

Birla Institute of Technology & Science (BITS), Pilani
Practice School Division
Practice School-I course (May 28th – July 23rd, 2024)

PS Chronicles (Core Engineering – Cement, Steel, Chemical, Civil, Mechanical & others)
(A compilation of student experience during PS-I)



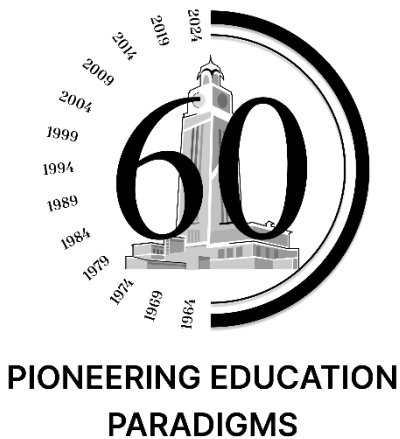
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From the Desk of the Editor

It is my great pleasure to bring forth the 6th edition of the PS-I Chronicles. This edition features over 1059 articles from PS-I students sharing their experiences during summer 2024.

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

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

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

- Chronicle 1: Information Technology
- Chronicle 2: Electronics
- Chronicle 3: Chemical, Mechanical, Cement, Textile, Steel, Infrastructure & others
- Chronicle 4; Health Care
- Chronicle 5: Finance and Management
- Chronicle 6: Government Research Labs

I would like to thank students for sharing their experiences during their stint at the organization. I would also like to thank Prof. Arun Maity, Prof. M. K. Hamirwasia and Prof. G Muthukumar for reviewing the articles and providing us the feedback. I would also like to extend my thanks to Mr. Om Prakash Singh Shekhawat, Mr. Shyam Sunder Saini and Mr. Varun Singh of the Practice School Division, of BITS, Pilani – Pilani Campus for their help in bringing out this edition of PS-I Chronicles.

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

S. Murugesan

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PS-I station: Baga Cement Work, Solan

Student

Name: AYUSH CHOUDHARI .(2022A4PS0911P)

Student Write-up:

PS-I Project Title: Supply Chain Management of Materials at UltraTech

Short Summary of work done: Analysed the 10 years of data and forecasted demand for the next year

Objectives of the project: Demand forecasting

Tool used: MS Excel, Python

Details of Papers/patents: Daily Raw material Stock data

Brief description of the working environment: Very great

Academic courses relevant to the project: Supply Chain Management

Learning Outcome: Data analysis

Name: GAURAV KATARIA(2022B4TS1525P)

Student Write-up:

PS-I Project Title: Cost analysis and reduction with respect to material balancing.

Short Summary of work done: During my summer internship in the Process Department of Ultratech Cement Baga, I gained hands-on experience in monitoring and optimizing production processes. I assisted in the analysis of raw material compositions, kiln operations, and clinker production. I also contributed to improving efficiency by identifying bottlenecks, ensuring adherence to safety standards, and participating in quality control checks to maintain product consistency. My work involved collaborating with engineers and technicians to enhance overall process performance.

Objectives of the project: To reduce the manufacturing cost of cement production without compromising quality.

Tool used: MS Excel, MS Powerpoint, MS Word

Details of Papers/patents : no

Brief description of the working environment: The working environment in the Baga cement works was fast-paced and demanding, with a strong emphasis on safety, teamwork, and precision. The company expected interns to quickly adapt, show initiative, and contribute meaningfully to ongoing projects.

During the PS1, I learned about the intricacies of cement production, including raw material handling, kiln operations, and quality control processes. I gained valuable insights into process optimization, troubleshooting, and the importance of maintaining strict safety standards in an industrial setting. The experience also enhanced my problem-solving skills, ability to work under pressure, and understanding of industrial workflows. Overall, the experience was good and unit staff was helpful.

Academic courses relevant to the project:

Learning Outcome: Understand and learned the processes, safety protocols, and quality control measures to ensure efficient production and product consistency.

Name: DIVYANSHU SHARMA(2022B5TS1527P)

Student Write-up:

PS-I Project Title: Cost Analysis and Reduction with respect to Material balancing

Short Summary of work done: The project at Ultratech Cement focused on cost analysis and reduction related to material balancing and handling. Key steps included data collection, analysis of fuel usage and material handling practices, and identification of

areas for improvement. Measures such as increasing the use of cost-efficient fuels like Indian Petcoke and AFR, optimizing kiln operations, improving insulation, and implementing waste heat recovery systems were proposed and tested. The implementation of these changes resulted in significant cost savings and enhanced energy efficiency. Performance was continuously monitored and adjusted for optimal results, ensuring substantial overall cost reduction.

Objectives of the project: To reduce the manufacturing cost in the cement production without compromising quality.

Tool used: MS Excel, MS PowerPoint, MS Word

Details of Papers/patents: NA

Brief description of the working environment: The working environment is good. The plant emphasizes safety, teamwork, and continuous improvement, providing employees with opportunities for professional growth while ensuring a productive and supportive atmosphere conducive to achieving operational excellence and sustainability goal. Most of the time the mentor is busy in their own work, so you have to put the effort to get their help related to project as plant has very strict working hours for employees.

Academic courses relevant to the project: NA

Learning Outcome: So learned about the different process in cement production, cost optimization, quality control and about different types of material used in industry & their cost analysis.

Name: HIMANSHU SHARMA(2022D2TS1550P)

Student Write-up:

PS-I Project Title: Electricity Bidding

Short Summary of work done: The project aimed to optimize energy consumption across different operational hours, aiming for a reduction compared to previous average consumption data.

Objectives of the project: Understanding Bidding In Electricity Market And Optimizing The Cost Of Electricity In Various Slots

Tool used: NIL

Details of Papers/patents: No

Brief description of the working environment: Great environment

Academic courses relevant to the project: Fundamentals of accounting is very relevant to the project

Learning Outcome: 1.Reduction in energy consumption during night hours by approximately 10.3 MW on an average.
2.Lowered energy usage during normal hours by about 17.674 MW on an average.
3.Decreased peak-hour consumption by around 44.765 MW on an average.

PS-I station: Birla White, Jodhpur

Student

Name: VARUN HARIKRISHNAN .(2022B5AB0641P)

Student Write-up:

PS-I Project Title: Improvement in the efficiency of a vertical roller mill

Short Summary of work done: Assigned the project, studied the mill, studied all subsystems, looked to improve each part of the subsystem, came up with 2 effective solutions , submitted the solution to mentor alongwith a relevant presentation

Objectives of the project: Improve energy consumption, output and quality of the system

Tool used: H/w - textbooks ,machine drawings and slides,S/w- Google , YouTube sheets , docs

Details of Papers/patents: Paper on improvement from helical fins to a cyclone separator

Brief description of the working environment: Formal structured working environment with lots of support from mentors. Expectations only of learning, learning - personal faults and how organization works

Academic courses relevant to the project: None

Learning Outcome: How organization works, how to work in an organisation.

PS-I station: Maihar Cement Works, Satna

Student

Name: ANKIT SAINI(2022B2TS1534P)

Student Write-up:

PS-I Project Title: Impact of MgO (MagnesiumOxide) in Cement Industry

Short Summary of work done: During my Practice School 1 (PS-1) at Maihar Cement Works, UltraTech, I conducted a detailed analysis of the impact of MgO on the cement industry. The study involved a series of experiments to measure the effects of varying MgO concentrations on cement quality. Key tests included the autoclave test, which assesses cement expansion under high-pressure steam, and the Le Chatellier test, which measures volume changes in cement paste due to free lime or magnesia. Additionally, cubic testing for soundness was performed to evaluate compressive strength and volume stability. The experimental data highlighted the optimal MgO levels that enhance cement strength and durability while adhering to BIS and ASTM guidelines. The findings emphasize the importance of controlled MgO usage in sustainable cement production, contributing to environmental conservation and cost efficiency.

Objectives of the project: To analyze the implications of magnesium oxide (MgO) on cement properties, manufacturing costs, environmental sustainability, and regulatory compliance, with a focus on optimizing MgO concentration to enhance cement quality while minimizing negative effects like expansion and reduced durability.

Tool used: - Autoclave , - Le Chatellier apparatus, - Compression testing machine, - Cement paste molds, - Measuring devices for expansion and volume changes

Details of Papers/patents: NA

Brief description of the working environment: Brief Description of the Working Environment:

The working environment at Maihar Cement Works was collaborative and supportive, with significant guidance from mentors and quality control experts. The facility provided access to advanced equipment and resources necessary for conducting thorough experimental analysis. Regular interactions with experienced professionals helped enhance my understanding of cement production processes and quality control measures.

Expectations from the Company:

My expectations from the company included gaining practical experience in the cement industry, understanding the impact of various additives on cement properties, and learning about the regulatory standards governing cement production. I also anticipated developing skills in experimental analysis and data interpretation relevant to industrial applications.

Learning During PS-1:

During PS-1, I learned about the critical role of MgO in cement composition and its potential effects on concrete durability and strength. The hands-on experience with experimental procedures, such as the autoclave and Le Chatellier tests, provided practical insights into quality control measures. Additionally, I gained knowledge about the regulatory frameworks (BIS and ASTM) that ensure the production of high-quality, durable cement.

Academic courses relevant to the project: Lab CE-1

Workshop

Organic chemistry

Physical chemistry

Inorganic chemistry

Learning Outcome: 1. Understanding the role of MgO in cement composition and its effects on concrete properties.

2. Gaining insights into the experimental processes for measuring MgO impact, including autoclave and Le Chatellier tests.

3. Learning about the regulatory standards (BIS and ASTM) for MgO content in cement.

4. Developing skills in conducting experimental analysis and interpreting results related to cement quality and durability.

Name: SULAKSHYA MISRA(2022B4TS1522P)

Student Write-up:

PS-I Project Title: Model Development of Heat Mass Balance

Short Summary of work done: During my PS-I at Maihar Cement Works, Ultratech, I focused on developing a model to calculate the heat and mass balance in the cement manufacturing process. The project aimed to enhance energy efficiency by establishing a relationship between various inputs and outputs in the production line. My work involved a detailed analysis of the cement manufacturing process, identifying key areas where energy input and output occur. I collected and analyzed data related to kiln performance, grinding mills, fluid flow, and pneumatic transport systems. Using this data, I developed a comprehensive model that simulates the energy and material flows within the plant, resulting in the creation of a heat mass balance sheet. This tool is expected to aid in ongoing efforts to improve energy efficiency and reduce operational costs. Additionally, I developed a second Excel sheet that included various safety formulas and calculations relevant to the cement manufacturing process. This sheet comprised formulas and calculations for ensuring safe operating conditions, such as pressure, temperature, and flow rate limits. It also included guidelines for equipment safety, personal protective equipment (PPE) requirements, and emergency response procedures. This sheet serves as a quick reference for maintaining safety standards and protocols within the plant, ensuring a safe working environment for all personnel. Through this project, I gained valuable insights into industrial processes, enhanced my technical skills in modeling and data analysis, and learned the importance of energy management and safety standards in the cement industry. This experience has significantly contributed to my practical understanding of engineering concepts and their application in a real-world industrial setting.

Objectives of the project: To develop a model which seamlessly calculates energy forming a relation between all the given inputs and outputs in the overall cement manufacturing process

Tool used: Microsoft Excel

Details of Papers/patents: None

Brief description of the working environment: During my PS-I at Maihar Cement Works, Ultratech, I experienced a mixed working environment. The facility was equipped with advanced machinery and systems, providing an excellent opportunity to observe and understand industrial processes first-hand. My mentor was highly supportive and offered valuable guidance, which significantly contributed to my learning and project development.

However, integrating into the team presented some challenges. Many employees were often preoccupied with their own tasks and were not readily available to provide assistance or guidance. This independent working environment required me to be proactive in seeking out information and learning resources. Additionally, the workplace atmosphere could be quite tense at times, with some employees facing harsh criticism

and occasional use of strong language. Despite these challenges, I maintained a professional attitude and focused on my project objectives.

The primary expectation from the company was to develop a robust model for heat and mass balance in the cement manufacturing process. This project required a high level of technical skill, data analysis, and practical application of engineering principles. I was also expected to adhere to safety standards and incorporate relevant safety formulas into my work.

Despite the initial difficulties, I gained significant insights into energy management, process optimization, and industrial safety. This experience taught me the importance of self-reliance, resilience, and maintaining a positive outlook in a demanding work environment. It also reinforced the value of effective mentorship and the impact it can have on professional growth and development.

Academic courses relevant to the project: Thermodynamics, Optimization

Learning Outcome:

1. Understanding of Heat and Mass Balance
2. Energy Efficiency and Optimization
3. Technical Skills in Modeling
4. Data Analysis and Interpretation
5. Practical Application of Engineering Concepts
6. Industrial Process Knowledge
7. Critical Thinking and Innovation

Name: RAJKUMAR(2022B4TS1526P)

Student Write-up:

PS-I Project Title: Reducing power consumption of Conveying Steam Compressor and Operations of Thermal Power Plant

Short Summary of work done: The project focused on optimizing thermal power plant operations and reducing steam compressor power consumption. Key areas included:
TPP Overview: Addressed power demands in cement manufacturing and operational efficiency. Components: Reviewed AFBC boilers, fuel use, and bed material impact. DM Plant: Emphasized water treatment for preventing scaling and turbine damage. Boiler Technology: Highlighted AFBC's high-efficiency and environmentally friendly combustion. Turbine & Generator: Covered energy conversion processes and key specifications. Conclusion: Achieved energy savings through optimized fuel use, improved combustion, upgraded water treatment, and streamlined steam compressor operations.

Objectives of the project: To learn How Can TPP reduce power consumption of conveying steam compressor and how electricity generates from coal.

Tool used: NIL

Details of Papers/patents: NIL

Brief description of the working environment: Brief Description of Working Environment, Expectations, and Learning During PS-I:

During my PS-I internship at the thermal power plant, I faced a challenging working environment. The harsh summer conditions made it difficult to stay on-site for extended periods, and the workplace atmosphere was rigid.

Despite these challenges, my primary learning focused on two key areas: techniques to reduce power consumption of the conveying steam compressor and the overall operations of a thermal power plant. I gained practical insights into optimizing compressor operations to enhance energy efficiency and reduce power usage. Additionally, I learned about the various components and processes involved in the functioning of a thermal power plant, including fuel management, boiler operations, and turbine efficiency. This experience, though demanding, provided me with valuable technical knowledge and a deeper understanding of power plant operations and energy conservation strategies.

Academic courses relevant to the project: Thermodynamics and Optimization.

Learning Outcome: Major Learning Outcomes of My Internship

1. Thermal Power Plant Operations: Gained knowledge of components, processes, and overall functioning.
2. Water and Fuel Management: Learned about water treatment methods and fuel properties for optimal performance.
3. Boiler and Turbine Maintenance: Understood maintenance strategies and principles of energy conversion.
4. Efficiency and Environmental Improvements: Enhanced combustion efficiency, reduced emissions, and optimized fuel use.
5. Teamwork and Problem-Solving: Developed practical solutions, collaborated effectively, and adhered to safety protocols.

PS-I station: National Council for Cement and Building Materials (NCCBM)-Hyderabad, Hyderabad

Student

Name: KOTHA VIPUL .(2022A2PS1696P)

Student Write-up:

PS-I Project Title: Usage of Paper Pulp Waste Obtained from the Indian Government Mint in the Construction Industry

Short Summary of work done: The work mainly involves literature survey of the material procured and how it can be processed or used in construction. This work also involves understanding of your Civil Engineering courses and implementing them in the labs. You will also have a good hands-on experience in research and possibilities of publishing a paper depending on the intensity of the results achieved.

Objectives of the project: Find the use of processed paper pulp waste as an alternative material in construction.

Tool used: None

Details of Papers/patents: None

Brief description of the working environment: The company would expect you to have good understanding of the civil concepts. It also looks forward the students who have keen interest in having research as a career path. This government station has great lab facilities and very helpful lab assistants and other people involved with us.

