborative workforce, Lots of exposure, good work life balance

Academic courses relevant to the project : Organisational Psychology, Technical Report Writing

PS-II Station : Telus International - Prompt Engineers - Code, Bengaluru

Faculty

Name: S.P.Vimal .

Student

Name: SHREYAS THIMAPPA BINDUMADHAVAN(2020B3A30837H)

Student Write-up

PS-II Project Title: Solutions Engineering

Short Summary of work done during PS-II : Worked primarily as a solutions engineer - lot of bug fixes, or data ingestion/ pipelining work into our tools.

Tool used (Development tools - H/w, S/w) : Python, SQL, Computer Vision, RLHF, etc.

Objectives of the project : Working closely with the project management team in designing & implementing technical solutions for multiple projects and ensuring their efficacy and smooth data integration for various projects. • Identify and provide timely workarounds and solutions when possible for incoming technical issues in project execution • Articulating features and differentiate solutions offerings to audiences ranging from project managers to end clients. • Help in creating analytics dashboards for customers and fulfilment team (PM & supply team). Writing queries (in SQL). • Documenting the technology solutions in precise detail for them to be reproducible in the future. • Interacting with the clients to understand and help them in the data-integration process if needed. • Driving operational efficiency by writing scripts & APIs (Python, JS) to automate day to day work.

Major Learning Outcomes : Intro to Computer Vision, GenAI, and AI in general.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Supportive environment, everyone is willing to help. Feel free to ask for more work if you get done with your tasks early.

Academic courses relevant to the project : Python, DBMS. Everything else can be picked up on the go.

PS-II Station : Telus International - Prompt Engineers - Logic and Reasoning, Bengaluru

Faculty

Name: S.P.Vimal .

Student

Name: PUSHPENDRA SINGH PAYAL .(2020B4A80824P)

Student Write-up

PS-II Project Title: Prompt Engineers - Logic and Reasoning

Short Summary of work done during PS-II : We were first admitted to logic and reasoning role where our work was mostly to rate PRP and images for clients and internal tool optimization. It was not that skill intensive. Then my team was changed to Pre-sales solution engineering which provides solutions to clients. This work was very interesting. I got to know a lot about the internal tools and programming languages. I worked on many live projects such as NVIDIA, Apple Foods, CISCO, OLA, MAGNA and many more. Overall, the work is really interesting (it was boring in the beginning). Everybody was really helpful and always present in case of problems.

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

Objectives of the project : The PS II folks will be working day to day with the product team to deliver on the quarterly/monthly roadmaps. The work would include competitive analysis, specification writing, user research, and working with engineering/design teams.

Major Learning Outcomes : Learned a couple of new languages like SQL and Python. Got to know a lot about collecting data for training AI model.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Work environment is very chill. The primary focus of the company is to get the work done and not on how it is done. There are no strict office timings and most of the employees come to office only on Tuesdays and Wednesdays. Everybody is helpful and nice. The task assigned to me were also monitored properly and their difficulty were gradually increased. Company mostly wants dual degree people and converts almost all the dual degree to full time.

Academic courses relevant to the project : Computer Vision

PS-II Station : Telus International - Prompt Engineers - Logic and Reasoning, Bengaluru

Faculty

Name: S.P.Vimal .

Student

Name: YASH CHAUHAN(2020B4A81683G)

Student Write-up

PS-II Project Title: Gen-AI Presales Solutions Team

Short Summary of work done during PS-II : Created dashboards in Retool using SQL to help the global operations team manage data collection and processing more effectively. Built a FastAPI application from scratch for a client project, which was later added as a feature in the FTS product. Improved skills in data processing and manipulation using Python and Pandas. Worked closely with clients, focusing on high-priority tasks based on their requirements.

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

Objectives of the project : To assist in Pre-sales pilots for clients by ingesting and exporting data from the tool, creating dashboards for product managers for extensive evaluation, and pre-creating and testing features for the product for specific clients before they are released in the product.

Major Learning Outcomes : Learnt how to build FastAPI and deploy them, also improved SQL skills by a lot, and gained proficiency in Python.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The company has a relaxed work environment. I initially worked in a prompt engineering role, focusing on creating and rating prompt-response pairs. Later, I transitioned to a solutions engineering role, which involves data manipulation and Python scripting. The work-life balance is generally good, with some busy days for deliverables and other days with lighter workloads. The company operates two main products: FTS, which focuses on language data collection, and GTS, which handles 3D and image-based data. Additionally, there's a BTS team under SDE that addresses ad-hoc requirements from Telus Digital.

Academic courses relevant to the project : None

PS-II Station : Telus International - Software Engineering, Bengaluru

Faculty

Name: S.P.Vimal .

Student

Name: DARSHAN KIRANKUMAR BAGRECHA(2020A8B52153H)

Student Write-up

PS-II Project Title: Backend Software Engineering

Short Summary of work done during PS-II : Worked on a more product with creation of certain APIs from scratch and implementing queues for inter/intra system communication. I also learned a lot about databases especially differences in SQL and No-SQL. I worked with go concurrency model to implement multi threaded consumers and publishers on RabbitMQ.

Tool used (Development tools - H/w, S/w) : - Golang, Java, TS, React, PostgreSQL, MongoDB, Mongo Compass, Debuggers, Grafana, Docker, Git, Postman, CircleCI.

Objectives of the project : - To learn about software development especially REST APIs, micro services and go lang

Major Learning Outcomes : I got to learn about

- traversing a huge codebase
- debugging faster and figuring out a fix for the same
- CI/CD with containerisation

- Database design and system architect design

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The work environment is great. People are very helpful and friendly towards interns. Making mistakes is encouraged as high learning opportunities and expectations are properly set.

Academic courses relevant to the project : Object Oriented Programming
Software Engineering

PS-II Station : Telus International - Software Engineering, Bengaluru

Faculty

Name: S.P.Vimal .

Student

Name: ABHAY KOLLI(2020B3A30499H)

Student Write-up

PS-II Project Title: Software Development of Annotation Tools

Short Summary of work done during PS-II : Built a feature for GTS (Data Labelling Tool) using React and Typescript. Then worked on bug fixes , working with clients on bug issues through oncall procedure.

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

Objectives of the project : Development and maintenance of Annotation Tools built on web technology

Major Learning Outcomes : Real Time experience in contributing to client projects, learnt everything from the ground up.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Great working environment, helpful teammates, encourage a culture of asking questions and personal responsibility. Expect serious work on the development side.

Academic courses relevant to the project : OOPS

PS-II Station : Telus International - Software Engineering, Bengaluru

Faculty

Name: S.P.Vimal .

Student

Name: ANIRUDH RAMESH(2021AAPS0599H)

Student Write-up

PS-II Project Title: Software Development Engineering Intern

Short Summary of work done during PS-II : Worked with the Software Development Team on many projects. Tasked with building a fullstack project as an onboarding project for internal user management. Also assisted the team on a major project for an international client, mainly tasked with urgent fixes, major code changes, etc. Managed to implement many new features, fix and publish a code change to the company codebase, and create a new Dashboard for a subproject.

Tool used (Development tools - H/w, S/w) : Javascript, Java, Python, GoLang, Retool, Internal Softwares

Objectives of the project : Assist the SDE team, in building and maintaining products, projects, and softwares for major clients

Major Learning Outcomes : - Fullstack Project Development using Agile Methodology

- Release Management (Development > Testing > Production)
- Hybrid working in a distributed team
- B2B (Business to Business) operating models

Details of Papers/patents : No papers or patents published

Brief Description of working environment, expectations from the company : Relaxed work environment, with flexible working hours and hybrid model of working. Office is good, with stocked pantry, video games, and pool table for relaxation. Company expects work at the higher level than many other internships but gives ample time to prepare. Friendly team members who help at all stages as and when required.

Academic courses relevant to the project : CS F213, OOP

CS F111, Computer Programming

CS F372, OS

CS F212, DBMS

BITS F232, FDSA

PS-II Station : Tempsens Instruments India Private Limited, Udaipur

Faculty

Name: Rajesh Kumar Tiwary .

Student

Name: NEHIL SINGH .(2020B5A41671P)

Student Write-up

PS-II Project Title: Development of High Range Heat Flux Sensors

Short Summary of work done during PS-II : The main objective of my project was to develop heat flux sensors which can work for very high ranges of heat flux. Previously the company had sensors that could go up till 30 W/cm². We were tasked to build sensors till 1000 W/cm². In the beginning, I learnt a lot regarding heat flux sensors, their working principles, production etc. Later, I started reading research papers to learn how to make higher range sensors. In the beginning, we had no success as it is hard to find new materials which can give better result but are also easy enough to work on. Slowly, we progressed and had breakthroughs. The majority of the work was to identify new materials which can potentially work as per our requirement. Then we had to test these materials. During this process, we faced many challenges which we had to be remove. In the end, we developed multiple sensors with the highest range being 800 W/cm².

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

Objectives of the project : To develop heat flux sensors of high range

Major Learning Outcomes : - Learnt the R&D process of a new product in a manufacturing company

- Read a lot of research papers which helped in improving research abilities

- Aided in the development of a commercial product which is now deployed

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment is fine. The expectations were that I should have an easy enough access to new materials and facilities.

Such access was readily provided.

Academic courses relevant to the project : Heat Transfer, Manufacturing Processes, Thermodynamics

PS-II Station : Tempsens Instruments India Private Limited, Udaipur

Faculty

Name: Rajesh Kumar Tiwary .

Student

Name: NYHA SAMAR .(2021A1PS2096P)

Student Write-up

PS-II Project Title: Optimizing the Production Process of Coil Heaters

Short Summary of work done during PS-II : The production process of coil heaters is facing significant challenges due to the occurrence of high voltage short circuits and openings in the heating elements. These defects not only compromise the quality and reliability of the heaters but also result in an elevated rejection ratio during quality control assessments. Addressing these

issues is critical to improving overall production efficiency, reducing waste, and ensuring the delivery of high-quality products to customers.

Tool used (Development tools - H/w, S/w) : EXCEL, SAP, MS VISIO

Objectives of the project : Improve the rejection ratio of coil heaters and improve the production process

Major Learning Outcomes : Deep understanding of the production process of Coil Heaters

Details of Papers/patents : NONE

Brief Description of working environment, expectations from the company : The company promotes a culture of learning and continuous improvement, with opportunities for skill development, mentorship, and career growth. Employee well-being, professional development, and work-life balance are important aspects of the culture.

Academic courses relevant to the project : MATERIAL SCIENCE, SAPM, BAV, FINMAN

PS-II Station : Texas Instruments (I) Pvt. Ltd. -Analog,Bengaluru, Bangalore

Faculty

Name: Sathisha Shet K .

Student

Name: LAASYA CHEEMALAMARRI(2021A3PS0993H)

Student Write-up

PS-II Project Title: Arbitrary Waveform Generator, GUI

Short Summary of work done during PS-II : I began by designing the signal chain for an Arbitrary Waveform Generator (AWG) using TI's 20-bit DACs, ensuring it met required performance. Following this, I created schematics for the signal chain and designed the PCB layout, optimizing the design for minimal noise and total harmonic distortion. Once the hardware design was complete, I developed a GUI for the AWG board to facilitate user interaction and waveform configuration. I also created a another GUI for a DAC Evaluation Module (EVM).

Tool used (Development tools - H/w, S/w) : Altium PCB Design, TINA simulation, Python

Objectives of the project : Analog Signal Chain Design

Major Learning Outcomes : PCB Design, Signal Chain Design for minimal noise and THD

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : The work environment was incredibly welcoming, with a friendly and supportive atmosphere. My mentor was extremely patient and took the time to explain concepts in great detail, which helped me learn a lot. The entire team was approachable and always willing to help, making the experience truly rewarding. The project itself was highly engaging, and the labs and equipment provided were extremely helpful.

Academic courses relevant to the project : Analog and Digital VLSI Design, Microelectronic Circuits, Digital Signal Processing, Digital Design



PS-II Station : Texas Instruments (I) Pvt. Ltd. -Analog,Bengaluru, Bangalore

Faculty

Name: Sathisha Shet K .

Student

Name: ADITYA MAJUMDAR .(2021AAPS0286P)

Student Write-up

PS-II Project Title: Open and Close detection of BMS contactors

Short Summary of work done during PS-II : Most OEMs are shifting to 400V/800V battery packs, with BMS contactors being used for this switchable architecture. My work needed me to check opening and closing of the contactors and searching for reliable method to detect open or close position of the contactors.

Tool used (Development tools - H/w, S/w) : MATLAB, Simulink, python, LabVIEW

Objectives of the project : Detection of opening and closing of contactors when commanded to do the same

Major Learning Outcomes : Working in a semiconductor company, learnt to use latest lab equipments, data collection and analysis, testing and confirming hypotheses and algorithms. Inculcated soft skills such as teamwork and communication.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment is fact-paced and work needed to be completed quickly. The mentor and team members were supportive, but suggested me to study and figure out problems by myself before clearing my doubts.

Academic courses relevant to the project : Control systems, Microelectronics, Signal and Systems, Analog Electronics

PS-II Station : Texas Instruments (I) Pvt. Ltd. -Digital,Bengaluru, Bangalore

Faculty

Name: Sathisha Shet K .

Student

Name: ASHISH YAKKALA(2020B4AA0489H)

Student Write-up

PS-II Project Title: P1500 Wrapper and LBIST Insertion on subchip

Short Summary of work done during PS-II : Worked on insertion of P1500-compliant core wrapper, as well as LBIST, onto a TI subchip. These mechanisms help in improved testing of the subchip, by improving the controllability and observability of the subchip involved. After these insertions, the subchip is tested using Automatic Test Pattern Generation (ATPG), which generates test patterns to detect several faults in the subchip. Then the fault coverage is calculated, and improved through further verification and changes.

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

Objectives of the project : To insert core wrapper and LBIST mechanisms on a subchip, in order to increase controllability and observability of the circuit-under-test involved.

Major Learning Outcomes : Design for Testability basics

Details of Papers/patents : IEEE 1149.1, IEEE 1687, IEEE 1500

Brief Description of working environment, expectations from the company : TI has a very supportive environment, with experts in their respective fields being ready to help when needed. TI also has very good work-life balance, with several sporting activities and volunteering events occurring in the duration of the internship.

Academic courses relevant to the project : Digital Design

PS-II Station : Texas Instruments (I) Pvt. Ltd. -Digital,Bengaluru, Bangalore

Faculty

Name: Sathisha Shet K .

Student

Name: PRANAV JAIN(2020B5A32124G)

Student Write-up

PS-II Project Title: Board Diagnostics using ATPG

Short Summary of work done during PS-II : Initially I had to learn about the basics of DFT (Design for test) and testing. This included combinational ATPG, understanding testing flow, Familiarizing with working of ATE (Automatic testing equipment). My project was to perform diagnosis of a complete PCB board using ATPG. Since a board consists of various kinds of switches, interconnects and pullup/pulldown networks, I had to design appropriate Verilog models for such components and perform ATPG using Cadence Modus tool for stuck-at and transition delay faults.

Tool used (Development tools - H/w, S/w) : Cadence Modus , Cadence Allegro, Verilog, Python, working in Linux terminal

Objectives of the project : Complete component and connectivity check for a PCB board using ATPG rather than conventional manual checking of the board.

Major Learning Outcomes : Understanding behaviour of high impedance state in tristate buffers. Understanding flow of ATPG and how the tool performs ATPG on various circuits and limitations the tool might face.
Familiarizing with digital testing and various kinds of ATE .

Details of Papers/patents : In process

Brief Description of working environment, expectations from the company : Really motivating and nurturing working environment. Everyone is eager to learn and quality time is spent discussing a problem and its solutions in detail. Mentors and managers are helpful and approachable.

Peers and colleagues are always ready to help.

Unlike normal execution based projects my project was a completely new research based project so I got to learn so many new things and also apply concepts studied in courses like digital Design, ADVSD, etc. in my work.

Academic courses relevant to the project : Digital Design
Analog Digital VLSI Design (ADVSD)

PS-II Station : Texas Instruments (I) Pvt. Ltd. -Digital,Bengaluru, Bangalore

Faculty

Name: Sathisha Shet K .

Student

Name: SAHIL SOMIL(2021AAPS1582H)

Student Write-up

PS-II Project Title: Advanced SoC Verification: Automating Generation of Complex Use-Case Scenarios

Short Summary of work done during PS-II : During my project, I focused on automating test generation for verifying modern SoCs using the Portable Stimulus Standard (PSS) and Cadence Perspec. My work involved creating scenario-based tests to validate various memory operations, addressing, and data integrity checks. I utilized PSS actions to model use cases and explored advanced features of tools like Perspec to ensure comprehensive coverage. Additionally, I contributed to debugging and refining test scenarios to handle complex system behaviors efficiently. This automation significantly reduced manual effort and enhanced the reliability of the verification process. Alongside technical contributions, I collaborated with my team to align on objectives and deliverables, gaining practical exposure to industry-standard methodologies and workflows.

Tool used (Development tools - H/w, S/w) : Perspec, Simvion & Indago by Cadence

Objectives of the project : To address the verification challenges of modern SoCs by automating the generation of comprehensive use-case scenarios using the Portable Stimulus Standard and Cadence Perspec, ensuring efficient, reliable, and thorough coverage across complex design behaviors.

Major Learning Outcomes : During this project, I gained valuable insights into the inner workings of microprocessors and key digital verification concepts, enhancing my understanding of PSS language and tools like Cadence Perspec for automated test generation. I also developed strong team collaboration and communication skills while coordinating with peers and mentors, further sharpening my problem-solving abilities to tackle complex verification challenges efficiently.

Details of Papers/patents : N.A

Brief Description of working environment, expectations from the company : The working conditions were excellent, with a supportive team and a helpful supervisor who provided clear guidance. Open communication and collaboration made the experience both productive and enjoyable.

Academic courses relevant to the project : Digital Design, MPI, DSA & Oops(some concepts were used)

PS-II Station : Texas Instruments-Embedded Software,Bengaluru, Bangalore

Faculty

Name: Sathisha Shet K .

Student

Name: TAARAK SHUKLA(2020B2AA2530H)

Student Write-up

PS-II Project Title: Development of SDK and Tools for High Power Devices

Short Summary of work done during PS-II : During my internship at Texas Instruments, significant contributions were made to radar systems and embedded software projects, focusing on inter- core communication, visualization enhancements, and documentation. Seamless inter-core communication was enabled between MCAL applications on the MSS core and the SDK on the DSP core using the lpcNotify framework. This improvement enhanced data synchronization, system interoperability, and overall efficiency in radar applications.

Tool used (Development tools - H/w, S/w) : Radar Devices, TI mmWave demo Visualiser

Objectives of the project : To develop drivers and tools for high power radar devices

Major Learning Outcomes : Learned about Embedded Software and radar devices

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : working environment was good and team was supportive

Academic courses relevant to the project : C programming, Operating System

PS-II Station : Texas Instruments-Embedded Software,Bengaluru, Bangalore

Faculty

Name: Sathisha Shet K .

Student

Name: SARANSH GAUTAM .(2020B4A31476P)

Student Write-up

PS-II Project Title: Development of Software Development Kit (SDK) for Low Power Radars

Short Summary of work done during PS-II : During my six-month PS-II internship at Texas Instruments, I contributed to the Low Power Radar Segment by optimizing and enhancing the Software Development Kit (SDK) for radar devices. My primary focus was on improving memory efficiency, driver development, and ensuring system reliability. One of the key accomplishments was the transition of out-of-box (OOB) demonstrations from FreeRTOS to NoRTOS, reducing memory consumption by 35% and optimizing resource usage for low-power applications. I also developed and tested essential drivers for the SDK, including Inter-Processor Communication (IPC), I2C, and Watchdog. These drivers were critical for enabling robust communication, fault tolerance, and peripheral interfacing in radar platforms. Additionally, I implemented factory and runtime calibrations to enhance the adaptability of radar devices to varying environmental conditions, ensuring accuracy and reliability. Through these contributions, I gained extensive experience in embedded system design, debugging, and performance optimization. This internship not only enriched my technical skills but also provided valuable insights into real-world engineering processes and collaborative problem-solving, reinforcing my passion for embedded software development.

Tool used (Development tools - H/w, S/w) : Visual Studio Code, Code Composer Studio, C, C++

Objectives of the project : Worked on development of SDK [Software Development Kit] for Low Power Radars of TI

Major Learning Outcomes : Gained Experience in writing production code in low level languages such as C, C++.

Wrote code for many software drivers such as I2C, IPC, Watchdog, UART, etc. used in TI low power Radars.

Details of Papers/patents : NA: In software team, research is less and deadlines are tighter. As an intern, my code was regularly pushed to production branch.

Brief Description of working environment, expectations from the company : Texas Instruments provides a collaborative working environment characterized by its open-cube culture, where managers and employees share the same workspace. This setup fosters accessibility, allowing interns to easily interact with managers and seek guidance, which significantly enhances learning opportunities.

The company expects interns to have a strong command of C programming and familiarity with low-level programming and operating systems. Knowledge of embedded systems and real-time programming is also crucial.

This unique blend of an open and supportive environment, combined with high technical expectations, creates an ideal space for growth, enabling interns to refine their skills and make meaningful contributions.

Academic courses relevant to the project : Operating Systems, DSA, Computer Programming, Internet of Things.

PS-II Station : Texas Instruments-Embedded Software,Bengaluru, Bangalore

Faculty

Name: Sathisha Shet K .

Student

Name: ROHIT RAJESH AGRAWAL .(2021A3PS2662P)

Student Write-up

PS-II Project Title: 1. A New Approach to Embedded System Logging 2. HW OSD Integration for next-generation DLP Controller (DLPC542x)

Short Summary of work done during PS-II : Developed a POC for a New Debug Logging approach, compatible with all Embedded Systems. Reduced blocked time caused by debug logs from milliseconds to 1-2 microseconds, enabling logging in any time critical task without impacting execution timelines. Other key features includes reducing IRAM space, enhancing error recovery and is applicable across all drivers, APIs, Applications. Preparing to integrate Hardware On-Screen Display (OSD) functionality for the upcoming new high-performance DLPC542x controller. Analyzed hardware OSD difference with previous controllers ensuring compatibility with updated architecture and feature changes.

Tool used (Development tools - H/w, S/w) : ARM DS5, Visual Studio Code, Confluence, Bit Bucket, DVH Board, JTAG Debugging

Objectives of the project : 1. Design POC for new Debug Logging Mechanism for Embedded System which should be compatible with all Embedded Systems, optimizing system performance. 2. Integrate HW OSD functionality from prev gen controller dlpc7540 to next gen controller dlpc542x

Major Learning Outcomes : During my internship, I gained comprehensive knowledge in embedded systems, RTOS, and DLP technology, enhancing my technical expertise. I also developed proficiency in version control using Git, which improved my workflow efficiency. Additionally, I honed soft skills such as effective communication and technical writing, including paper writing, which have been instrumental in presenting and documenting my work effectively

Details of Papers/patents : Enhancing Debugging Mechanism for Embedded Systems

Brief Description of working environment, expectations from the company : The working environment during my internship was incredibly supportive and encouraging. My team was highly collaborative and approachable, always willing to share their knowledge and provide assistance whenever needed. My mentor and manager played a crucial role in guiding me throughout the internship, offering valuable feedback and ensuring that I had a clear understanding of my tasks and responsibilities.

Their consistent support and constructive advice not only helped me overcome challenges but also allowed me to grow both technically and professionally. The positive team dynamics and open communication fostered an environment where I felt comfortable sharing ideas and asking questions.

Academic courses relevant to the project : Microprocessor and Interfacing, Operating Systems, Computer Programming

**PS-II Station : Texas Instruments-Product Marketing Engineer,
Bengaluru, Bengaluru**

Faculty

Name: Sathisha Shet K .

Student

Name: NISHIT SHAW(2021AAPS2853G)

Student Write-up

PS-II Project Title: FMWM opportunities in the grid sector

Short Summary of work done during PS-II : Led growth initiatives in the Grid Sector by analyzing market opportunities and refining product positioning across diverse end equipment. Conducted Total Addressable Market (TAM) analysis to provide data-driven insights, guiding strategic decisions and identifying growth opportunities. Optimized new product development (NPD) processes to accelerate timelines, enhance customer engagement, and boost product adoption. Improved product visibility on TI.com by restructuring content and aligning product placement with end equipment applications. Strengthened global communication with cross-functional teams to increase awareness, adoption, and market positioning of new product portfolios.

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

Objectives of the project : Finding opportunities in the grid sector for upcoming products

Major Learning Outcomes : Market Analysis and Strategic Decision-Making

Product Positioning and Marketing Strategy

Process Optimization and Stakeholder Engagement

Cross-Functional Collaboration and Communication

Data-Driven Insights and Decision-Making

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The work environment at Texas Instruments India office during the internship was collaborative, innovative, and supportive. It emphasized hands-on learning, with a strong focus on technical problem-solving and professional growth. The culture fostered open communication, teamwork, and cross-functional collaboration, enabling interns to gain valuable insights and contribute meaningfully to projects. With access to advanced tools, mentorship, and a clear focus on industry impact, the environment was both challenging and enriching, encouraging creativity and excellence.

Academic courses relevant to the project : Power Electronics

PS-II Station : The Agri Collaboratory (TAC), Gurugram, Gurgaon

Faculty

Name: Sidharth Mishra .

Student

Name: SIDDHANT SOMVANSHI(2020B2A11951G)

Student Write-up

PS-II Project Title: Agri Digitalization Framework, AgDx

Short Summary of work done during PS-II : I read through many research papers on the influence of technology on Agriculture and narrowed down 15 most essential parameters out of 33 parameters in India and abroad. I along with the team designed an Agri Digitalization Framework which gives scores across various Agricultural dimensions consisting of the most essential pillars for Agriculture and farmers who are the eventual beneficiaries. I also made pitch decks for the company for presenting the idea before experts. The detailed framework was then unveiled in front of Agri experts and entrepreneurs.

Tool used (Development tools - H/w, S/w) : MS Excel, Word, Powerpoint, ChatGPT, Co-Pilot, Google Suite.

Objectives of the project : Designing a Framework for giving scores to the states according to their digitalization progress in Agriculture.

Major Learning Outcomes : I had the following learning outcomes:

Metrics Development: Gained experience in identifying key performance indicators (KPIs) and metrics to evaluate digitalization progress in agriculture across states.