Academic courses relevant to the project: Civil Engineering Materials (CEM 2-1)

Learning Outcome: Research experience

PS-I station: Shree Cement, Pali

Student

Name: AYUSH GUPTA .(2022A1PS1325P)

Student Write-up:

PS-I Project Title: Study of various Equipment in a Cement Plant

Short Summary of work done: Observed and learned about the various types of equipment used in cement production for major processes

Objectives of the project: Learning about the equipment used in the cement plant

Tool used: Computer and camera

Details of Papers/patents: None

Brief description of the working environment: Friendly environment.

Academic courses relevant to the project: None

Learning Outcome: Learning about the different equipment used for various major processes in cement production process

PS-I station: Centre for High Technology, Noida

Student

Name: TUSHAR SINGH .(2022A1PS1104P)

Student Write-up:

PS-I Project Title: Production of hydrogen through SMR of CBG

Short Summary of work done: Came to know about how hydrogen is the future fuel and how it can be made using SMR process with the immense knowledge of my mentor and other members at the centre

Objectives of the project: Understanding about production of hydrogen

Tool used: None

Details of Papers/patents: None

Brief description of the working environment: The work environment was great, very interactive and beneficial for gaining knowledge about new things

Academic courses relevant to the project: None

Learning Outcome: Learned in depth about steam methane reformation

Name: ARCHI PATEL .(2022A1PS1596P)

Student Write-up:

PS-I Project Title: Study of Refinery Process

Short Summary of work done: Visiting to various IOCL refineries and learning its outcome

Objectives of the project: To know about the refineries, the process and the major refineries in india

Tool used: .

Details of Papers/patents:.

Brief description of the working environment: Good working environment

Academic courses relevant to the project: All chemical CDCs

Learning Outcome: Working and major refineries of india

Name: SHUBHANG GAUTAM .(2022A1PS1666P)

Student Write-up:

PS-I Project Title: Analysis of Hydrogen Storage and Transport

Short Summary of work done: Literature review, Excel work, word.

Objectives of the project: Technical and Cost analysis of the current and future options for storage and transport of hydrogen

Tool used: Excel, Word

Details of Papers/patents:-None

Brief description of the working environment: Good working environment, helpful staff.

Academic courses relevant to the project: Overall Chemical subjects

Learning Outcome: How to review literature. How to create executive summary, etc

Name: KRISHNA GARG .(2022A1PS1729P)

Student Write-up:

PS-I Project Title: Carbon Capture Utilization and Storage , Hydrogen Production and Storage, Heat Exchangers

Short Summary of work done: The research focused on three critical energy technologies: heat exchangers, Carbon Capture, Utilization, and Storage (CCUS), and hydrogen storage. Heat exchangers, essential for energy transfer between fluids, were studied for efficiency improvements, materials, and design innovations. CCUS research examined methods to capture CO₂ from industrial processes, store it underground, and convert it into valuable products, aiming to mitigate climate change. Hydrogen storage studies explored safe and efficient ways to store hydrogen, a clean energy carrier, through materials-based solutions like metal hydrides, and advanced tanks. These technologies are pivotal for advancing sustainable energy systems and reducing carbon footprints.

Objectives of the project: To understand how decarbonization takes place by CCUS technology , Utility of Hydrogen as a Fuel and its storage methods and to understand how Heat Exchangers are designed

Tool used: Ms Word, Excel, Ppt

Details of Papers/patents:-

Brief description of the working environment: The working environment was very good .Everyone at the company was very helpful and full of knowledge. We got to learn how working in corporate world feels like.

Academic courses relevant to the project: none

Learning Outcome: Heat Exchangers: Innovations in materials and design can significantly improve the efficiency and effectiveness of heat exchangers, which are critical for energy transfer in various industrial processes.

CCUS: Effective carbon capture, utilization, and storage technologies can play a crucial role in reducing industrial CO₂ emissions, thus helping to mitigate climate change. The conversion of captured CO₂ into valuable products can also provide economic incentives for adoption.

Hydrogen : Safe and efficient hydrogen storage is essential for the viability of hydrogen as a clean energy carrier. Advances in materials-based solutions and improved tank designs are key to overcoming current storage challenges.

Name: NISCHAY AGARWAL .(2022A2PS1707H)

Student Write-up:

PS-I Project Title: Analysis of Hydrogen transport and storage

Short Summary of work done: We worked in teams on the project. First, we learnt about the basics of hydrogen as a fuel and then we started working on our project and did hypothetical case studies.

Objectives of the project: To get an optimal understanding and methods on transportation and storage of hydrogen as an energy carrier

Tool used: nil

Details of Papers/patents:None

Brief description of the working environment: The working environment was very healthy, with our guide helping us throughout the PS timeline. Although I expected to learn about applications of civil engineering, I learnt something else, how we view hydrogen in our futures.

Academic courses relevant to the project: None

Learning Outcome: How does hydrogen work as an energy carrier and what is the future of hydrogen as an alternative fuel.

PS-I station: Deccan Fine Chemicals, Goa

Student

Name: RAHUL RAVISHANKAR .(2022B2A11109P)

Student Write-up:

PS-I Project Title: Flow chemistry

Short Summary of work done: Report on separation process between cyclohexane and 1,2-dichloroethane

Objectives of the project: Microfluidics, Separation Processes, Computational Flow Dynamics

Tool used: MATLAB, DWSIM

Details of Papers/patents:
<https://www.sciencedirect.com/science/article/abs/pii/S0167732217345555>

Brief description of the working environment: Good

Academic courses relevant to the project: Fluid Dynamics, Mass transfer, Heat Transfer

Learning Outcome: Simulations, Presentation

PS-I station: Grasim Industries, Nagda

Student

Name: KHYATI LOYA .(2022A1PS1696H)

Student Write-up:

PS-I Project Title: IMPROVING YIELD OF FIRST PASS MILL

Short Summary of work done: The PS 1 started with a presentation on Aditya Birla group with focus on the complete grasim industries. We performed a project on improvement of first pass yield in viscose production. We had a session with industry mentor Mr. Dinesh Pathikar. We had a group discussion as well. We learnt a lot in this PS -1.

Objectives of the project: Compare Yields of different machine and find ways to improve performance

Tool used: Powerpoint, Microsoft Word, Microsoft Excel, Canva, Google Docs, Desmos Graphs

Details of Papers/patents:None

Brief description of the working environment: It was overall nice experience and as it was online so we were not able communicate to more workers.

Academic courses relevant to the project: Chemical, Business Administration, Data Analysis

Learning Outcome: Learnt about different parameters that affect viscose first yield production.

Name: SHUBHAM BANSAL .(2022A4PS1365P)

Student Write-up:

PS-I Project Title: Lubrication in process

Short Summary of work done: We have made ppts about grasim industry whats are its brand its overall loss profit and many other things . Then we focus on lubricants used in Grasim Industries and done so many research about the topic made reports and ppt and presented in front of our faculty.

Objectives of the project: To research about the lubricants used in grasim industry which is benficial etc

Tool used: No

Details of Papers/patents:No

Brief description of the working environment: It was very good working experience we learnt lot of things how to manage all the things which will help us in future

Academic courses relevant to the project: Mechanical courses

Learning Outcome: We learnt much about lubricants what are it uses and where it's used it's advantage etc

Name: YUKTHA RATNA PUVVADI .(2022B1A21054H)

Student Write-up:

PS-I Project Title: Instrumentation for contamination sorter

Short Summary of work done: To find ways and developements in technology for contamination sorter and strategies to make it more cost efficient and more efficiency

Objectives of the project: Contamination sorter

Tool used: S/w

Details of Papers/patents:.NIL

Brief description of the working environment: Good

Academic courses relevant to the project: chemical

Learning Outcome: Working of textile fabric formation

Name: BHAWANA TANWAR(2022D2TS1545P)

Student Write-up:

PS-I Project Title: HAZARDS IN FIBER MANUFACTURING INDUSTRY AND SAFETY MEASURES/PRACTICES

Short Summary of work done: That was not such a good experience of mine because everything was online, so we did not get to learn much but overall it was okay, okay experience, we had group discussions and presentations. And a lot more .

Objectives of the project: Identity safety measures/practices

Tool used: NA

Details of Papers/patents:-

Brief description of the working environment: We have no idea about the company environment because it's was online.

Academic courses relevant to the project: -

Learning Outcome: We get to know about how the company function it was industry so how things done and what are the things we should be carefull of

Name: ANKIT SINGH RAWAT(2022D2TS1552P)

Student Write-up:

PS-I Project Title: HAZARDS IN FIBER MANUFACTURING INDUSTRY AND SAFETY MEASURES/PRACTICES

Short Summary of work done: During PS-1 I collected and analysed data in context to prepare MSDS data sheets for hazards chemical. I also prepared animations and posters for safety measures while working with hazards chemical.

Objectives of the project: To find safety measures and precautions for harm caused by hazards chemicals use in fiber manufacturing factory

Tool used: I used canva for making posters and ppt. For making animation I used canva+filmora.

Details of Papers/patents:No

Brief description of the working environment: The work environment was very good. The faculty incharge and mentor for PS-1 were very supportive and helpful in nature.

Academic courses relevant to the project: Print audio and visual advertisement(Pava)

Learning Outcome: 1. Learn how to analyse data.
2. Learn how to make data sheets.
3. Also learned about various hazards caused by chemicals in factory.

Name: GITIKA RAWAT(2022D2TS1554P)

Student Write-up:

PS-I Project Title: Hazards in fiber manufacturing industry and safety measure

Short Summary of work done: During ps1 I collected and analysed data to prepare MSDS data sheet .I also prepared animation and poster for this project

Objectives of the project: The objective of this project is to identify, evaluate, and mitigate the hazards associated with the fiber manufacturing industry to ensure a safer working environment.

Tool used: I used power point for presentation and canva for poster making

Details of Papers/patents:No

Brief description of the working environment: The working environment was very good and mentors and faculty incharge were very supportive and understanding.

Academic courses relevant to the project: Print audio and visual advertisement (pava)

Learning Outcome: Ability to identify and categorize various hazards in the fiber manufacturing industry, including chemical, mechanical, ergonomic, and fire hazards.

PS-I station: Indian Oil Corporation Ltd Mathura, Mathura

Student

Name: AYUSHMAN RAJ .(2022A1PS1339P)

Student Write-up:

PS-I Project Title: Atmospheric and vaccum distillation unit

Short Summary of work done: 1 st month basic refinery overview , 2nd month working in detail for the project of enhancement of efficiency of adu and vdu

Objectives of the project: To understand the working and enhance efficiency of adu and vdu units

Tool used: soft skills and basic knowledge of CDCs.

Details of Papers/patents:no

Brief description of the working environment: good working environment , officials were helpful

Academic courses relevant to the project: CDCs of chemical engineering

Learning Outcome: understand the working of adu and vdu in detail

Name: ANUSHKA SHARMA(2022A1PS1476G)

Student Write-up:

PS-I Project Title: Propylene recovery in Fluidized Catalytic Cracking Unit (FCCU)

Short Summary of work done: During my PS1 at Indian Oil Corporation Limited (IOCL), I focused on the operations of the Fluidised Catalytic Cracking Unit (FCCU) and the Propylene Recovery Unit (PRU), addressing the critical issue of propylene loss in both areas. I studied the FCCU in-depth, gaining comprehensive insights into its operations. My investigation into propylene loss from the primary absorber of the FCCU led me to propose solutions such as incorporating a chiller and additional coolers, supported by detailed data analysis. In the PRU, I specifically addressed propylene loss from the debutanizer bottom and deethanizer top. To tackle this issue, I identified the root causes of the loss and implemented strategies to minimize it, including fine-tuning operating parameters, enhancing the efficiency of reflux ratios, and employing advanced separation techniques.

Objectives of the project: The project aimed to investigate propylene loss from the primary absorber of the FCCU and the propylene recovery unit, with a specific focus on losses occurring at the debutanizer bottom and the deethanizer top. The objective was to develop strategies to minimize these losses by adjusting operating parameters, optimizing reflux ratios, and enhancing separation techniques.

Tool used: My analysis involved using graphical plots and calculations performed on Excel

Details of Papers/patents:-

Brief description of the working environment: The working environment at Indian Oil Corporation Limited (IOCL) Mathura Refinery was very supportive and cooperative. The team created a positive atmosphere where experienced engineers and technicians were always ready to help clear up any doubts and deepen my understanding of complex ideas. The refinery's modern equipment and practical setup were perfect for learning and growing.

My goal was to apply what I had learned in theory to real-world situations, understand how the refinery works, and help solve important issues like propylene loss. I also wanted to build my technical skills, improve my problem-solving abilities, and gain a better understanding of how the industry operates.

Academic courses relevant to the project: Separation Process-I , Heat Transfer

Learning Outcome: Throughout the project, I gained valuable insights into applying theoretical knowledge in real-world situations. I learned how to bridge the gap between theory and practice, recognizing that real-life scenarios can be more complex than theoretical models suggest. I also discovered the importance of balancing various parameters to achieve optimal efficiency in operations. Additionally, I improved my communication skills and gained confidence in presenting technical information and working with team members.

Name: UJJAWAL KUMAR .(2022B2A11708P)

Student Write-up:

PS-I Project Title: Minimization of Catalyst loss and Bottom Exchanger improvement in run length

Short Summary of work done: Overview, exploration and in depth understanding of various unites such as AVU, FCCU, CCRU, NPRU, OSM, Pump house. I also engaged in two major projects and studied FCCU in depth

Objectives of the project: Profit maximisation and waste minimisation

Tool used: NA.

Details of Papers/patents:N.A.

Brief description of the working environment: Government company, therefore we needed to step up ourselves to learn and know about the processes, field visit, project undertaking and a lot more. Township had all the facilities for food and sports. Working environment was good. The company expects to follow the norms and not to breach security.

Academic courses relevant to the project: Petroleum refinery processes

Learning Outcome: Units, their types, roles, mechanisms, inter relationships between units

PS-I station: Indian Oil Corporation Ltd- Vadodara, Vadodara

Student

Name: PATEL HET PANKAJKUMAR .(2022A1PS0742P)

Student Write-up:

PS-I Project Title: Study of Process Plant in IOC

Short Summary of work done: The work that we did was majorly about studying of different plants and understanding the real life application of book knowledge. You will study how a process flow diagram works around. Additionally you'll learn deeply about the Petroleum engineering as a field.

Objectives of the project: How different plants in a factory run

Tool used: NIL

Details of Papers/patents: NIL

Brief description of the working environment: The working environment will depend on your plant to plant. We had a great learning experience in DCU and VGO-HDT where mentors over there were teaching really well and this plants was where we were able to connect all dots about how plant was going. Majorly all our guides were 3-4 years elder only so it was fun.

Academic courses relevant to the project: Majorly 3rd Year courses and basics of pressure and flow.

Learning Outcome:

1. Understood about how we maximize profits by re utilisation of used and waste products.
2. Learned about how one plant is interlinked to other by visiting 8 plants and understanding the flow of process.
3. You will understand the network of petroleum all around India.
4. Since visiting all plants you'll gain an edge over all other people who visited a single plant like in case of Reliance.
5. You'll learn how IOCL is shifting towards petrochemical.

Name: NISARG PATEL(2022A4PS1219G)

Student Write-up:

PS-I Project Title: Study of Process Plant at IOC

Short Summary of work done: We visited all the major plants present in gujarat refinery and learnt about their functioning, different chemical processes and different machinery used and how our coursework was relevant to the industry.

Objectives of the project: To visit different plants in gujarat refinery and learn about them

Tool used: None

Details of Papers/patents:None

Brief description of the working environment: Good Working Environment, Fellow employees were helpful and eager to teach us about the functioning of the plants .

Academic courses relevant to the project: Heat Transfer, Fluid Mechanics, Thermodynamics, Mass Transfer, basically cdc's of Mechanical and Chemical Department were really helpful.

Learning Outcome:

1. Industry Shift:-With the depletion of crude oil resources, major oil companies are transitioning towards the petrochemical sector.
2. Plant Exposure:-I gained firsthand knowledge of various petroleum plants, including HGU, DHDT, SRU, ISOM, FCC, VGO-HDT, OM&S, and DCU.
3. Practical Application:-The internship allowed me to apply core chemical engineering concepts like Fluid Mechanics and Heat Transfer in real-world scenarios.
4. Sustainability Initiatives:- I learned about IOCL's sustainable practices, such as extensive chemical reuse and the development of eco-parks around their facilities.

Name: LAKSHYA ARORA(2022B4A31242G)

Student Write-up:

PS-I Project Title: Study of Process Plant at IOC

Short Summary of work done: We visited plants namely BS - VI, OM&S, DCU, VGO, DHDT, HGU, SRU, etc. to understand their refining process, in-feed, out-feed, catalysts used, various equipments used such as pumps, heat exchangers, valves, compressors and finally understood how these complex plants operate. One aspect of training was to understand that one has to take care of emissions, safety, operational efficiency, quality control, blending of products according to customer's need and stringent government norms

Objectives of the project: The objective of this project was to visit different plants and understand the specific refining processes, aiming to reduce the operational costs and improve energy efficiency while minimising environmental impact.

Tool used: IFR Suit, Safety Shoes, Safety Helmet

Details of Papers/patents:-

Brief description of the working environment: Employees at IOCL work in a collaborative environment. The company also invests in regular training and development programs. The company offers various benefits and welfare schemes to ensure the well-being of its employees. It is also committed to sustainability and environmental stewardship. IOCL places a strong emphasis on safety, ensuring that all operations adhere to stringent safety standards and regulatory compliance.

Academic courses relevant to the project: B.E. Chemical / Mechanical / Electrical

Learning Outcome: Vocational Training at Indian Oil Corporation Limited (IOCL) provided me with a comprehensive understanding of the oil and gas industry, and the practical skills and knowledge that are essential in the chemical industry. Some learning outcomes include environmental awareness, quality control, operational efficiency, safety and compliance, and team management.

PS-I station: Indian Oil Corporation Ltd, Digboi

Student

Name: NISHIT BAISHYA .(2022A1PS0959P)

Student Write-up:

PS-I Project Title: Improving Furnace efficiency

Short Summary of work done: Analysed different operational units of IOCL

Objectives of the project: Calculating efficiency of various furnaces and literature review to improve the design

Tool used: Nothing

Details of Papers/patents:Nothing

Brief description of the working environment: Even though the company employees were busy , they always took out time to make us understand each and every process of the operational units. Got to know how team work actually works .

Academic courses relevant to the project: Heat transfer, Mass transfer

Learning Outcome: Got a very good industrial experience and got to learn the application of concepts learned in 2nd year

Name: KAUSTUBH SHARMA .(2022A1PS1126P)

Student Write-up:

PS-I Project Title: Calculating Furnace Efficiency

Short Summary of work done: Learned about different refinery units for fuel and wax sectors in IOCL Digboi.

Objectives of the project: To get hands on industrial experience.

Tool used: NA

Details of Papers/patents:NA

Brief description of the working environment: Work culture in IOCL is like any other govt. organisation.

Academic courses relevant to the project: All chemical CDCs

Learning Outcome: Learned the practical application of theoretical concepts.

PS-I station: Reliance Industries Limited-Jamnagar, Jamnagar

Student

Name: HARDIK MANTRI .(2022A1PS1022P)

Student Write-up:

PS-I Project Title: HPIB Steam and Condensate System Hydraulic Adequacy Study

Short Summary of work done: During my Practice School-I at Reliance Jamnagar, I worked on projects related to chemical engineering, though the projects were assigned based on my branch rather than my personal interests. My tasks mainly involved applying what I've learned in class to real-world challenges in the refinery. The schedule was demanding, with long hours and a daily commute, but I gained valuable insights into how large-scale industrial processes work. Overall, my experience was a mix of practical learning and adapting to challenges, giving me a better understanding of the chemical engineering field and how it works in a real industrial setting.

Objectives of the project: This project evaluates the hydraulic performance of steam and condensate systems in High Purity Iso-Butylene (HPIB) production. It aims to identify inefficiencies, potential hydraulic bottlenecks, and recommend optimization strategies to enhance the reliability and effectiveness of steam and condensate management.

Tool used: Aspen HYSYS, KORF, Excel

Details of Papers/patents:No

Brief description of the working environment: During my Practice School-I at Reliance Jamnagar, I worked in a large-scale refinery with complex operations. The environment was fast-paced and required strict adherence to safety protocols. Interns were expected to quickly adapt, apply theoretical knowledge to practical tasks, and contribute to ongoing projects. The company anticipated that we would learn about refinery processes and develop problem-solving skills in a real-world setting.

Academic courses relevant to the project: CHE F214 - Fluid Mechanics
CHE F244 - Separation Processes-I

Learning Outcome: During my Practice School-I at Reliance Jamnagar, I learned how to apply chemical engineering knowledge in real-world situations, gained a better understanding of refinery operations, and developed problem-solving skills. I also improved my ability to adapt to challenges, manage my time effectively, and work well with others, all while learning about industrial safety and the corporate environment.

Name: DEVAM NIKETUBHAI SHETH .(2022A3PS1204P)

Student Write-up:

PS-I Project Title: AGR-PRC Compressor Variable Speed Drive, Internal Components & Reliability Study

Short Summary of work done: This project at Reliance's DTA-PCG plant focused on enhancing the Variable Speed Drive (VSD) system powering AGR-PRC compressors. By analyzing internal components (rectifiers, inverters, capacitors, transformers) and conducting reliability studies, potential failure points were identified and optimization strategies proposed. The project aimed to improve overall plant efficiency by ensuring reliable power delivery for compressor operation.

Objectives of the project: Analyze AGR-PRC compressor VSD components for efficiency. Assess reliability, identify potential failure points. Optimize VSD performance in DTA-PCG plant.

Tool used: Rectifiers, Inverters, Capacitors ,Transformers

Details of Papers/patents:Cannot disclose because of company regulations

Brief description of the working environment: Reliance's DTA-PCG plant provided a valuable industrial learning environment. The team was supportive, and the HR department facilitated a smooth onboarding process. The experience offered a blend of theoretical knowledge and practical application within a structured corporate setting. Let me know if you'd like any section expanded or refined!

Academic courses relevant to the project: Power Electronics, Electronic Devices and Electrical Machines

Learning Outcome: Deep understanding of VSD systems in power generation. Hands-on experience with rectifiers, inverters, capacitors, transformers.

Practical knowledge of industrial reliability analysis

PS-I station: Zasya Life Sciences, Ahmedabad

Student

Name: PRAKRITI.(2022A5PS1417P)

Student Write-up:

PS-I Project Title: Solid phase peptide synthesis of Carfilzomib

Short Summary of work done: The project began with an extensive review of existing synthesis protocols for Carfilzomib, identifying key steps and potential challenges. I then moved to practical lab work, starting with the preparation of the resin-bound initial amino acid. Successive amino acids were added step-by-step using Fmoc (9-fluorenylmethoxycarbonyl) chemistry, ensuring proper deprotection and coupling reactions at each stage. Monitoring these reactions involved using techniques such as thin-layer chromatography (TLC) and high-performance liquid chromatography (HPLC). Challenges encountered included managing incomplete reactions and side reactions, which required optimizing reaction conditions such as temperature, solvent choice, and coupling reagents. Purification of the intermediate and final products was performed using preparative HPLC. This experience enhanced my technical skills in peptide synthesis, analytical methods, and problem-solving, providing a solid foundation for future work in pharmaceutical chemistry.

Objectives of the project: The objective of the project is to develop and optimize a reliable solid-phase peptide synthesis method for producing Carfilzomib.

Tool used: Apptec peptide synthesizer, rotary evaporator, chemdraw, combi flash and reaxys.

Details of Papers/patents: No patents

Brief description of the working environment: The working environment at Zasya Life Sciences was collaborative and dynamic, fostering both individual growth and team success. The office culture emphasized open communication, with regular meetings and feedback sessions that ensured everyone was on the same page. The team was diverse, bringing together different skill sets and perspectives, which enriched the problem-solving

process. During my PS-I, I gained valuable insights into the practical applications of my academic knowledge. I learned how to manage time efficiently, prioritize tasks, and work under pressure. The experience taught me the importance of effective communication and collaboration in achieving project goals. I also acquired new technical skills and became proficient in tools and technologies relevant to my field. Overall, my internship at Zasya Life Sciences was an enriching experience that significantly contributed to my professional and personal growth.

Academic courses relevant to the project: Pharmaceutical chemistry and medicinal chemistry.

Learning Outcome: Scientific literacy, critical thinking, documentation and reporting, safety practices, analytical skills and time management.

Name: CHITRA SHUKLA .(2022A5PS1422P)

Student Write-up:

PS-I Project Title: Studies towards the synthesis of caraprizine derivative

Short Summary of work done: Synthesised intermediate 1 and 2 of the molecule cariprazine then coupled these intermediates through a

Objectives of the project: Synthesis of organic chemistry application in real life

Tool used: S/w- Chemdraw H/w- rotatory evaporator, column chromatography, combiflash, magnetic stirrer

Details of Papers/patents:NA

Brief description of the working environment: In the API lab, people can get a bit curious and get into your business. They will expect you to work like an employee there meaning no extra time for tea breaks than they are taking. However our mentor was really nice and never cared for such petty things. Company expects you to wear safety gears in the lab at all times. I've had a great understanding of reaction mechanism of a lot of organic reactions and revised my concepts of organic chemistry which will help me in the subject of organic chemistry next semester.

Academic courses relevant to the project: Pharmaceutical chemistry, 11th and 12th organic chemistry

Learning Outcome: I learnt how to use laboratory equipments like rotatory evaporator, learnt column chromatography through a gravity column, combiflash and made my report with the help of chemdraw

Name: SOMYA GUPTA .(2022A5PS1431P)

Student Write-up:

PS-I Project Title: Analysis of the samples by advanced analytical techniques

Short Summary of work done: I learnt the preparation of the samples that has to be loaded in the machines, their mobile phase, mechanism of all the machines used, how to read chromatogram, how to analyse the purity level of the sample, and how to isolate the purified compound

Objectives of the project: Analysis by HPLC, UPLC, LC-MS, Prep HPLC

Tool used: HPLC, Prep- HPLC, UPLC, LC-MS , Empower, Mass lynx

Details of Papers/patents:NA

Brief description of the working environment: The working environment is quite friendly. The mentors are willing to help interns. They expect you to do work. They help you every possible way. They give you exposure to the instruments and even let you handle the instrument. This helps in gaining practical knowledge. They are cooperative.

Academic courses relevant to the project: Pharmaceutical analysis , IMA

Learning Outcome: Able to use analytical techniques

Name: KANUPRIYA SINGH .(2022A5PS1440P)

Student Write-up:

PS-I Project Title: Solid phase peptide synthesis of cyclosporine

Short Summary of work done: We worked on the synthesis of a tetrapeptide Cyclosporine using the method of solid phase peptide synthesis.

Objectives of the project: Synthesising peptide from the mechanism of solid phase peptide synthesis

Tool used: H/w- Rotary evaporator, Combyflash , Automatic peptide synthesis apptec machine,LC-MS, Prep-HPLC. S/w:- ChemDraw, Reaxys,

Details of Papers/patents:N/a

Brief description of the working environment: Working environment in Zasya is very healthy. Everyone is very friendly and is always open to help. Our mentors explained each and everything with patience and we're very nice to us.

Academic courses relevant to the project: Pharmaceutical chemistry, organic chemistry

Learning Outcome: Laboratory skills, Organic Chemistry, peptide synthesis

PS-I station: AECOM, Mumbai

Student

Name: SIDDHARTH VIJAY PATEL .(2022A2PS1153P)

Student Write-up:

PS-I Project Title: AUTOMATING CABLE PROFILE GENERATION FOR PRESTRESSED CONCRETE CABLES AND ANALYSIS OF ECCENTRICALLY LOADED RECTANGULAR FOOTING RESTING ON SOIL

Short Summary of work done: My work was mostly around automating structural analysis tasks which are repetitive and take up a lot of time. The

Objectives of the project: Create Excel VBA based tools to automate cable profile generation and rectangular footing analysis.

Tool used: Excel VBA, Midas Civil, AutoCAD.

Details of Papers/patents:-

Brief description of the working environment: Although the official time is 10 am to 6 pm, it is quite flexible. I worked on a daily task basis. I could leave early if my work for the day were done. The people around were very comforting, supportive, and polite. I had a great time at AECOM working with structural engineers on mega projects like the Mumbai Coastal Road Project. I understood the functioning of a construction consultancy firm and also became proficient with structural analysis software like Midas Civil and Staad Pro.

Academic courses relevant to the project: Mechanics of Solids, Structural Analysis, Prestressed Concrete Structures, Foundation Engineering, Bridge Engineering

Learning Outcome: Learned new civil engineering concepts like Prestressed concrete, Footing Analysis.
Became proficient with software's like Midas Civil and Staad Pro and use of Excel VBA.

PS-I station: Delhi Metro Rail Corporation (DMRC) - Mechanical, Central Delhi

Student

Name: ARNAV DAYAL .(2022B4A41028P)

Student Write-up:

PS-I Project Title: Pneumatics and braking systems in DMRC trains

Short Summary of work done: Work environment overview of DMRC, section-wise DMRC train function

Objectives of the project: To analyse and compare different types of braking systems used in DMRC trains

Tool used: Internal custom softwares

Details of Papers/patents:-

Brief description of the working environment: Braking, pneumatics

Academic courses relevant to the project: Mechanics oscillations and waves (MeOW)

Learning Outcome: Work environment overview, section-wise DMRC train function

PS-I station: Hitech Projects Pvt. Ltd, Ahmedabad

Student

Name: SURYAM MIHIR MANIAR .(2022A2PS1076P)

Student Write-up:

PS-I Project Title: Construction Methodologies and Activities

Short Summary of work done: Observing and understanding the processes involved in various construction activities carried out on a site during a slab to slab cycle. Also, evaluating the benefits and needs for all activities and their various components. Exploring Mivan technology and the Quality assurance system. Importance of Curing, steel checking, casting and practical experience of the same. Particulars of RCF with Slab, Beams and Columns with all technical aspects overviewed. Boom Placer, Crane, Clamshell and other machines used on site.

Objectives of the project: Learning and Implementing Construction Planning for Activities of a Slab Cycle and other Methodologies

Tool used: DWG viewer, Adobe, MS Excel

Details of Papers/patents:N.A.

Brief description of the working environment: The work environment of Hitech Projects was very collaborative, Intellectual and Learning Oriented. Even today, the firm's top leaders learn new technologies and impart the same to their employees. I was expecting the firm to place me at a construction site and make me do grunt work and clerical jobs but I was proved wrong. All the engineers very helpful and friendly, each teaching me from the expertise they possessed. The Project Manager and Project Head

were very practical and learned engineers, who gave me apt tasks so that I could learn all the basic as well as critical concepts of RCF and Construction Planning. They have got the best HR team, Mr. Prateek was always ready to assist us for learning anything, just with the motto that Learning comes above all. In my opinion, Hitech is the best corporate firm I have ever encountered and the people in there are amazing.

Academic courses relevant to the project: Civil Engineering Materials, Business Communication, Analysis of Structures, Construction Planning and Technology, Fundamentals of Financing and Accounting

Learning Outcome:

1. Leadership and team work
2. Construction Planning
3. Slab Cycle and its activities
4. Major activities on site and their processes
5. Mivan shuttering system and its benefits
6. Major machines and equipment used on site
7. Diaphragm wall, lock systems and scaffolding

Name: TANISH KATARIYA .(2022A2PS1456H)

Student Write-up:

PS-I Project Title: Working Process On A Construction Site

Short Summary of work done: I have observed and learned many things on site in the period lasting 2 months. This includes working closely with junior engineers, senior engineers, safety officers. I have closely observed the slab cycle and learned about the overall working of the slab cycle. I have also worked at the steel yard and learned about the working procedures over there. In the final month, I worked in finishing, masonry, and quality aspects of the site. Also I worked closely with the safety officers on site as Safety was my sub-topic for the project.

Objectives of the project: To understand the overall working and technicalities at a construction site.

Tool used: -

Details of Papers/patents:-

Brief description of the working environment: The environment is quite good.

The work is on-site and in general all the staff is very helpful and cooperative. For maximum output you need to ask as many doubts as possible and learn along the way.