Framework Design: Learned how to design a scalable and adaptable framework for state-level comparison.

Research Skills: Enhanced ability to research and gather insights from publicly available datasets and government reports, websites and portals.

Collaboration and Communication: Worked effectively in a team to integrate diverse perspectives and inputs of other collaborating organizations which had their respective expertise, aligning efforts toward a common goal.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Collaborative and team-oriented environment that encouraged open communication and idea-sharing.

Focus on innovation and problem-solving to address real-world challenges in agriculture through digital solutions.

Structured mentorship and guidance from experienced professionals in the field.

Exposure to cross-functional teams, allowing for holistic learning and multi-disciplinary insights.

Professional yet flexible atmosphere, enabling efficient teamwork and individual contributions.

Expectations from Organization: A platform to gain hands-on experience and practical exposure to real-world problems.

Opportunities to work on impactful projects that contribute to societal and sectoral development with Constructive feedback and support to enhance personal and professional skills.

Encouragement to take ownership of responsibilities and contribute meaningfully to team goals.

Academic courses relevant to the project : Business Communication

PS-II Station : The Akshaya Patra Foundation, Jaipur

Faculty

Name: Mahesh Kumar Hamirwasia .

Student

Name: YASHWARDHAN RAI .(2021A2PS2517P)

Student Write-up

PS-II Project Title: Marketing, Content Creation and Public Relations

Short Summary of work done during PS-II : During my 4-month internship at The Akshaya Patra Foundation (TAPF), I had the opportunity to contribute to its noble mission of eliminating hunger and improving education for millions of children across India. My role encompassed three key areas: content creation, digital marketing, and public relations. In content creation, I designed engaging social media posts, wrote articles, and drafted press releases that amplified TAPF's impact and raised awareness about its initiatives. I leveraged storytelling to connect with diverse audiences, ensuring that the organization's message resonated strongly. In digital marketing, I worked on creating and promoting social media campaigns aimed at increasing engagement and encouraging donations. I also assisted in email marketing by drafting newsletters for TAPF's donor base. Through data analysis using tools like Google Analytics, I tracked campaign performance and refined strategies for better outcomes. Public relations was another critical aspect of my work. I managed media outreach, wrote press releases for major events, and assisted in organizing donor events where stakeholders could witness the foundation's impact firsthand. Strengthening relationships with donors was a key highlight, contributing to TAPF's sustainability. This internship helped me develop essential skills like time management, data-driven decision-making, and stakeholder engagement. It was a fulfilling experience that not only allowed me to contribute to a meaningful cause but also provided insights into how strategic communication can drive impactful change. I'm grateful for the opportunity to have been part of such a remarkable organization.

Tool used (Development tools - H/w, S/w) : Canva, Google analytics, ms Excel

Objectives of the project : Learn Marketing and its nuances along with experience in content creation and public relations management

Major Learning Outcomes : Softwares such as Google analytics, Canva and so on. Soft skills such as communication skills. Technicalities of digital marketing

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment at The Akshaya Patra Foundation (TAPF) is collaborative, purpose-driven, and dynamic. As a non-profit organization with a massive impact, the team operates with a strong sense of responsibility and dedication toward its mission of eliminating classroom hunger.

I found the workplace to be welcoming and inclusive, with open communication and teamwork at its core. Everyone was approachable, whether it was seeking guidance from senior members or brainstorming ideas with peers. The environment encouraged innovation and adaptability, as the work often required quick decision-making and creative solutions to address challenges.

While the work was deadline-oriented, there was also an emphasis on personal growth and learning. Mentors and colleagues were supportive, providing constructive feedback and sharing valuable insights. The blend of professionalism and empathy created a balanced atmosphere, fostering both productivity and motivation.

Being part of an organization that directly impacts millions of lives added a layer of fulfillment and inspiration to the daily tasks. It was a unique opportunity to learn the intricacies of working in the social sector while contributing to a larger cause.

Academic courses relevant to the project : No CDCs

PS-II Station : The Future University - Community Manager, Mohali

Faculty

Name: Sidharth Mishra .

Student

Name: AYUSH KATARA(2020B4A41912G)

Student Write-up

PS-II Project Title: Community Manager

Short Summary of work done during PS-II : The project aimed to improve the efficiency of the sales team by optimizing processes through data analysis. By leveraging insights from data, the team was able to identify bottlenecks, streamline workflows, and implement actionable strategies, ultimately enhancing performance and decision-making. This approach contributed to a more effective and productive sales operation.

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

Objectives of the project : To enhance the efficiency of the sales team by streamlining processes through comprehensive data analysis, enabling better decision-making and improved performance.

Major Learning Outcomes : Data Analysis

Details of Papers/patents : -

Brief Description of working environment, expectations from the company :

Academic courses relevant to the project : -



PS-II Station : The Future University - Community Manager, Mohali

Faculty

Name: Sidharth Mishra .

Student

Name: NITIN GAUTAM(2020B4A42132G)

Student Write-up

PS-II Project Title: CRM Process Optimization and Strategic Data Insights

Short Summary of work done during PS-II : During my six-month internship at The Future University, I focused on optimizing CRM processes and lead tracking. My work involved managing lead data using SQL and pgAdmin, ensuring accuracy and consistency across databases. I integrated AI tools like AiSensy and Interakt to automate communication workflows such as follow-ups and post-class activities, improving efficiency and customer engagement. Using Microsoft Excel, I cleaned, organized, and analyzed data to generate visual reports that informed key business decisions. Collaboration with various teams helped me identify and address process inefficiencies, ensuring continuous improvement. This project not only enhanced the organization's operational efficiency but also honed my technical, analytical, and interpersonal skills.

Tool used (Development tools - H/w, S/w) : SQL, pgAdmin, API, Microsoft Excel, Standard computing systems

Objectives of the project : The primary objectives of this project were to enhance the accuracy of lead data to enable informed decision-making, automate repetitive tasks in the customer relationship management (CRM) process to save time and effort, and extract actionable insights through data analysis to improve customer engagement and overall business strategies.

Major Learning Outcomes : Data Analysis, Collaboration, Analytical Thinking, Decision Making

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at The Future University was dynamic but lacked structure, with undefined roles. Roles were not always well-aligned with interns' skills. The startup culture fostered growth and learning, but the long hours (Tuesday-Sunday) and low pay were challenging. Good work wasn't always recognized, and the company's expectations were often unclear. Nevertheless, the team was collaborative, providing opportunities for professional development.

Academic courses relevant to the project : NA

PS-II Station : The Future University - Community Manager, Mohali

Faculty

Name: Sidharth Mishra .

Student

Name: HARDIK GOEL(2020B5AA1893G)

Student Write-up

PS-II Project Title: Category Digital Marketing

Short Summary of work done during PS-II : Ran and analysed the performances of ad campaigns for the company

Tool used (Development tools - H/w, S/w) : Google Ads, Meta Ads, Taboola Ads, Twitter Ads, SQL, Google sheets

Objectives of the project : Handling digital marketing

Major Learning Outcomes : Marketing, Data Analysis

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Not good working culture or environment, a lot of resignations and terminations during our period there. Some internship roles unfit for engineering students

Academic courses relevant to the project : N/A

PS-II Station : The Future University - Community Manager, Mohali

Faculty

Name: Sidharth Mishra .

Student

Name: DEEPANSHU CHOUDHARY .(2021A2PS1355P)

Student Write-up

PS-II Project Title: Marketing associate and community manager

Short Summary of work done during PS-II : During my internship at The Future University, I played a key role in both community management and marketing optimization. I managed the marketing funnel for my assigned category, focusing on scalable strategies that delivered a 500% ROI. Additionally, I optimized the business funnel for two teachers, including the most successful educator in the company. This involved overseeing their entire funnel—from marketing campaigns to CRM and sales—which resulted in significant revenue growth and enhanced user experience. Community engagement was another area of focus, where I built strong relationships with users, ensuring higher retention and satisfaction. Recognizing the need for better data visibility, I initiated a data dashboard project to provide actionable insights for leadership and teams. While I completed the initial phase, I successfully transitioned the project to another team member before my internship ended. Throughout this period, I developed strong problem-solving skills, adhered to strict timelines, and adopted a research-oriented approach to implement innovative strategies. The supportive work culture and collaboration with mentors and colleagues played a crucial role in my growth. This internship equipped me with practical experience in marketing, analytics, and team management while honing my ability to drive results and create scalable solutions.

Tool used (Development tools - H/w, S/w) : Canva, Google ads, Meta ads, Sheets, pgadmin, Metabase,

Objectives of the project : To create and optimize scalable marketing funnels for improved lead generation and ROI. To manage and enhance the business funnel for two key teachers, increasing revenue and user satisfaction. To engage with the community for improved customer retention and experience. To initiate a data visibility dashboard for better real-time tracking and decision-making.

Major Learning Outcomes : Gained hands-on experience in managing marketing funnels and understanding user behavior to optimize ROI.

Learned the end-to-end management of business funnels, improving teacher performance and revenue.

Enhanced skills in community management, fostering engagement and loyalty among users.

Developed strong problem-solving and research-oriented skills for implementing scalable solutions.

Gained exposure to building data dashboards for real-time insights and visibility.

Improved interpersonal and professional communication through team collaboration and leadership interactions.

Details of Papers/patents : NONE

Brief Description of working environment, expectations from the company : One of the standout aspects of my internship experience at The Future University was undoubtedly its work culture and the people I had the opportunity to collaborate with.

Supportive Environment:

The staff and mentors fostered a supportive and growth-oriented atmosphere, encouraging open communication, brainstorming, and innovation. Despite being an intern, I was entrusted with significant responsibilities, making me feel valued and confident in my abilities.

Collaborative Spirit:

The teams across marketing, sales, community management, and operations worked together seamlessly. The willingness of colleagues to share knowledge, provide constructive feedback, and celebrate successes created a positive work dynamic.

Leadership and Mentorship:

I had the privilege of working under inspiring leaders like Kanha Singhania, whose guidance and mentorship played a key role in shaping my learning curve. Their ability to lead by example and offer autonomy while still providing necessary support was invaluable.

Inclusive Culture:

The company embraced inclusivity and ensured every team member, regardless of their role, felt like a crucial part of the larger mission. The emphasis on teamwork and shared goals strengthened bonds between interns, managers, and leadership alike.

People-First Approach:

Beyond work, the company prioritized individual well-being and growth. Regular interactions, problem-solving sessions, and team engagements made it a vibrant and people-centric workplace.

Academic courses relevant to the project : NONE

PS-II Station : The Future University - Community Manager, Mohali

Faculty

Name: Sidharth Mishra .

Student

Name: VENKATESH SAINI(2021A4PS2524H)

Student Write-up

PS-II Project Title: Product Management Intern

Short Summary of work done during PS-II : Managed multiple sheets and the data of the various conversion% of the company, managed the all products of the company

Tool used (Development tools - H/w, S/w) : Excel,pgadmin,Mixpanel,Webengage etc.

Objectives of the project : Idea about Product Management

Major Learning Outcomes : Understood how a startup finctions and learnt a lot about Product Management

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : Overall decent work environment, company is a growing startup so did learn a lot fromthere

Academic courses relevant to the project : SQL,Excel, Product Management Knowledge

PS-II Station : The Future University - Community Manager, Mohali

Faculty

Name: Sidharth Mishra .

Student

Name: SHIVAM AGARWAL(2021A4PS2883G)

Student Write-up

PS-II Project Title: Community Manager

Short Summary of work done during PS-II : My internship at The Future University has been an enriching journey, offering hands-on experience in digital marketing. I worked with various ad platforms, achieved measurable improvements in revenue and ROAS, and gained expertise in budget management, audience segmentation, and campaign optimization. Contributing to lower CPLs and higher ROI boosted my confidence and reinforced my passion for digital marketing. This experience underscored the importance of blending technical skills, creativity, and adaptability to succeed in this dynamic field. I am excited to apply these insights to future opportunities, driving growth for businesses and platforms.

Tool used (Development tools - H/w, S/w) : Google Sheets, Canva, Python, What's App

Objectives of the project : Worked on managing substantial marketing budgets, conducting data-driven experiments, and optimizing campaign performance.

Major Learning Outcomes : Implementing innovative strategies to enhance user engagement, analysing user behaviour to refine marketing efforts, and developing a systematic approach to track and improve ROI.

Details of Papers/patents : NONE

Brief Description of working environment, expectations from the company :

The working environment at The Future University was challenging and far from ideal. The odd work timings, with a six-day work week and the single day off on Mondays, made maintaining a healthy work-life balance difficult. Adding to this was the lack of holidays on significant occasions like Independence Day and Dussehra, which were often postponed indefinitely. Employees were expected to be available and work even beyond office hours, leading to a sense of constant engagement without adequate respite.

Basic operational issues, such as frequent internet disruptions, further hindered productivity, especially in a field as dependent on connectivity as digital marketing. While the experience offered valuable learning opportunities, the overall environment could benefit from improvements in work culture, better scheduling, and addressing basic infrastructural needs to foster a more supportive and efficient workplace.

Academic courses relevant to the project : NONE

PS-II Station : The Future University - Community Manager, Mohali

Faculty

Name: Sidharth Mishra .

Student

Name: ATIBHAV SAXENA(2021A4PS3105H)

Student Write-up

PS-II Project Title: Product Management: Pathway to technical excellence

Short Summary of work done during PS-II : During my Practice School internship at The Future University's Product-Tech Department, I immersed myself in the dynamic field of Product Management, focusing on enhancing user experience and operational efficiency. The primary objective was to identify and resolve customer pain points through data-driven decision making and user-centric design principles. This report details my journey through four distinct phases, culminating in the development of the Student Rollover feature and integration of Webengage analytics. Product Analysis and Management represent crucial elements in modern technology companies, as they bridge the gap between user needs and technical solutions.

Tool used (Development tools - H/w, S/w) : PgAdmin, MS Excel, Webengage, Mixpanel

Objectives of the project : Feature testing and drafting documentation like PRDs, SOPs etc and working on solving a problem faced by the customers and the employees at the company

Major Learning Outcomes : • The importance of data-driven decision-making.

- The value of team collaboration and effective communication.
- Insights into overcoming operational challenges and resistance to change.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Here's the revised version reflecting that the internship has concluded:

During my internship, I was progressively integrated into the company's product development lifecycle, from ideation to production. This included participating in discussions, exploring the integration of new features with the existing codebase, collaborating with developers, drafting Product Requirement Documents, and conducting pre- and post-production testing.

To meet the expectations of the role, I undertook industry-specific research and deepened my understanding of technical concepts such as APIs, Webhooks, Websockets, and SDKs. Additionally, I contributed to the company's growth by leveraging SQL and analytics platforms like Mixpanel and WebEngage to extract meaningful data and derive actionable insights.

My primary focus was on projects related to the Student Management System and User CRM journeys. Alongside these, I managed responsibilities such as data analysis, feature testing, and

quality control, ensuring smooth implementation and optimal user experiences. This experience provided valuable insights into product management and reinforced my technical and analytical skills.

Academic courses relevant to the project : DBMS, OOPS



PS-II Station : The Future University - Community Manager, Mohali

Faculty

Name: Sidharth Mishra .

Student

Name: ADITYA BANSAL(2021AAPS1860G)

Student Write-up

PS-II Project Title: Supply Analyst

Short Summary of work done during PS-II : During my PS-2 internship at The Future University, I worked as part of the supply team, focusing on onboarding instructors and managing their performance. My responsibilities included reviewing teaching sessions, training facilitators, and analyzing metrics like click-through percentage (CTP) to identify areas for improvement and enhance user engagement. This role provided insight into how performance metrics directly influence user behavior and platform outcomes. In addition to these core responsibilities, I worked on several key projects. I helped onboard high-profile instructors and played a crucial role in coordinating a celebrity workshop, which required extensive communication and negotiation. I also collaborated with external companies, such as Stock Phoenix, and contributed to initiatives like OnCampus, an offline collaboration program with colleges, and HealoVed, a project focused

on Ayurveda-based diabetes reversal. Another part of my role involved overseeing analytics for both new and ongoing projects. I used tools like Excel to track performance trends and identify reasons behind declining metrics, which informed corrective strategies. I also managed cross-functional coordination to ensure timely delivery of project goals. While the work environment was dynamic and demanding, with changing priorities and tight deadlines, it provided valuable exposure to the fast-paced nature of startups. This internship helped me develop skills in data analysis, stakeholder communication, and multitasking, offering a comprehensive understanding of the operational and strategic aspects of an ed-tech company.

Tool used (Development tools - H/w, S/w) : Google Workspace (Sheets, Docs), CRM Tools, Learning Management Systems (LMS), WhatsApp Business, Canva

Objectives of the project : 1. Bring good quality instructors of different domains like trading and spirituality. 2. Market Research to find different Categories/Topics/Models/Funnels of Revenue Generation.

Major Learning Outcomes : 1. I greatly improved my communication and convincing skills due to meetings and collaborations with high-level individuals and companies.

2. Data Organisation and Analysis

3. Problem Solving and category creation.

Details of Papers/patents : No papers or patents as such.

Brief Description of working environment, expectations from the company : The working environment at The Future University is fast-paced and dynamic, typical of a growing startup. The company operates with a small, closely-knit team, which means responsibilities are fluid, and individuals often need to adapt to changing priorities quickly. The office hours are long, with frequent instances of extended workdays and late-night meetings. Even during work-from-home (WFH) days or on leave, there is an expectation to stay available for tasks or attend the office if required.

The company places significant emphasis on meeting tight deadlines and achieving ambitious targets, which can sometimes be challenging. Feedback from leadership is frequent and direct, aiming to improve performance, but it can occasionally feel overly critical. The Co-Founders are

deeply involved in operations, often leading discussions and setting high expectations, though this occasionally results in prolonged meetings without immediate outcomes.

The team is expected to be proactive and resilient, taking ownership of tasks and delivering results under pressure. While the role offers exposure to various aspects of the ed-tech industry, including project management, stakeholder collaboration, and performance analytics, the demanding schedule and high-pressure environment may not suit everyone.

Overall, the internship provides a hands-on understanding of startup operations but requires strong adaptability, time management, and perseverance to navigate the challenges effectively. It's an opportunity to learn, but the workload and expectations should be carefully considered.

Academic courses relevant to the project : None in particular

PS-II Station : The Future University - Community Manager, Mohali

Faculty

Name: Sidharth Mishra .

Student

Name: SAMAY GOYAL .(2021ABPS2486P)

Student Write-up

PS-II Project Title: Improving Bootcamp Experiences and Operations Optimization

Short Summary of work done during PS-II : My work required providing good exp to enrolled students so that the upsell level 2 revenue increases as more people will convert

Tool used (Development tools - H/w, S/w) : Excel google sheets interakt webengage

Objectives of the project : To improve the overall experience of bootcamps and build a robust feedback system to ultimately increase upsell revenue

Major Learning Outcomes : Learn how to deal with a huge customer base

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Weekends were working and Mondays were off and my manager in particular was very rude to talk

Academic courses relevant to the project : NA

PS-II Station : TIF Labs Pvt. Ltd. - Electronics, Bengaluru

Faculty

Name: Harish Kumar J. R.

Student

Name: STITIPRANGYA PATRA(2020B4AA1856G)

Student Write-up

PS-II Project Title: AI-Powered Solutions for Embedded Systems and IoT: Enhancing Product Analysis and Car Data Segmentation

Short Summary of work done during PS-II : During my PS-II at TIF Labs, I worked on AI-Powered Solutions for Embedded Systems and IoT, focusing on real-world applications of

machine learning and IoT integration. A major highlight was the Car Part Segmentation and Damage Detection System, which employed YOLO-based models for segmenting car parts and classifying damage severity. This system achieved over 85% accuracy, providing annotated images and structured damage reports for real-time decision-making, significantly enhancing the efficiency of automotive inspections. I also worked on automating product analysis using LangChain and AWS Bedrock, improving data scraping and dataset quality by 40%. This automation streamlined workflows and contributed to richer datasets for product comparison across multiple e-commerce platforms. In IoT integration, I utilized Raspberry Pi Pico and Xiao ESP32 for real-time sensor fusion, enhancing data processing speed by 15% and accuracy by 10%. Additionally, I developed gesture recognition and object detection models using Edge Impulse and Grove Vision AI, enabling efficient deployment on resource-constrained devices and increasing deployment efficiency by 25%. These efforts were complemented by extensive optimization of machine learning workflows, including hyperparameter tuning, data augmentation, and model conversion to TensorFlow Lite for edge deployment. The project addressed challenges such as hardware constraints and data variability, emphasizing problem-solving and innovation. Overall, the work contributed to scalable, efficient AI-powered solutions, showcasing the potential of AI and IoT in modern applications while significantly improving operational efficiency and user experience.

Tool used (Development tools - H/w, S/w) : Hardware Tools: Raspberry Pi Pico, Xiao ESP32, Grove Vision AI, Accelerometers and Gyroscopes;; Software Tools: TensorFlow and Keras, Edge Impulse, Python Programming, LangChain, AWS Bedrock, Pandas and NumPy, YOLO Models (best.pt, best_dam.pt), OpenCV, F

Objectives of the project : Build a damage detection and segmentation project for client, build a website to compare products from multiple websites, Build a project recommendation system where on inputting project title it gives components, urls, budget, step and code

Major Learning Outcomes : The project on AI-Powered Solutions for Embedded Systems and IoT provided a transformative learning experience, blending advanced technologies and real-world applications. A key outcome was mastering machine learning tools such as TensorFlow, Keras, and YOLO for tasks like car damage detection and object recognition. Deploying models on resource-constrained devices using TensorFlow Lite and Edge Impulse enhanced my

understanding of TinyML, while real-time data integration with IoT devices like Raspberry Pi Pico and Xiao ESP32 enriched my expertise in sensor fusion and edge computing.

I developed problem-solving skills by addressing challenges such as dataset imbalances, hardware limitations, and cross-platform integration. Fine-tuning hyperparameters, optimizing models, and employing data augmentation techniques significantly improved performance metrics. Data handling became a core strength, as I automated data acquisition using LangChain and AWS Bedrock and applied Pandas and NumPy for analyzing large datasets. These efforts streamlined workflows and improved operational efficiency, evident in outcomes like a 30% increase in defect identification efficiency.

The project provided practical exposure to applying AI and IoT solutions to real-world problems, enhancing product analysis and IoT sensor integration. It also reinforced the importance of documentation and collaboration. Effective teamwork, coupled with detailed project reporting, ensured seamless knowledge transfer and interdisciplinary understanding.

Through this endeavor, I gained hands-on experience with various tools, including FastAPI, OpenCV, and cloud-based services like AWS Bedrock. These experiences strengthened my technical foundation, while the process of solving complex challenges improved my analytical, organizational, and communication skills. Overall, the project was pivotal in advancing my technical expertise, fostering innovation, and preparing me for tackling industry-level problems effectively.

Details of Papers/patents : No patents or papers were produced as such. Mostly worked on client based projects

Brief Description of working environment, expectations from the company : The working environment at the organization is collaborative and innovative, fostering creativity and leveraging cutting-edge technologies. The culture emphasizes continuous learning, inclusivity, and open communication, which greatly enhances productivity and professional growth. Flexible work policies, transparent management practices, and opportunities for skill enhancement through workshops or certifications create a highly enriching experience.

The organization provides excellent mentorship and guidance, striking a balance between structured support and independence in problem-solving. Clear objectives, regular feedback mechanisms, and access to resources facilitate the successful execution of complex projects. Working on impactful, real-world problems, especially those involving emerging technologies like AI, IoT, and TinyML, provides a platform to apply and expand my expertise effectively. The

recognition of efforts and the presence of a supportive team dynamic contribute significantly to maintaining motivation and fostering a sense of belonging.

The company integrates ethics and sustainability into its operations, reflecting a forward-thinking and responsible approach. A well-defined path for career progression ensures alignment between personal growth and the organization's development, making the experience both fulfilling and impactful.

Academic courses relevant to the project : 1) Artificial Intelligence and Machine Learning

2) Digital Signal Processing (DSP)

3) Embedded Systems Design

4) Computer Vision and Image Processing

5) Data Structures and Algorithms

PS-II Station : Timble Technologies, New Delhi

Faculty

Name: Jyotsana Grover

Student

Name: DHRUV TANDON .(2021A8PS1221P)

Student Write-up

PS-II Project Title: Financial analysis and Verification Services: Market Analytics Project

Short Summary of work done during PS-II : Finding various triggers and evaluating each trigger's efficiency ○ PAN Advanced Verification. ○ Mobile UPI Advance Verification ○ Corporate PRO(Mobile to EPFO) ● Understanding competitors and their pricing (Perfios) ● Finding more

clients and application(Banks, Insurance companies, Clinics) • Global Fintech Fest: Creating Product demos for our founder Dhananjay who was representing timble technologies the event

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

Objectives of the project : This project is about doing detailed market research to find potential clients and understand the competition for Timble Glance's KYC Verification services. We'll use our knowledge of financial empowerment and technology products to discover new clients and assess the market. Additionally, we'll analyze data and patterns to enhance our decision-making process.

Major Learning Outcomes : Understanding market dynamics, client needs, and competitive forces is crucial.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The work environment was really positive and supportive, which made it a great place to learn and grow. Being part of a small team allowed me to get involved in multiple areas of the company. I had the chance to contribute to different projects, which gave me a deeper understanding of how the company operates. This hands-on exposure to various verticals helped me see the bigger picture and gain a well-rounded perspective of the business

Academic courses relevant to the project : • FIN F311 Derivatives of Risk Management

- INSTR F426 Fibre Optics & Optoelect
- INSTR F432 Medical instrumentation

PS-II Station : Time tooth Technologies Pvt Ltd,Noida, Noida

Faculty

Name: Nithin Tom Mathew .