Academic courses relevant to the project: CEM, Surveying, CPT

Learning Outcome: Overall intricacies of a building and about coordination of so many people for a successful project

PS-I station: Intercontinental Consultants & Technocrats Pvt. Ltd, Delhi

Student

Name: ATUL AJAY SINGH .(2022A2PS1715P)

Student Write-up:

PS-I Project Title: Civil Engineering

Short Summary of work done: Got to work for various departments under civil engineering (eg highway hydrology surveying etc) . understood IRC codes more deeply and most importantly the practical aspects of the theoretical concepts. Did a safety audit of a junction near our company . What problems did that junction had and various solutions possible . Prepared a report. Our faculty also made us learn about excel in more detail , EDA in python and overall it was an in depth PS .

Objectives of the project: getting experience of various projects of different departments under civil engineering

Tool used: work was mostly done outside the company like surveys , audit so as such no tools

Details of Papers/patents: Reports were prepared at various stages.

Brief description of the working environment: to work in ICT was very worth remembering as the environment was very positive and motivated to work . My fellow bitsians also were so dedicated and that team projects and team work was the major takeaway from the PS. The company always took our internship seriously and made us work and left no efforts to make us learn more about civil engineering in depth.

Academic courses relevant to the project: Highway engineering, Structural engineering, Soil mechanics , Fluid mechanics.

Learning Outcome: how corporate works , team work, time management, punctuality.

Name: SPARSH MATHUR .(2022A2PS1717P)

Student Write-up:

PS-I Project Title: analysis of an at grade junction

Short Summary of work done: I have experience analyzing data in Excel, where I utilized advanced functions and tools to derive insights. Additionally, I've conducted safety audits, ensuring compliance and identifying areas for improvement. My role also involved creating formal reports, effectively documenting findings and recommendations. These skills have honed my ability to manage data and communicate results clearly and professionally

Objectives of the project: To rectify the problems and provide solution at a road junction for smooth flow of traffic

Tool used: excel, word, power point, auto cad

Details of Papers/patents:no

Brief description of the working environment: The environment at the company was good as mentors from each department were very helpful, also provided with safety equipment at on-site work.

Academic courses relevant to the project: highway engineering, engineering graphics

Learning Outcome: were able to analyze data in excel
gained the experience of conducting safety audits
and create formal reports

Name: DEVANSH .(2022A2PS1718P)

Student Write-up:

PS-I Project Title: Highways

Short Summary of work done: It's been an insightful journey exploring the world of civil engineering firsthand. From bridges to highways and PMG, each department offers unique learnings and challenges. Working on-site has been quite rewarding, applying classroom knowledge to real-world projects under the guidance of our mentor and the supervisors from the various departments of the company as of now as well.

Objectives of the project: Analysing the existing problem and providing long- and short-term solutions.

Tool used: None

Details of Papers/patents:None

Brief description of the working environment: Working environment was very relaxed and chill, I expected the company to be more rigorous, but it was not that case. Learnings during PS-I was work ethics, teamwork, time-mangement etc.

Academic courses relevant to the project: Highway Engg, Hydraulic Engg, AOS.

Learning Outcome: We were able to identify current problems more efficiently through our mentors and with respect to that we gave solutions to it. We learned work ethics, teamwork and time management also through various projects.

PS-I station: Kolkata Metro Rail Corporation Ltd., Kolkata

Student

Name: ASHIS MISHRA .(2022A3PS0410P)

Student Write-up:

PS-I Project Title: Tunnel Ventilation System and Automatic Fare Collection System

Short Summary of work done: In the first week we were informed about the objective purpose and vision of the organisation followed by a masterclass on project management by the chief project manager. Then the next week rolled down with understanding various systemic components of the metro infrastructure which includes psd(platform screen door),tvf(tunnel Ventilation system),SCADA architecture, FIRE emergency infrastructure.The post -midsem portion was majorly about AFC(AUTOMATIC FARE COLLECTION SYSTEM) . We understood the system of AFC in detail from the industry experts. We all got an opportunity to visit the new constructed metro stations to understand how the entire system and its components are integrated.

Objectives of the project: To understand the planning, construction and maintenance of rapid transit systems in Kolkata

Tool used: SCADA,EXCEL,PYTHON,AUTO CAD

Details of Papers/patents:NIL

Brief description of the working environment: The work environment was very professional. The staff were very friendly and supportive. The working hours were flexible. Mostly all our work for the day was done in the first half itself.Good well furnished office .

Academic courses relevant to the project: SIGNALS AND SYSTEMS, DIGITAL DESIGN, ENGINEERING GRAPHICS

Learning Outcome: Project Management, Estimate Filing ,System Design using SCADA architecture, QR code mechanism and design principles.

Name: ANVIK GHOSH .(2022A8PS0694H)

Student Write-up:

PS-I Project Title: Integration Station Management Systems (ISMS), and Automatic fare collection (AFC)

Short Summary of work done: The PS internship at KMRCL was mostly instructional and demonstrational, with the interns getting hands on experience to a certain extent during field visits. We were taught about the aforementioned systems through lec-dem sessions taken by their experts, and other engineers from collaborative companies (CRIS, AECON, Voltas etc.) During our field visits to the under construction metro stations at

Esplanade and Howrah (a part of the new East-West corridor), we were shown their internal workings in depth, with each of the visits going on for 3-4 hours. It was multi disciplinary, covering systems from many branches of engineering viz. civil, mech, electronics, IT. Additionally we were also shown how such large scale projects under the state and central govt. of India are sanctioned and take shape. This gave us insights into the financial, economic and HR management aspects of KMRCL as well.

Objectives of the project: To learn about the various operational systems of KMRCL (collectively known as ISMS)

Tool used: H/w- PLC Circuits, DESFire Cards, Ultralite Tokens. S/w - SCADA, PAC Machine Edition, Cimplicity workbench (Note that prerequisite knowledge wasn't required)

Details of Papers/patents: Nil.

Brief description of the working environment: Working environment was great. The officials were always very helpful to us. We were given a separate room, and were provided with ample refreshments. Working hours was usually from 11am-3pm on weekdays only. During field visits it used to stretch on until 4-5pm occasionally.

Academic courses relevant to the project: Digital Design, Microprocessors and Interfacing
(and some basic physics and maths concepts which is expected of one to know)

Learning Outcome: Under the ISMS I learnt about Ventilation, Electronics, Signalling and Emergency Systems and I've also learnt about the Automatic Fare Collection system of the metro.

PS-I station: Mormugao Port Trust, Mormugao

Student

Name: SRIYAAN KODEBOYENA ,(2022A2PS1711H)

Student Write-up:

PS-I Project Title: Construction of extension of NH-17B from Varunapuri to Sada, International and Domestic Cruise terminal at Mormugao

Short Summary of work done: Observation of construction of the extension of the roadway NH-17B from Varunapuri to Sada Junction in Goa. Observation of construction of India's first curved cable bridge, which is a part of NH-17B. Observation of the construction of the international and domestic cruise terminal at Mormugao port

Objectives of the project: Learn and observe the construction of the structures and different processes used to do so

Tool used: Canva, Autocad

Details of Papers/patents: None

Brief description of the working environment: Work friendly environment. Colleagues provide support and encouragement for the interns. Learnt work ethics, learnt the difference between classroom and field work. Learnt how to apply skills learnt in classroom.

Academic courses relevant to the project: Surveying, Highway Engineering, Construction planning and technology, Civil Engineering Materials

Learning Outcome: Work ethics, team work

Name: [MOHANA VARSHITH BOLLOJU .\(2022A2PS1714H\)](#)

Student Write-up:

PS-I Project Title: Goa Bridge Project, International and Domestic Cruise Terminal

Short Summary of work done: We used to report to our mentor and get to the site and learn what are the things that were going around and report back the same and help in making monthly reports

Objectives of the project: Learn and observe construction.

Tool used: Canva and Autocad

Details of Papers/patents: None

Brief description of the working environment: Our working environment is how a site civil engineer works at and as our working is on site, we expect the company to go on recruiting interns and help them learn.

Academic courses relevant to the project: Materials of solids, Analysis of solids, Construction planning and technology, Soil mechanics and Surveying.

Learning Outcome: Apply our course outcomes on site was a huge plus for us civil engineers and learned a lot from on site work and gained in sight experience

Name: HIMADRI MATHUR .(2022A5PS1448P)

Student Write-up:

PS-I Project Title: COMMON FRAMEWORK FOR PRESENTATION OF FINANCIAL STATEMENTS FOR MAJOR PORTS

Short Summary of work done: to change the port's financial data from an old non-standard format to a new standard format that would be acceptable anywhere. Improving the port's financial reporting and guaranteeing adherence to international standards required this initiative. A thorough study of grants from the government, tax expenditures, cash flow statements, segment reporting, related party transactions, revenues, expenses, reserves, and surplus were all part of it. With the assistance of the Accounting Manual for Major Ports prepared by the ICAI Accounting Research Foundation that my supervisor gave me, I first tried to understand the various components of a balance sheet and specifically those related to MPA, then attempted to convert the financial data to the new format, making sure that it was accurate and consistent the entire time.

Objectives of the project: In response to new governmental regulations, the Mormugao Port Authority is transitioning its financial data from the old format to a new standardized format using Excel. This project aims to ensure that the financial statements meet regulatory requirements, improve data accuracy, and streamline reporting processes.

Tool used: Excel

Details of Papers/patents:.

Brief description of the working environment: My mentor was nice. I learnt excel, finance and accounting skills.

Academic courses relevant to the project: Fundafin

Learning Outcome: Excel, finance, accounting

Name: PIALI SARKAR(2022B2A41393G)

Student Write-up:

PS-I Project Title: Ports of the Future - IoT & 5G

Short Summary of work done: In the first couple of days we observed and learnt about work done at the port. We were then asked to identify any operation at the port, that we could improve. It was a very broad task, as there are numerous operations on the port, with multiple processes under each operation. I finally settled on a sort of research project. It required me to research on IoT, blockchain , AI and find practical applications of these technologies on port operations to improve the efficiency of operations.

Objectives of the project: Identify areas of automation for the port. Prepare case studies on other international ports

Tool used: MS Word

Details of Papers/patents:NA

Brief description of the working environment: Work environment was quite chill, no micromanaging from the senior engineers. Your learning really depends on how much you put yourself out there and talk to your mentor and other engineers. The mentor for mechanical engineering department was really good. I learnt how field engineers work, how the port operates. I also got a chance to learn about the attempt of the port to transition from completely manual to semi autonomous operations.

Academic courses relevant to the project: NA

Learning Outcome: I learnt about all operations on port. I also got to explore applications of IoT, blockchain, ML & AI in automation of port operations.

PS-I station: Narshing Construction Private limited - IT, Ranchi

Student

Name: UJJWAL KUMAR LAL .(2022B1A11616P)

Student Write-up:

PS-I Project Title: Web development

Short Summary of work done: For the first one month they shared few lectures so we could learn the web development and then they gave the actual project of developing the website for the company. We were majorly involved in developing the front end aspect of the website, by making the use of HTML, CSS and JavaScript

Objectives of the project: To make the front end part of the company's website

Tool used: HTML, CSS and JavaScript

Details of Papers/patents:None

Brief description of the working environment: It was changed from on-site to online

Academic courses relevant to the project: Computer programming

Learning Outcome: Front end aspects of web development

Name: KUMAR KASHYAP(2022B1A81379G)

Student Write-up:

PS-I Project Title: Infra Web App

Short Summary of work done: Used html, css and js to create the website

Objectives of the project: Make a infra Web app for the company

Tool used: HTML,CSS,JS,BOOTSTRAP

Details of Papers/patents:N/A

Brief description of the working environment: Online mode

Academic courses relevant to the project: N/A

Learning Outcome: Web Development
Construction industry

PS-I station: National Institute of Hydrology, Roorkee

Student

Name: ABHISHRUT PRATAP SINGH .(2022B5A21049P)

Student Write-up:

PS-I Project Title: Review report on Narmada canal

Short Summary of work done: It was good and I got something to learn

Objectives of the project: To review the depleting water table

Tool used: Google earth

Details of Papers/patents: NIL

Brief description of the working environment: It was decent

Academic courses relevant to the project: Hydrology

Learning Outcome: How to make a review report

PS-I station: North Western Railway, Jaipur

Student

Name: ADITYA GOYAL .(2022A2PS0981P)

Student Write-up:

PS-I Project Title: DEDICATED TEST TRACK FOR RDSO (GUDHA-THATHANA MITHRI)

Short Summary of work done: 1. Site Development Station Building Construction: Erection of a control point at Gudha, essential for monitoring and managing the operations of the Dedicated Test Track (DTT). Power Supply Building: Dedicated structure to support electric locomotives, highlighting the shift from diesel to more efficient and environmentally friendly electric power. 2. Embankment Construction Earthwork: Involved significant excavation and filling to create stable embankments. Blanket materials were used to manage water flow and ensure long-term stability. Slope Protection: Implemented to prevent erosion and ensure the durability of embankments. 3. Concrete and Material Handling Cement Storage Silos: Deployed to store cement securely, protecting it from moisture and ensuring a consistent supply for ongoing construction activities. Concrete Plant: Automated batching and mixing plant to produce consistent-quality concrete, reducing waste and enhancing the strength and durability of structures. 4. Bridge Construction Major and Minor Bridges: Construction of 15 major and 80 minor bridges in the first phase, incorporating prestressed concrete girders and open web girders for durability and support during high-speed testing. 5. Testing and Quality Control On-Site Laboratory: Established for conducting various soil and material tests to ensure that the construction meets the required standards. Advanced Instrumentation: Installation of sensors and instruments for monitoring train speed, rail stress, strain, and soil settlement, providing precise data for analysis.

Objectives of the project: The development of a dedicated test track for high-speed trains in Nawa City, India,

Tool used: Steel Reinforcement Testing • Tensile Strength Test determines the maximum stress steel reinforcement bars can withstand while stretched. Ensuring the bars can handle the loads and stresses they will encounter is crucial. • Bend Test: This test evaluates

Details of Papers/patents:NA

Brief description of the working environment: Several challenges have been encountered during the construction of the DTT, including logistical issues, environmental

conditions, and technical complexities. Observations indicate that the project team has implemented effective mitigation strategies to address these challenges. For instance, advanced planning and coordination have been employed to manage the supply chain and ensure timely materials delivery. Environmental protection measures, such as erosion control and drainage systems, have been implemented to safeguard the site. Technical challenges, such as precise alignment and quality control, are addressed through continuous monitoring and adherence to stringent standards.

In conclusion, the site observations of the Dedicated Test Track project for RDSO highlight the project's advanced engineering practices, innovative approaches, and commitment to quality. The progress observed on various construction components, such as station buildings, electrical infrastructure, cement silos, embankments, PSC girders, testing laboratories, and track alignment, underscores the project's significance in advancing railway technology and infrastructure. The integration of advanced surveying techniques and effective mitigation strategies further ensures the successful execution and timely completion of the project.

Academic courses relevant to the project: Civil Engineering

Learning Outcome: The Dedicated Test Track (DTT) project for RDSO represents a groundbreaking advancement in India's railway infrastructure.

Name: PARTH MAHESHWARI .(2022A2PS1159P)

Student Write-up:

PS-I Project Title: Dedicated Test Track for RDSO

Short Summary of work done: We learned about the objective and necessity of DTT for RDSO, learned about different divisions of NWR like Civil, Electrical, S&T and their functioning. How track should be designed for 220 kmph trains, seen the practical application of all the lab experiments done in college

Objectives of the project: To know about the importance of railways and its functioning.

Tool used: NA

Details of Papers/patents:NA

Brief description of the working environment: We learned about the objective and necessity of DTT for RDSO, learned about different divisions of NWR like Civil, Electrical, S&T and their functioning. How track should be designed for 220 kmph trains, seen the practical application of all the lab experiments done in college. The working environment was excellent and all the people from organization were very supportive.