Student

Name: ARYAN SONTALIA(2021A4PS3103H)

Student Write-up

PS-II Project Title: Design of Exoskeleton Subsystem & External Back Frame

Short Summary of work done during PS-II : Work done at PS2 station Timetooth, Bengaluru, comprises two projects. Firstly, the Exoskeleton subsystem design requiring Work on Multi-Body Dynamics (MBD) of its joints, motor selection, bearing selection, bolt selection, and composites. The second project deals with the design of an External Back Frame (EBF). It is a frame that can be worn by ground units, similar to a bag, and loads can be mounted upon it for carrying long distances

Tool used (Development tools - H/w, S/w) : Altair Hyperworks, Hypermesh, OptiStruct, MotionView, MotionSolve, Matlab, AnyBody Technology (software),

Objectives of the project : Design of Exoskeleton Subsystems & Design of External Back Frame

Major Learning Outcomes : Multi Body Dynamics, Finite Element Analysis, Roller Bearing Selection, Selection of Motor, Product Design, DFM

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Conducive Environment for Work, Toxicity Free, Not a vertically integrated company, Horizontally integrated workforce, Friendly, Approachable colleagues

Academic courses relevant to the project : Design of Machine Elements, Computer Aided Design, Mechanics of Solids, Machines & Mechanisms

PS-II Station : UBER - Data Science, Hyderabad, Hyderabad

Faculty

Name: Akshaya G .

Student

Name: YASHRAJ HEMANT MEHTA(2020B3A72226H)

Student Write-up

PS-II Project Title: Spender Arrears Loss Reduction

Short Summary of work done during PS-II : During my PS-II internship at Uber, I worked as a Data Science intern in the Risk Experience team, focusing on fraud prevention and risk mitigation strategies. My key contributions included three projects: 1) CAD Threshold Optimization: Optimized cash arrear deferral thresholds using machine learning models to balance company risk and user experience in cash-heavy markets. 2) Pre-Emptive Recovery of Arrears: Designed and executed an A/B testing framework to analyze the impact of proactive notification strategies on arrear recovery rates. Created monitoring dashboards and implemented anomaly detection mechanisms. 3) US Tax & Compliance Document Engagement: Developed dashboards to track user engagement with compliance documents and ensure adherence to regulatory requirements. I gained hands-on experience with tools and technologies such as SQL, DBMS, machine learning, and visualization platforms like Google Studio and Grafana. My work involved collaborating with cross-functional teams to design experiments, analyze large datasets, and provide actionable insights to stakeholders. Through this internship, I enhanced my skills in data-driven decision-making, statistical analysis, and effective communication of technical findings. This experience

deepened my understanding of real-world applications of data science in risk management and reinforced my ability to develop scalable, impactful solutions.

Tool used (Development tools - H/w, S/w) : Languages: Python, R, STATA, Java, C++, HTML/CSS, SQL Database Management: Apache Hive, Kafka, Piper, Apache Spark, Apache Airflow, MySQL, PrestoSQL, Hadoop Machine Learning: Pandas, Numpy, Scikit-Learn, Tensorflow, Pytorch, Keras, Jupyter, seaborn,matplotlib

Objectives of the project : I had 2 sub-projects allotted under my project domain: 1) The first was to carry out an A/B experiment and measure the lift in arrear collection due to a UX change. 2) Contribute in building an ML model that would score users on their probability of paying back arrears which would be used to determine policies on a dynamic basis.

Major Learning Outcomes : 1)Fraud detection strategies

2)A/B testing expertise

3)Machine learning models

4)Data visualization tools

5)Cross-functional collaboration

6)Regulatory compliance insights

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Uber fostered innovation, collaboration, and learning. As a Data Science intern in the Risk Experience team, I experienced a dynamic culture where cross-functional collaboration was integral. The team encouraged open communication, allowing me to share ideas and seek guidance from peers, mentors, and managers.

The company provided a supportive environment with access to advanced tools and technologies, enabling me to work on impactful projects. I was expected to apply my technical expertise to solve real-world problems, such as optimizing cash arrear thresholds and enhancing fraud detection mechanisms. Uber valued a data-driven approach, and I was encouraged to analyze large datasets, design experiments, and present actionable insights to stakeholders.

High expectations for quality, efficiency, and adherence to timelines were balanced by opportunities for learning and growth. The organization emphasized proactive problem-solving and the ability to adapt to complex challenges.

Overall, Uber provided a stimulating environment that nurtured professional development while delivering meaningful contributions to the company's goals.

Academic courses relevant to the project : Database Management Systems,
Foundations Of Data Science,
Machine Learning,
Econometric Methods

PS-II Station : UBER - Software Engineer, Hyderabad, Hyderabad

Faculty

Name: Akshaya G .

Student

Name: SABYASACHI BHOI(2020B3A72147H)

Student Write-up

PS-II Project Title: Uber Payments

Short Summary of work done during PS-II : (Can't go in much details due to NDA) My team handles all types of bank card traffic that comes into Uber. The current legacy infrastructure had a lot of issues related to development and monitoring, due to which a new infrastructure was introduced. My project involved migrating some parts of the old codebase to the new codebase.

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

Objectives of the project : migrate current payments infrastructure to new and improved infrastructure

Major Learning Outcomes : Java, OOP Design Patterns, SOLID Design

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Work Environment:

- Tuesday and Thursday are designated as anchor days, where in-office presence is encouraged to facilitate collaboration and engagement. On other days, you have the flexibility to work remotely, enabling a balance between professional and personal commitments.

- Collaboration is highly valued within the team. While colleagues are approachable and supportive, there is an expectation that team members will demonstrate initiative by conducting thorough research and preparation prior to seeking assistance.

Expectations:

- The nature of our work can be dynamic and fast-paced, with certain periods requiring extended work hours to meet project goals. On occasion, additional effort may be required during weekends to address critical deliverables.

- There is an implicit expectation that team members possess a strong foundational understanding of programming concepts, unit testing, and software design principles. These skills are considered integral to the role and essential for maintaining the high standards of excellence our team upholds.

Academic courses relevant to the project : OOPS

OS

Computer Networks

Compiler Construction

PS-II Station : UBER - Software Engineer, Hyderabad, Hyderabad

Faculty

Name: Akshaya G .

Student

Name: ARUSH SUKESH SHETTY .(2021A3PS2661P)

Student Write-up

PS-II Project Title: GAP Migration

Short Summary of work done during PS-II : My work primarily focused on developing an API to support the flow changes that the team is currently implementing. This was predominantly a backend development task

Tool used (Development tools - H/w, S/w) : GoLang, SQL, Git, Kafka

Objectives of the project : Migration of the existing flow and redesigning the architecture of the accounting system.

Major Learning Outcomes : Gained hands-on experience in writing, debugging, and testing code within a large-scale codebase, which enhanced my understanding of maintaining and contributing to complex software systems. Additionally, I acquired proficiency in technologies such as GoLang, SQL, Git, and Kafka, and learned how to effectively integrate these tools to build scalable backend service.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working environment was good, However, initially, it was a bit challenging to catch up with the team, as the project had already been under development by the team members before I joined.

Academic courses relevant to the project : DBMS

PS-II Station : UBER - Software Engineer,Bangalore, Bengaluru

Faculty

Name: Akshaya G .

Student

Name: MAITREYI SUNTHA(2020B2AA2475H)

Student Write-up

PS-II Project Title: U4B-CONCUR INTEGRATION DATA COLLECTION OPTIMIZATION

Short Summary of work done during PS-II : 1) Concur Data collection Optimization:I had to work on both frontend & backend for this project. It involves collecting consent from users for u4b-concur integration. I worked with Go & React and worked around the existing logic for the same. There was changes made in the API & in the database, such that if user decides to give consent of a certain data, then only we would store it. It also involved some backfilling tasks. 2) Then there was an incident follow up task which required using Cadence. 3) Some on-call related tasks.

Tool used (Development tools - H/w, S/w) : Go-lang, Cadence, Cronjob, React-JS

Objectives of the project : To enhance user experience, to improve efficiency on Uber's end by adding this to Uber's business logic.

Major Learning Outcomes : Had full exposure to how git works. Got to learn React for web-development. Learnt to code in a new language. Learnt how important communication skills are.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Work environment is really good. All the team members were really helpful and approachable. Your WLF depends mostly on how you are able to handle the pressure and how much effort you are putting in the work. It is important you are clear on the deadlines of your project and other than that everyone is welcoming and the whole experience was worth it.

Academic courses relevant to the project : OS, Dbms

PS-II Station : UBER - Software Engineer,Bangalore, Bengaluru

Faculty

Name: Akshaya G .

Student

Name: UDIT GUPTA(2020B4A72368H)

Student Write-up

PS-II Project Title: Rider seasons

Short Summary of work done during PS-II : During my internship at Uber, I worked on integrating device location data into rider sessions to improve rider behavior analysis, with a focus on critical areas like airports. I contributed to the migration of fare estimation systems from RefV2 to Package Variants, streamlining data handling and enhancing system performance. I gained hands-on experience with real-time streaming pipelines using Flink, optimizing data processing workflows and ensuring scalability. Additionally, I utilized tools like Grafana and U-Monitor to monitor and analyze system performance, identifying anomalies and ensuring data accuracy. My work involved executing end-to-end projects, from design and implementation to validation and deployment, while collaborating with cross-functional teams to resolve issues and enhance system functionality.

Tool used (Development tools - H/w, S/w) : Flink: For real-time data stream processing. Presto and Spark SQL: For querying and analyzing large datasets. Grafana and U-Monitor: For system monitoring, debugging, and performance analysis. Java: For backend development and integration tasks. Pinot: Fo

Objectives of the project : Device Location Integration: Enhance rider behavior analysis by integrating device location into rider sessions, focusing on airports and distinguishing genuine ride requests from casual inquiries. RefV2 to Package Variants Migration: Streamline fare estimation by migrating from RefV2 to Package Variants, ensuring data accuracy, reducing volume, and improving system performance.

Major Learning Outcomes : Gained expertise in Flink architecture and real-time streaming systems.

Enhanced skills in Presto, Spark SQL, and Java for data processing.

Executed end-to-end project lifecycles, including testing and deployment.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : dynamic, collaborative, and fast-paced

Academic courses relevant to the project : Database Management Systems (DBMS)

Distributed Systems
Big Data Analytics
Software Engineering
Operating Systems
OOPS

PS-II Station : UBER - Software Engineer,Bangalore, Bengaluru

Faculty

Name: Akshaya G .

Student

Name: DEEPALI RATHI(2020B4A82365H)

Student Write-up

PS-II Project Title: APF Priority and Fairness in Kubernetes Cluster Administration

Short Summary of work done during PS-II : During my PS-II project titled "APF Priority and Fairness in Kubernetes Cluster Administration," I focused on enhancing the performance and fairness of Kubernetes clusters under high traffic conditions. The key objective was to prioritize incoming requests to the Kubernetes API server based on their criticality, ensuring that high-priority requests are serviced before less critical ones. This was achieved through the implementation of APF , a scheduling algorithm that dynamically adjusts priorities. I also worked on integrating Shuffle Sharding for better request routing and load balancing, minimizing the impact of one internal service over others in a shared cluster environment. Tools like Grafana and Prometheus were employed to monitor the performance and behavior of the cluster, while Docker and Kubernetes were used for container orchestration and deployment. Throughout the project, I

collaborated with various teams to ensure that the solution met both operational and performance expectations.

Tool used (Development tools - H/w, S/w) : Kubernetes, Docker, Buildkite, Grafana, Prometheus, up, Github, Sourcegraph

Objectives of the project : To prioritize the incoming request to Kubernetes API server based on criticality of request at the tie of high Traffic and reducing the impact of one internal service over another

Major Learning Outcomes : Kubernetes, Concept of Shuffle Sharding, Flow schema and Priority level as Kubernetes

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment for this project was highly collaborative and fast-paced, with a focus on infrastructure optimization and container orchestration. My team utilized cutting-edge tools like Kubernetes, Docker, and Prometheus, combined with industry best practices for scalable application management. I was expected to develop a robust and scalable solution for managing high traffic in Kubernetes clusters while ensuring fairness and priority-based access to resources. The company's focus was on practical solutions that could be directly implemented in real-world scenarios, optimizing infrastructure performance while maintaining fairness across services. I expected to deepen my understanding of Kubernetes cluster administration, enhance my problem-solving skills, and contribute to improving the scalability of cloud-native applications.

Academic courses relevant to the project : Cloud and Computing

PS-II Station : UBER - Software Engineer,Bangalore, Bengaluru

Faculty

Name: Akshaya G .

Student

Name: SHREYA ANAND AGRAWAL(2020B4AA0785G)

Student Write-up

PS-II Project Title: Hailables Rider Simulator

Short Summary of work done during PS-II : I developed a 3P Vendor Rider Simulator to enable third-party vendors to independently test their API integrations with Uber's 3P Rides platform. My work involved building a responsive UI, creating state flow visualizations, implementing gRPC services, and handling request/response conversions for seamless testing. I streamlined vendor integration by automating processes, reducing Uber's involvement, and ensuring compatibility with scalable API versions.

Tool used (Development tools - H/w, S/w) : React.js, GraphQL, JavaScript, Java

Objectives of the project : Develop a 3P Vendor Simulator to enable third-party vendors to independently test their API integrations with Uber's 3P Rides platform. The simulator will streamline the testing process, allowing vendors to simulate key ride scenarios, decouple from legacy APIs for scalability, and reduce Uber's involvement by enabling self-testing. Additionally, it aims to accelerate vendor onboarding by supporting a growing number of integrations with a consistent and reliable experience.

Major Learning Outcomes : Enhanced skills in designing scalable, user-friendly UIs using React.js and GraphQL.

Reinforced knowledge of full-cycle development, from setup to UI design, backend integration, and thorough system testing.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Uber was dynamic, collaborative, and fast-paced, fostering innovation and problem-solving

Academic courses relevant to the project : Object Oriented Programming

PS-II Station : UBER - Software Engineer,Bangalore, Bengaluru

Faculty

Name: Akshaya G .

Student

Name: ARYAMAN CHAUHAN .(2020B5A72006P)

Student Write-up

PS-II Project Title: Vendor Resilience

Short Summary of work done during PS-II : Improved the overall resilience of the system with respect to dealing with 3rd Party Vendors. Also worked with improving the Error detection abilities of the system, and automating Failovers between these vendors.

Tool used (Development tools - H/w, S/w) : GoLang, VSCode Web, Java, MySQL, MVCS, Presto, Kafka

Objectives of the project : To improve efficiency of the Systems via early detection and mitigation of issues

Major Learning Outcomes : - Learned How to write Efficient codes

- Learned proper code practices and importance of reviewing
- Learned about design aspects of projects
- Learned how to interact with and notify stakeholders of the project

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment is a supportive and comfortable learning platform, fostering growth through practical application of knowledge. Team members are knowledgeable and offer guidance when needed, but encourage independent problem-solving rather than hand-holding. This promotes self-reliance and skill development. The company provides all necessary resources to maximize efficiency and create a positive and productive work experience. Expectations from the company include a proactive approach to learning, a willingness to tackle challenges independently, and a collaborative spirit in contributing to team success. While support is readily available, employees are expected to take ownership of their work and demonstrate initiative.

Academic courses relevant to the project : DBMS, DSA, DAA, Computer Network, OOP

PS-II Station : UBS - NCL Product Control - Valuations, Pune

Faculty

Name: Niranjan Swain .

Student

Name: SANYAM JAIN(2021A8PS1611G)

Student Write-up

PS-II Project Title: Valuation Control

Short Summary of work done during PS-II : Extracting and Validating market risk data from various broker platforms, leveraging SQL & Python, ensuring data integrity for accurate valuation. Reporting IPV & Risk-based price testing impacts of up to \$5 million for fixed-income trades to senior management with actionability.

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

Objectives of the project : Revaluation of trades in fixed intervals

Major Learning Outcomes : Various Financial Instruments

Details of Papers/patents :

Brief Description of working environment, expectations from the company :

Academic courses relevant to the project : DRM

PS-II Station : UBS - NCL Product Control - Valuations, Pune

Faculty

Name: Niranjana Swain .

Student

Name: KRITI JAKHORIA .(2021B3PS2052P)

Student Write-up

PS-II Project Title: Valuation

Short Summary of work done during PS-II : Automation using python to increase proficiency, performed XVA operationally, and done titan risk download.

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

Objectives of the project : To increase efficiency in the team

Major Learning Outcomes : I have developed proficiency in python , excel and finance

Details of Papers/patents : -

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

Academic courses relevant to the project : DRM

PS-II Station : UBS - NCL Product Control - Valuations, Pune

Faculty

Name: Niranjana Swain .

Student

Name: VINEETA BUGALIA .(2021B3PS2058P)

Student Write-up

PS-II Project Title: Valuation and Migration Project

Short Summary of work done during PS-II : Extracting data from Bloomberg, Reuters, Totem for required instruments for saving Demand Curve Market Fleet at MDS (Market Data System) which further allows to perform monthly IPV's. Performing various IPV (Independent Price Verification) for various risk factors like IR Vol & Skew, IR IR Correlation, Yield Curve associated with products like Swaps, Swaptions, Bonds for various currencies. Analyzing the material impacts and drivers behind them. Communicating material Price Testing impacts of FID risk factors to Front Office. Reconciling the data from different platforms starting with Price Testing Handoffs to Central Database to further Provisional Data Base & analyzing in case of any breaks among the platforms. Preparing IVR Deck/PPT for NCL Macro Region majorly with commentaries from different process owners for the highlighted material impacts as per threshold which is presented to the global head by my manager. Migrating data sources for the instruments as per historical risk, reducing cost by 10 times which is a part of alignment project between CS & UBS including automation wherever required. Volunteered in "FINANCE CONNECT" event held for UBS this year in which professionals from different teams and across cities attended making it a big event for all as this was a major step in integration between UBS & CS .

Tool used (Development tools - H/w, S/w) : Excel, Python, PowerPoint Presentation, Bloomberg, Reuters, Totem, Pure, MDS, Communication (both oral & written) and Analytical skills.

Objectives of the project : Communicating material Price Testing impacts of FID risk factors to Front Office. Migrating data sources for some instruments as a part of alignment between UBS & CS , hence decreasing cost by almost 10 times.

Major Learning Outcomes : Deep knowledge of instruments like Swaps, Swaption, Bonds and how each is priced. Learnt about risk factors like IR Volatility & Skew, IR IR Correlation, Yield

Curve. Bank's working around valuing different instruments and analyzing drivers behind the material impacts.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Worked in the Credit Suisse Valuations team of UBS. People there were extremely helpful, supporting and approachable. Made all the interns a part of everything happening inside the team, never felt left out among the highly experienced and knowledgeable people. Everyone was always ready to help and provide solutions whenever any problem came be it work related or otherwise. Never felt short of advices on any topic. Was always encouraged to express my views on the tasks that I was performing to frame them in a better way reducing both cost and time. Culture of the team was beyond expectation and the environment was always positive and motivating.

Academic courses relevant to the project : DERIVATIVES & RISK MANAGEMENT , BUSINESS ANALYSIS & VALUATION.

PS-II Station : UBS - NCL Product Control, Pune

Faculty

Name: Niranjan Swain .

Student

Name: AKSHITA PANWAR .(2021B3PS2057P)

Student Write-up

PS-II Project Title: Product Control and Valuations

Short Summary of work done during PS-II : As a product control intern in investment banking, I managed, analyzed and reported P&L analysis, valuation adjustments, and risk metrics such as delta and gamma. I collaborated closely with traders to ensure accurate financial reporting, supported migrations and auctions.

Tool used (Development tools - H/w, S/w) : Multiple company related apps and softwares, python, excel

Objectives of the project : develop a strong understanding of financial products, enhance analytical skills through P&L reconciliation and risk assessment, and build technical expertise using financial tools. Interns also aim to strengthen collaboration with cross-functional teams and ensure compliance with regulatory standards while contributing to accurate reporting and decision-making processes.

Major Learning Outcomes : It provides hands-on experience in financial analysis, risk management, and valuation control processes. It develops technical skills in tools like Excel and Python, enhances problem-solving abilities, and fosters collaboration with teams across risk, operations, and the front office.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The working environment in a good investment banking team is fast-paced, collaborative, and with a focus on precision and efficiency. Team members communicate openly, share insights, and support each other to meet tight deadlines and complex challenges, fostering a culture of continuous learning and professional growth.

Academic courses relevant to the project : Finance Courses

PS-II Station : UBS - Quantitative Risk Modelling,Mumbai, Mumbai

Faculty

Name: Niranjan Swain .

Student

Name: YASHMAAN S. BHATIA .(2020B3A31967P)

Student Write-up

PS-II Project Title: QRM Intern at UBS

Short Summary of work done during PS-II : Corporate Specialized Lending and Sovereign Lending

Tool used (Development tools - H/w, S/w) : Python R Studio Excel Toad Jira

Objectives of the project : To manage risk

Major Learning Outcomes : Risk Management

Details of Papers/patents : Na

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

Academic courses relevant to the project : None

PS-II Station : UBS - Quantitative Risk Modelling,Mumbai, Mumbai

Faculty

Name: Niranjan Swain .

Student

Name: JAI GOEL(2020B3A70564G)

Student Write-up

PS-II Project Title: Non Financial Risk

Short Summary of work done during PS-II : Integration of CS and UBS models in model calibration to match stress scenarios. Focus on learning of non financial risk and understanding and running R codes of the company to measure the said risk. Data assurance and reconciliation tasks on excel was another part of what I did in my internship.

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

Objectives of the project : Measuring non financial risk and integrating CS and UBS models

Major Learning Outcomes : Learnt how to measure non financial risk

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Very work friendly environment, helpful team, the team is global so there are team members at the office and around the globe so it is a unique work environment and experience. Overall very happy with the firm. I will continue here for my second semester too.

Academic courses relevant to the project : DRM, FRAM, MSM, Econometrics, Applied Econometrics

PS-II Station : UBS - Quantitative Risk Modelling,Mumbai, Mumbai

Faculty

Name: Niranjan Swain .

Student

Name: NAKULL MAHAJAN(2020B3AA1177G)

Student Write-up

PS-II Project Title: Probability of Default Losses

Short Summary of work done during PS-II : Triggering ECL & CECL Haircut Engine Model: Responsible for initiating and monitoring Expected Credit Loss (ECL) and Current Expected Credit Loss (CECL) calculations, ensuring accurate and timely outputs. Transitioning Model Documentation to LaTeX: Utilized LaTeX to code and structure the existing model document, which had previously been maintained in Word for several years. Stage Corrections: Monitored and updated the Credit Watchlist by regularly reviewing borrower profiles and risk indicators. Management Overlays: Assisted in applying management overlays by incorporating qualitative insights to adjust model outputs. This ensured more accurate credit risk provisioning by accounting for emerging risks and factors not fully captured by models, aligning with the bank's risk strategy and regulatory requirements. Annual Sensitivity: Conducted sensitivity analysis by applying macroeconomic shocks to evaluate impacts on credit risk metrics, ensuring model robustness under various scenarios.

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

Objectives of the project : Probability of Default (PD) is a fundamental metric in credit risk management, representing the likelihood that a borrower will default on their debt obligations within a given time frame. This metric plays a crucial role in determining the overall credit risk of financial institutions, influencing decisions related to capital allocation, loan pricing, and provisioning. PD forms the cornerstone of credit loss estimation frameworks such as Expected Credit Loss (ECL) under IFRS 9 and Current Expected Credit Loss (CECL) under US GAAP. At UBS, PD modeling is used extensively in the Corporate Credit Risk Management team to assess credit risk for various portfolios, including loans, credit cards, and mortgages. The incorporation of PD into models ensures compliance with regulatory standards and aligns with UBS's broader risk mitigation strategies.

Major Learning Outcomes : Coding & Technical Skills: Developed proficiency in R, Python, SQL, and LaTeX during bootcamp training.

Collaboration & Teamwork: Regular meetings with teammates helped me gain practical experience in RtB tasks, which I eventually took on independently.

Mandatory Training: Completed mandatory trainings to ensure compliance with key legal, regulatory, and ethical standards.

This internship deepened my technical expertise on credit risk modeling, significantly developed problem-solving and analytical capabilities, and underlined the crucial importance of a regulatory framework like IFRS9 in financial risk management. These insights have become cornerstones in building my professional approach toward managing risk and decision-making.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The UBS Airoli office in Mumbai provides a dynamic and collaborative environment designed to support innovation and excellence in financial services. As part of UBS's global network, the Airoli office plays a critical role in supporting the bank's operations, particularly in areas like risk management, compliance, and data analytics. The workspace is modern, equipped with state-of-the-art facilities, and fosters a culture of teamwork and professional growth.

Employees are encouraged to take ownership of their tasks, think critically, and contribute to UBS's core values of integrity, collaboration, and sustainability. Regular knowledge-sharing sessions and workshops enable continuous learning, while the emphasis on work-life balance ensures employee well-being.

Expectations from the Company

As an employee, you can expect:

Supportive Learning Environment, Exposure to Global Teams, Career Growth Opportunities, Inclusive Culture & Commitment to Innovation.

Academic courses relevant to the project : All Finance Minor Courses

PS-II Station : UBS - Quantitative Risk Modelling, Mumbai, Mumbai

Faculty

Name: Niranjana Swain .

Student

Name: VARUN M PAI(2020B3AA1469G)

Student Write-up

PS-II Project Title: Market Risk Models

Short Summary of work done during PS-II : Worked on the maintenance of the various models used at UBS and Credit Suisse to monitor market risk of the firm.

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

Objectives of the project : Understand how market risk is modelled.

Major Learning Outcomes : How Market Risk is modelled

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Very helpful and gained a lot of knowledge

Academic courses relevant to the project : FRAM, DRM, SAPM

PS-II Station : UBS - Quantitative Risk Modelling,Mumbai, Mumbai

Faculty

Name: Niranjana Swain .

Student

Name: SAMRIDH SINGH(2020B3AA1809G)

Student Write-up

PS-II Project Title: Quantitative Modelling

Short Summary of work done during PS-II : .This PS-II experience at the Corporate Credit Risk Management (CCRM) team of Quantitative Risk Modelling (QRM) Department at UBS has been very informative for the both of us. We've had the opportunity to work and invest our time collectively on one particular model to revalidate it and ensure its continued utility. While we've both had several ad-hoc tasks that encompass the use of several softwares and frameworks such

as VBA, UBS' in-house analytics platform and routine monitorings, we both agree that the time spent on analyzing and remodelling a particular model on Issuer Risk has been the most vital component of our learning, and we'll be focusing this report on the learnings garnered from this particular model only. This model has provided valuable insight into the immense dedication, precision, and thoughtful planning required to design, build, and sustain a robust financial model. It has highlighted the significant effort involved in ensuring the model is not only functionally accurate but also seamlessly integrated into the broader workflow, aligning with operational goals and risk management frameworks. Furthermore, it emphasizes the importance of creating a model capable of enduring the challenges posed by evolving market dynamics, organizational needs, and stringent regulatory scrutiny. This journey underscores how such meticulous development ensures the model remains reliable, relevant, and compliant over time.