Academic courses relevant to the project: Surveying, Construction Planning and Technology, Soil Mechanics, Design of RCC

Learning Outcome: Surveying, site work, girder launching, retaining wall structure

PS-I station: Promac Advisors Pvt. Ltd, Jaipur

Student

Name: CHIRANJEEV SINGH .(2022A1PS1631P)

Student Write-up:

PS-I Project Title: Project Management of Building Construction

Short Summary of work done: Handled various construction projects including Eden Garden Township, jaipur

Objectives of the project: Learning Project Management and it's application in real life projects

Tool used: Oracle Primevera

Details of Papers/patents:no

Brief description of the working environment: Good Office Environment

Academic courses relevant to the project: Principle Of Management(POM)

Learning Outcome: Project Management

Name: HARYAKSH MANUH BHARDWAJ(2022B4A10900G)

Student Write-up:

PS-I Project Title: Project Management: Study, Techniques and Applications

Short Summary of work done: The aim of this project is to introduce key concepts and tools of the project management and illustrate the application of the conceptual models and heuristics. Thus, the current report uses examples from throughout history and the present day to focus on the development and importance of project management for numerous fields. The study is expected to assess the factors of competence that should be developed in order to ensure proper response to the identified threats, as well as to reveal the tools that can be used to perform the desired tasks, with the main focus on the proactive management and strategic planning of the project. The research outcomes also underlined that more attention should be paid to project management as this concept contributes to the strategic success of an organization and may influence the changes in the business context.

Objectives of the project: The aim of this project is to introduce key concepts and tools of the project management and illustrate the application of the conceptual models and heuristics.

Tool used: Canva, Ms Word, Primavera

Details of Papers/patents:N/A

Brief description of the working environment: The aim of this project is to introduce key concepts and tools of the project management and illustrate the application of the conceptual models and heuristics. Thus, the current report uses examples from throughout history and the present day to focus on the development and importance of project management for numerous fields. The study is expected to assess the factors of competence that should be developed in order to ensure proper response to the identified threats, as well as to reveal the tools that can be used to perform the desired tasks, with the main focus on the proactive management and strategic planning of the project. The research outcomes also underlined that more attention should be paid to project management as this concept contributes to the strategic success of an organization and may influence the changes in the business context.

Academic courses relevant to the project: Operations Research, Principles of Management

Learning Outcome: Industrial Exposure
Project Management
Project Communication Management
Does Project Management Need Material Resources?
Organizational Influences
Process Framework & Role Of Project Manager
Project Integration Management
Project Scope Management
Project Schedule Management
Project Cost Management

PS-I station: Public Work Department, Jammu

Student

Name: SUDHANSHU MODI .(2022A2PS1703P)

Student Write-up:

PS-I Project Title: CONSTRUCTION OF NEW SMART CLASSROOM BLOCK (G+2)

Short Summary of work done: The report then describes the 2 months that I spent on the site, during which I observed various stages of the construction process, including reinforcement of slabs and beams, casting of the slab, making bar bending schedule, brick masonry, site testing of materials and other building construction processes. It also discusses the importance of effective project management, communication, and coordination between stakeholders during the construction process. The construction project is being executed by the J&K PWD(R&B) PROJECT DIVISION-II, a public sector undertaking under the government of Jammu and Kashmir. The new building will be a (G+2) structure covering an area of 10336 sq feet and is expected to cost around 1009.20 lakh rupees. The project is a significant investment in the future of the college, and the smart classrooms are expected to enhance the teaching and learning experience for students and faculty alike. The construction of the new building with smart classrooms is expected to be a game-changer for Science College. The project is aimed at creating a modern and technologically advanced learning environment that will facilitate better communication, collaboration, and engagement among students and faculty. The smart classrooms will be equipped with state-of-the-art technology and will provide students with access to a range of digital resources and tools. This will enable them to engage in

interactive and immersive learning experiences that go beyond the traditional lecture format. In addition to the smart classrooms, the new building will also feature other amenities such as a library, computer lab, and seminar rooms. These facilities will provide students with access to a wide range of resources and support services that are essential for academic success. The project is being executed by PWD(R&B), a reputed and experienced construction company that has completed several infrastructure projects of national importance in the region. The corporation is committed to ensuring the timely completion of the project while maintaining the highest quality standards. Overall, the new building with smart classrooms is expected to be a major asset for Science College, providing students and faculty with a modern and advanced learning environment that will help them achieve their academic and professional goals.

Objectives of the project: To orient us with practical work. To let us gain practical experience. To let us understand the planning, design, drawing of construction

Tool used: Civil engineering materials used and equipments

Details of Papers/patents: Nil

Brief description of the working environment: During the PS-I at PWD Jammu for a civil construction project, the working environment is dynamic and multifaceted, encompassing both field and office settings. The primary focus is on large-scale infrastructure development, where tasks involve site inspections, supervision of construction activities, and ensuring compliance with safety and quality standards. Engineers and project managers closely monitor progress, coordinate with contractors, and resolve any issues that arise on-site.

Expectations from the company include a commitment to punctuality, adherence to safety protocols, and proactive communication. Interns are expected to demonstrate a strong work ethic, attention to detail, and the ability to apply theoretical knowledge to practical situations. They should be prepared to contribute to project documentation, assist in data collection, and support senior engineers in various tasks.

During the PS-I internship, significant learning opportunities include gaining hands-on experience in civil construction processes, understanding project management techniques, and applying engineering principles in real-world scenarios. Interns will acquire insights into material testing, construction methodologies, and site management. They will also develop skills in problem-solving, teamwork, and project coordination, enhancing their technical and professional competencies in the field of civil engineering.

Academic courses relevant to the project: Construction planning and technology

Civil gang Materials

Surveying

Learning Outcome: The internship is a great way to learn practical skills which are useful in the real world.

During 2 months of internship, I gained various experiences through the tasks which were assigned to me.

- Learning in a classroom and working in the field are very different experiences.
- The internship an is opportunity to test out all the skills that we developed in college and see how they work in the real world.
- This internship has helped me sharpen the skills I have and learn how to deal with different situations.
- It has taught me various aspects of civil engineering.
- Working on a construction site was no less than a challenge.
- This internship has taught me about communication with people, develop interpersonal skills, working in a team, etc.
- My experience during this internship was very informative.

PS-I station: Rourkela Steel Plant, Raurkela

Student

Name: ARYAMAN DUBEY .(2022A1PS0661P)

Student Write-up:

PS-I Project Title: Corrosion control in the internal walls of the pipelines

Short Summary of work done: Researching diffrent ways the corrosion is controlled in other steel industries and industries with gases of similar composition taking theorising a method that would be the most cost effective and would not need any gas flow stopages. Leading to finding a continuous injection system with a custom inhibitor blend that would be mixed with gas while it is flowing and would distribute the inhibitor mix on all the interior parts of the pipelines

Objectives of the project: Innovative ways to control corrosion at minimum costs

Tool used: multiple research papers

Details of Papers/patents: None

Brief description of the working environment: The mentor was helpful but was to busy to guide us through the process of research which led to more time consumption in the initial stages of the research

Academic courses relevant to the project: material science

Learning Outcome: An continuous injection chemical inhibitor blend could work efficiently

Name: SRISHITH DESINI .(2022A1PS1046H)

Student Write-up:

PS-I Project Title: BOD PLANT

Short Summary of work done: We went to the plant BOD which is water recycling plant and using again but they have a problem with concentration of high flouride so they said to find different methods other than what they are using to improve the quality of water

Objectives of the project: Reducing the flouride concentration from 7.8ppm to below 2ppm

Tool used: None

Details of Papers/patents:None

Brief description of the working environment: Working environment is fine. They have expected not more than which will be possible from us. The assigned mentor was available even through a call and he explained in detailed manner what to do

Academic courses relevant to the project: None

Learning Outcome: Different methods to do it and how does the environment department in a steel plant works

Name: GAURAV A(2022A1PS1306G)

Student Write-up:

PS-I Project Title: Corrosion in gas pipelines

Short Summary of work done: Tried to find methods to prevent corrosion in gas pipelines in RSP

Objectives of the project: Methods to combat corrosion

Tool used: none

Details of Papers/patents:none

Brief description of the working environment: bad

Academic courses relevant to the project: Thermodynamics. Electrochemistry

Learning Outcome: Teamwork,

Name: [BIBHU SMARAN RATH .\(2022A1PS1409H\)](#)

Student Write-up:

PS-I Project Title: BOD Plant and the problem with Fluoride

Short Summary of work done: In this project, we explored three primary methods for reducing fluoride content in wastewater at the Rourkela Steel Plant: Activated Alumina, Coagulation-Flocculation, and Ion Exchange Resins. The initial fluoride concentration was 7.8 ppm, with a target to reduce it below 2 ppm. **Activated Alumina** was found to be highly efficient and regenerative, capable of being reused multiple times, but involved higher initial and operational costs. Calculations revealed the need for significant quantities of alumina, making it costly despite its high efficiency. **Coagulation-Flocculation**, using chemicals like alum, proved to be cost-effective and straightforward to implement but generated considerable sludge, posing disposal challenges. This method's cost was significantly lower, but its efficiency varied with chemical dosages and water chemistry. **Ion Exchange Resins** offered very high fluoride removal efficiency and could also be regenerated. However, the initial and operational costs were high, and the setup was complex, requiring careful management of regeneration processes. We performed detailed cost analyses and compared these methods in terms of efficiency, regenerability, cost, sludge production, and operational ease. Activated alumina and ion exchange resins showed high reusability, while coagulation-flocculation was noted for its

low operational costs but higher sludge management needs. Assumptions for these analyses included a wastewater flow rate of 100 m³/hr, translating to 2,400 m³/day. The findings provided a comprehensive understanding of each method's strengths and weaknesses, guiding the selection of the most appropriate fluoride removal technique.

Objectives of the project: To help achieve the fluoride concentration below the safety limit (within 2ppm) consistently in the wastewater received through CCD.

Tool used: -

Details of Papers/patents:-

Brief description of the working environment: The work environment at the Rourkela Steel Plant, known for its rigorous operational standards and commitment to environmental sustainability, provides an ideal setting for implementing advanced wastewater treatment solutions. Employees are expected to adhere to high safety standards and exhibit a proactive approach to problem-solving.

Work Environment

Collaborative Atmosphere

- Emphasizes teamwork and collaboration among various departments to achieve common goals.

- Encourages open communication and knowledge sharing to foster innovation and efficiency.

State-of-the-Art Facilities

- Equipped with modern technology and infrastructure to support advanced treatment processes.

- Continuous investments in upgrading facilities to meet environmental compliance and improve operational efficiency.

Learning and Development

- Offers opportunities for continuous learning and professional development.

- Supports participation in training programs, workshops, and seminars to stay updated with industry advancements.

Expectations from the Company

Innovation and Improvement

- Encourages employees to contribute innovative solutions for process optimization and efficiency.

- Expects active participation in research and development projects aimed at environmental sustainability.

Operational Excellence

- Demands adherence to operational protocols and standard operating procedures.

- Emphasizes the importance of maintaining high-quality standards and minimizing environmental impact.

Safety and Compliance

- Prioritizes safety in all operations, expecting strict adherence to safety guidelines and regulations.

- Requires compliance with environmental laws and standards, promoting responsible waste management practices.

Teamwork and Communication

- Values strong teamwork, effective communication, and collaboration across all levels of the organization.

- Encourages employees to share insights, provide feedback, and engage in constructive dialogue to drive continuous improvement.

Overall, the Rourkela Steel Plant offers a dynamic and supportive work environment, expecting dedication, innovation, and a commitment to sustainability from its employees.

Academic courses relevant to the project: Separation Processes 1 and Chemical Process Calculations

Learning Outcome: Understood the fluoride removal methods.

Developed the ability to compare between the fluoride methods based on efficiency cost and sludge production.

Name: ARYAN .(2022B1AB1337P)

Student Write-up:

PS-I Project Title: Automation of Aluminum Nugget Casting in Foundry Shop in RSP

Short Summary of work done: Designed a new fully automated model for Aluminium casting

Objectives of the project: Automation of Aluminum Nugget Casting in Foundry Shop in RSP

Tool used: AutoCad, Fusion 360

Details of Papers/patents:-

Brief description of the working environment: To think creatively and observe different machine operations

Academic courses relevant to the project: Mechanics, Engineering drawing

Learning Outcome: Machinery designing

PS-I station: Wadia Institute of Himalayan Geology, Dehradun

Student

Name: BISHESH BARUAH .(2022A2PS1737P)

Student Write-up:

PS-I Project Title: Study of Fluid Inclusions

Short Summary of work done: The environment was really good and the mentors and scholars helped me out a lot

Objectives of the project: Learnt about the fluid packets in rocks

Tool used: Petrographic microscope

Details of Papers/patents:None

Brief description of the working environment: The environment was clean and the availability of equipment was a huge help to my study

Academic courses relevant to the project: Mineralogy and geochemistry

Learning Outcome: Better for my civil background

Name: SHIV SAXENA .(2022A3PS0510P)

Student Write-up:

PS-I Project Title: Developing AI Models to Analyse Seismic Activity Patterns for Hazard Assessment

Short Summary of work done: Developing AI Models to Analyse Seismic Activity Patterns for Hazard Assessment

Objectives of the project: Developing AI Models to Analyse Seismic Activity Patterns for Hazard Assessment

Tool used: Matlab, python

Details of Papers/patents:None

Brief description of the working environment: The faculty was very good and we enjoyed working

Academic courses relevant to the project: Non

Learning Outcome: Working environment in an office

Name: ADITYA SINGH JAMWAL(2022AAPS0473G)

Student Write-up:

PS-I Project Title: Developing low cost weather station and snow depth sensor

Short Summary of work done: I developed an Arduino circuit involving ds18b20(for temp) Dht22 (for humidity) bmp180(for pressure) and anemometer for wind speed. I interfaced this with Arduino and attached a battery to it. Then compared it with the reading obtain by automatic weather station.I also developed a snow depth measuring sensor using hcsr04

Objectives of the project: To develop a low cost weather station that will measure weather accurately using Arduino and it's sensor

Tool used: Arduino uno ds18b20 Dht22 anemometer bmp180 wires ds3231

Details of Papers/patents: Developing a low-cost weather monitoring system for data-sparse regions of the Himalayas by Mohit Singhal and DD Khandelwal

Brief description of the working environment: The environment was quite friendly and helping

Academic courses relevant to the project: Yes it was relevant to my course ECE

Learning Outcome: It was a hefty project but by putting in more money in it we can develop a weather station within 1 lakh

Name: SHREY SAXENA .(2022B1A21736P)

Student Write-up:

PS-I Project Title: Landslide susceptibility mapping

Short Summary of work done: So I start reading about LSM and came to know about the importance and technology to produce it and then applied all this to make LSM for Solan district

Objectives of the project: To make a landslide susceptibility map for solan district

Tool used: ArcGIS, USGS website

Details of Papers/patents: Papers i read were baaed on LSM on hilly regions

Brief description of the working environment: The environment was quite good with helpful staff and ps-1 faculty.

Academic courses relevant to the project: Civil engineering

Learning Outcome: To learn about softwares like arcGIS and reading about landslides

Name: DEV MALAIYA .(2022B4A40705P)

Student Write-up:

PS-I Project Title: Application of Hilbert's Transform in Geophysics

Short Summary of work done: Work done during PS1 was quite of my interest. We basically got a scientist of WIHG allotted to us as a supervisor. He was very flexible with my area of interest. So, during these 2 months, I learned about Weka Software along with basics of Geophysics. My final report was based on Hilbert Transform, which was in alignment with my major as well as with Geophysics. Also, we were given work by our FIC, Prof Chandra Shekhar Sir in the form of Group discussions. All these things involved research skills as well as knowledge of the field. Two months suffices enough for all the work I mentioned.

Objectives of the project: To study about mathematical tools as well as softwares to do research in geophysics

Tool used: Weka, MATLAB

Details of Papers/patents:-

Brief description of the working environment: Working environment was good, we were provided a space in library. We were also given access to the labs in which the allotted scientist worked.

Academic courses relevant to the project: Technical Report Writing, Mathematical Methods

Learning Outcome: Research Writing, Soft skills.