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

Objectives of the project : Maintaining and Redeveloping Credit Models

Major Learning Outcomes :

The Upstream and Downstream workflow and the use of deliverables, interfacing external databases with internal data using different mapping, redeveloping models based on new data.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Very friendly and welcoming teams, minimal interaction with higher leadership

Academic courses relevant to the project : FRAM, Applied Econometrics

PS-II Station : UBS - Quantitative Risk Modelling,Mumbai, Mumbai

Faculty

Name: Niranjan Swain .

Student

Name: S SREEPHALGUNI REDDY(2020B4A40946H)

Student Write-up

PS-II Project Title: Quantitative Risk Modeling

Short Summary of work done during PS-II : During my internship at UBS in the Lombard lending team, I focused on analyzing and validating risk models. My responsibilities included testing code quality in RStudio to ensure robust model performance and accurate lending value assessments. I actively participated in the quarterly and monthly assessments of the model's output, identifying patterns and discrepancies to improve its predictive accuracy. Additionally, I prepared detailed documentation, including test evidence and design, to enhance the model validation process. Collaborating with a global team, I gained hands-on experience in refining models to meet UBS standards and compliance requirements.

Tool used (Development tools - H/w, S/w) : RStudio, MS Office (Word, Excel, PowerPoint), JIRA, TOAD

Objectives of the project : Analyze and validate risk models related to Lombard lending.

Major Learning Outcomes : Acquired expertise in financial risk analysis using R, model debugging, documentation for compliance, and global team collaboration

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at UBS is inclusive, collaborative, and supportive, with team members fostering open

communication and knowledge sharing. There is a strong emphasis on maintaining a healthy work-life balance, with flexible working hours that accommodate both personal and professional needs. Everyone is welcoming, creating a comfortable and productive atmosphere.

Academic courses relevant to the project : FRAM,DRM

PS-II Station : UBS - Quantitative Risk Modelling,Mumbai, Mumbai

Faculty

Name: Niranjana Swain .

Student

Name: SWAYAM RANJAN(2020B4A81590G)

Student Write-up

PS-II Project Title: Trading Credit Risk Model (TCRM)

Short Summary of work done during PS-II : Helped the team in creating the model confirmation reports for the ETD model. It includes the analysis of the trades taken by the bank during the last year and then checking the key model performance indicators (KMPIs). This helps to tell the relevance of the model performance

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

Objectives of the project : Perform daily checks and create model confirmation report for ETD model

Major Learning Outcomes : Banking Regulation, Data Analysis, Knowledge of structured financial product

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Very Supportive and understanding work environment

Academic courses relevant to the project : DRM, FRAM

PS-II Station : UBS - Quantitative Risk Modelling,Mumbai, Mumbai

Faculty

Name: Niranjan Swain .

Student

Name: SHREY GARG(2020B4A81659G)

Student Write-up

PS-II Project Title: Model Confirmations for OTC and s-EPE Models

Short Summary of work done during PS-II : I worked as part of the Exposure Risk Measurement team, starting with a training phase focused on statistics and quantitative methods. My work included internal exposure control processes and contributing to the Derivatives Umbrella Model for OTC counterparties and s-EPE model confirmations. This gave me hands-on experience with tools like R, Python, and SQL and helped me draw useful financial insights from the work.

Tool used (Development tools - H/w, S/w) : R , Python ,Excel , Bank's internal software

Objectives of the project : Model Confirmations for the OTC and s-EPE models, providing annual reports to ensure their accuracy and effectiveness, while also contributing to internal exposure control processes.

Major Learning Outcomes : I learned about various risk models and gained experience in quantitative analysis. I developed skills in R, Python, SQL, and Excel while working on exposure measurement and validating financial models.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : UBS has a friendly and supportive work environment with flexible timings, as long as the work is completed on time. The small team size encourages learning and taking on responsibilities. The management is cooperative, and the work-life balance is decent, making it a good place to grow.

Academic courses relevant to the project : Derivatives and Risk Management

PS-II Station : UBS - Reporting and Analytics, Pune, Pune

Faculty

Name: Niranjana Swain .

Student

Name: PARAB URJIT AJIT(2020B1A41942G)

Student Write-up

PS-II Project Title: Reporting and Analytics

Short Summary of work done during PS-II : Designed reports and dashboards using Power BI desktop and Power BI service, created paginated reports using Power BI report builder and also wrote its documentation, carried out the testing of a GPT by validating its data against a Power BI dashboard, Validation of reports to ensure accuracy of data in reporting

Tool used (Development tools - H/w, S/w) : Power BI, SQL, Excel Macros

Objectives of the project : To create internal dashboards and reports for reporting purposes in UBS to ensure stakeholders take the right decisions

Major Learning Outcomes : Learnt how to use Power BI to create visually appealing internal dashboards and reports which ensure that the accuracy of data is maintained. Also learnt how to write complex queries in SQL to extract information from databases using different types of joins. Learnt how to automate repetitive processes using Excel macros.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Work environment is very good, everyone encourages you to learn new things, but in order to benefit more from the ps2 you need to ensure you talk to different members in your team and get work assigned to you

Academic courses relevant to the project : NA

PS-II Station : UBS - Reporting and Analytics, Pune, Pune

Faculty

Name: Niranjan Swain .

Student

Name: MANISHA MATHUR(2020B3A31776G)

Student Write-up

PS-II Project Title: Reporting and Analytics (RAS)

Short Summary of work done during PS-II : I validated data feeds with high accuracy, ensuring that critical reports were free from discrepancies. My efforts in automating manual processes not only improved efficiency but also reduced the risk of human error. Participating in user acceptance testing allowed me to identify potential issues early, providing valuable feedback to development teams. I also played a key role in aligning the reporting framework with business objectives, facilitating seamless integration of analytics into decision-making processes.

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

Objectives of the project : The RAS ControlGroup serves as the cornerstone of data governance for a strategic reporting project. The group's mission is to ensure the integrity of data feeds flowing into the organization's reporting system, which functions as a single source of truth for decision-makers.

Major Learning Outcomes : During this internship, I honed a variety of technical and soft skills that

were instrumental in achieving project goals. Key technical skills include expertise in SQL, which was leveraged in Databricks for efficient querying and data validation. Business intelligence capabilities were enhanced through the use of Power BI, enabling the creation of insightful dashboards tailored to stakeholder needs. Advanced Excel proficiency, including the development of VBA macros, facilitated automation of complex tasks, ensuring accuracy and efficiency.

Details of Papers/patents : Nil

Brief Description of working environment, expectations from the company : Very good company culture, proper training provided before commencing the actual work.

Academic courses relevant to the project : -

PS-II Station : UBS GCRG, Mumbai/Pune, Mumbai

Faculty

Name: Niranjana Swain .

Student

Name: SHIVAM ARYA .(2020B1A40593P)

Student Write-up

PS-II Project Title: GCRG intern

Short Summary of work done during PS-II : Made dashboards on power bi, used rest api, made reports using report builder

Tool used (Development tools - H/w, S/w) : Power bi, report builder, excel etc

Objectives of the project : Intern

Major Learning Outcomes : Power bi

Details of Papers/patents : Finance

Brief Description of working environment, expectations from the company : Working environment is fine Not recommended if you want to go into finance

Academic courses relevant to the project : Not really relevant



PS-II Station : Udaan, Bangalore

Faculty

Name: Ramesh Venkatraman .

Student

Name: LAKSHIT JAIN .(2020B2A11918P)

Student Write-up

PS-II Project Title: Inventory Planning and Management

Short Summary of work done during PS-II : Ensure that there is availability of all products across warehouses and that purchase orders are being placed for the products whose inventory is about to get exhausted. I worked with n the availability of warehouses and took the availability from 80% to over 95%. I closely monitored inter-warehouse inventory transfer and found there were lot of failures in it, so I identified the issues and got them resolved. I prepared a Power BI dashboard to keep track of the sales and inventory of cold drinks in all the warehouses due to approaching winter season. There were certain products for which there was some issue in their MRP mapping due to which excess purchase orders were placed, I guess t such incorrect orders cancelled, thus reducing the unnecessary capital expenditure.

Tool used (Development tools - H/w, S/w) : Microsoft Excel, SQL, Power BI

Objectives of the project : Maintain availability of products across warehouses, ensuring proper transfer of inventory between warehouses, look into all the purchase orders and their delivery, prevent accumulation of excess inventory to optimize warehouse space

Major Learning Outcomes : I gained a comprehensive understanding of the entire supply chain network that is involved in running the business. I got a good experience of working on Microsoft Excel, SQL and Power BI. I also improved upon my my communication skills as I got to interact with a lot of people to get the work done.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment is good, you get a chance to express yourself, everyone is helpful and there are no strict office timings. Sometimes, it does get hectic when you need to push yourself.

Academic courses relevant to the project : Supply chain related courses

PS-II Station : Udaan, Bangalore

Faculty

Name: Ramesh Venkatraman .

Student

Name: YADAV DIVYANSHU SINGH RAMKISHOR SINGH(2020B4A81573G)

Student Write-up

PS-II Project Title: Business Analyst

Short Summary of work done during PS-II : I helped sales and BD team by reviewing their methods and later developing dashboards, thereby, increasing efficiency. Also helped the tech team with some sample videos for presentation and some backend work for getting important information via an already deployed API.

Tool used (Development tools - H/w, S/w) : SQL, PowerBI, VBA, Excel, Pycharm Community, Postman

Objectives of the project : Write queries, create dashboards and help the team anyway possible.

Major Learning Outcomes : Learned how an organization or a startup works, how each individual performance matters

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Basic expectations are to be eager to learn anything, also requiring skills in SQL, excel and powerBI (sometimes). The work culture is great and working hours are chill.

Academic courses relevant to the project : N/A

PS-II Station : Udaan, Bangalore

Faculty

Name: Ramesh Venkatraman .

Student

Name: ADITYA GUPTA .(2021A1PS1576P)

Student Write-up

PS-II Project Title: Enhancing Business Decision Making using Data Analytics of Retail Operations

Short Summary of work done during PS-II : I worked mainly as a data analyst, but owing to a startup environment, my work varied depending on the team's need. I built master tables using SQL along with other probe needs for data analysis. Designed sale constructs, did buyer calling to judge awareness and implementing strategy changes based on the response. I also handled app communications and announcements for quarterly sale events.

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

Objectives of the project : To prepare master tables, and analysis of promo offers

Major Learning Outcomes : Learnt about B2B retail, warehouse operations. From a SW POV, was able to skill up in SQL and Excel usage for data analysis.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment in my team was hectic, with high expectations from the start. Since I wasn't highly skilled, the learning curve was a bit steep in the start. Work was also expected on the weekends sometimes or beyond office times, so adapting to that was necessary. However, there is a heavy exposure to various teams and avenues of work, so you get the chance to learn a lot, although it might get stressful sometimes.

Academic courses relevant to the project : Supply Chain Management (brief knowledge about supply chain helps, although not necessary)

PS-II Station : Udaan, Bangalore

Faculty

Name: Ramesh Venkatraman .

Student

Name: NAVYA KRISHNIA .(2021A4PS0134P)

Student Write-up

PS-II Project Title: Program Management to enhance Sales throughput and performance

Short Summary of work done during PS-II : As a part of my PS-II project, I was responsible for creating dashboards and leaderboards for the team, which showed various details and metrics, and helped to monitor the performance of the organisation.

Tool used (Development tools - H/w, S/w) : Data Platform, MS Excel, PowerBI, SQL, Python

Objectives of the project : To develop efficient methods and enhance performance using analytics

Major Learning Outcomes :

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Working environment was chill and flexible, no hard deadlines, and hybrid work.

Academic courses relevant to the project : Analytics for Supply Chain was a bit relevant

PS-II Station : UnifyApp, Gurgaon

Faculty

Name: Sugata Ghosal .

Student

Name: SWAHA PATI .(2021A3PS0027P)

Student Write-up

PS-II Project Title: Building enterprise automations for Unifyapps

Short Summary of work done during PS-II : Here's a modified version of your paragraph to align with the question: Short Summary of Work Done During PS-II During my six-month internship at Unifyapps, I developed 21 connectors, including 12 high-priority connectors critical for client demos. These connectors spanned a variety of use cases, such as payment handling, email services, and database integrations. I also had the opportunity to attend client demos, which provided direct insights into specific client requirements. Understanding these requirements firsthand was instrumental in improving the quality and relevance of the connectors I built. This experience enhanced my ability to design solutions that effectively addressed real-world use cases, contributing to a better end-user experience. My work involved leveraging technologies such as REST APIs, webhooks, and automation tools to develop seamless integrations between various applications. This improved my technical proficiency in Java and gave me a deep understanding of the functional scope of the product.

Tool used (Development tools - H/w, S/w) : Java, JSON, Unifyapps qa platform, Github

Objectives of the project : To build app automations based to client requirements

Major Learning Outcomes : Gained hands-on experience in writing clean and maintainable Java and groovy code, ensuring the development of robust and scalable products.

Acquired in-depth knowledge about HTTPs, REST APIs, Webhooks, and automation workflows, enhancing technical expertise in modern software integrations.

Learned the importance of writing clear and concise documentation, a critical skill for effective collaboration in cross-functional teams.

Developed essential soft skills, including time management, clear communication, and adaptability, to excel in a fast-paced corporate environment.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : Unifyapps has a fast paced work environment. Employees are required to work 6 days a week and be available whenever there is a requirement. One needs to be an open minded and adaptive learner as the company is in its initial growing stage and is constantly evolving.

Academic courses relevant to the project : Object Oriented programming

PS-II Station : Unity Growth Investments Pvt Ltd - Tech, Hyderabad

Faculty

Name: Gaurav Nagpal .

Student

Name: NACHIKET SINGH JAGMOHAN SINGH KANDARI(2021A7PS2691P)

Student Write-up

PS-II Project Title: Unity Fund Services

Short Summary of work done during PS-II : The work done during PS 2 comprised mostly of front-end web development where-in we used the existing apis or creating new functions in the back-end and using their api calls for the new features being implemented on the UGF portal. The app development work consisted of synchronising the website with the app in flutter. React.js was used for front-end and Node.js was used for back-end. I also created email validation and auto-email sending applications for the company's use in order to save dependency on subscription based alternatives. There was also the task of handling the database which required basic knowledge of MySQL.

Tool used (Development tools - H/w, S/w) : S/w - React.js, Next.js, Python, Flutter, MySQL

Objectives of the project : Creation of a multi-asset fund in the portal. Bug Fixing. Adding new features to the existing Unity Growth Fund website.

Major Learning Outcomes : Front-end , Back-end, App- Development, CI/CD Pipeline, Cross-functional teamwork

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment is pretty balanced. During my PS-II , the internship was in remote mode and that enabled us to smoothly adjust to the US timings. Expectations from the company were to provide some guidance in the field of software development and provide us with challenging projects which teach us new things. They passed my expectations and also let us work on their production environment and as a result a lot of what is visible in their website has been in some way modified and improved on by me.

Academic courses relevant to the project : OOP, DBS

PS-II Station : UST- SI Digital Transform, Thiruvananthapuram

Faculty

Name: Sindhu S .

Student

Name: KARTIKEYA MAYANK(2019B4AA0758G)

Student Write-up

PS-II Project Title: Impact analysis and job allocation

Short Summary of work done during PS-II : Implemented models concerned with optimization of internal job allocation, testing the models, implementation of the models and debugging

Tool used (Development tools - H/w, S/w) : Python, libraries, Neo4j

Objectives of the project : Job allocation in internal projects using data analysis and machine learning

Major Learning Outcomes : Python, ML, Data Analytics, Neo4j

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Very good work life balance. Good working environment.

Academic courses relevant to the project : NA

PS-II Station : UST- SI Digital Transform, Thiruvananthapuram

Faculty

Name: Sindhu S .

Student

Name: KARUN VATTAKAVIL(2020B2A32403H)

Student Write-up

PS-II Project Title: Impact Analysis of Code Repositories

Short Summary of work done during PS-II : were given the problem statement and started with our own approaches. i started off using a simple python script leveraging the openai api's ability to parse through large chunks of code and classify segments under classes, segments, modules and imports. these nodes were imported into a Neo4j graph database. next we worked on the emerge open source python module and enhanced it to work with a variety of languages, mainly Java and javascript. We managed to extract first level dependencies of each node into a python list for testers or developers to find of use.

Tool used (Development tools - H/w, S/w) : python, openai api, neo4j, emerge, Javaparser

Objectives of the project : perform impact analysis on code repositories, belonging to clients of the firm

Major Learning Outcomes : learnt about compiler construction, language parsers, use of openai api

Details of Papers/patents : none

Brief Description of working environment, expectations from the company : very relaxed, you are in charge of your own work. have to take responsibility and find solutions to problems on your own. mentors do help but the task given was too complex and difficult even for them so online resources had to be used. location is not amazing but company building is great, all facilities are available and timings are extremely flexible.

Academic courses relevant to the project : compiler construction, ML, OOPS

PS-II Station : UST- SI Digital Transform, Thiruvananthapuram

Faculty

Name: Sindhu S .

Student

Name: AMAN DOKANIA(2020B2AA2512H)

Student Write-up

PS-II Project Title: Impact Analysis & Job Allocation

Short Summary of work done during PS-II : Internal Job Allocation, testing the models, implementation of the models and debugging

Tool used (Development tools - H/w, S/w) : Python, Libraries, Neo4j

Objectives of the project : Job allocation in the internal projects using data analysis and machine learning

Major Learning Outcomes : Python, ML, Data Analysis, Neo4j

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Good work life balance. Good working environment.

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

PS-II Station : UST- SI Digital Transform, Thiruvananthapuram

Faculty

Name: Sindhu S .

Student

Name: ROHIT PATHAK(2020B5A42369H)

Student Write-up

PS-II Project Title: Entity Dependency Tool

Short Summary of work done during PS-II : Made File dependency tool. Improved emerge tool.

Tool used (Development tools - H/w, S/w) : VS code, AST, etc.

Objectives of the project : Help testers and debuggers.

Major Learning Outcomes : Python.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Very good work life balance.

Academic courses relevant to the project : NA

PS-II Station : Varaha ClimateAg Private Limited, Gurgaon

Faculty

Name: Gaurav Nagpal .

Student

Name: HARSHAL CHANDRAKANT GUTHE(2021AAPS2926G)

Student Write-up

PS-II Project Title: Developing Carbon Credit Projects

Short Summary of work done during PS-II : During my internship at Varaha ClimateAg, I contributed to various strategic and operational initiatives within the partnerships and strategic alliances team. I supported the development of concept notes, proposals, and grant applications, including a ₹2 crore Access Grant focused on biochar production in Maharashtra, emphasizing its socio-economic and environmental impact. I facilitated stakeholder engagement by coordinating with entities like NSL Seeds, Paani Foundation, and multiple agroforestry and biochar technology partners to explore potential collaborations. I conducted detailed research on biochar technologies, including low- and high-tech production methods, assessing their viability for different projects. Additionally, I audited and validated biochar plants and proposed strategies for scaling operations. My work extended to preparing financial models and technical documents for proposals to corporates, startups, and government agencies, highlighting Varaha's alignment with climate goals. Engaging with academic and industrial stakeholders, I explored life cycle assessments for biochar's carbon reduction potential and supported applications for carbon credits like CORCs and CDRs. I played a key role in outreach activities for global platforms like Shopify and regional partnerships with state governments for sustainable agroforestry and biochar initiatives. In summary, I bridged technical, financial, and strategic gaps, enhancing Varaha's biochar project portfolio and its collaborations. My contributions significantly bolstered

the organization's efforts to scale impactful climate solutions through innovative partnerships and business strategies.

Tool used (Development tools - H/w, S/w) : Excel, Google Earth, MS Office Suite

Objectives of the project : Varaha seeks a motivated and analytical intern to help answer key strategic questions that will unlock exponential growth for the company. As a Carbon Supply - Intern, you will be at the heart of Varaha's growth and development, helping to build partnerships that drive sustainable agricultural practices. This is an opportunity to work at the forefront of climate tech while gaining invaluable business development experience in a high-growth, investor-backed startup.

Major Learning Outcomes : As a Carbon Supply Intern at Varaha, you will gain hands-on experience in business development, learning how to navigate and shape partnerships that foster sustainable agricultural practices. You'll have the chance to deepen your understanding of the climate tech industry and its role in driving positive environmental change. By working closely with a dynamic team in a fast-paced startup environment, you'll develop strong analytical skills, gaining insight into market trends, stakeholder relationships, and the complexities of scaling solutions for carbon offset projects. You'll also build your communication and negotiation abilities, learning how to engage with a wide range of partners, from farmers to investors. Overall, this internship offers a unique opportunity to blend strategic thinking with practical, real-world applications in a rapidly evolving industry.

Details of Papers/patents : Relevant research papers according to the needs.

Brief Description of working environment, expectations from the company : At Varaha ClimateAg, the working environment is dynamic, fast-paced, and deeply committed to driving sustainable change through innovative climate tech solutions. As part of a high-growth, investor-backed startup, employees are encouraged to bring their creativity, problem-solving skills, and passion for sustainability to the table. The team is collaborative, with a strong emphasis on teamwork, mutual respect, and shared goals. Working at Varaha means being at the forefront of the climate tech space, where each day offers new challenges and opportunities to make a tangible impact on global agricultural practices and carbon reduction efforts.

The company culture is built on values of transparency, accountability, and innovation. Team members are expected to be self-driven, adaptable, and proactive, taking ownership of projects and contributing to both short-term goals and long-term strategic growth. Varaha promotes a learning-oriented environment, offering ample opportunities for interns and employees alike to grow professionally, gain exposure to diverse areas of the business, and make meaningful contributions to the company's mission.

Expectations include an ability to think strategically, analyze data effectively, and engage with a variety of stakeholders, from farmers to corporate partners. There is also a strong focus on delivering results, with a commitment to sustainable and scalable impact. Employees at Varaha are passionate about creating a greener, more sustainable future, and are expected to bring that same drive and dedication to their work every day.

Academic courses relevant to the project : Chemical, Mechanical, Finance/Management a bit

PS-II Station : Vedant Infra Solution, Jaipur

Faculty

Name: Mahesh Kumar Hamirwasia .

Student

Name: ARIN MANGAL .(2021A2PS2153P)

Student Write-up

PS-II Project Title: Alsisar Hospital Project and Paint Expansion

Short Summary of work done during PS-II : During my PS-II internship at Vedant Infra Solution, I contributed to two major initiatives: the Alsisar Hospital Project and the expansion into the luxury

paint segment in collaboration with Berger Paints. My work focused on enhancing operational efficiency through digitalization and supporting business development strategies. For the Alsisar Hospital Project, I monitored construction workflows, proposed solutions to address delays caused by unforeseen site conditions, and assisted in revising project timelines with buffer periods. Additionally, I participated in the foundation stone ceremony, marking a significant milestone in the project. In the digitalization domain, I introduced tools like Excel and Trello to transition the company's documentation from manual to digital formats, creating templates that streamlined reporting and project tracking. For the luxury paint expansion, I conducted market research, evaluated store locations, and collaborated on a scalable business model to address cost challenges. I implemented a just-in-time inventory system to optimize stock management and minimize overhead. Furthermore, I developed a comprehensive client database to enhance outreach efforts and identified tender opportunities with high-value clients such as Tata and L&T. These contributions not only improved internal processes but also positioned the company for future growth opportunities. The internship allowed me to integrate technical and managerial skills, demonstrating adaptability, problem-solving, and effective communication in a professional environment.

Tool used (Development tools - H/w, S/w) : Microsoft Excel: For data organization, analysis, and creating templates for project documentation and reporting. Trello: For workflow management, task tracking, and collaboration. Google Drive: For cloud-based document storage and sharing, enhancing acce

Objectives of the project : Oversee Hospital Construction and Expand to Paint business

Major Learning Outcomes : During the internship, I gained valuable insights into project management, particularly in addressing construction delays and optimizing workflows. I successfully implemented digital tools like Excel and Trello to streamline documentation processes and enhance efficiency. My involvement in business development included conducting market research and strategic planning for the luxury paint segment expansion, which sharpened my analytical and problem-solving skills. I also strengthened my client relationship management abilities by preparing detailed databases and professional presentations to enhance outreach efforts. Additionally, I improved my adaptability and communication skills by effectively collaborating with team members, supervisors, and external stakeholders, ensuring alignment

across projects. These experiences collectively enhanced my technical, managerial, and interpersonal competencies.

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment at Vedant Infra Solution was dynamic, collaborative, and growth-oriented. Despite being a mid-sized organization with a compact team of 15 employees, the company fostered a professional yet approachable atmosphere. Team members were highly supportive, encouraging open communication and collaboration, which created a conducive space for learning and contributing effectively.

The organization emphasized the importance of quality and client satisfaction, which reflected in its operations and interactions. As an intern, I was treated as an integral part of the team and entrusted with significant responsibilities, including project tracking, digitalization, and business development tasks. The work environment encouraged problem-solving and critical thinking, allowing me to actively participate in decision-making processes. Regular meetings with supervisors and peers provided constructive feedback and helped align my contributions with the company's objectives.

The company's expectations were clear and challenging. They required interns to be proactive, adaptable, and capable of handling diverse tasks, from monitoring construction workflows to strategizing for market expansion. Punctuality, professionalism, and a commitment to meeting deadlines were expected, along with the ability to communicate effectively with team members and external stakeholders. Overall, the experience provided an excellent balance of guidance and autonomy, fostering personal and professional growth while contributing meaningfully to the organization's projects.

Academic courses relevant to the project : Construction Management, Surveying

PS-II Station : Vegapay Technology Private Limited - Product, Gurgaon

Faculty

Name: Gaurav Nagpal .