Name: TANISH THAKUR .(2022B5A21026P)

Student Write-up:

PS-I Project Title: Earthquake patterns in uttarakhand (computational approach)

Short Summary of work done: During ps1 I was given the task of finding seismic events from a large seismic data and edit it so that we can filter out different types of waves this locating the epicenter of the earthquake

Objectives of the project: To study earthquakes in uttarakhand region using seisan

Tool used: Seisan and python

Details of Papers/patents:Wrote a paper on Seisan and also wrote a paper on earthquake patterns in uttarakhand

Brief description of the working environment: Working environment was nice. Everyone was helping.The institute was really beautiful with ample greenery.

Academic courses relevant to the project: Use of physics in wave formations due to earthquakes

Learning Outcome: Learned how to use seismology library in python also learned about how earthquakes create strong seismic waves

PS-I station: 609 EME BATTALION, Meerut

Student

Name: SHREYA SINGH(2022B1A41366G)

Student Write-up:

PS-I Project Title: Equipment Mapping and Tracking System

Short Summary of work done: The project aims to help the military track and retrieve damaged equipment during wartime or exercises. The app automates finding and retrieving damaged vehicles, reducing mistakes and speeding up the process. It provides real-time updates on vehicle status, helping with quick decision-making and efficient monitoring. The app is built using Flutter for both Android and iOS, Firestore for managing data, and Firebase Auth for secure login. Google Maps features are included for easy navigation and locating vehicles. Users can create accounts, verify their emails, and get admin approval to use the app. The app allows reporting and updating vehicle statuses and provides map-based navigation to vehicle locations. This project improves efficiency and accuracy in managing military equipment logistics.

Objectives of the project: Create an app to track and retrieve damaged equipment, improve response times, and ensure secure, authorized access with real-time updates.

Tool used: Flutter, Firebase, Google Maps API, Visual Studio Code, Android Studio, Xcode

Details of Papers/patents: There were no specific patents or research papers published related to the project. Only a project report was submitted, detailing the development and implementation of the app.

Brief description of the working environment: The 609 EME Battalion maintains and repairs the Indian Army's mechanical and electrical equipment. The military-focused environment emphasized technical support and readiness. Students were expected to understand maintenance operations, solve practical problems, and enhance their technical and communication skills while maintaining high ethical standards. Through the project, students gained hands-on experience in app development, automation, real-time data handling, and secure login systems. This experience helped them learn to document and analyse data, improve critical thinking, and communicate effectively with professionals, preparing them for high-stress environments.

Academic courses relevant to the project: CS F111 Computer Programming

Learning Outcome: App development, real-time data handling, security implementation, decision-making support, user access management, and problem-solving skills in high-stress environments.

Name: HARSH SIROHI .(2022B4AA1622H)

Student Write-up:

PS-I Project Title: Equipment Tracking App

Short Summary of work done: Got to work on app-dev using flutter and firebase technologies . Also got to enhance knowledge on hardware technologies such as Bluetooth,UWB(Ultra Wide Band technologies) etc. Also got to know a briefly about other technologies and the way FindMyDevice technologies work (theoretical only) .

Objectives of the project: Make a protoype app for equipment tracking and mapping

Tool used: Flutter for frontend , Firebase for backend , VS Code , Android Studios , Android Simulator,IOS Simulator

Details of Papers/patents:....

Brief description of the working environment: The environment of the station was pretty good and chill. One needs to put their own efforts for maximizing the learning output

and overall enhancement of skills . Regular updates were given to the Mentors and the Ps faculty. Regular group meeting were done and there was a good sync among the team members .

Academic courses relevant to the project: CS F111 , FDSA(BITS F232) , Programming basics

Learning Outcome: Got on-hands experience of app-dev using flutter and firebase technologies and got to make a fully functional prototype app with front-end and backend integration

PS-I station: Albatross Energetics - IT, Mumbai

Student

Name: ARNAV AGARWAL .(2022B1A41724P)

Student Write-up:

PS-I Project Title: Development of Frontend System for LDAC cooling model

Short Summary of work done: Learned frontend and backend and developed a model of LDAC in backend through python and front-end by HTML CSS JS

Objectives of the project: To develop a frontend website for LDAC

Tool used: HTML CSS JAVASCRIPT PYTHON

Details of Papers/patents:NA

Brief description of the working environment:

Academic courses relevant to the project: Computer Programming

Learning Outcome: HTML , CSS , JAVASCRIPT, PYTHON

PS-I station: Atomic Energy Regulatory Board (AERB), Mumbai

Student

Name: HRITIK JOGLEKAR(2022A4PS0787G)

Student Write-up:

PS-I Project Title: AERB Source Term Estimation Tool

Short Summary of work done: Final results depicted the quantity of radionuclides which got released to the environment

Objectives of the project: To write a code which predicts the inventory of different radioactive elements in various parts of a nuclear reactor

Tool used: Fortran 95

Details of Papers/patents:No papers were published

Brief description of the working environment: The major thing that I learnt was that superiors never properly assign work and you just have to figure everything out yourself.

Academic courses relevant to the project: Computer Programming taught in 1st year

Learning Outcome: A good understanding of Fortran 95 was developed. In addition to this, various equation governing several phenomena inside a nuclear reactor were learnt.

PS-I station: Bhabha Atomic Research Centre (BARC), Visakhapatnam

Student

Name: RACHAKONDA KOMAL NAYAN .(2022A3PS0563H)

Student Write-up:

PS-I Project Title: Measurement and analysis of Electromagnetic noise during Railgun operation.

Short Summary of work done: produced during electromagnetic railgun testing. We used various antennas to capture the noise signals, determined their frequencies, and investigated how noise relates to factors like velocity and voltage. We also examined how these factors influenced the noise levels.

Objectives of the project: Measure and analyse EMN during a railgun operation.

Tool used: Visio, Origin.

Details of Papers/patents:None.

Brief description of the working environment: The working environment was good . All the scientists were very supportive and helped me a lot during the duration of the project.

Academic courses relevant to the project: Electromagnetic theory, Signals and systems .

Learning Outcome: Studied about Electromagnetic noise , pulse and it's effects.

Name: [SIDDHARTH ROYURU .\(2022A3PS1325H\)](#)

Student Write-up:

PS-I Project Title: Simulation and design of a high voltage power supply

Short Summary of work done: We understood the power circuit and control circuit of a high voltage power supply. We also learnt about pulse width modulation. We designed the control circuit which has a varied range of operation than the one at the facility.

Objectives of the project: To understand the working of high voltage high frequency power supply and to design the control circuit

Tool used: Resistors, capacitors, li ion battery, SG3525A IC, mosfet, potentiometers, LT SPICE

Details of Papers/patents:No

Brief description of the working environment: At the workplace we were not allowed phones or laptops. It was a new experience for us but we got used to it. Our faculty at BARC was really helpful. He explained us about the industrial equipment at the facility and also explained us pulse width modulation.

Academic courses relevant to the project: Electrical sciences, electronic devices, micro-electronic circuits

Learning Outcome: I learnt about the working of high voltage power supply and about pulse width modulation. I also did simulations of the output waveforms in LT spice.

Name: SHIVANSH CHATURVEDI .(2022A4PS0694P)

Student Write-up:

PS-I Project Title: Magnetic Pulse Welding and its Characterisation

Short Summary of work done: This project investigates the Magnetic Pulse Welding (MPW) process and the subsequent characterization of welded materials. The research began with an extensive literature review, summarizing current knowledge and technologies, and these findings were shared with the project guide. Practical engagement included participation in the demonstration of the MPW setup and the successful synthesis of a Titanium-Stainless Steel (Ti-SS) weld. To complement the experimental work, structural mechanics simulations of Ti-SS welds were conducted using COMSOL software, offering detailed insights into the mechanical behavior of the welds. This comprehensive approach enabled a deeper understanding of the MPW process, its practical applications, and the mechanical properties of the welded samples.

Objectives of the project: To get a comprehensive understanding of the welding in general and magnetic pulse welding Specifically. Also to synthesize welds and use tests to assess weld quality

Tool used: Comsol, Abaqus, High Impact Welding

Details of Papers/patents:N.A

Brief description of the working environment: The working environment was pretty good. Guides were supportive and assigned work on regular basis. Helped me with the assignments. Guides looked this as an opportunity to make me love their work rather than seeing this as just an evaluative.

Academic courses relevant to the project: Manufacturing processes, Mechanics of solids

Learning Outcome: A lot of learning was received during the internship. A lot of knowledge transfer took place. Got hands on experience on Simulations as well as report writing part .

Name: RITABRATA CHAKRABORTY .(2022A4PS0843P)

Student Write-up:

PS-I Project Title: HIGH VELOCITY IMPACT TESTING AND ANALYSIS OF LAYERED METAL-COMPOSITE SHIELDS USING ELECTROMAGNETIC RAILGUN

Short Summary of work done: During my PS-I internship, I focused on developing a lightweight metal composite to stop high-speed projectiles (up to 1000 m/s). The objective was to create a material balancing weight and strength for defense and aerospace applications. I explored composites like SS 304 stainless steel, Al 6061 T6 aluminum alloy, and Glass Fiber Reinforced Polymer (GFRP) based on their mechanical properties and density. Using ANSYS, I simulated the behavior of these materials under high strain rates and temperatures using the Johnson-Cook model, analyzing stress distribution, deformation, and failure mechanisms. Experimental tests were conducted to validate the simulations by subjecting composite samples to controlled impact conditions. The combination of SS 304 and Al 6061 T6 with GFRP showed superior impact resistance, effectively absorbing and dissipating the kinetic energy of projectiles. This project provided valuable insights into material selection, composite design, and performance evaluation, contributing to the development of advanced materials for high-speed impact protection.

Objectives of the project: Develop a Lightweight Metal composite to stop high speed projectiles

Tool used: S/w - ANSYS, Solidworks

Details of Papers/patents:-

Brief description of the working environment: During my PS-I internship, I worked in a dynamic and collaborative environment focused on research and development in advanced materials. The company provided a well-equipped laboratory with cutting-edge tools and resources, fostering a culture of innovation and continuous learning.

Expectations from the company included applying theoretical knowledge to practical problems, conducting rigorous simulations and experiments, and delivering tangible results. I was also expected to work independently, manage time effectively, and collaborate with team members to achieve project goals.

Throughout the internship, I gained hands-on experience in material science and engineering. I learned to use advanced software tools like ANSYS for simulations and SolidWorks for designing composite samples.

Working closely with experienced professionals, I received mentorship and feedback that helped refine my problem-solving and research skills. I also learned the importance of meticulous documentation and reporting, as well as the significance of safety protocols in a laboratory setting.

Academic courses relevant to the project: Material Science, Mechanics of Solids

Learning Outcome: Learnt ANSYS, Worked on Research Publication

Name: ADITYA SHARMA(2022A4PS0982G)

Student Write-up:

PS-I Project Title: Vibration analysis of structural components of electromagnetic launcher system

Short Summary of work done: The project begins with constructing the electromagnetic launcher platform using SolidWorks and importing it into ANSYS for analysis. Modal analysis is then performed to identify the natural frequencies of the platform. Following this, a transient analysis simulates the system's response to a time-varying recoil force, generating an acceleration versus time graph. This data is processed using FFT to obtain the acceleration versus frequency characteristics. Experimental data is collected using accelerometers, and FFT is applied to validate the simulation results. The project concludes with a comparison of analytical and experimental results, providing insights into the vibrational behavior of the EML system.

Objectives of the project: The primary objective of the project was to conduct a detailed vibration analysis of the structural components of an electromagnetic launcher system.

This included performing modal and transient analyses in ANSYS, obtaining acceleration versus time data, and conducting Fast Fourier Transform (FFT) to derive acceleration versus frequency characteristics. Additionally, the project aimed to validate the analytical results with experimental data obtained from accelerometers, ensuring the accuracy and reliability of the simulation models.

Tool used: Solidworks, Ansys, Matlab

Details of Papers/patents:NA

Brief description of the working environment: Working Environment - Working at BARC (Bhabha Atomic Research Centre) has been an enriching experience due to its excellent working environment. The atmosphere is warm and friendly, with scientists who are not only highly experienced and intelligent but also remarkably supportive. Their humility makes collaboration easy and enjoyable.

One of the standout features is the academic friendliness towards interns. Interns are encouraged to choose projects aligned with their interests by requesting their guides, fostering a sense of autonomy and passion in their work. Importantly, there's no pressure to engage in tasks that don't align with one's interests, which enhances productivity and satisfaction.

Expectations -Despite the positive aspects of working at BARC, interns should manage their expectations due to the short duration of the internship, typically just two months. During this time, a significant portion of the work may involve tasks such as improving existing models or verifying previously concluded research. This focus ensures continuity and refinement of ongoing projects rather than initiating entirely new endeavors.

While this may limit the scope for groundbreaking research within the internship period, it provides valuable opportunities to contribute to ongoing projects, gain practical experience, and understand the rigorous processes involved in nuclear research at BARC.

Academic courses relevant to the project: Vibrations and Control, Mechanics Oscillations and Waves

Learning Outcome: -

Name: MEGHADITYA GIRI .(2022A7PS0155H)

Student Write-up:

PS-I Project Title: Development and Testing of Constrained Detection and Tracking Algorithm for Intended Objects

Short Summary of work done: This project successfully developed a constrained detection and tracking algorithm for drones, demonstrating significant advancements in real-time object detection and tracking. showcasing advancements in drone detection and tracking technologies through the integration of machine learning, computer vision, and advanced hardware systems.

Objectives of the project: Develop and test an algorithm to detect and track intended objects, specifically drones. Differentiate between birds and drones using image detection. Improve the precision and accuracy of the detection system.

Tool used: Python,Roboflow,YOLOv8

Details of Papers/patents:NA

Brief description of the working environment: The working environment was highly supportive and focused on learning. The people there were very knowledgeable and always ready to help whenever I encountered any difficulties. I gained a deep understanding of how government organizations operate, how research is conducted, and how it is applied in real-world scenarios. PSI provided me with the opportunity to apply my skills in a prestigious research organization, giving me my first experience of what it's like to work in a professional setting.

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

Learning Outcome: I had the opportunity to work on a defense-related project at a prestigious government organization. During my time there, I familiarized myself with various ongoing projects and cutting-edge technologies. I also had the chance to learn extensively from the experts at BARC. By applying machine learning techniques to my project, I further enhanced my knowledge in the domain.

Name: [LALITH CHARAN REDDY VENNAPUSA .\(2022AAPS0276H\)](#)

Student Write-up:

PS-I Project Title: MEASUREMENT AND ANALYSIS OF ELECTROMAGNETIC NOISE GENERATED DURING RAILGUN OPERATION

Short Summary of work done:

Objectives of the project: To capture and analyze Emp generated during railgun operation

Tool used: Origin software(for signal analysis),microsoft visio.

Details of Papers/patents: Not allowed to share as it is government organisation

Brief description of the working environment: We have taken trail shots of electromagnetic railgun and we have used high level oscilloscopes to capture the EMP radiation generated during the operation of railgun and analyzed the frequency of the radiation generated and the maximum electric and magnetic field transient.

Academic courses relevant to the project: ELECTROMAGNETIC THEORY , SIGNALS AND SYSTEMS

Learning Outcome: Learnt about railgun , learnt how to apply concepts to practical world.

Name: [DHRUBA RAY .\(2022AAPS0326H\)](#)

Student Write-up:

PS-I Project Title: Measurement and Analysis of Electromagnetic Noise Generated During Railgun Operation

Short Summary of work done: During my 2-month internship at the Bhabha Atomic Research Centre (BARC), I had the remarkable opportunity to work on a project titled "Measurement and Analysis of Electromagnetic Noise during Railgun Operation" within the Pulsed Power & Electromagnetics Division (PPEMD). This experience provided a deep dive into the complexities of electromagnetic noise and its implications for railgun technology. My primary responsibilities included conducting a comprehensive literature survey to identify existing knowledge and gaps related to electromagnetic noise in railgun systems. This foundational work informed the subsequent stages of my project and ensured that our research was grounded in the latest scientific advancements. Following the literature survey, I was involved in designing and conducting experiments to measure electromagnetic noise during railgun operation. This phase required meticulous planning and execution, utilizing sophisticated equipment and methodologies to gather accurate data. The data collected was then subjected to in-depth analysis to extract meaningful insights and understand the patterns and behaviors of electromagnetic noise in this context. A significant aspect of my internship was focused on detailed reporting and documentation. I meticulously recorded all experimental procedures, data, and findings to ensure that our research was transparent and reproducible. This attention to detail was

crucial for the project's success and honed my skills in technical writing and precision. Throughout this internship, I also gained valuable knowledge in power systems and signal processing, which was instrumental in my research. Collaborating with esteemed professionals at BARC enriched my learning experience, providing guidance and support that were invaluable.