Student

Name: VARUN JAIN(2020B4AA2361H)

Student Write-up

PS-II Project Title: Product Management and Lifecycle Enhancements for VegaPay's Credit Card Management System (CCMS)

Short Summary of work done during PS-II : **Short Summary of Work Done During PS-II**

During my internship at VegaPay, I primarily focused on enhancing their Credit Card Management System (CCMS) and developing data-driven solutions through Metabase dashboards. My work involved identifying and defining Key Performance Indicators (KPIs), such as delinquency metrics, onboarding rates, and issue resolution times, to support operational efficiency and strategic decision-making. I collaborated with stakeholders to gather requirements, designed data models, and wrote SQL queries to extract and validate data for visualizations. I successfully created and deployed dashboards for tracking delinquency trends, onboarding metrics, and support operations, incorporating real-time data updates and advanced filtering options. These dashboards provided insightful visualizations, enabling teams to monitor performance, improve workflows, and make informed decisions. In addition to technical tasks, I contributed to the refinement of the CCMS by implementing features like session timers, enhanced search functionalities, and API integrations for VKYC data verification. My role also involved creating documentation and conducting training sessions to ensure effective use of the dashboards. This internship provided me with valuable exposure to product management in the fintech sector, enhancing my skills in data analytics, visualization, stakeholder collaboration, and problem-solving. By leveraging tools like Metabase and SQL, I contributed to optimizing VegaPay's operations and delivering actionable insights that aligned with business goals.

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

Objectives of the project : During my internship at VegaPay, I primarily focused on enhancing the existing Credit Card Management System (CCMS) and developing Metabase dashboards to calculate and visualize key performance metrics. This involved optimizing system functionalities, implementing new features, and creating comprehensive data analytics tools to support informed decision-making.

Major Learning Outcomes : Developed expertise in product management and data analytics within the fintech sector, focusing on enhancing the Credit Card Management System (CCMS) and creating Metabase dashboards. Gained hands-on experience in KPI identification, SQL querying, and designing data visualizations for informed decision-making and operational efficiency.

Details of Papers/patents : Papers: None published during this internship.
Patents: None filed during this internship.

Brief Description of working environment, expectations from the company : The working environment at VegaPay was fast-paced and dynamic, reflecting the nature of the fintech industry. Collaboration and teamwork were central, with regular interactions between product managers, developers, and analysts to ensure alignment on project goals. The company encouraged ownership of tasks, adaptability to changing priorities, and proactive problem-solving. Expectations included delivering high-quality work within tight deadlines and maintaining clear communication with stakeholders. This challenging yet supportive environment offered valuable insights into product management and the operations of a rapidly evolving industry.

Academic courses relevant to the project : Probability and Statistics

PS-II Station : Vegapay Technology Private Limited - Tech, Bengaluru

Faculty

Name: Uma Nagarajan .

Student

Name: SURYAANSH TRIPATHI(2021A7PS2610G)

Student Write-up

PS-II Project Title: Software Development Intern

Short Summary of work done during PS-II : I was task with making some back in tech technologies for our firm. I was also involved in APIs I was also made to do load testing, and I also made to make some into services. I also saw some crucial bugs related to a product going live. I also helped developed new frameworks and libraries in our organisation.

Tool used (Development tools - H/w, S/w) : The main tools used for Java spring boot, IntelliJ postman, docker, lens, kibana

Objectives of the project : Taking our product live by December

Major Learning Outcomes : Learned best practices of backend development from my seniors and applied them in real world fintech projects

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Working environment is very good and chill. Seniors are very helpful, and the manager is also very helpful in providing tasks in a timely manner.

Academic courses relevant to the project : None

PS-II Station : Vehant Technologies, Noida

Faculty

Name: Rajesh Kumar Tiwary .

Student

Name: HARSH NEMA .(2021AAPS2714P)

Student Write-up

PS-II Project Title: Initial MLOps Integration for Model Training

Short Summary of work done during PS-II : During my PS-II internship at Vehant Technologies, I integrated MLflow for experiment tracking and developed UniTrainer, a frontend app for managing ML configurations. Using MLflow, I logged parameters, metrics, and models to streamline experiment tracking. I trained the Swin Transformer on the MNIST dataset, applying preprocessing and optimization techniques. UniTrainer simplified hyperparameter management through a user-friendly interface, generating validated JSON configurations for seamless backend integration. This project improved ML workflow efficiency, reproducibility, and user accessibility.

Tool used (Development tools - H/w, S/w) : Python, Html,Css,Java Script

Objectives of the project : To build a platform for Machine Learning Model training using MLOps and frontend of UniTrainer App

Major Learning Outcomes : During the internship, I gained expertise in MLflow for experiment tracking, logging parameters, and analyzing results through its UI. I developed UniTrainer, a user-friendly frontend for managing ML hyperparameters and generating JSON configurations, seamlessly integrated with MLflow. I trained the Swin Transformer model on the MNIST dataset, mastering preprocessing, optimization techniques, and PyTorch workflows. The project enhanced

my understanding of reproducibility, automation, and efficient ML workflows, while improving problem-solving, collaboration, and communication skills.

Details of Papers/patents : <https://mlflow.org/>

Brief Description of working environment, expectations from the company : The working environment at Vehant Technologies was collaborative and dynamic, fostering both technical growth and innovation. I worked closely with my mentor and team, who provided invaluable guidance and constructive feedback throughout the project. The company maintained a balance between structured supervision and independent problem-solving, allowing me to explore solutions while aligning with project goals.

I had access to modern tools and resources, including GPU workstations for efficient model training and well-documented frameworks like MLflow and PyTorch. Regular discussions with my mentor ensured clarity of objectives, while the flexibility to innovate encouraged creativity in developing UniTrainer.

Academic courses relevant to the project : Computer Programming

PS-II Station : Viacom - Android and Android TV Development, Bengaluru

Faculty

Name: Sandeep Kayastha .

Student

Name: V NAGA YUGANDER(2020B4A72335H)

Student Write-up

PS-II Project Title: Mobile App Development(JioCinema)

Short Summary of work done during PS-II : During my Summer Internship at Viacom18, I worked as a frontend developer for the JioCinema app. My primary responsibilities included maintaining the app's functionality, developing new features, and ensuring an optimal user experience. I contributed to implementing features that adhered to project requirements, significantly enhancing the app's functionality. I actively debugged and resolved critical bugs, ensuring a seamless user experience and stable app performance. Leveraging tools like Charles Proxy, I was able to efficiently debug network issues, while Git streamlined the collaboration process. Collaborating closely with the team, I ensured timely updates and feature integrations, meeting project deadlines. This experience provided me with valuable insights into professional development workflows and honed my technical and problem-solving skills.

Tool used (Development tools - H/w, S/w) : Software: Android Studio Charles Proxy Git Kotlin

Objectives of the project : To maintain and enhance the functionality of the JioCinema app by contributing as a frontend developer. To improve the app's user experience through the development and implementation of new features. To ensure the stability and performance of the app by identifying and resolving critical bugs.

Major Learning Outcomes : Gained hands-on experience with Kotlin for Android application development.

Learned advanced debugging techniques using tools like Charles Proxy.

Enhanced understanding of version control using Git for collaborative development.

Improved skills in integrating features to enhance app performance and user experience.

Developed an appreciation for collaborative workflows in a professional team environment.

Details of Papers/patents : No papers or patents were submitted during this internship.

Brief Description of working environment, expectations from the company : The working environment at Viacom18 was dynamic and collaborative, fostering innovation and growth. My team was highly supportive, creating a space where I could freely share ideas and learn from experienced professionals.

The company emphasized delivering high-quality features in a fast-paced development cycle. Expectations included active participation in team discussions, adherence to deadlines, and ensuring the app met user expectations. Regular code reviews and feedback sessions provided opportunities for continuous learning and improvement.

Academic courses relevant to the project : Object-Oriented Programming

HCI

Data Structures and Algorithms

PS-II Station : Viacom - Android and Android TV Development, Bengaluru

Faculty

Name: Sandeep Kayastha .

Student

Name: ROHAN G SHROFF(2021A7PS0004G)

Student Write-up

PS-II Project Title: Android Tv APP Development

Short Summary of work done during PS-II : As part of my learning journey with Android development, I initially created a real-time news application to gain hands-on experience with Android Studio and Kotlin. Following the initial development, I focused on enhancing the user experience by implementing three key improvements: First, I introduced loading indicators on both the home screen and search screen to provide visual feedback during data retrieval. This ensures users are aware that content is being loaded, preventing confusion or frustration with

seemingly empty screens. To simulate real-world loading scenarios, I strategically added delays where appropriate. Secondly, I implemented a robust network connectivity management feature. The app now detects internet disconnections and displays a toast notification to inform users about the loss of network connection. Additionally, the application includes an automatic retry mechanism that attempts to reconnect and reload content seamlessly when internet connectivity is restored. Lastly, I optimized the voice search functionality to streamline the user experience. Instead of first loading search suggestions, the voice search now directly loads the search results, reducing unnecessary steps and providing a more direct and efficient search process. These enhancements significantly improved the app's usability, responsiveness, and overall user interaction.

Tool used (Development tools - H/w, S/w) : Android Studio, Kotlin, Git,Github, Android emulator, Retrofit, Charles, Firebase

Objectives of the project : Improving the overall experience of the users of the jiocinema app

Major Learning Outcomes : Kotlin, Android Studio, Gtithub

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment was characterized by flexibility and supportive team dynamics. I benefited from flexible working hours that allowed for a healthy work-life balance and enabled me to manage my professional responsibilities effectively. The team maintained realistic expectations, which created a positive and productive atmosphere.

Whenever challenges arose or additional guidance was needed, support was readily available. Colleagues and managers were approachable and willing to provide assistance, fostering a collaborative and inclusive workplace culture. This open and helpful approach ensured that team members could seek clarification, learn, and grow professionally.

The company's approach emphasised understanding individual work styles while maintaining clear performance standards. This balanced method allowed for personal autonomy while ensuring team objectives were met consistently. The flexible yet structured environment promoted both individual creativity and collective achievement.

Academic courses relevant to the project : Data Structures and Algorithms, Theory of computation, Design and analysis of Algorithms, Operating Systems, Object Oriented Programming

PS-II Station : Viacom - Android and Android TV Development, Bengaluru

Faculty

Name: Sandeep Kayastha .

Student

Name: SARTHAK SHARMA(2021A7PS2535P)

Student Write-up

PS-II Project Title: Android Dev @JioCinema

Short Summary of work done during PS-II : The PS was divided into two parts. The learning curve and the work assignment on the JC App. In the learning curve i developed two end end to applications. Post that i was assigned 2 tickets of medium priority one extensively on the UI and the other on the analytics.

Tool used (Development tools - H/w, S/w) : Compose, Kotlin, Retrofit, Paging3, Hikari, Mixpanel, Charles, RoomDb

Objectives of the project : Work on the JioCinema Application

Major Learning Outcomes : Kotlin, Compose UI dev, Sprint planning and ticket management through Jira, Architecture Principles

Details of Papers/patents : Confluence Doc on Top App bar for the JC app

Brief Description of working environment, expectations from the company : Nice, but on hiring freeze as of now due to merger with Hotstar.

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

PS-II Station : Viacom - Content Strategy & Analytics, Mumbai

Faculty

Name: Sandeep Kayastha .

Student

Name: RAMESTHA PRINCE .(2020B2A11941P)

Student Write-up

PS-II Project Title: Content Strategy & Analytics

Short Summary of work done during PS-II : I was involved in daily Tracking, Analysis and Reporting of new launches on JioCinema. I have also worked on the strategy planning for the IPL 2025.

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

Objectives of the project : To Analyse the performance overview of new launches on the JioCinema.

Major Learning Outcomes : Mixpanel, Microsoft Excel

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working culture is pretty good. The people at Viacom are very nice and helpful. They consider you like a regular employee and involve you in the regular projects.

Academic courses relevant to the project : NA

PS-II Station : Viacom - Content Strategy & Analytics, Mumbai

Faculty

Name: Sandeep Kayastha .

Student

Name: UTKARSH SAMADDAR(2020B2A42047G)

Student Write-up

PS-II Project Title: Content Strategy & Analytics

Short Summary of work done during PS-II : I played a pivotal role in analyzing content performance on Jio Cinema, leveraging key performance indicators (KPIs) such as viewer count, watch time, ad revenue, subscriptions gained, and subscription sources. By systematically

tracking these metrics, I identified patterns and trends, enabling the generation of actionable insights which were presented to key stakeholders to support strategic decision-making. Specifically, I monitored and reported the performance of marquee shows like *Bigg Boss Kannada S11*, delivering trend analyses and detailed performance reports that highlighted audience engagement and monetization opportunities. These insights helped fine-tune content strategies, ensuring optimized viewership and revenue generation. Additionally, I facilitated a seamless data transition process during the merger of Jio Cinema and Hotstar. Anticipating the discontinuation of Mixpanel, I created a comprehensive Excel-based data repository to consolidate and preserve historical data. This ensured continuity and accessibility of critical analytics, safeguarding valuable insights for future content and platform strategies.

Tool used (Development tools - H/w, S/w) : Mixpanel, Excel, PowerPoint, SQL.

Objectives of the project : To use data analytics as a tool to understand user behavior and suggest content based on user preference and profiling.

Major Learning Outcomes : Mixpanel, Excel, Stakeholder Communication.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Great Working Conditions! Team was very collaborative, helpful and supportive.

Academic courses relevant to the project : Probability & Statistics

PS-II Station : Viacom - Content Strategy & Analytics, Mumbai

Faculty

Name: Sandeep Kayastha .

Student

Name: RAGHAV(2021A4PS2214G)

Student Write-up

PS-II Project Title: Content Strategy & Analytics

Short Summary of work done during PS-II : The role involves leveraging data-driven decision-making to support Viacom18's OTT platform, JioCinema. This includes daily metric analysis, performance tracking of the Platform and shows, and the formulation of impactful strategies to drive growth, enhance user engagement and increase subscription

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

Objectives of the project : Increase user engagement & subscription in JioCinema

Major Learning Outcomes : Data Analytics, Communication

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment was friendly and collaborative. People here are very helpful. Most of the time interns are asked to help the senior managers in their projects.

Academic courses relevant to the project : N/A

PS-II Station : Viacom - Content Strategy & Analytics, Mumbai

Faculty

Name: Sandeep Kayastha .

Student

Name: PRADHYUMN SINGH RATHORE(2021A4PS2828G)

Student Write-up

PS-II Project Title: Content Strategy and Analytics

Short Summary of work done during PS-II : The role pertains to data driven decision making for Viacom18's flagship OTT platform Jio Cinema, which involves day to day metric analysis and strategy formulation.

Tool used (Development tools - H/w, S/w) : MS Excel, SQL, VBA, Mixpanel

Objectives of the project : Improve user engagement on Jio Cinema

Major Learning Outcomes : Data Analytics and Analysis, Communication

Details of Papers/patents : nil

Brief Description of working environment, expectations from the company : the work environment is very collaborative and enthusiastic, with passionate people around, who are always ready to help. The company quickly absorbs the new interns and they are put to day to day reporting roles, along side involving them with senior managers for their projects.

Academic courses relevant to the project : nil

PS-II Station : Viacom - Creators Business, Mumbai

Faculty

Name: Sandeep Kayastha .

Student

Name: RISHAB BANSAL .(2021A1PS1587P)

Student Write-up

PS-II Project Title: Creators Business, JioCinema

Short Summary of work done during PS-II : During my 6-month internship, I focused on automating workflows and providing data-driven insights to improve efficiency. I automated the tracking of key metrics for Creators Adda, streamlined the video approval and publishing pipeline, saving 10-12 hours per week, and automated creator data collection while analyzing the top YouTube channels in India for valuable insights. Additionally, I supported project planning by creating Gantt charts and assisting with deal structuring, ensuring better execution. My work helped save time, enhance processes, and contribute to business growth through automation and data analysis.

Tool used (Development tools - H/w, S/w) : Mixpanel, Excel, Google Sheets, Appscript

Objectives of the project : Creators Business is an early stage team building JioCinema as a creator platform, and building audience habit of watching creator content on JioCinema.

Major Learning Outcomes : Proficient in using Mixpanel and Excel for data extraction and analysis, efficiently deriving actionable insights to address key problem statements and drive informed decision-making.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at JioCinema can be fast-paced and demanding at times, but it offers invaluable learning opportunities. Despite the challenges, the experience fosters growth and allows you to develop crucial skills in user engagement, data analysis, and digital marketing. The dynamic nature of the industry, combined with the hands-on exposure to real-world projects, ensures that you gain deep insights into the complexities of user behavior, content strategies, and operational efficiency, making it a rewarding and enriching experience.

Academic courses relevant to the project : None

PS-II Station : Viacom - D2C Subscriptions – ChatBots (WhatsApp and RCS), Mumbai

Faculty

Name: Sandeep Kayastha .

Student

Name: SHASHWAT VARENIA(2021A2PS2437H)

Student Write-up

PS-II Project Title: RCS & Whatsapp Chatbots

Short Summary of work done during PS-II : During my PS-II, I worked on several projects aimed at optimizing JioCinema's user engagement, payment infrastructure, and scalability. One of the key tasks was setting up automated alerts to monitor key performance indicators (KPIs),

such as daily order completes, payment success rates, and the percentage of plans page loaded to order completes. I developed systems to trigger real-time alerts via email if there were significant fluctuations in these KPIs, allowing the team to respond quickly to any issues. I also worked on the JioStar project, which involved scaling transaction processing systems (TPS) due to the merger of Jio and Hotstar. This required collaboration with banks, payment gateways, and regulatory bodies to ensure that systems could handle the increased load, especially for high-demand events like cricket. I helped with AB testing of bank servers to ensure they could process 5000 TPS without issues, analyzing load distribution across different platforms and identifying potential failure points. Additionally, I worked on optimizing subscription campaigns. I created and tracked campaigns designed to reactivate expired users by targeting them with relevant content based on their previous viewing history. I analyzed campaign metrics like conversion rates and cost per subscription (CPS), suggesting improvements for better performance. Throughout the projects, I gained hands-on experience in data analysis, technical troubleshooting, stakeholder management, and problem-solving, all of which contributed to a deeper understanding of scaling digital platforms and optimizing user acquisition and retention strategies.

Tool used (Development tools - H/w, S/w) : Mixpanel, Clevertap, Excel, Word, Powerpoint

Objectives of the project : The objective of the project was to contribute to the operational and strategic growth of Viacom18's OTT platform, JioCinema, through data-driven insights and technical optimizations.

Major Learning Outcomes : Understanding of KPIs and Alerts: Gained a deep understanding of how key performance indicators (KPIs) like payment success rates and order completes are tracked, monitored, and used to trigger alerts to ensure smooth operations.

Data-Driven Decision Making: Learned how to analyze user engagement, retention data, and payment success metrics to make data-driven decisions that enhance user experience and platform performance.

Payment Infrastructure and Scaling: Developed knowledge of how payment gateways, UPI apps, and banks work together to handle large-scale transactions, and the importance of scaling infrastructure to support high transaction volumes (TPS) like in the JioStar project.

Campaign Management and Optimization: Acquired skills in campaign execution, from designing and verifying templates to tracking performance and analyzing conversion metrics to optimize subscription campaigns.

Technical Expertise in AB Testing: Gained hands-on experience with AB testing, especially in testing load capacity, such as testing if bank servers could handle 5000 TPS, ensuring seamless transactions.

Collaborative Stakeholder Management: Worked closely with multiple stakeholders, including payment gateways, banks, and regulatory bodies, to ensure smooth execution of the projects, highlighting teamwork and communication skills.

Problem-Solving and Adaptability: Developed critical problem-solving skills by analyzing potential issues in real-time and implementing solutions that minimize disruptions and improve performance.

Knowledge of Digital Payments Ecosystem: Gained a deeper understanding of the digital payments ecosystem, including roles of payees, payers, and regulatory bodies like NPCI, and how the payment journey affects TPS scaling.

Real-Time Monitoring & Optimization: Learned the importance of real-time monitoring for critical infrastructure like payment gateways and how optimizing these systems can directly impact user experience and business success.

Details of Papers/patents : During my PS-II, there were no specific papers or patents that I contributed to or developed.

Brief Description of working environment, expectations from the company : The working environment during my PS-II internship at Viacom18 was dynamic, fast-paced, and collaborative. As an intern, I was given opportunities to work on real-world projects related to key areas such as scaling up transactions per second (TPS), optimizing subscription campaigns, analyzing user engagement vs. retention, and automating KPI monitoring. The team was highly supportive, with experienced professionals guiding me through complex processes and encouraging hands-on learning.

The expectations from the company were clear: I was expected to contribute meaningfully to ongoing projects by applying analytical thinking, performing data-driven analysis, and implementing practical solutions to challenges faced by the organization. I was given the responsibility to work independently on several initiatives, such as setting up automated alerts for KPIs and optimizing campaigns for user reactivation, while receiving continuous feedback from mentors to refine my work.

The company expected me to display adaptability in dealing with different tools and technologies, such as Mixpanel for data analysis, and engage proactively with various stakeholders to drive

progress in projects like scaling up TPS infrastructure for JioStar. Additionally, I was expected to apply theoretical knowledge from my coursework to real-world problems, ensuring that my contributions had tangible value for the company. Overall, the environment was intellectually stimulating, providing opportunities for growth while aligning with the company's strategic objectives.

Academic courses relevant to the project : The following academic courses were highly relevant to the projects I worked on during my PS-II internship at Viacom18:

1. Data Analytics and Visualization

- This course helped me understand how to work with large datasets, extract meaningful insights

PS-II Station : Viacom - D2C Subscriptions – ChatBots (WhatsApp and RCS), Mumbai

Faculty

Name: Sandeep Kayastha .

Student

Name: SRIVARAN KUKATLA(2021A4PS1988H)

Student Write-up

PS-II Project Title: D2C Subscription - Chatbots(Whatsapp&RCS)

Short Summary of work done during PS-II : Achieved the best Retention rates and Autopay percentages in OTT industry, for which I created Automated anomaly detector in Mix panel, worked on improving the autopay percentages, worked on reactivation source issues, trackers, and different analysis, worked on campaigns, worked on user profiling engagement analysis and

analytics on trends with retention, worked on stakeholder management, worked on improving the infrastructure of the nation for upscaling the Transactions per second that can happen via autopay

Tool used (Development tools - H/w, S/w) : Mixpanel, Clevertap, Bigquery, Excel

Objectives of the project : -Retention, business analytics

Major Learning Outcomes : -Retention, business analytics

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Being an OTT platform, the work-life balance is highly dependent on the time that we are working in, for example, in high business numbers generating time period like that of bigg boss release, the work-life balance comes to a toss, but I enjoyed the work and the immediate impact of the work therefore not leading to much stress on me. Summarizing, the work culture is pretty good if you enjoy your work and are ready to take some stress to create some impact.

Academic courses relevant to the project : DBMS

PS-II Station : Viacom - Data Platform and Analytics, Bengaluru

Faculty

Name: Sandeep Kayastha .

Student

Name: PIYUSH CHANDUKA .(2021A4PS1554P)

Student Write-up

PS-II Project Title: Implement a Data Quality Monitoring Framework

Short Summary of work done during PS-II : During my internship, I contributed to several impactful projects. A key focus was the Data Quality Management (DQM) framework, where I ensured the accuracy and reliability of data by building a dashboard to track metrics like views, viewers, and time spent per viewer (TSV). I implemented automated alerts to flag data inconsistencies. Additionally, I worked on web scraping to extract mobile device details (price, brand, model) to aid marketing strategies. I developed a dynamic Directed Acyclic Graph (DAG) to process app installation data, ensuring accurate tracking of user acquisition metrics. I also created and maintained Superset dashboards for data visualization. Throughout the internship, I handled various data requests, including analyzing user entry points for Splitsvilla, defining metrics for the Discovery POD, and aggregating advertiser counts for sports content.

Tool used (Development tools - H/w, S/w) : S/w - Data Build Tool, Mixpanel, Bigquery, VS Code, JIRA, Github

Objectives of the project : Define data quality checks. Configure automated checks, data validation procedures. Integrate with existing reporting tools and notification channels.

Major Learning Outcomes : I learnt about data quality importance to a company and building a framework. I worked on from defining the tests to implementing them in Data Build tool. I built a good hands-on on DBT tool.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at the company was exceptional and provided a perfect balance between professionalism and comfort. I learned a great deal during my internship, thanks to the supportive and approachable nature of all team members. Everyone was friendly and welcoming, which made it easy for me to bond with each person I interacted with. The environment was relaxed yet focused, fostering creativity and productivity.

One of the standout aspects of the company culture was its flexibility. The emphasis was on delivering quality work, irrespective of where or when it was completed, as long as it met the deadlines. This approach instilled a sense of responsibility and allowed for a better work-life balance. Overall, the experience was highly enriching, and the company's culture played a significant role in making my internship both enjoyable and educational.

Academic courses relevant to the project : Probability and Statistics

PS-II Station : Viacom - Digital Sales Planning, Mumbai

Faculty

Name: Sandeep Kayastha .

Student

Name: SHIVANG RAI .(2020B2A41947P)

Student Write-up

PS-II Project Title: Data Analysis and Reporting

Short Summary of work done during PS-II : At Viacom18, my primary responsibility was to develop expertise in extracting and processing data from Google Ad Manager (GAM). This skill was crucial in reducing my team's reliance on external teams for data management and reporting. I learned how to efficiently handle GAM's extensive datasets and automated the data processing workflow using Python. This automation significantly streamlined our operations, reducing manual effort and saving valuable time that could be redirected toward more strategic and detailed analysis. One of my key contributions was conducting an eCPM analysis of advertisers. By analyzing data trends and patterns, I provided actionable insights that helped optimize ad pricing

strategies and improve overall revenue performance. This analysis was instrumental in identifying high-value advertisers and understanding their contribution to our monetization efforts. Through these initiatives, I not only enhanced data accessibility and efficiency but also empowered my team to make data-driven decisions, ultimately contributing to the growth of Viacom18's AVOD revenue strategy.

Tool used (Development tools - H/w, S/w) : Python, SQL, Excel, PowerBI, VS Code, Jupyter Notebook

Objectives of the project : Learn how to operate, extract and process data from Google Ad Manager

Major Learning Outcomes : Critical Thinking, Problem Solving, and Data Analysis

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Viacom18 offered an exceptional working environment that fostered growth, collaboration, and innovation. The culture was highly supportive, with teams and leadership always approachable and willing to guide. This created a nurturing atmosphere where challenges were met with encouragement and resources to succeed.