Objectives of the project: Measuring the various EMP generated during the working of a role gun and analysing its exact source.

Tool used: Origin, Visio, Excel, Matlab

Details of Papers/patents: None

Brief description of the working environment: My 2-month internship at the Bhabha Atomic Research Centre (BARC) was an enriching experience characterized by a supportive and stimulating working environment. The typical workday ran from 9 AM to 5 PM, providing a structured yet flexible schedule that facilitated both productivity and learning.

The working environment at BARC was collaborative and encouraging. I was surrounded by highly knowledgeable mentors and scientists who were always willing to offer guidance and support. Their commitment to fostering growth and development in interns was evident in their approachability and willingness to share their expertise. This nurturing environment greatly enhanced my learning experience, allowing me to tackle complex problems with confidence.

Academic courses relevant to the project: Signals & Systems, Electromagnetic Theory

Learning Outcome: Learnt to create schematics using Visio, Learnt how to analyse FFTs of signals and signal processing, Learnt how to handle an oscilloscope and extract data

Name: YASHICA SREE RAYASAM .(2022AAPS0331H)

Student Write-up:

PS-I Project Title: Design and development of a protection circuit for a series/parallel connected IGBT switch module used for high pulse power applications

Short Summary of work done: .

Objectives of the project: To design a protection circuit for IGBT switch module. Simulate and fabricate the circuit

Tool used: Pspice cadence

Details of Papers/patents:NA

Brief description of the working environment: .

Academic courses relevant to the project: Micro electronic circuits, analog electronics

Learning Outcome: Simulations in p spice, fabricating a circuit in PCB board

Name: RUDRA KHAITAN .(2022B1A70849P)

Student Write-up:

PS-I Project Title: SIMULATION OF WAVE PROPAGATION BY SOLVING KIRCHHOFF-FRESNEL DIFFRACTION EQUATION USING ANGULAR SPECTRUM METHOD

Short Summary of work done: The project commenced with a thorough review of literature pertinent to the field. I delved into several papers focusing on numerical wave propagation and explored various image analysis software, such as ImageJ. A comprehensive study was conducted on the Angular Spectrum Method, highlighting its advantages over other methods like Fresnel and Fresnel–Bluestein algorithms. Recognizing the necessity of Python for simulating numerical wave propagation, I identified the essential libraries needed for the project. My journey began with mastering the fundamentals of Python, followed by an in-depth exploration of the Numpy and Matplotlib libraries. Subsequently, I embarked on writing the code, which was unconventional and significantly enhanced my debugging skills. Upon completing the code and successfully simulating wave propagation, I developed a verification code to authenticate the original work. This verification code utilized the lens formula to ensure the accuracy of the simulation. During the verification process, I encountered an issue related to Nano-aperture distortion in wave propagation simulation. Through meticulous analysis and troubleshooting, this issue was resolved, leading to the generation of legitimate and accurate results. The resolution of this problem not only validated the simulation but also demonstrated the robustness and reliability of the implemented methods. This project not only expanded my technical knowledge but also honed my

problem-solving and debugging skills, contributing significantly to my expertise in numerical wave propagation and image analysis.

Objectives of the project: Simulation of solutions of numerical wave propagation by using angular spectrum method and verification of whether the results produced are legitimate or not by using lens formula.

Tool used: Spectrometer and spectral analysis software called Spectra Scan, Origin for making graphs (Not a part of the project but learnt along with other labmates), Anaconda/specifically Jupiter notebook for Python.

Details of Papers/patents: none as of now

Brief description of the working environment: The employees were quite enthusiastic about receiving interns. Everyone was welcoming and happy to talk. Even though there were a lot of restrictions on the the use of external electronic devices, like mobile phones and laptops, devices present at the site could be used. Still learnt a lot from working in the lab. Working at the site taught us a lot about how communication happens between the departments in an organisation.

The rules and restrictions at the site stay (especially near the BARC main site) were a bit too restrictive.

Learnings include Python programming, extensive use of Python libraries (Numpy and Matplotlib), operating a spectrometer, and working with a spectral analyser called Spectra Scan.

Academic courses relevant to the project: Courses of Optics, Computer Programming

Learning Outcome: Python Programming (with the extensive use of libraries like Numpy and Matplotlib), Communication skills(the project being on-site),

Name: TIRTH PATEL .(2022B1A80886P)

Student Write-up:

PS-I Project Title: Comprehensive analysis of Power Supply, Distribution and transmission at BARC Vizag site

Short Summary of work done: It was just a study oriented project

Objectives of the project: Study oriented project

Tool used: None

Details of Papers/patents:None

Brief description of the working environment: Nice

Academic courses relevant to the project: Power systems

Learning Outcome: Understood about various components in substation in detail

Name: [AVVIRAL JAIN .\(2022B2A31632P\)](#)

Student Write-up:

PS-I Project Title: Study and implementation of machine learned interatomic potential

Short Summary of work done: I was given a bunch of data files which contained DFT calculations of different configurations of Zr lattice. I wrote a parser for the text files to extract the input features for the neural network. Then I used the GNNFF (graph neural network force field) architecture as the neural network and coded it. Majority of the time spent on coding and training the model. Then the potential generated was used for MD simulations.

Objectives of the project: The development of a machine-learned interatomic potential (MLIP) for zirconium using graph neural networks (GNNs).

Tool used: Jupyter Notebooks, NumPy, PyTorch-Geometric, SciPy, Matplotlib, LAMMPS, Ovito, ASE

Details of Papers/patents:In the process

Brief description of the working environment: Working environment was great. All the scientific officers were very helpful and workplace was good too (phones were not allowed in). BARC took care of our accommodation and travel. The place we were staying in is a little far from the city but it is very well built and we enjoyed our time here. BARC expected us to make use of our time and work accordingly. My project was particularly work heavy but I had no problem with it as the project was so interesting. I learnt a lot during the time and got the chance to follow up on my interest in machine learning. This project will definitely help me in my career.

Academic courses relevant to the project: Deep Learning

Learning Outcome: Machine Learning and specifically Deep Learning (Graph Neural Networks). I learnt PyTorch and NumPy to code the network. I also had to write a text file parser. Jupyter Notebooks were used for coding the pipeline. I learnt about molecular dynamics too using LAMMPS and ASE.

Name: SRISHTI GHOSH(2022B5A31238G)

Student Write-up:

PS-I Project Title: INVESTIGATION OF THERMOCHROMICITY IN EVAPORATED/SPUTTERED VANADIUM OXIDE NANO-COATINGS

Short Summary of work done: WE EXAMINED THE THERMOCHROMIC CHARACTERISTICS OF VO₂ THIN FILMS. A TOTAL OF TWELVE VO₂ FILMS WERE UTILIZED - SIX ON BK-7 AND SIX ON SILICON, FABRICATED USING E-BEAM EVAPORATION AT VARYING SUBSTRATE TEMPERATURES. FOR MEASURING RESISTIVITY, WE EMPLOYED A 4-PROBE CONFIGURATION ALONG WITH AN OVEN TO VARY THE TEMPERATURE OF THE SAMPLE. TO MEASURE TRANSMITTANCE, A SPECTROMETER EQUIPPED WITH A HEATING APPARATUS WAS UTILIZED TO ALTER THE TEMPERATURE OF THE SAMPLE. WE UTILIZED ELLIPSOMETRY AS WELL TO MEASURE FILM THICKNESSES. THE MAIN FOCUS OF THE ANALYSIS WAS ON THE 4-PROBE TECHNIQUE TO STUDY THE HYSTERESIS CURVES AND PHASE TRANSITION OF VO₂ WITH THE OPTICAL MEASUREMENTS TO BACKUP THE FINDINGS FROM THE ELECTRICAL CHARACTERIZATION.

Objectives of the project: TO ANALYSE THE THERMOCHROMIC PROPERTIES OF VARIOUS VO₂ THIN FILMS PREPARED BY ELECTRON BEAM EVAPORATION UNDER VARIOUS SUBSTRATE TEMPERATURES, ON BK-7 AND SILICON SUBSTRATES USING THE FOUR PROBE METHOD, SPECTROPHOTOMETRY AND SPECTROSCOPIC ELLIPSOMETRY

Tool used: FOUR PROBE ARRANGEMENT WITH SESCAMM SOFTWARE, SPECTROPHOTOMETER SETUP WITH SPECTRASCAN SOFTWARE, SPECTROSCOPIC ELLIPSOMETER WITH SOPRA AND SEA SOFTWARE

Details of Papers/patents:THERMOCHROMIC PHASE TRANSITION IN E-BEAM EVAPORATED THIN FILMS

Brief description of the working environment: THE EMPLOYEES WERE ENTHUSIASTIC ABOUT RECEIVING INTERNS AND WELCOMED US AND HELPED US WHEREVER POSSIBLE. EVEN THOUGH THERE WERE A LOT OF RESTRICTIONS ON THE USE OF EXTERNAL ELECTRONIC DEVICES DUE TO BARC BEING A GOVERNMENT INSTITUTION, DEVICES PRESENT AT THE SITE COULD BE USED. WE LEARNT A LOT FROM WORKING IN THE LAB, FROM DEVICE HANDLING TO INTRA-DEPARTMENT COMMUNICATION.

WE ENJOYED AND LEARNT THOROUGHLY DURING THE TENURE OF 2 MONTHS. OUR GUIDE EXPECTED US TO LEARN HOW TO USE THE OPTICAL AND ELECTRICAL SETUPS TO CHARACTERIZE THE SAMPLES WHICH WE WERE ABLE TO COMPLETE WITHIN THE TIME FRAME. UNEXPECTEDLY, WE COULD ALSO HELP WITH THE MAKING OF THE PAPER OUR GUIDE WAS WRITING WHICH WAS A JOYOUS SURPRISE.

APART FROM ALL THAT, WE FEEL WE COULD BETTER HANDLE OUR WORK-LIFE BALANCE DUE TO THE INTENSIVE WORKLOAD WHICH WOULD HELP US IN THE FUTURE.

Academic courses relevant to the project: OPTICS, MECH OSCIL & WAVES, QUANTUM MECHANICS

Learning Outcome: THIN FILM BEHAVIOUR, QUANTUM EFFECTS, DEPOSITION METHODS [E-BEAM EVAPORATION/MAGNETRON SPUTTERING], CHARACTERIZATION TECHNIQUES [FOUR PROBE/SPECTROPHOTOMETRY/SPECTROSCOPIC ELLIPSOMETRY]

Name: PRANAV VASISHTA .(2022B5AA0677H)

Student Write-up:

PS-I Project Title: INVESTIGATION OF THERMOCHROMICITY IN EVAPORATED/SPUTTERED VANADIUM OXIDE NANO-COATINGS

Short Summary of work done: We investigated the trends of thermochromic properties of VO₂ thin films. We used twelve VO₂ films in total, six on BK-7 and six on silicon, the samples were prepared by e-beam evaporation at different substrate temperatures. For resistivity, we used a 4 probe set up with an oven to change the sample temperature. For transmittance, we used a spectrometer with a heating device to change sample

temperature. We also used ellipsometry to determine film thicknesses. The analysis part was majorly focused on the 4-probe method where we investigated the hysteresis curves and phase transition of VO₂.

Objectives of the project: To investigate the trends of resistivity and optical transmittance of sputtered VO₂ thin films, with temperature

Tool used: for 4 probe, SESCAMM was used. For spectrometry, we used SpectraScan software. For ellipsometry, the experimental data was obtained using SOPRA, the analysis was done using SEA software

Details of Papers/patents:Based on the results we obtained from the electrical characterization of VO₂ thin films (4 probe method), a paper is being published which will be presented in an international conference in IISER Behrampur this November. The title of the paper is: Ther

Brief description of the working environment: THERE WERE A LOT OF RESTRICTIONS ON THE USE OF EXTERNAL ELECTRONIC DEVICES DUE TO BARC BEING A GOVERNMENT INSTITUTION, DEVICES PRESENT AT THE SITE COULD BE USED. THE WORK ENVIRONMENT WAS VERY RELAXED, OUR PROJECT GUIDE AND OTHER SCIENTISTS IN BARC WERE REALLY HELPFUL AND SUPPORTIVE.

WE ENJOYED AND LEARNT THOROUGHLY DURING THE TENURE OF 2 MONTHS. OUR GUIDE EXPECTED US TO LEARN HOW TO USE THE OPTICAL AND ELECTRICAL SETUPS TO CHARACTERIZE THE SAMPLES WHICH WE WERE ABLE TO COMPLETE WITHIN THE TIME FRAME. WE COULD ALSO HELP WITH THE MAKING OF THE PAPER OUR GUIDE WAS WRITING WHICH WAS A JOYOUS SURPRISE.

APART FROM ALL THAT, WE FEEL WE COULD BETTER HANDLE OUR WORK-LIFE BALANCE DUE TO THE INTENSIVE WORKLOAD WHICH WOULD HELP US IN THE FUTURE.

Academic courses relevant to the project: Electromagnetic Theory (EMT), Thin Film Technology (TFT, it is a DEL)

Learning Outcome: Learned about the wide applications of VO₂ thin films and its phase transition. We also learned about the theorised mechanisms of phase transition.

PS-I station: Bharat Forge Ltd., Pune

Student

Name: RUDRAKSH SINGHAL .(2022B1A41649P)

Student Write-up:

PS-I Project Title: Implementation of 5S in Crankshaft Line

Short Summary of work done: In a nutshell, we explored and understood the different processes in the production line and tried to suggest improvements pertaining to the 5S model. We also helped out in employee training by preparing training schedules and grading the respective employees in different tasks and reallocating working areas accordingly.

Objectives of the project: To implement the 5S techniques in the crankshaft production lines in a department called the Machined Components Division 1.

Tool used: -

Details of Papers/patents:-

Brief description of the working environment: The environment was that of core mechanical, with loud and hot workshops. The company does not expect much from second year interns. We learnt the different manufacturing processes and the working of a core company. I was also in the defense department for a while and had the opportunity to learn various things.

Academic courses relevant to the project: -

Learning Outcome: 5S

PS-I station: Bharat Petroleum Corporation Limited, Jaipur

Student

Name: VEDANT MATHUR .(2022A3PS0375P)

Student Write-up:

PS-I Project Title: Increasing energy efficiency in BPCL LPG bottling plant

Short Summary of work done: Well we were to visit different parts of the plant and learn about the various machines in the plant. After that we were given some brief safety documents such as OISD 144 and related documents to learn about various things that are used in the plant. Then we were given tools such as clamp meter, three point wire to understand earth pits and air compressors. Then finally we understood transformers and SLD

Objectives of the project: Find ways to save energy in the bottling plant

Tool used: Clamp Meter, SLD

Details of Papers/patents:OISD - 144

Brief description of the working environment: Well the staff was nice and supportive and used to give us great details of the working of the plant, however they ignored us during some emergency procedures which is understandable but waste our time in the station

Academic courses relevant to the project: Electric Machines

Learning Outcome: Learnt about various methods which can be deployed in energy conservation

Name: RUCHIT ABROL .(2022A4PS0925P)

Student Write-up:

PS-I Project Title: Statutory Pressure Testing of LPG cylinders & Storage vessels

Short Summary of work done: The station was a bottling plant where LPG cylinders (Bharatgas) came for refilling. My project was about the specific process of pressure testing of cylinders. Pressure testing is done for all cylinders every 5 years, selective cylinders which are deformed. The process involves various mechanisms and machines from which the cylinders go about. My objectives were to thoroughly understand the functioning of the current process and to improve the process in any way possible. It could both be ergonomic and technical.

Objectives of the project: To better the optimize the current functioning of Pressure Testing processes held at the bottling plant for improving safety of LPG cylinders

Tool used: Research papers, OISD 144, documents related to plant, Powerpoint.

Details of Papers/patents:OISD 144 : constitution of LPG companies; Documents related to plant : about the layout, the functioning, the whys behind every process.