The organization also emphasized a healthy work-life balance, ensuring that employees could perform at their best without feeling overwhelmed. This balance, combined with the supportive ecosystem, made Viacom18 a rewarding and enriching place to work.

Academic courses relevant to the project : Probability and Statistics

PS-II Station : Viacom - Performance Marketing,Mumbai, Mumbai

Faculty

Name: Sandeep Kayastha .

Student

Name: AKSHITA RAJ PANDITA .(2021A4PS0151P)

Student Write-up

PS-II Project Title: Campaign Performance Analytics and Digital Impact Reporting for JioCinema shows

Short Summary of work done during PS-II : During my PS-II internship at Viacom18, I worked on optimizing digital marketing campaigns and managing content for various JioCinema Originals. My primary responsibilities included updating and maintaining the Digital Impact (DI) sheet and city-wise DI trackers for multiple campaigns. I tracked key performance metrics such as CPV, CPM, reach, and impressions, ensuring daily updates and accurate reporting. I collaborated with the Havas Media agency to gather performance data and made strategic recommendations for campaign optimization. In addition to campaign management, I contributed to SEO efforts by conducting keyword research, optimizing content, and managing the IMDB pages for JioCinema Originals. I also ensured the timely uploading of the platform's synopsis, cast details, and promotional assets. A significant part of my learning involved media planning, where I understood the process of selecting the right media channels, and audiences, budgeting, and scheduling for maximum campaign impact. I also gained hands-on experience with tools like Google Adwords, dv360, and Mixpanel, which were crucial for performance tracking and optimization. Overall, my internship allowed me to develop a strong understanding of digital marketing, campaign performance analysis, SEO strategies, and media planning, preparing me for future marketing and digital media roles.

Tool used (Development tools - H/w, S/w) : Mixpanel, AppsFlyer, Google Ads, DV360, Superset, Semrush, Microsoft Excel

Objectives of the project : The project aimed to enhance JioCinema's campaign performance through data-driven analysis, SEO, and content management. Key activities included tracking

performance metrics, updating DI sheets, improving content visibility, and coordinating with agencies to streamline campaign execution.

Major Learning Outcomes : Data Analysis & Interpretation: Gained proficiency in tracking and analyzing key performance metrics (CPV, CPM, reach, impressions) to assess campaign effectiveness.

SEO & Keyword Research: Developed skills in SEO optimization, keyword research, and content visibility enhancement for JioCinema Originals.

Campaign Management: Learned to manage end-to-end campaign execution, from updating DI sheets to tracking city-wise campaign impact.

Media Planning & Strategy: Gained insights into media planning, including selecting the right media channels, audiences, scheduling, and optimizing budgets for maximum campaign impact.

Data-Driven Decision Making: Improved the ability to draw actionable insights from campaign data, enabling more effective marketing strategies.

Tool Proficiency: Gained hands-on experience with tools like Google Ads, AppsFlyer dv360, and Mixpanel for campaign tracking and SEO strategy.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment is relaxed and collaborative, with a strong emphasis on proactivity. As it's a large company, tasks are not always assigned directly, and you'll need to take the initiative to seek work or propose tasks. The team is highly experienced, offering ample learning opportunities. The company expects you to be self-driven, engage with team members, and take responsibility for your tasks. Flexibility, curiosity, and problem-solving are key in this environment, offering a great chance for growth and skill development.

Academic courses relevant to the project : NA

PS-II Station : Viacom -AdOps - Data Analysis, Mumbai

Faculty

Name: Sandeep Kayastha .

Student

Name: SHREEANSH MOHANTY .(2021ABPS2715P)

Student Write-up

PS-II Project Title: Development of a Dashboard

Short Summary of work done during PS-II : During my internship at Viacom18 in the Digital Ventures department, I was entrusted with responsibilities aimed at enhancing operational efficiency within the Ad Operations team. My primary role revolved around automating data workflows and improving the accuracy and accessibility of key ad metrics. I undertook daily tracking of metrics such as impressions, inventory, revenue, and fill rates for top shows like Bigg Boss Hindi and MTV Hustle, alongside metrics for the JioCinema platform as a whole. This process, previously reliant on manual efforts using Power Query and Python, was optimized using a semi-automated PostgreSQL database, significantly reducing processing time from hours to minutes. Another key milestone was the development of a Power BI dashboard. This dashboard offered comprehensive drill-down capabilities, allowing users to analyze metrics by revenue channels, ad positions, viewer devices, and live versus Video-On-Demand performances. This solution was integral in supporting data-driven decisions for ad strategy and optimization. This internship fostered my technical expertise in tools like PostgreSQL, Power BI, and Mixpanel, while honing soft skills such as cross-team collaboration and workflow optimization. My contributions streamlined reporting processes, enhanced analytics capabilities, and provided actionable insights, benefiting the organization while enriching my professional growth.

Tool used (Development tools - H/w, S/w) : Postgres SQL, Python, Mixpanel, Power BI, Google Ad Manager

Objectives of the project : Prepare a power BI dashboard for easy access and visualization of data related to various ad metrics. Also improve the procedure for daily reporting of data.

Major Learning Outcomes : Developed technical and interpersonal skills

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment at Viacom18 was dynamic, collaborative, and oriented toward innovation. The company fosters a culture of teamwork, encouraging employees and interns alike to contribute ideas and take ownership of their tasks. My interactions with colleagues and supervisors were characterized by a supportive and approachable demeanor, which helped in overcoming challenges and enhancing productivity. Open communication and knowledge-sharing were actively promoted, creating a conducive atmosphere for learning and growth. Expectations from the company primarily revolved around leveraging my skills to contribute meaningfully to ongoing projects while maintaining a professional and dedicated approach. The emphasis was on delivering results that aligned with the company's strategic goals. This included demonstrating adaptability, problem-solving abilities, and a commitment to deadlines. Additionally, the company expected proactive involvement in identifying areas for improvement and taking initiatives to address them, showcasing a spirit of ownership and accountability. As an intern, I anticipated an enriching learning environment where I could work on real-world challenges and develop both technical and soft skills. The organization's clear communication of objectives and the guidance provided by my mentors exceeded my expectations, ensuring a productive and fulfilling experience. This synergy between the company's expectations and the opportunities it provided played a pivotal role in fostering my professional growth.

Academic courses relevant to the project : N/A

PS-II Station : Viacom -Business Analytics & Business Intelligence, Mumbai

Faculty

Name: Sandeep Kayastha .

Student

Name: SINGH HARSHVARDHAN BHARAT SHARAN(2021A4PS1336P)

Student Write-up

PS-II Project Title: BUSINESS ANALYTICS AND INTELLIGENCE

Short Summary of work done during PS-II : Project initially revolved around pulling data and identifying trends in the data. Data which is usually fetched from Mixpanel is broken in various cohorts to identify their unique nature in the given trend. I have been given the opportunity to work on Olympics, the Median Time per viewer, Ad video on demand (AVOD) to Subscription video on demand (SVOD) conversions in which I have fetched data and observed some trends in various cohorts. Besides this I also updated a Weekly Tracker Database which included important metrics like Monthly and daily active users and viewers, Sports and entertainment Monthly and Daily viewers and other such important metrics. I have also worked on traffic study of Jio cinema by observing the kind of viewers coming to Jio cinema. Also worked on Studying the behaviour of Youtube channels in India and their respective viewers. My main project post-merger was building a M&E industry data deck and a dashboard that would represent it. It will be used by higher executives including the CEO.

Tool used (Development tools - H/w, S/w) : Mixpanel, Excel, Power Bi

Objectives of the project : To understand Cohorts driving changes. Understanding M&E Industry

.

Major Learning Outcomes : Reaching to the depth of a problem and identifying factors making changes.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Very helpful people. Work environment is also good with flexible working hours.

Academic courses relevant to the project : None, may be DBMS and python could help to an extent. Excel is a must.

PS-II Station : Viacom -Interactivity, Mumbai

Faculty

Name: Sandeep Kayastha .

Student

Name: ANUBHAV SINHA(2021A4PS2893G)

Student Write-up

PS-II Project Title: Interactivity

Short Summary of work done during PS-II : During my internship at Viacom18 in the Digital Ventures department, I played a crucial role in enhancing the operational efficiency of the Ad Operations team. My primary focus was on automating data workflows and improving the accuracy and accessibility of key ad metrics. I diligently tracked daily metrics such as impressions, inventory, revenue, and fill rates for flagship shows like Bigg Boss Hindi and MTV Hustle, as well as metrics for the JioCinema platform overall. This process, which initially relied on manual efforts using Power Query and Python, was significantly optimized by implementing a semi-automated PostgreSQL database. This enhancement reduced processing times from hours to minutes. A

key achievement was developing a Power BI dashboard with comprehensive drill-down capabilities, enabling users to analyze metrics by revenue channels, ad positions, viewer devices, and live versus Video-On-Demand performances. This tool was vital for supporting data-driven decisions in ad strategy and optimization.

Tool used (Development tools - H/w, S/w) : Mixpanel, Excel and SQL

Objectives of the project : To increase engagement

Major Learning Outcomes : The major learning outcome of my internship was gaining proficiency in SQL, PostgreSQL, and Power BI, while also enhancing crucial soft skills like communication, collaboration, and problem-solving.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at Viacom18, particularly in the Digital Ventures department, is dynamic and collaborative. The company fosters a culture of innovation, encouraging interns to contribute actively and take ownership of their projects. There is a strong emphasis on cross-team collaboration, with open communication channels and support from experienced mentors. Interns are expected to be proactive, adaptable, and eager to learn. They are entrusted with meaningful responsibilities, such as improving operational efficiency and developing new solutions, which provide ample opportunities for professional growth and development. Overall, the company values a blend of technical expertise and soft skills, aiming to cultivate well-rounded professionals.

Academic courses relevant to the project : Finance Courses

PS-II Station : Viacom -Retention Marketing, Mumbai

Faculty

Name: Sandeep Kayastha .

Student

Name: ARYAMAN VAISH(2021A4PS2491H)

Student Write-up

PS-II Project Title: Tracking user behaviour and retention

Short Summary of work done during PS-II : During my internship at JioCinema, I contributed to enhancing user engagement and retention through a variety of data-driven projects. I developed and optimized a push notification system to keep users informed about new releases and promotions, playing a key role in improving platform engagement. Additionally, I managed and analyzed user engagement data, tracking notification metrics and user responses to derive actionable insights. Using tools like Mixpanel and CleverTap, I assessed user behavior, retention strategies, and the impact of notifications on engagement, further strengthening my understanding of mobile marketing and user analytics in the digital streaming industry.

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

Objectives of the project : The internship focuses on leveraging data analytics and tracking and sending notifications to the users to increase the company's viewership, reach and retention to its audience.

Major Learning Outcomes : Proficient in using Mixpanel and Clevertap for data extraction and analysis, efficiently deriving actionable insights to address key problem statements and drive informed decision-making.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The working environment at JioCinema can be fast-paced and demanding at times, but it offers invaluable learning opportunities. Despite the challenges, the experience fosters growth and allows you to develop crucial skills in user engagement, data analysis, and digital marketing. The dynamic nature of the industry, combined with the hands-on exposure to real-world projects, ensures that you gain deep insights into the complexities of user behavior, content strategies, and operational efficiency, making it a rewarding and enriching experience.

Academic courses relevant to the project : None

PS-II Station : Viacom -Retention Marketing, Mumbai

Faculty

Name: Sandeep Kayastha .

Student

Name: AKAL MURUGAN A R(2021A4PS2885G)

Student Write-up

PS-II Project Title: Data Analysis

Short Summary of work done during PS-II : Led Project South, focusing on transitioning sports viewers into entertainment consumers across South Indian languages (Tamil, Telugu, Kannada, and Malayalam). Executed Push Notification campaigns targeting diverse audience segments, ensuring localized and engaging content delivery. Performed data analysis for major events, including the Paralympics, Indian Super League (ISL), Bigg Boss, India vs Bangladesh cricket series, and other entertainment properties, to evaluate campaign impact. Conducted daily

campaign analysis, assessing metrics like Click-Through Rates (CTR) and Click-to-View (C2V) to drive optimization and improve performance outcomes.

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

Objectives of the project : Understand Customer Lifecycle Management (CLM): Gain insights into customer acquisition, retention, and engagement strategies for entertainment consumers. Campaign Management: Design, execute, and analyze campaigns targeting specific consumer cohorts in the South Indian market. Data Analysis: Use metrics such as CTR, C2V, and churn rates to optimize content strategies. Content Localization: Create and manage region-specific marketing initiatives for sports and entertainment events.

Major Learning Outcomes : Strategic Planning: Learned how to plan and execute campaigns that cater to diverse audience demographics.

Analytical Skills: Gained experience in interpreting campaign performance data to draw actionable insights.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Collaborative: The team encouraged collaboration across different departments, fostering a supportive atmosphere.

Dynamic: The environment was fast-paced, with tight deadlines requiring quick decision-making.

Learning-Oriented: Emphasis was placed on experimentation, continuous learning, and feedback loops.

Flexible: Flexibility in exploring innovative approaches for regional campaigns and data-driven storytelling.

Academic courses relevant to the project : -

PS-II Station : VINJEY Software Systems Pvt. Ltd.,Bengaluru, Bengaluru

Faculty

Name: Satya Sudhakar Yedlapalli .

Student

Name: ANISETTI KARTHIK(2021AAPS2145H)

Student Write-up

PS-II Project Title: Optimization of audio codec

Short Summary of work done during PS-II : Audio codec is a open source software. It is a code. It needs to be implemented on a hardware. Many vendors like qualcomm, ti, nxp have their own implementations of the codec. Here we try to implement them on a cheaper platform also getting same or better performance than already existing ones. Work is mainly on ARM, RISC-V, RX MCUs.

Tool used (Development tools - H/w, S/w) : RISCv assembly, Arm assembly, C language, STMCube 32 IDE, E2 Studios, Espressif IDE

Objectives of the project : To optimize the flac decoder for ARM MCUs

Major Learning Outcomes : Arm assembly, C language, RISCv assembly, Computer Architecture, application in real life

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : It is very stressful. Daily outcomes is expected, daily task for 8hr need to be planned by us and is expected to complete in that day.

Academic courses relevant to the project : Computer Architecture

PS-II Station : Vittiki Tech LLP - FINZIE, Chhindwara

Faculty

Name: Sidharth Mishra .

Student

Name: ISHIKA BHANDARI(2021A1PS2279G)

Student Write-up

PS-II Project Title: Growth Intern

Short Summary of work done during PS-II : During my internship as a growth intern at Finzie, I worked on different projects related to market research, surveys, and idea generation. 1. I did market research for various projects to find trends and gather useful information to help in growth strategies. 2. I helped in designing a platform where clients can host courses by creating surveys to collect feedback from learners and understand their needs. 3. I worked on creating a survey tool for learners to understand their preferences and suggestions for improvement. 4. I contributed ideas for an HR automation platform that can generate letters for employees automatically using ready-made templates, making HR processes faster and easier. 5. I conducted surveys with previous clients to collect feedback and provided suggestions to improve user satisfaction and make platforms more user-friendly. Through this internship, I learned how

to conduct research, design surveys, analyze feedback, and think of new ideas to solve real business problems.

Tool used (Development tools - H/w, S/w) : Google Forms - For creating surveys and collecting feedback. Excel/Google Sheets - For analyzing survey data and organizing research findings. Google Workspace - For collaboration, documentation, and presentation. Online Research Tools. Figma. Canva

Objectives of the project : Conduct market research for various client projects and analyze industry trends. Design surveys to gather insights on customer behavior and preferences. Provide strategic recommendations to drive business growth. Work on design generation ideas.

Major Learning Outcomes :

1. Market Research in Various Projects:

- Learned how to do market research to find trends, study competitors, and gather useful information.

- Understood how to give recommendations based on data to help the company grow.

2. Platform design for clients:

- Learned how to design platforms by understanding the needs of clients and learners.

- Understood the role of surveys in collecting feedback to improve the platform.

3. Survey Tool for Learners:

- Gained experience in creating surveys to understand what learners want.

- Learned how to study survey results and suggest ways to improve the tool.

4. Improving User Experience:

- Learned the importance of client feedback for improving user satisfaction.

- Understood how to collect and analyze survey data to make user-friendly improvements.

5. General Skills Learned:

- Improved time management by working on multiple projects together.

- Learned communication skills by sharing ideas and presenting my work clearly.

- Developed a problem-solving attitude by finding better solutions for different projects.

Details of Papers/patents : No patents.

Brief Description of working environment, expectations from the company : The working environment at Finzie was highly supportive and flexible, especially as I worked in a remote setup. The team maintained clear communication through Google Meet, ensuring I could always reach out for help or feedback. Regular check-ins and discussions helped me stay aligned with project goals and timelines. Despite working virtually, I always felt connected, as the company encouraged collaboration and idea-sharing. The mentors were approachable and provided valuable guidance, which helped me improve my skills and understand the importance of my role in the projects.

My expectations from the company were to gain practical exposure to real-world projects, learn from experienced professionals, and develop both technical and soft skills. Finzie met these expectations by giving me opportunities to work on impactful projects like market research, survey creation, and idea generation for platforms. The company allowed me to take ownership of tasks and contribute my ideas, which boosted my confidence.

Going forward, I look forward to continued mentorship and opportunities to work on challenging projects where I can learn more about business growth strategies and improve my skills further. I also hope for constructive feedback that will help me grow professionally.

Overall, the positive, collaborative, and growth-focused environment at Finzie made my internship a great learning experience.

Academic courses relevant to the project : None

PS-II Station : Vittiki Tech LLP - FINZIE, Chhindwara

Faculty

Name: Sidharth Mishra .

Student

Name: KUSHAL SARKAR(2021A8PS0813G)

Student Write-up

PS-II Project Title: Enhancing Client Outreach and Social Media Growth at Finzie

Short Summary of work done during PS-II : During my PS-II internship at Finzie, a B2B service provider, I worked as a Growth and Marketing Intern. My primary responsibilities included identifying potential clients, connecting with them, and expanding the company's social media presence. I successfully researched and created a database of prospects, reaching out to several potential clients, and contributed to converting several leads into active clients. On the social media front, I analyzed the existing performance of Finzie's clients and developed strategies to increase engagement and visibility. By creating and scheduling content, monitoring metrics, and implementing targeted campaigns, I helped grow the follower base on Instagram, YouTube and LinkedIn. I also contributed to the development of client outreach templates, improving response rates by 15%. In collaboration with the creative team, I brainstormed ideas for posts and campaigns that aligned with the company's goals and audience preferences. The experience allowed me to understand client acquisition processes, develop marketing strategies, and measure campaign success through analytics. It also improved my communication, time management, and problem-solving skills, preparing me for real-world challenges in the business domain. Overall, my internship was a valuable learning experience where I contributed meaningfully to the company's growth while gaining hands-on exposure to B2B marketing and business development.

Tool used (Development tools - H/w, S/w) : CRM Software: For managing client leads and tracking outreach progress. Canva: For designing social media posts, banners, and other visuals. Google Workspace: For emails, document sharing, and project collaboration (Docs, Sheets, Slides). Instagram, Youtu

Objectives of the project : 1) Find and Connect with Potential Clients: To identify businesses that can benefit from Finzie's services and build relationships with them. 2) Grow Social Media Presence: To increase followers, engagement, and brand awareness on platforms like Instagram, LinkedIn, and Twitter. 3) Support Business Growth: To help Finzie attract more clients and improve its market presence through effective marketing strategies. 4) Develop Outreach

Strategies: To create and implement plans for better client communication and higher response rates. 5)Contribute to Revenue Generation: To help convert leads into paying clients and boost the company's earnings.

Major Learning Outcomes :

Understanding Client Outreach: Learned how to identify and connect with potential clients effectively.

Social Media Strategies: Gained knowledge of growing a brand's presence on platforms like Instagram and LinkedIn.

Communication Skills: Improved interpersonal and professional communication through client interactions.

Marketing Techniques: Developed and executed strategies for lead generation and engagement.

Time Management: Learned to prioritize tasks and meet project deadlines efficiently.

Data Analysis: Understood how to analyze metrics to measure campaign success and improve performance.

Team Collaboration: Worked closely with other departments to achieve common goals.

Problem-Solving: Found creative solutions to challenges like low response rates and content adaptability.

Content Creation: Improved skills in creating engaging and relevant content for social media campaigns.

Business Insights: Gained a better understanding of how B2B service providers operate and grow.

Details of Papers/patents : No patents were filed during this internship

Brief Description of working environment, expectations from the company : The working environment at Finzie is friendly, supportive, and full of opportunities to learn. The team is small but very focused on helping the company grow. Everyone is open to sharing ideas, and communication is clear and constant. As an intern, I got to work closely with the marketing team and was given real responsibilities like reaching out to potential clients, handling social media, and creating marketing campaigns. The work is fast-paced, which helped me improve my time management and problem-solving skills.

From the company, I expected a place where I could apply my skills and also learn new things. Finzie met these expectations by giving me hands-on experience in client outreach, digital marketing, and social media management. The support from my team and mentors made me feel

confident and motivated. I also had the freedom to work on my own projects, which helped me understand how businesses run and grow. This internship taught me the importance of teamwork, adaptability, and taking initiative to reach business goals.

Academic courses relevant to the project : Principles of Management

PS-II Station : Voicegain,Texas, Texas

Faculty

Name: Monali Tushar Mavani .

Student

Name: IRVIT GUPTA .(2020B4A30726P)

Student Write-up

PS-II Project Title: AI Bot Development

Short Summary of work done during PS-II : I worked on developing advanced conversational AI systems using GPT models, LangChain, and LangGraph. My responsibilities included designing and implementing intelligent query-handling bots with retrieval-augmented generation (RAG) pipelines for context-aware responses. I enhanced bot performance by integrating agents for modular query resolution and optimizing data storage with vector databases like Firestore. Additionally, I contributed to deploying these systems in real-world scenarios, ensuring scalability and reliability. This experience deepened my expertise in conversational AI frameworks, context management, and data engineering while honing my problem-solving and optimization skills for building production-grade solutions.

Tool used (Development tools - H/w, S/w) : GPT Models, LangChain, LangGraph, Python

Objectives of the project : To design and develop intelligent conversational agents leveraging GPT models, LangChain, and LangGraph frameworks for advanced query handling, context management, and seamless interaction. The project aims to optimize retrieval-augmented generation (RAG) pipelines for enhanced accuracy and user experience.

Major Learning Outcomes : Gained expertise in using LangChain and LangGraph for building modular and scalable conversational AI systems. Developed proficiency in implementing RAG pipelines for improving contextual accuracy in bot responses.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment was quite relaxed, with minimal pressure from the organization and the flexibility to work at your own pace, especially in the beginning. The team was generally helpful and provided guidance whenever needed, fostering a supportive atmosphere. There were also good opportunities for peer-to-peer learning. Since the PS-2 was remote, I can't comment on the office environment.

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

PS-II Station : Volt Money - Software Development, Bengaluru

Faculty

Name: Mohammad Saleem Bagewadi .

Student

Name: ARYAN RAJESH SHELKE(2020B4A71203G)

Student Write-up

PS-II Project Title: LSP Stack Development

Short Summary of work done during PS-II : During my PS-II at Volt Money, I worked on developing and optimizing backend services to streamline financial operations. My primary focus was on automating workflows for disbursements and repayments, integrating lender systems, and enhancing API performance and reliability. I designed and implemented secure and scalable APIs to handle high-volume financial transactions, ensuring data accuracy and compliance with business requirements. Additionally, I contributed to processing pipelines to transform and validate transaction data efficiently. I also worked on mapping payment gateway responses to backend systems and implemented solutions for handling failed transactions, improving the overall user experience. Through this role, I gained hands-on experience in API development, data processing, and integrating third-party services. I honed my problem-solving skills by tackling real-world challenges in financial technology and collaborated with cross-functional teams in an agile environment. This experience enhanced my technical expertise and provided valuable insights into building scalable and secure financial systems.

Tool used (Development tools - H/w, S/w) : H/w - Macbook Pro, S/w - IntelliJ Idea, AWS, DBeaver, Cursor, TablePlus, OpenVPN

Objectives of the project : At Volt Money, the project focused on automating financial workflows, enhancing data processing, and building secure, scalable APIs to streamline disbursements, repayments, and lender integrations.

Major Learning Outcomes : Building scalable and secure APIs

Automating financial workflows

Integrating with third-party systems (lenders)

Efficient data processing and transformation

Problem-solving in real-world financial scenarios

Collaborating in an agile development environment

Details of Papers/patents : N/A

Brief Description of working environment, expectations from the company : The working environment at Volt Money was collaborative and fast-paced. The team encouraged ownership of tasks while providing guidance when needed. Agile practices like stand-ups and code reviews kept work aligned.

The company expected interns to quickly adapt, solve problems, and contribute to live projects. Emphasis was on building scalable, secure solutions with clean, maintainable code while meeting deadlines.

The experience was hands-on and rewarding, offering exposure to real-world challenges in fintech and opportunities to grow both technically and professionally.

The work load was high but the people were very helpful.

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

PS-II Station : Volt Money - Software Development, Bengaluru

Faculty

Name: Mohammad Saleem Bagewadi .

Student

Name: CHAITANYA MISHRA(2021A7PS2725G)

Student Write-up

PS-II Project Title: Software Development

Short Summary of work done during PS-II : During my internship at Volt Money, I was part of the backend development team, primarily contributing to the design and implementation of the company's newly launched lending stack. My responsibilities included developing core modules for the lending platform using Java Spring Boot, optimizing existing APIs, and integrating various AWS services to ensure the platform's efficiency and scalability. I also worked on debugging and enhancing application performance, ensuring seamless user experiences. Collaborating with the product and QA teams, I contributed to the successful deployment of key features, aligning with the company's vision of becoming a leading fintech lender. This experience gave me practical exposure to backend systems and helped me grow as a software developer.

Tool used (Development tools - H/w, S/w) : Software Tools: Java Spring Boot, MySQL, AWS services (S3, Lambda, etc.), Postman, GitHub Development Tools: IntelliJ IDEA, JIRA, Docker

Objectives of the project : Software backend Development

Major Learning Outcomes : Gained hands-on experience in backend development using Java Spring Boot, including designing and implementing RESTful APIs.

Acquired proficiency in integrating AWS services to enhance scalability and reliability of applications.

Developed a deep understanding of the fintech domain, specifically the architecture of lending systems and loan service platforms.

Improved problem-solving skills by addressing real-time issues in a fast-paced startup environment.

Enhanced collaboration and communication skills while working closely with cross-functional teams to deliver high-quality software solutions.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Volt Money provided a dynamic and challenging working environment that fostered innovation and skill development. The company's startup culture encouraged ownership and autonomy in tasks, which significantly accelerated my learning curve. The team was collaborative, with senior developers actively mentoring interns and fostering an open communication environment. Despite the demanding workload, the supportive culture and flexibility in work hours helped maintain a

balance. The company had high expectations from its employees, emphasizing quality deliverables and timely completion of projects. Overall, Volt Money's environment was inspiring and growth-oriented, providing invaluable exposure to cutting-edge technologies and industry best practices.

Academic courses relevant to the project : Data Structures and Algorithms, DBMS, OOPS and OS.

PS-II Station : Wald.ai, Silicon Valley, USA, Silicon Valley, USA

Faculty

Name: Shree Prasad M

Student

Name: IVAN JOSEPH JACOB .(2021A8PS2552P)

Student Write-up

PS-II Project Title: AI/ML

Short Summary of work done during PS-II : During my PS-II at Wald AI, I worked on developing privacy-focused AI tools and understanding data usage in generative AI models. I built secure AI assistants that follow regulatory standards and used LangChain to create practical systems. I also implemented Retrieval-Augmented Generation (RAG) to handle large datasets. This involved splitting big documents, finding the relevant parts, and giving those sections to an LLM to answer specific questions. This approach improved processing and accuracy while keeping data secure. I also read many research papers, which helped me apply new ideas and improve my skills.

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

Objectives of the project : Understand generative AI and its privacy implications. Develop privacy-focused, secure AI assistants. Build regulatory-compliant AI systems. Implement Retrieval-Augmented Generation (RAG) for large-scale data handling.

Major Learning Outcomes : Gained a deep understanding of generative AI and data privacy concerns.

Learned to build secure, privacy-oriented AI systems.

Worked extensively with LangChain for AI development.

Implemented RAG for handling large documents with LLMs.

Enhanced skills in reading and applying research papers.

Details of Papers/patents : No papers or patents yet; ongoing research and development phase.

Brief Description of working environment, expectations from the company : The working environment at Wald AI was supportive and collaborative. I had access to great tools and guidance from experienced mentors, who helped me understand complex AI topics. The company encouraged learning by reading research papers and applying concepts in practice. I gained valuable hands-on experience with AI/ML technologies and industry best practices.

Academic courses relevant to the project : Natural Language Processing

PS-II Station : WILP - ADAS , Artificial & Computation,Hyderabad, Hyderabad

Faculty

Name: Rajiv Ranjan Gupta .

Student

Name: VANSI MAHESHWARI(2021A4PS2534H)

Student Write-up

PS-II Project Title: Driver Safety Enhancement with CNNs

Short Summary of work done during PS-II : Driver Facial Emotion Detection: A CNN-based system detects driver emotions like happy, neutral, or surprise using the FER 2013 dataset, triggering actions such as spraying perfume or making emergency calls via Arduino integration. Intelligent Actuator Control: A YOLO-based model classifies objects as "defect" or "perfect," activating a linear actuator controlled by STM32 to automate sorting in a quality control system. Both projects leverage deep learning for real-time applications and integrate hardware components for automated responses. They utilize technologies like OpenCV, microcontrollers (STM32, Arduino), GSM modules, and linear actuators for seamless automation. These projects demonstrate expertise in CNNs, YOLO, real-time object detection, and hardware-software integration for safety and quality control.

Tool used (Development tools - H/w, S/w) : Yolo, Numpy,Pandas,keras,arduino,

Objectives of the project : Improve driver safety and interior comfort using AI

Major Learning Outcomes : AI/ML

Details of Papers/patents : None

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

Academic courses relevant to the project : CNI minor courses

PS-II Station : WILP - ADAS , Artificial & Computation,Hyderabad, Hyderabad

Faculty

Name: Rajiv Ranjan Gupta .

Student

Name: SAKETH EUNNY(2021A4PS3106H)

Student Write-up

PS-II Project Title: Autonomous Bot Project, Intelligent Linear Actuator, Traffic Optimization

Short Summary of work done during PS-II : My work was mainly to build an autonomous bot from scratch using ROS 2. I also built other side projects like Intelligent Linear actuator and trained images to detect defects in boxes to implement a mini scale prototype of a linear actuator that can push the defective piece out of the field of view.

Tool used (Development tools - H/w, S/w) : Python, ROS 2, OpenCV, YOLO, Raspberry Pi, Jetson Xavier

Objectives of the project : 1. Make an autonomous bot that uses LiDAR and IMU, A linear actuator that pushes a box that is detected as defect.

Major Learning Outcomes : ROS 2 fundamentals, Object Detection, Object tracking, Using Hardware

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Well equipped lab and students have the freedom on what projects they want to work on.

Academic courses relevant to the project : Image Processing

PS-II Station : WILP - AI for Education Innovation Lab,Hyderabad, Hyderabad

Faculty

Name: Suparna Chakraborty .

Student

Name: RAGHAV LAHOTY .(2021A3PS2391P)

Student Write-up

PS-II Project Title: Finetuning, Optimization & Deployment of Spanda.AI's Applications for WILP Bits Pilani

Short Summary of work done during PS-II : As of now, Spanda.AI has come up with 8 applications which they are going to deploy at production level for WILP: Automatic Grading Assignment (AGA), Automatic Question Generation & Answer Generation (AQG), Chatbot, Automatic Faculty Evaluation (AFE), Automatic New Faculty Evaluation (AFE-n), Dissertation Analysis, Multi-Modal AFE and Question-Bank Generation. These applications all use a RAG (Retrieval augmented generation) pipeline to supplement the LLM (Large Language Model) which is the basis of these applications. My main work currently is to test these LLM's and applications to make sure they perform the way they are expected to perform and finetune them if they don't. There are various faces to testing and fine-tuning which I have gone in detail further in the report.

I have also helped in setting up the applications and will also be aiding Spanda.AI when they deploy it at a production level for WILP.

Tool used (Development tools - H/w, S/w) : Predator, Apache Kafka, Grafana, Prometheus, Docker, Kubernetes, Promptfoo

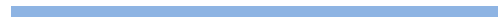
Objectives of the project : Finetuning, Optimization & Deployment of Spanda.AI's Applications for WILP Bits Pilani

Major Learning Outcomes : Finetuning, Optimization & Deployment

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : It was a good working environment and nice to work at. It was on campus so the campus amenities were there.

Academic courses relevant to the project : None



PS-II Station : WILP - Communication Lab, Hyderabad, Hyderabad

Faculty

Name: Suparna Chakraborty .

Student

Name: C DEVANSH REDDY .(2021A3PS2660P)

Student Write-up

PS-II Project Title: Irrigation management in precision agriculture using AI

Short Summary of work done during PS-II : During my PS-II, I worked on developing a sensor-based IoT system integrated with AI for environmental monitoring and decision-making. The project focused on deploying a network of 81 sensors across a 1760 x 1760-meter field to collect real-time data on temperature, humidity, wind speed, and soil moisture. A machine learning model, specifically an SVM, was utilized to predict rainfall based on sensor data. The predictions guided irrigation decisions to optimize water usage. The work involved simulating sensor data, detecting sensor errors, and monitoring sensor health parameters like battery levels, communication strength, and packet delivery ratios. MATLAB and Simulink were used for virtual simulations to refine the system before field deployment. A mobile data receiver, automated using a remote-controlled vehicle, was designed to traverse the field, collect sensor data, and ensure seamless communication. Challenges addressed included handling sensor malfunctions (e.g., delayed or invalid data) and establishing a reliable wireless communication network. The project emphasized scalability, enabling the retraining of AI models with real-time data to improve prediction accuracy. It also incorporated features like error logging and system health checks for efficient operation. This hands-on experience deepened my understanding of IoT systems, AI integration, and automation, providing valuable insights into real-world applications of technology in environmental monitoring.

Tool used (Development tools - H/w, S/w) : Hardware Raspberry Pi – Central processing unit for data processing and decision-making. T-Higrow ESP32 Bluetooth Sensor – For real-time environmental data collection. 12V DC Electric Solenoid Valve – For controlling water flow in irrigation. Remote-Contr

Objectives of the project : To optimize water irrigation system in precision agriculture using AI

Major Learning Outcomes : Sensor Network Setup – Designing and configuring IoT-based sensor networks.

AI Integration – Implementing machine learning models for rainfall prediction.

Real-time Data Processing – Handling, analyzing, and validating sensor data.

Automation – Developing mobile data receivers using automated vehicles.

Error Detection – Monitoring sensor health and addressing malfunctions.

Simulation – Testing models through MATLAB/Simulink simulations.

Resource Optimization – Enhancing water and energy efficiency.
Field Deployment – Insights into real-world IoT and AI applications.

Details of Papers/patents : -

Brief Description of working environment, expectations from the company :

The working environment during my PS-II was collaborative and innovation-driven, with access to advanced tools and resources for hands-on development. The company expected me to contribute to system design, troubleshoot issues, and demonstrate initiative while applying theoretical knowledge to real-world challenges

Academic courses relevant to the project : Control Systems

PS-II Station : WILP - IOT,Hyderabad, Hyderabad

Faculty

Name: Prakruthi Hareesh .

Student

Name: VARSHITH SRINIVASA PEDDADA(2021A8PS1660H)

Student Write-up

PS-II Project Title: building a digital twin for a water bottling plant

Short Summary of work done during PS-II : The Digital Twin project involves creating virtual replicas of physical systems to enable real-time monitoring, analysis, and control. The project focuses on modeling physical assets, such as tanks, heaters, mixers, and coolers, and converting

them into Simulink blocks. These virtual models are integrated with real-time data from sensors and controllers using protocols like Modbus TCP/IP. Python scripts and SQL databases facilitate the seamless flow of information between the physical system, digital twin, and user interface.

Tool used (Development tools - H/w, S/w) : Machine learning, simulink, matlab

Objectives of the project : building a working digital twin for a miniature water bottling plant using matlab, simulink and machine learning

Major Learning Outcomes : Creating machine learning models, implementing simulink models and matlab scripting

Details of Papers/patents : Publication submitted to Conference of Learning Factory (CLF) 2025

Brief Description of working environment, expectations from the company : Working environment was encouraging and supportive. People at the organisation were receptive to any ideas that I had and were more than willing to help me implement these ideas. I expected an environment which encouraged and fostered innovation and was satisfied regarding my expectations

Academic courses relevant to the project : Machine learning

PS-II Station : WILP - IOT,Hyderabad, Hyderabad

Faculty

Name: Prkruthi Hareesh .

Student

Name: SATYAM SHARAN(2021A8PS2985G)

Student Write-up

PS-II Project Title: APPLICATION OF ARTIFICIAL INTELLIGENCE IN MANUFACTURING INDUSTRY

Short Summary of work done during PS-II : The primary objective of this project was to design, develop, and implement chatbot solutions capable of efficiently retrieving and delivering contextually relevant information. These chatbots were tailored to address various use cases, leveraging different technologies and data sources

Tool used (Development tools - H/w, S/w) : python, Mern, basic linux, LLMs etc

Objectives of the project : To design and implement multiple chatbot architectures utilizing cutting-edge technologies, including OpenAI APIs, MySQL, and the Mistral model, to compare and understand their strengths and weaknesses. To create an intuitive interface that simplifies access to complex datasets and static documents, enabling users to retrieve precise answers quickly and efficiently. To utilize advanced large language models (LLMs), including OpenAI and Mistral-7B, for their conversational abilities, contextual understanding, and capacity to process large datasets. To ensure the chatbots are deployed using frameworks like Streamlit, providing a seamless and visually engaging user experience for both technical and non-technical users.

Major Learning Outcomes : Learnt about the use of chatbots in Manufacturing industries and how they can be leverage to offer solutions to an array of problems

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : Working environment is not too hectic. You have to the freedom to contribute in any way you want to.

Academic courses relevant to the project : Large Language Models (Reading Course)

PS-II Station : WILP - IOT,Hyderabad, Hyderabad

Faculty

Name: Prakruthi Hareesh .

Student

Name: ANIRUDH L REDDY(2021AAPS2581G)

Student Write-up

PS-II Project Title: Chatbot development

Short Summary of work done during PS-II : During this internship, I contributed to three distinct projects focused on plant operations, sensor data analysis, and chatbot development. The first project involved plant documentation, where I developed comprehensive manuals detailing the operations and workflows of the plant. Leveraging tools like MS Word and Python, I standardized formatting processes and created well-structured documentation to ensure clarity and consistency, enabling ease of future updates and accessibility. In the second project, I worked on sensor data analysis, designing a framework for managing and analyzing extensive datasets from sensors. I implemented Python-based tools to detect anomalies, visualize trends, and ensure data accuracy. These insights facilitated better decision-making, improving the operational efficiency of the system. The third project focused on developing a question-answer chatbot integrated with the sensor database. The chatbot was designed to address real-time queries about sensor data and provide adaptive questionnaires with varying difficulty levels. By implementing logical frameworks for question categorization and progression, the bot effectively enhanced interaction and streamlined the assessment process for operational and maintenance tasks.

Tool used (Development tools - H/w, S/w) : Python, MySQL, MongoDB, Flask, Streamlit

Objectives of the project : Develop a chatbot for and about Water Bottling Plant.

Major Learning Outcomes : Gained experience in end to end development of web applications and their deployment.

Details of Papers/patents : It was a novel project yet to be published or patented.

Brief Description of working environment, expectations from the company : Internships at the IIoT Lab, part of WILP-BITS Hyderabad, will provide a collaborative, research-driven work environment. Because it is a laboratory that emphasizes technology therefore, we focus on innovations in industrial automation, data analysis and IoT applications. The lab provides us access to state-of-the-art equipment, sensor data systems and software frameworks to facilitate efficient project execution.

Organizational expectations include maintaining high standards of professionalism. Meet project deadlines and deliver quality results. Trainees are encouraged to take ownership of their own work, think critically and devise innovative solutions to meet ongoing challenges. The lab values teamwork and continuous collaboration. Regular discussions and brainstorming sessions are held with the goal of promoting problem-solving thinking.

A structured approach to the project has been a priority. Trainees must carefully document the process and results for future reference. Clear communication skills are important. This is because projects often present progress, findings and technical guidance to consultants and stakeholders. Overall, the work environment encourages trainees to explore, learn, and apply their knowledge to real-world industrial challenges.

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

PS-II Station : WILP - Remote Lab Hyderabad PB, Hyderabad

Faculty

Name: Rajiv Ranjan Gupta .

Student

Name: VIVEK KALLANI .(2020B2A41943P)

Student Write-up

PS-II Project Title: Development of a slot booking portal

Short Summary of work done during PS-II : successfully developed a slot booking portal from scratch using mern stack. on booking a slot the booking details will get saved in the mongodb database and automatically a mail will be sent using nodemailer for the booking conformation and rdp file .and taking remote access.

Tool used (Development tools - H/w, S/w) : we have used mern stack for development with react for frontend and nodejs and express for backend . for database we are using mongodb. for taking remote access we have used rdp files. and for sending mails we have used smtp /nodemailer.

Objectives of the project : to develop a slot booking portal so that students can take remote access .

Major Learning Outcomes : learned about full stack development using mern stack .learned React, node, express and mongoDB. also learned about key features like SMTP implementation using nodemailer, and taking remote access via using the rdp file. also learned about how to do API calls.

Details of Papers/patents : na

Brief Description of working environment, expectations from the company : working environment was always good. we had good mentors like Mr. Rajiv ranjan sir and Mr Santosh sir

to guide us throughout our project completion. they told us in a systematic way about how we have to implement small features and the workflow of the project.

Academic courses relevant to the project : Computer Programming,

PS-II Station : WILP - Remote Lab Hyderabad PB, Hyderabad

Faculty

Name: Rajiv Ranjan Gupta .

Student

Name: DIVYANSH MUDGIL(2020B4A31863G)

Student Write-up

PS-II Project Title: Slot Booking Portal Development

Short Summary of work done during PS-II : Developed a slot booking portal from scratch which allows students to book lab slots and take access to the experiments and perform them remotely. This project used React.js for the frontend, Node.js for the backend, MongoDB as the database, Remote Desktop Protocol for making remote connections to the PCs and powershell remoting for resetting password after the slot ends.

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

Objectives of the project : To develop a slot booking portal for remote access to the PCs in the lab

Major Learning Outcomes : Learnt about using MERN stack to make a slot booking portal - React.js for the frontend and Node.js for the backend. Also learnt about Remote Desktop Protocol and Powershell remoting.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The workplace was the Intelligent Systems lab in BITS Hyderabad. The mentors and faculty were very supportive in the entire duration of the project.

Academic courses relevant to the project : OOP, DSA

PS-II Station : WILP - Remote Lab Hyderabad PB, Hyderabad

Faculty

Name: Rajiv Ranjan Gupta .

Student

Name: PIYUSH KUMAR(2021A3PS2979H)

Student Write-up

PS-II Project Title: SRGAN Implementation and Car Manual Assistant

Short Summary of work done during PS-II : Implemented an SRGAN model from its original research paper, created a car manual assistant that uses cosine similarity and sentence transformation to answer questions from a pdf. Fiddled around with other GAN models like

CycleGAN. Helped conduct a workshop on Advanced Driver Assistance Systems, won second prize in Autoviz'24 event conducted by WILP, Helped inaugurate Intelligent Systems Lab in WILP, deployed multiple projects there.

Tool used (Development tools - H/w, S/w) : CUDA, Pytorch, Transformers, Python, Nvidia RTX 4090, Llama3.2:1B, ChatGPT

Objectives of the project : Implement SRGAN which is state of the art model for improving image resolution using Generative Adversarial Networks and Create a Chat Assistant which uses SBERT to answer driver's queries from the car manual.

Major Learning Outcomes : Learnt how to use AI to analyse and generate images. Used NLP to generate artificial and useful information from a pdf.

Details of Papers/patents : Implemented SRGAN model with the exact architecture mentioned in the paper "Photo-Realistic Single Image Super-Resolution Using a Generative Adversarial Network."

Brief Description of working environment, expectations from the company : Labs were good; sometimes we were expected to work overtime, especially during events. We were allowed to choose what we wanted to do. office hours were flexible.

Academic courses relevant to the project : AI, ML, Deep Learning

PS-II Station : WILP - Research, Hyderabad, Hyderabad

Faculty

Name: Pawan Sharma .

Student

Name: DEEPIKA .(2021D2PS2087P)

Student Write-up

PS-II Project Title: THE YOUTH ADULT LEARNING STUDY

Short Summary of work done during PS-II : During my PS-II, I worked on two key projects. The first involved analyzing survey data using the CLASS questionnaire to evaluate student attitudes toward science subjects, focusing on gender and demographic influences. The second project was an AI/ML initiative aimed at providing free courses and placement assistance to female students from government colleges across India. These projects allowed me to apply data analysis techniques, draw meaningful insights, and contribute to initiatives promoting educational equity and skill development.

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

Objectives of the project : To determine the students attitude towards science.

Major Learning Outcomes : Through my projects, I gained hands-on experience in data analysis, working with large datasets to extract meaningful insights using Excel and statistical tools. I developed a strong understanding of survey interpretation, particularly using the CLASS survey, to analyze gender and demographic influences on attitudes toward STEM education. Additionally, I acquired knowledge in managing AI/ML initiatives aimed at promoting educational equity and skill development. These experiences enhanced my problem-solving abilities, improved my communication skills for presenting complex findings, and strengthened my collaborative skills through teamwork on multi-faceted projects.

Details of Papers/patents : QUIZ, GROUP DISCUSSION, PRESENTATION, REPORT

Brief Description of working environment, expectations from the company : The working environment during my PS-II was in an online mode, which provided flexibility and the opportunity to work independently while maintaining regular communication with mentors and team members.

Academic courses relevant to the project : MARKETING RESEARCH

PS-II Station : WILP - Research, Hyderabad, Hyderabad

Faculty

Name: Pawan Sharma .

Student

Name: NISHA SATYAPAL .(2021D2PS2091P)

Student Write-up

PS-II Project Title: The Youth Adult Learning

Short Summary of work done during PS-II : During my PS-II at WILP Hyderabad, I worked on data analysis and presentation tasks under the guidance of Parimi Preeti ma'am. My responsibilities included analyzing survey data for companies like HCL and SAP Lab, creating Excel reports, and preparing presentations highlighting key findings and comparisons. I focused on summarizing data insights using graphs and tables while ensuring clear and professional reporting. This experience enhanced my analytical, presentation, and data interpretation skills

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

Objectives of the project : To determine students attitude towards science

Major Learning Outcomes : During my PS-II at WILP Hyderabad, I developed key skills in data analysis, including statistical calculations and visual data representation using Excel. I enhanced

my presentation and reporting abilities by creating clear, data-driven reports and delivering professional presentations. Working closely with my mentor and team improved my communication and collaboration skills. I also gained experience in project management, learning to manage tasks, meet deadlines, and adapt to organizational processes. Overall, the internship provided valuable industry insights into corporate data analysis and business research methodologies.

Details of Papers/patents : group decisions and quiz

Brief Description of working environment, expectations from the company : The working environment during my online PS-II at WILP Hyderabad was supportive, collaborative, and task-oriented. Despite the remote setup, regular virtual meetings ensured effective communication and clear task assignments. The company expected timely completion of assigned projects, attention to detail, and proactive participation in discussions. I was encouraged to ask questions, seek feedback, and continuously improve my work. The structured yet flexible environment helped me stay focused, meet deadlines, and enhance my professional skills while working remotely.

Academic courses relevant to the project : During my PS-II at WILP Hyderabad, several academic courses proved highly relevant to my project work. ****Marketing research**** helped me design surveys, analyse data, and interpret market insights effectively. ****Principles of Management**** provided a deeper

PS-II Station : WILP-HYDERABAD, Hyderabad

Faculty

Name: Bharathi R .

Student

Name: MS. ANISHA .(2021B1PS2072P)

Student Write-up

PS-II Project Title: AR-Enhanced Human Anatomy Learning for Paramedical Students

Short Summary of work done during PS-II : This project focuses on developing an AR-enhanced application to revolutionize the study of human anatomy for paramedical students. By incorporating 3D visualization, interactive tools, and quizzes, the application aims to simplify complex anatomical concepts, enhance knowledge retention, and provide an engaging, accessible, and effective learning experience for future healthcare professionals.

Tool used (Development tools - H/w, S/w) : 3D Anatomical models , Microsoft Visual Studio/Code Editor

Objectives of the project : To develop an AR application that enhances paramedical students' understanding, retention, and engagement in learning complex human anatomy.

Major Learning Outcomes : 1.Enhanced understanding of complex anatomical structures through interactive AR tools.

2.Improved retention of anatomy concepts via 3D visualization and active engagement.

3.Development of critical thinking and problem-solving skills in anatomy-related contexts.

4.Increased accessibility to advanced learning resources for paramedical education.

5.Better preparedness for practical applications in healthcare professions.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : My PS mood is online ,so my working environment is good .

Academic courses relevant to the project : Yes

PS-II Station : WYLD, Mumbai

Faculty

Name: Anjani Srikanth Koka .

Student

Name: ANANYA SINGH .(2021A1PS2604P)

Student Write-up

PS-II Project Title: The Social Media Marketing Industry- work done at WYLD, Mumbai

Short Summary of work done during PS-II : My work was mostly content creation, brainstorming, possible brand partnerships and digital marketing related.

Tool used (Development tools - H/w, S/w) : Canva, Figma, Instagram, Excel

Objectives of the project : Influencer marketing, Social media, Content Creation

Major Learning Outcomes : Influencer marketing, Social media, Content Creation

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : The working environment was very creative and motivating. It was a very different internship as it was in a startup.

Academic courses relevant to the project : PAVA

PS-II Station : YETHI CONSULTING, Bengaluru, Bengaluru

Faculty

Name: Shreyas Suresh Rao .

Student

Name: DEVANSH .(2020B5A72001P)

Student Write-up

PS-II Project Title: Using LLM to integrate AI features in application

Short Summary of work done during PS-II : Majority of work done was regarding LLM models and frameworks. Majority of time was utilized to understand the API of LLM models like Chatgpt or understand frameworks like Llama Index and Langchain. We also have to keep ourselves updated with latest development in AI world so that we can integrate latest features in our application.

Tool used (Development tools - H/w, S/w) : VS Code, Dbeaver, Amazon Bedrock, PostgreSQL, Llama Index, Langchain

Objectives of the project : Create application using LLM and frameworks

Major Learning Outcomes : Learned in detail about working of LLM, RAG, new research and development in AI world. At time of writing there are no academic courses available in BITS which teach about LLM.

Most important outcome was how to use frameworks and keep yourself updated with latest LLM models and their API reference

Details of Papers/patents : No patents or papers were published during internship.

Brief Description of working environment, expectations from the company : The working environment was excellent for interns with manager being supportive, giving plenty of time to understand the basics for newcomers. The company expected us to create a Text2SQL app which is able to convert natural language to SQL query.

There was strict timing of attending 9 hours in office, 5 days a week.

Academic courses relevant to the project : None of the Academic courses were relevant in project

PS-II Station : Zetwerk Manufacturing Businesses, Bengaluru, Bengaluru

Faculty

Name: Srinivas Kota .

Student

Name: SOHAN N(2021A4PS1399H)

Student Write-up

PS-II Project Title: Generating automated Business Reconciliation reports using Metabase and streamlining Supply Chain tracking using ZISO software

Short Summary of work done during PS-II : In the first project, I worked on the ZISO supply chain portal, identifying and helping to resolve issues with a mobile app used for real-time manufacturing updates. For the second project, I created automated business reconciliation reports using Metabase to compare actual costs with planned expenses, improving financial transparency. Additionally, I gained exposure to the Aerospace and Defence sectors, contributing

to operations and enhancing my skills in supply chain management, business analytics, and project management software.

Tool used (Development tools - H/w, S/w) : Excel , Metabase, Internal products.

Objectives of the project : Improving business reporting and streamlining project tracking.

Major Learning Outcomes : Supply Chain Management, Business analysis

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : Progressive and friendly work environment. Flexible work hours.

Academic courses relevant to the project : Supply chain mangement.

PS-II Station : Zetwerk Manufacturing Businesses, Noida, Noida

Faculty

Name: Srinivas Kota .

Student

Name: WADHWANI GAYATRI KISHOR(2020B2A42523H)

Student Write-up

PS-II Project Title: SCM visibility, Planning Department

Short Summary of work done during PS-II : Key initiatives include a dispatch tracker for real-time updates on inward kits, dispatches, and remaining balances; a monthly Runway file to align production schedules with inventory; a clear-to-build tool to prioritize production based on inventory readiness; and a comprehensive dashboard for upper management to review shipment-related financial transactions. Additionally, a methodology for physical inventory verification has been proposed to ensure accuracy and compliance. These solutions address critical challenges such as information gaps, inventory inaccuracies, and financial delays, fostering transparency, operational efficiency, and better decision-making.

Tool used (Development tools - H/w, S/w) : MS Excel, Google Sheets, Power BI

Objectives of the project : Enhancing SCM visibility in planning department through the development of practical tools and methodologies.

Major Learning Outcomes : I learned about all the work that happens at ground level into the SCM department. Right from planning to purchasing and then logistics. I got to closely observe how these sub-departments co-ordinate with each other.

I got to understand the flow of information and data that happens within the SCM department and the flow of data between SCM and other departments like finance, project management & sales.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : My experience was decent. My colleagues were very helpful and approachable.

Academic courses relevant to the project : Supply Chain Management

PS-II Station : Zetwerk Manufacturing Businesses, Noida, Noida

Faculty

Name: Srinivas Kota .

Student

Name: VIKRAMADITYA BHATTACHARJEE .(2021A4PS0736P)

Student Write-up

PS-II Project Title: Enhancing Visibility of Supply Chain in a Business organization through the creation of Dashboards and its Analysis

Short Summary of work done during PS-II : Created a daily shipment report entailing the relevant details such as shipment name, price , no of cartons, flight date, Custom duty process, etc. It helped in keeping track of every thing such as invoice received and amount. Created E-way bills to clear shipment from customs and getting to factory. Multiple dashboards were created and maintained such as payment tracker and monthly expenses on vendors for payment. Assisted accounts department in keeping record of invoices received and duty payment so that balance sheet and ledger can be maintained.

Tool used (Development tools - H/w, S/w) : MS Excel, google sheets

Objectives of the project : To create dashboards to track the shipments being imported and improve their visibility in the organisation

Major Learning Outcomes : Importance of data visibility and its analysis for better communication and smoother work flow

Understood the process of handling custom process and imports

How to tackle problems in real life and critical thinking

Soft skills - verbal and written ,

Basic process of financial transactions

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : People are friendly and helpful. Sufficient resources were provided to learn things.

It was mostly a monotonous administrative job without much scope for growth.

Otherwise it was a good opportunity to learn about customs and its handling, interaction with vendors, and other people.

Overall, it is an ok place to work if you want to learn how an organization works at the grassroots level. In well established organizations since everything is streamlined for a long time, there are very rare problems. Here, since it is a recently established company (3-4) years, the problem statements are many for you to solve and learn.

It was a good experience

Academic courses relevant to the project : BITS F445 - Analytics for Supply Chain

PS-II Station : Zetwerk Manufacturing Businesses, Noida, Noida

Faculty

Name: Srinivas Kota .

Student

Name: VIDIT DASHORA .(2021A4PS2674P)

Student Write-up

PS-II Project Title: Establishing Visibility across all aspects of a global supply chain.

Short Summary of work done during PS-II : During my internship at Zetwerk, a prominent manufacturing solutions provider, I gained practical exposure to the intricacies of procurement and supply chain management. My responsibilities encompassed understanding and assisting in processes such as purchase order creation, customer and supplier interactions, and departmental workflow coordination. I actively contributed to the procurement process by working closely with suppliers to ensure timely delivery and maintaining effective communication between internal teams. This involved verifying purchase requisitions, assisting in vendor management, and ensuring alignment with organizational requirements. Additionally, I participated in documenting and improving workflow procedures to enhance operational efficiency. As part of my role, I explored cross-functional collaboration, gaining insights into planning processes, inventory management, and Imports. These learnings helped me understand the interdependencies within the manufacturing ecosystem. The internship not only shaped my technical and analytical skills but also strengthened my interpersonal abilities as I engaged with diverse stakeholders. The experience broadened my perspective on supply chain optimization, preparing me for future challenges in operations management. In summary, my internship at Zetwerk provided me with a comprehensive understanding of real-world manufacturing operations, equipping me with the skills and knowledge to contribute effectively to dynamic industrial environments.

Tool used (Development tools - H/w, S/w) : S/W - Microsoft Excel , Google Sheets , Microsoft Dynamics, AppScripts, VBA

Objectives of the project : 1 . To simplify payment tracking system 2. design a workflow to generate purchase orders easily and effectively 3. Maximizing total producible kit with respect to available packaging material 4. reducing cost by effectively for OS&D materials and warehouse visibility

Major Learning Outcomes : 1. Understanding of end to end procurement Process
2. Understanding and developing Vendor-Customer relations
3. Documentation of work and Providing visibility of relevant information
4. Learning about warehouse operations
5. Learning about planning process.

Details of Papers/patents : No Papers were published

Brief Description of working environment, expectations from the company : The working environment at Zetwerk was highly supportive and conducive to learning. The team fostered a collaborative culture where every member, regardless of their role, was approachable and willing to assist. Colleagues demonstrated exceptional patience, taking time to explain complex processes and guiding me through unfamiliar tasks. I particularly appreciated the open communication channels, which encouraged asking questions and engaging in meaningful discussions. These interactions often led to fruitful exchanges of ideas, enhancing both my understanding and contribution to the organization.

The company's expectations were well-defined and professional, emphasizing timely completion of tasks, maintaining high standards of documentation, and ensuring effective knowledge transfer. Meeting deadlines was a priority, reflecting the fast-paced yet structured nature of operations. Proper documentation was integral to maintaining clarity and enabling seamless workflow across teams. Furthermore, the emphasis on knowledge transfer highlighted the organization's commitment to continuous improvement and empowering employees with the information necessary to perform effectively.

Overall, the blend of a supportive work environment and clear expectations created a balanced and motivating experience. This approach not only allowed me to excel in my role but also provided valuable insights into working efficiently in a dynamic industrial setting.

Academic courses relevant to the project : Supply Chain Management

Manufacturing Management

Engineering Optimization

PS-II Station : Zetwerk Manufacturing Businesses, Noida, Noida

Faculty

Name: Srinivas Kota .

Student

Name: AMAY BHATIA(2021A4PS2918H)

Student Write-up

PS-II Project Title: Enhancing Supply Chain Efficiency through Automation and Data Management at Zetwerk Manufacturing

Short Summary of work done during PS-II : During my internship at Zetwerk Manufacturing, I worked closely with the Master Data Management (MDM) team to improve supply chain efficiency. My main focus was on vendor onboarding, purchase order management, part code creation, and ensuring data accuracy within the ERP system. These tasks played a key role in maintaining smooth operations and reliable data across the supply chain. I was responsible for creating and validating part codes, uploading Bills of Materials (BOMs), and streamlining the vendor data management process. Additionally, I had the opportunity to mentor a new team member, which helped deepen my understanding of data management practices and strengthened my teamwork skills. As a secondary project, I developed a time-tracking automation feature using Google Apps Script, addressing inefficiencies in manual processes. This automation improved task monitoring and enhanced overall productivity within the team. The internship provided valuable hands-on experience, allowing me to apply concepts like Lean Manufacturing and Just-in-Time principles in a real-world environment. It emphasized the importance of accurate data, effective collaboration, and automation in optimizing supply chain operations, providing insights that will guide my future career in supply chain management.

Tool used (Development tools - H/w, S/w) : MS Excel, MSD Software, Google forms, Google docs

Objectives of the project : 1)Enhance supply chain visibility. 2)Automate routine processes for efficiency. 3)Ensure data accuracy and consistency in supply chain operations

Major Learning Outcomes : Proficiency in Data management

Teamwork and collaboration

Application of theoretical concepts

Adaptability in a professional setting

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The work environment at Zetwerk Manufacturing was incredibly friendly and supportive, fostering both personal and professional growth. My supervisors, Ms. Harmeet Soni, Ms. Poonam Rawat, and Mr. Alok Gaur, were always approachable and ready to offer guidance. They provided constructive feedback, encouraged open communication, and were patient in addressing my queries. Collaborating with the MDM and procurement teams further enriched my learning experience, as my colleagues were equally helpful and open to knowledge sharing. This supportive and collaborative culture boosted my confidence, making it possible to take on responsibilities and contribute effectively to the organization.

Academic courses relevant to the project : MF 421 Supply Chain Management

PS-II Station : ZF India Technology Center - AI Developer, Hyderabad

Faculty

Name: Suparna Chakraborty .

Student

Name: PRATHAM ARYA .(2020B4A81658P)

Student Write-up

PS-II Project Title: Market Research and Analysis in Indian ADAS Market, EE Architecture in SDV, Innovation Methods and Processes

Short Summary of work done during PS-II : During my PS-II project at ZF Group, I focused on three key areas: Market Research and Analysis in the Indian ADAS Market, EE Architecture in Software-Defined Vehicles (SDV), and Innovation Methods and Processes. The project involved identifying market trends, analyzing the competitive landscape, and developing strategies for market penetration in the ADAS sector. Additionally, I worked on designing innovative and scalable EE architectures for SDVs, ensuring high performance and cost optimization. Lastly, I fostered a culture of innovation by implementing agile methodologies and leveraging emerging technologies to stay ahead in the industry. These efforts aimed to drive growth, enhance competitiveness, and support the company's transition to an all-electric future.

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

Objectives of the project : The objectives for these projects are to identify market trends and develop strategies for the Indian ADAS market, design innovative and scalable EE architectures for software-defined vehicles, and foster a culture of innovation through agile methodologies and emerging technologies. The focus is on enhancing performance, sustainability, and market positioning while ensuring cost optimization and competitive analysis. These efforts aim to drive growth, maintain a competitive edge, and support the company's transition to an all-electric future.

Major Learning Outcomes : The major learning outcomes from these projects include:

1. Market Insights: Gaining a deep understanding of the Indian ADAS market, including trends, competitive landscape, and market penetration strategies.
2. Technical Proficiency: Developing expertise in designing and implementing innovative EE architectures for software-defined vehicles, focusing on performance, scalability, and cost optimization.
3. Innovation Skills: Enhancing the ability to foster a culture of innovation, implement agile methodologies, and leverage emerging technologies to stay ahead in the industry.

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : The working environment at ZF Group is dynamic and collaborative, fostering innovation and continuous learning. The company provides state-of-the-art facilities and resources, encouraging employees

to engage in cutting-edge research and development. Teamwork and open communication are highly valued, creating a supportive atmosphere where ideas can flourish.

Expectations from the company include a commitment to excellence, adherence to high-quality standards, and a proactive approach to problem-solving. Employees are expected to stay updated with the latest industry trends and technologies, contribute to the company's strategic goals, and maintain a strong focus on customer satisfaction and sustainability.

This environment and these expectations aim to drive growth, enhance competitiveness, and support the company's transition to an all-electric future.

Academic courses relevant to the project : NA

PS-II Station : ZF India Technology Center - Innovation, Hyderabad

Faculty

Name: Suparna Chakraborty .

Student

Name: BHAMARE YASH PRASHANT(2020B2A80760G)

Student Write-up

PS-II Project Title: Development of RAG-based Chatbot Applications

Short Summary of work done during PS-II : During my PS-II, I worked on developing a Retrieval-Augmented Generation (RAG) chatbot application to address incident reports in the automotive sector. The project involved fine-tuning Llama 3.1 and creating vector embeddings using fields like Summary, Description, and Conclusion from a dataset of over 9000 entries. The chatbot uses ChromaDB for efficient retrieval of information. I also developed a user-friendly

interface for querying the chatbot, ensuring it returns accurate results along with incident IDs. This project enhanced my skills in AI model training, embedding generation, and web application development.

Tool used (Development tools - H/w, S/w) : Hardware: Google Colab (T4 GPU) Software: Python, Flask, Streamlit, LangChain, ChromaDB, Ollama, Unsloth

Objectives of the project : To build a robust chatbot application capable of providing accurate solutions for automotive incidents using a fine-tuned model

Major Learning Outcomes : 1. Implementing Retrieval-Augmented Generation using Llama 3.1. 2. Creating and managing embeddings using ChromaDB. 3. Developing user interfaces with Flask and Streamlit.

Details of Papers/patents : None

Brief Description of working environment, expectations from the company : The expectations were really unrealistic , they wanted me to develop a full fledged AI application and that too for free without any infrastructure for AI in my team . I told multiple times that give me a different project but apparently that was what they hired me for . I developed two chatbot applications using opensource and free software . There were no BITSians or IITians presence in the team . All had a very mediocre mindset . Other than that the work hours are good and there was no work from home . But you wont learn anything on production level and as software is not the main domain , its not worthwhile to go for any software roles in the company . It would be good for automotive people and people interested in automotive domain .

Academic courses relevant to the project : Object Oriented Programming , C programming , Operating systems

PS-II Station : ZF India Technology Center - Use Cases - SDLC, Hyderabad

Faculty

Name: Suparna Chakraborty .

Student

Name: ANSH BHARDWAJ(2020B5A31847G)

Student Write-up

PS-II Project Title: Design & Development of ML Algorithm Service for Road Condition Monitoring

Short Summary of work done during PS-II : During PS-II, I focused on developing and enhancing the Event AI algorithm. This involved adapting the algorithm to work with smartphone sensor data, optimizing its performance, and evaluating its effectiveness. Key activities included data preprocessing, model training and evaluation, and exploring potential deployment strategies.

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

Objectives of the project : Migrate ML codebase from using dedicated sensor data as source to smartphone accelerometer

Major Learning Outcomes : Enhanced understanding of machine learning concepts and their application in real-world scenarios.

Details of Papers/patents : n/a

Brief Description of working environment, expectations from the company : Good environment but more beneficial if you are coming from mechanical background as it will be easier to grasp context and understand company working

Academic courses relevant to the project : Machine Learning

PS-II Station : Zolve Innovations Pvt. Ltd., Bangalore

Faculty

Name: Sidharth Mishra .

Student

Name: SACHIKA LALA .(2021A1PS2375P)

Student Write-up

PS-II Project Title: User Acquisition and Engagement in Fintechs

Short Summary of work done during PS-II : Strategized on the referral program with cross-team collaboration, increasing customer engagement by 12 percent. Boosted the top 4 US university acquisitions by drafting go-to-market strategies that mapped the relevant KPIs like user spending capacity. Worked on partnerships with 10+ US universities for customer acquisition, increasing our user base by 18 percent. Drafted GTM strategies for market expansion and presented the same to the CBO. Brainstormed various recommendations to increase app engagement using all metrics possible.

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

Objectives of the project : Promote user acquisition and engagement. The project focussed on benchmarking with other competitors to understand the strategies that would best suit us to promote app engagement. As a subset of the project, market expansion strategies have also been highlighted; making way for the company's long-term goals to provide cross-border financial access to as many people as possible.

Major Learning Outcomes : - Hard Skills including SQL and Excel (data anyalsis)

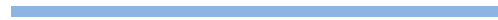
- Soft skills including importance of good communication and strong work ethic

Details of Papers/patents : -

Brief Description of working environment, expectations from the company : All the full timers have excellent academic backgrounds and very helpful. There is a lot of accountability and the opportunity to present your work to the C suite are aplenty.

They expect you to be regular in office and work must be done timely.

Academic courses relevant to the project : -



PS-II Station : Zomato-Sales, PAN INDIA, Gurgaon

Faculty

Name: Bhamidipati Vaishali .

Student

Name: GUNNAM JAYARAM CHOWDARY(2021A2PS3056H)

Student Write-up

PS-II Project Title: Restaurant Acquisitions

Short Summary of work done during PS-II : As an intern in the Restaurant Acquisition team, my primary responsibility was to drive the acquisition of new restaurant partners and expand Zomato's footprint in emerging localities. I was tasked with reaching out to restaurant owners,

building relationships with them, and convincing them to join the Zomato platform, thereby enhancing the variety of food offerings available to customers. My role included managing the end-to-end process of onboarding, which involved educating restaurant owners about the benefits of joining Zomato, assisting them with creating their profiles, and addressing any concerns they might have. I also supported restaurant partners in navigating the Zomato Partner App, helping them update their menus, apply for FSSAI certifications, enroll in e-commerce GST programs, and manage any changes in ownership or location details. In addition to these responsibilities, I actively participated in field visits, particularly when launching new service areas. I worked alongside my colleagues, including Sravan, Aravind, Sasya Krishna, and William, ensuring that new areas like Rajanagaram, Peddapuram, and Achampet Junction were launched smoothly, and restaurant owners in these regions understood the value of joining Zomato. Moreover, I played a key role in supporting legendary brands such as Suruchi, Chicago Pizza, KFC, Gatotx Naturals, and Tazza Tiffins in their onboarding process, ensuring they received the necessary support and guidance. I also worked on securing commission exceptions for these high-potential restaurants and helped my colleague William in learning the commission modules, which were essential for understanding the financial aspects of restaurant onboarding. Throughout my internship, I demonstrated strong communication and problem-solving skills, ensuring that all restaurant partners had a smooth onboarding experience. This role honed my ability to work in a fast-paced environment, meet acquisition targets, and collaborate effectively with cross-functional teams.

Tool used (Development tools - H/w, S/w) : Google sheet , Zomato Restaurant partner app

Objectives of the project : My Main motto of the internship is to onboard as many as restaurants as possible in zomato, expanding zomato services in many cities and towns, launching new working zones and maintaining good relationship with Merchants (restaurant owners).

Major Learning Outcomes : Major learning outcomes i have learned from my PS-II as foollows

- * Convincing merchants to apply for FSSAI and GST.
- * Convincing Zomato Flexi commission benefits to small merchants.
- * Persuading high offline sales restaurants to join Zomato and addressing commission exception issues.
- * Launching new localities and convincing people to onboard.

* Training non-tech-savvy merchants on the Partner App by providing step-by-step guidance and support.

* Addressing issues with menu uploads, ownership changes, or location discrepancies.

Details of Papers/patents : nothing

Brief Description of working environment, expectations from the company : The working environment at Zomato was dynamic and collaborative, with a strong emphasis on innovation and achieving targets. The company fostered a performance-driven culture, encouraging creativity and proactive problem-solving. Expectations included onboarding new restaurants, expanding service zones, and maintaining excellent merchant relationships. Zomato valued adaptability, efficiency, and a commitment to enhancing the food delivery ecosystem.

Academic courses relevant to the project : Marketing ; Technical report writing,

PS-II Station : Zomato-Sales, PAN INDIA, Gurgaon

Faculty

Name: Bhamidipati Vaishali .

Student

Name: YASHRAJ SINGH(2021A8PS2032G)

Student Write-up

PS-II Project Title: Sales Intern

Short Summary of work done during PS-II : Initial Months began as Acquisition Intern, dedicated to find new merchants and onboard new outlets, after a while working with different projects, roles got changed to Sales Operator, where, working with the team, have to manage their issues with Outlets specific to Restaurant Partner Dashboard

Tool used (Development tools - H/w, S/w) : Zomato's DIY Platform, Zomato's Restaurant Partner, Google Sheets and other Productivity Tools

Objectives of the project : Understand inner workings of Company, Negotiate with other Restaurants to partner up with Zomato, To learn how an outlet works form within

Major Learning Outcomes : Negotiation, Management, Teamwork

Details of Papers/patents : NA

Brief Description of working environment, expectations from the company : Decentralized System, Everyone working together on the same floor without any distinguishes in Cubicle Spaces.

Academic courses relevant to the project : NA

PS-II Station : Zunpulse Pvt Ltd, Gurugram, Gurgaon

Faculty

Name: Rajesh Kumar Tiwary .

Student

Name: RITAVYA RAWAT(2020B3A10484G)

Student Write-up

PS-II Project Title: Web Development Intern

Short Summary of work done during PS-II : As a Web Developer Intern at ZunRoof, I contributed to the development of two company websites, one built on the React framework and the other on the Angular framework . My responsibilities included adding new, responsive pages to both websites and developing backend APIs in javascript. This experience allowed me to enhance my skills in full-stack development.

Tool used (Development tools - H/w, S/w) : HTML, CSS, Javascript, SQL, ReactJS, AngularJS

Objectives of the project : Website Development

Major Learning Outcomes : learnt full stack web development

Details of Papers/patents : Web development intern.

Brief Description of working environment, expectations from the company : Good work culture. I was in the tech team, both my team lead and my reporting manager were very helpful and

Academic courses relevant to the project : none

PS-II Station : Zunpulse Pvt Ltd, Gurugram, Gurgaon

Faculty

Name: Rajesh Kumar Tiwary .

Student

Name: ADITYA SRIVASTAVA(2021A4PS2436H)

Student Write-up

PS-II Project Title: Expanding Product Horizons: Market Research and Vendor Development

Short Summary of work done during PS-II : During my internship at Pioneer Electrocables Pvt Ltd, I contributed to the company's product diversification strategy by conducting market research and establishing vendor partnerships. I explored new product categories, including smart door locks, video door phones, smart rings, smart touch switch panels, car dash cameras, and electric kettles. My work involved analyzing market trends, identifying competitors, and assessing product quality and pricing. I also researched procurement methods, such as SKD and CKD, to optimize costs. I reached out to multiple vendors across India and Alibaba, negotiated pricing, and ordered product samples for testing and quality evaluation. Additionally, I explored the regulatory requirements for importing electronic products, specifically the BIS and ISI certifications, ensuring compliance with Indian market standards. By establishing a database of potential vendors, I provided actionable insights to support the company's entry into new markets in India and Nepal. Overall, my work contributed to the company's growth by identifying opportunities for product expansion, building relationships with suppliers, and ensuring regulatory compliance for smooth imports.

Tool used (Development tools - H/w, S/w) : Alibaba, Unicommerce, Indiamart, Google Sheets, Power Point, MS Excel,

Objectives of the project : To identify new product opportunities, establish reliable vendor partnerships, and ensure regulatory compliance to support the diversification of Pioneer Electrocables Pvt Ltd's product portfolio, thereby enabling market expansion and business growth in India and Nepal.

Major Learning Outcomes : Market Research, Vendor Management, New Product Research and Competition Analysis, Communication, Procurement Models, Regulatory Compliances

Details of Papers/patents : did not specifically involve papers or patents

Brief Description of working environment, expectations from the company : During my internship at Pioneer Electrocables Pvt Ltd, the working environment was dynamic, collaborative, and focused on growth. As an intern in the Growth Team, I was encouraged to take initiative, conduct independent research, and contribute actively to strategic decisions. The team fostered a supportive atmosphere where feedback and communication were open, allowing me to learn continuously while working on real-time projects.

The company's expectations from me were clear and centered around contributing to the expansion of its product portfolio. I was expected to conduct thorough market research, engage with vendors, and identify potential new products to diversify the company's offerings. Additionally, I was tasked with analyzing competitor strategies, understanding regulatory requirements, and providing actionable insights to assist in decision-making. The company emphasized the importance of data-driven analysis and effective communication, expecting me to deliver well-researched reports, product recommendations, and vendor evaluations.

Overall, the company's environment was goal-oriented, with a focus on innovation, strategic thinking, and business development. They expected me to not only gain valuable experience but also contribute meaningfully to the growth and expansion efforts

Academic courses relevant to the project : Manufacturing Management,

PRACTICE SCHOOL MILESTONES:

- Conceptualization – 1973
- Extended PS option to all disciplines – 1975
- Inception of PS-I - 1976
- COPSIMS (Computer Operated Practice School Instruction Monitoring System) – 1985
- First PS station abroad – 1991
- PS for Higher Degree – 1992
- Double semester PS for Dual Degree students – 1992
- Combined PS-I operation for Pilani and Goa campuses – 2006
- Combined PS-II operation for Pilani and Goa campuses – 2007
- WEPSIMS (Web Enabled Practice School Instruction Monitoring System) – 2008
- Combined PS-I operation for Pilani, Goa and Hyderabad campuses – 2010
- Combined PS-II operation for Pilani, Goa and Hyderabad campuses – 2011
- BITS Pilani started offering scholarship of Rs. 8,000/- per month amounting to Rs. 44,000 (for the entire duration of PS-II) to selected PS-II students with CGPA 7.00 and above at various research organizations to encourage students to opt for CSIR & other Govt. Research labs - 2012
- PSMS (Practice School Management System) – 2014
- Conceptualization of PS Chronicles - 2015
- Digital Content for Skill gap - 2016
- Enhanced scholarship amount for PS-II students (CGPA 7.00 & above) at CSIR & other Research labs - Rs. 12,000 per month amounting to Rs. 66,000 (for the entire duration of PS-II) - 2016
- Introduction of Subject Matter Expert (SME) for PS-I Projects - 2017
- Digital version of PS Diary - 2019
- Successful implementation of PS-I course in remote mode for 2940 + students during summer 2020 with detailed project identification prior to start of the course - 2020
- Establishment of Student Counselling Cell (SCC) – 2023
- Conceptualization of open house much prior to allotment process - 2023
- Initiated Level of Engagement (LoE) survey for PS-I students during the course – 2023
- Pre PS-II Preferences Survey - 2023
- Conceptualized the live support sessions for students opting for PS – 2023
- BITS Pilani is currently offering an enhanced scholarship of Rs. 20,000 per month amounting to Rs. 1,10,000/- (for the entire duration of PS-II) to selected PS-II students with CGPA 6.00 and above at various research organizations - 2023.
- Complete restructuring of PS transcript - 2023
- Conceptualization of data source page for providing the access to information in a single platform for students - 2024
- Implementation of New Practice School Management System with enhanced capabilities for planning & allotment purposes - 2024.
- Conceptualization of Pre Practice School-I survey – 2024



BITS Pilani

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Practice School Division
PS Chronicles