Brief description of the working environment: It was a great working environment with all our supervisors being helpful, approachable and hospitable. I expected to learn something similar. Major learning was that it gave me a pre hand corporate experience and the management tree apart from the technical knowledge mentioned before.

Academic courses relevant to the project: Mechanisms & machines; Fluid Mechanics.

Learning Outcome: Technical knowledge about the functioning of a bottling plant; the management and sequence of processes; the core knowledge behind every process.

Name: DEEPAK YADAV .(2022A4PS1465H)

Student Write-up:

PS-I Project Title: Fire Safety at LPG Plant

Short Summary of work done: Worked on improving Fire Safety at LPG bottling Plant

Objectives of the project: Improving Fire Safety at LPG Plant

Tool used: Oisd 144

Details of Papers/patents:No

Brief description of the working environment: Everyone was cooperative

Academic courses relevant to the project: Thermodynamics

Learning Outcome: Work experience

Name: AADESH SHRIVASTAV(2022B2A41503G)

Student Write-up:

PS-I Project Title: Enhancing safety of packed trucks/logistics

Short Summary of work done: We visited LPG bottling plant in this LPG cylinders are filled so we saw various safety instruments in the plant and how they work

Objectives of the project: To study various safety features of trucks that carry LPG

Tool used: Nil

Details of Papers/patents:No

Brief description of the working environment: Working environment is very healthy and flexible

Academic courses relevant to the project: Mechanical and electrical

Learning Outcome: Trucks that carry LPG has sufficient safety features in it

Academic courses relevant to the project: Financial Management, Fundamentals of finance and accounting, derivatives and risk management

Learning Outcome: Financial Risk Management

PS-I station: Boston Polymers - Marketing, Gurgaon

Student

Name: PRIYANSH AGARWAL .(2022A7PS1293H)

Student Write-up:

PS-I Project Title: Financial management

Short Summary of work done: I learned that Starting and operating an industry involves a multifaceted approach that integrates market research, planning, compliance, funding, and continuous improvement. I also worked upon financial reports, I studied them in depth to come to decisive conclusions. I also learned about marketing and it's importance.

Objectives of the project: Study finance reports and gain insights on handling finance of a company

Tool used: Excel Sheets

Details of Papers/patents:No

Brief description of the working environment: It was a friendly environment. Mentor was really good, he gave us in-depth knowledge about the topics and cleared every doubt.

Academic courses relevant to the project: FOFA,FRAM

Learning Outcome: Financial summary

Name: KARNASULA SATYA HAVISH NARAYANA(2022AAPS0262H)

Student Write-up:

PS-I Project Title: Integration of marketing in a supply chain of b2b

Short Summary of work done: As an intern at Boston polymers we were supposed to get all products manufactured by Boston polymers and their manufacturing and supply chain. Researched the market demands and positioning of the company and curated marketing strategies to get ahead of their competitors. Also worked on R&D department of the company i.e. product development and dwelled upon impact of product development on marketing. My PS-1 majorly revolved around what's and how's of marketing.

Objectives of the project: To increase visibility of the Boston polymers in FMCG sector

Tool used: No such development tools were used

Details of Papers/patents:No paper was published

Brief description of the working environment: Working environment is quite relaxed. The timings were adjusted according to convenience of the students. The company representative was very interactive and insightful.

Academic courses relevant to the project: None

Learning Outcome: Marketing and product development

PS-I station: Boston Polymers, Gurgaon

Student

Name: TANU SINGH BHUEE .(2022A1PS1723H)

Student Write-up:

PS-I Project Title: Financial Analysis and Industry

Short Summary of work done: Throughout the internship period, I worked under the team finance. I was involved in reading and analysis of the Profit & Loss statement and conduct financial analysis of the dummy data provided to us by the company. I also learnt various crucial steps involved in starting a manufacturing firm, geopolitical factors that play crucial role in procuring raw materials, importance of marketing and various strategies related to it.

Objectives of the project: To be able to read and analyse financial statements for optimization and risk management

Tool used: Excel, Power BI

Details of Papers/patents:None

Brief description of the working environment: There were one-on-one sessions with the founder itself. Sir, taught us about financial statements and industry working. Being it an online internship, the exposure was quite less. It could be have been more if it was offline.

Academic courses relevant to the project: Fundamentals of Finance & Accounting, Derivatives and Risk Management

Learning Outcome: Understanding of reading financial statements like Balance Sheet, Profit & Loss Statement etc. Developed Microsoft Power BI as a skill as a part of it. Learning about basics of starting a manufacturing business.

Name: ADITYA S LOCHAN .(2022A4PS0927H)

Student Write-up:

PS-I Project Title: Price fluctuations of raw materials

Short Summary of work done: We read news articles and compared them with the prices of crude oil and polymer raw material in order to understand the effects of various factors affecting prices

Objectives of the project: understanding factors affecting prices and how to plan investment strategy

Tool used: Excel

Details of Papers/patents:none

Brief description of the working environment: Working environment was chill, both the FIC and company mentor were very approachable, meeting were held roughly once every week.

I had expected a more core mech oriented project but nevertheless gained experience with the business side of a manufacturing based industry

Academic courses relevant to the project: Personally nothing i was taught in 2nd year

Learning Outcome: Finance, Supply chain management

Name: PRANJAL KAUR .(2022A4PS1499H)

Student Write-up:

PS-I Project Title: Financial Risk Management

Short Summary of work done: Analyse financial data to identify pitfalls and work for solutions.

Objectives of the project: Analyse financial data to identify pitfalls and work for solutions.

Tool used: MS Excel, Google Worksheets, Google slides, MS powerpoint

Details of Papers/patents:-

Brief description of the working environment: Very friendly and helpful environment

Academic courses relevant to the project: Finance Minor

Learning Outcome: Financial analysis, financial modelling, risk management

Name: VEDATMAN KAMLESH SONPAL .(2022B3A70259P)

Student Write-up:

PS-I Project Title: Analyzing price fluctuation in the polymer industry

Short Summary of work done: Learning about the polymer industry and its various aspects, the dependance of major raw materials like crude oil and USD and mapping deoendances of other case studies on polymer prices

Objectives of the project: Collect and analyze data regaridng raw material prices and analyze dependance of polymer prices on crude oil, USD/INR and geopolitical and environmental factors

Tool used: MS Excel

Details of Papers/patents:None

Brief description of the working environment: Very communicative environment which fostered co learning amongst peers and from the supervisor, an industry elader in polymer production who promoted discussions and collaboration. Apart from the working of the industry, I developed soft skills like team work and collaboration

Academic courses relevant to the project: Supply Chain Management

Learning Outcome: Learning about the polymer industry and its various aspects, the dependance of major raw materials like crude oil and USD and mapping dependances of other case studies on polymer prices

PS-I station: Central Institute of Road Transport, Pune

Student

Name: ATHARVA SHINDE .(2022A1PS1688H)

Student Write-up:

PS-I Project Title: Hydrogen Fuel as the Fuel for Future

Short Summary of work done: During the PS-I the work involved Research about Hydrogen and Proposing Hydrogen Fuel as the Fuel for future.explores the potential of hydrogen fuel cells as a key energy source for the future, comparing them with electric vehicles (EVs) and biofuels in terms of efficiency, sustainability, and practicality. Even after Hydrogen having many benefits, its use is limited by challenges like storage and infrastructure. The Project provides a Comprehensive analysis of the issues, and examines the difficulties in adopting hydrogen fuel, and outlines the safety standards and possible complications involved.

Objectives of the project: Hydrogen Fuel Research, Proposing Hydrogen as the Fuel for Transport

Tool used: Excel, Powerpoint

Details of Papers/patents:nil

Brief description of the working environment: The working environment was Really good and productive. The employees were really experienced in their field and had great knowledge about their respective departments. They were cooperative and guided us whenever needed. They even arranged an Industrial visit to Kalyani Powertrain. Work Culture was really good.

Academic courses relevant to the project: Material Science and Engineering, Heat Transfer, Principles of Economics

Learning Outcome: Hydrogen Fuel, Different types fuel available in the market
Communication Skills, Teamwork,

Name: RAAM GAGAN KATTA .(2022A4PS1074H)

Student Write-up:

PS-I Project Title: Hydrogen fuels for future vehicles

Short Summary of work done: We made a report about hydrogen storage systems and safety systems by doing research from different research papers and journals. We also made a presentation at the end of our project.

Objectives of the project: To Research about hydrogen fuels storage and safety systems and make a report about it.

Tool used: Research papers and journals from internet.

Details of Papers/patents:N/A

Brief description of the working environment: Working environment is very nice. We used to work 5 days per week and accommodation facilities were very good.

Academic courses relevant to the project: Second year mechanical courses

Learning Outcome: Learned about different hydrogen fuel storage systems and safety systems.

Name: PANKAJA HEMANT KARALE .(2022B2A11363P)

Student Write-up:

PS-I Project Title: Material Characterization Of Polymeric Compounds

Short Summary of work done: Worked on the machines present there. Also gained knowledge of the machines and techniques used to characterize polymeric compounds, especially rubber. Also, learnt a lot about the working of the Polymer Lab.

Objectives of the project: Determine the Thermal, Mechanical and Chemical Properties of the samples.

Tool used: Machines- UTM, TGA, MDR, Automatic Hardness Tester, Ozone Chamber and many other.

Details of Papers/patents:-

Brief description of the working environment: The staff was friendly and knowledgeable. I had hands on experience with advanced equipments like TGA, UTM, MDR etc while adhering to strict safety protocols. The company provided invaluable guidance and mentorship, offering training sessions, access to research resources, and regular feedback on my performance. I look forward to potentially exploring opportunities for continued collaboration or employment with the company.

Academic courses relevant to the project: Polymer Chemistry and Analytical Chemistry

Learning Outcome: Basic Knowledge of Polymeric Compounds, it's applications, characterization properties, significance and the techniques used for analysis of a few compounds.

PS-I station: Centre for Military Airworthiness & Certification (CEMILAC), DRDO, Bangalore

Student

Name: ARPIT KAPOOR.(2022A4PS1526H)

Student Write-up:

PS-I Project Title: Safety Assessment of airborne systems

Short Summary of work done: As part of PS-1 two projects were completed by me. The first project was done in a group of three, which comprised the safety assessment of airborne stores and covering the theory behind the safety certification. It provided us with an overview of the certification process and the importance of safety and reliability of safety critical systems. The next project was pursued personally by me. It involved fluid simulation in the case of a lid-driven cavity. Simulation were run in ANSYS FLUENT software for varying initial conditions and results were validated by comparing the obtained plotted values against published values.

Objectives of the project: Familiarization with the industry software, Protocols used and gain a brief overview of Defense Aerospace industry

Tool used: For first project- ISOGRAPH workbench software ; for second project- ANSYS FLUENT fluid solver software used.

Details of Papers/patents: Comparative report on fluid simulation was made for second project.

Brief description of the working environment: The work environment in the organization was very conducive. Interaction with scientists who are involved in various ongoing projects, gave us a broader overview of the defense industry.

Academic courses relevant to the project: courses relevant to my second project would be- Computational fluid dynamics, numerical techniques of fluid flow. Those pertaining to the first project would be about product life cycle, failure assessment especially in the manufacturing sector.

Learning Outcome: Real time exposure to the professional environment at a government organization. Practice school also provided me with an opportunity to have an hands-on training on the software used in the industry.

Name: PRITHU PARESH DAS .(2022A4PS1795H)

Student Write-up:

PS-I Project Title: Developing a method for the Reliability Testing of One-Shot Systems and System Safety Assessment of Aircraft Landing Gear

Short Summary of work done: During my internship at CEMILAC, DRDO Bangalore, I focused on enhancing the reliability of military aviation systems through various analytical methods. I worked extensively on Fault Tree Analysis (FTA) and Failure Modes, Effects, and Criticality Analysis (FMECA) to identify and analyze potential failure points in missile delivery systems and aircraft landing gear. Additionally, I developed and analyzed Reliability Block Diagrams (RBD) and conducted System Safety Analysis (SSA) to model the reliability of these systems comprehensively. A significant portion of my work involved applying statistical distributions, such as Poisson for mechanical components, Exponential for electrical components, and Weibull for warhead components, to accurately simulate failure rates. I utilized Monte Carlo simulations to calculate system unavailability, running numerous cycles to obtain reliable data. This simulation work was crucial for predicting the overall reliability of the systems under study. My programming skills in Python were significantly enhanced as I developed scripts to automate the generation of failure rate data and perform reliability calculations. These scripts also facilitated data visualization, making it easier to interpret the results and draw meaningful conclusions about system performance. In addition to these technical tasks, I gained specialized knowledge in the reliability testing of one-shot systems, such as missiles. I contributed to documenting testing methodologies and ensuring the reliability and effectiveness of these critical defense systems. Throughout my internship, I collaborated closely with senior researchers and engineers, which helped me improve my project management and teamwork abilities. This hands-on experience at CEMILAC provided me with valuable insights into the practical applications of reliability engineering concepts and equipped me with essential skills for my future career in aerospace engineering and defense research.

Objectives of the project: To develop a robust method to test the Reliability of one-shot systems such as missiles rockets and satellites. To perform the safety and reliability analysis of aircraft landing gear.

Tool used: Military Aviation Standards, Civil Aviation Standards, Military Handbooks, Isograph Reliability workbench software, python, MATLAB

Details of Papers/patents:Working on it

Brief description of the working environment: The working environment at CEMILAC, DRDO Bangalore, was highly professional and research-focused. As an intern, I was integrated into a team of experienced researchers and engineers dedicated to enhancing

the reliability and performance of military aviation systems. The organization fostered a collaborative atmosphere where knowledge sharing and teamwork were encouraged. Expectations from the company were clear and demanding, emphasizing the importance of precision, attention to detail, and adherence to rigorous standards in all tasks. I was expected to apply theoretical knowledge practically, contribute effectively to ongoing projects, and meet deadlines consistently. The company valued innovation and problem-solving skills, pushing me to think critically and creatively.

During my PS-I, I gained a comprehensive understanding of various reliability analysis methods, including Fault Tree Analysis (FTA), Failure Modes, Effects, and Criticality Analysis (FMECA), Reliability Block Diagram (RBD), and System Safety Analysis (SSA). I learned to apply statistical distributions and conduct Monte Carlo simulations to model and predict system reliability. My programming skills, particularly in Python, were significantly enhanced as I developed scripts for reliability calculations and data visualization.

This internship provided me with invaluable hands-on experience, bridging the gap between academic learning and practical application. I learned the importance of meticulous research, data accuracy, and effective communication in a professional setting. Overall, my time at CEMILAC was enriching and instrumental in shaping my future career in aerospace engineering and defense research.

Academic courses relevant to the project: C Programming, M3 and PnS

Learning Outcome: I learned Fault Tree Analysis (FTA), Failure Modes, Effects, and Criticality Analysis (FMECA), Reliability Block Diagram (RBD), and State Space Analysis (SSA). I also gained experience in applying statistical distributions, conducting Monte Carlo simulations, and programming in Python for reliability calculations and data visualization. Additionally, I acquired specialized knowledge in the reliability testing of one-shot systems such as missiles, and improved my skills in project management and collaboration within a research environment.

Name: RITHISH CHANALU SURESH(2022A8PS1194G)

Student Write-up:

PS-I Project Title: Design of Manchester Biphase encodee according to MIL-STD-1553 in VerilogHDL on Vivado Design Suite, Design of PID Controller in MATLAB

Short Summary of work done: Revised concepts of Digital Design and Control Systems courses, Learnt how to code in VerilogHDL and use Vivado Design Suite tool. Learnt how

to use MATLAB software and write code in MATLAB. Got to learn various aspects of aircraft design and avionics as well as aircraft control surfaces.

Objectives of the project: Design a Manchester Encoder in Verilog according to MIL-STD-1553, Learn to design basic Control systems in MATLAB.

Tool used: Vivado, MATLAB, VerilogHDL

Details of Papers/patents:N/A

Brief description of the working environment: The overall environment was stimulating and the mentor was very good. He motivated us as well as helped in enriching our knowledge further. Through his efforts we were able to see and learn various things that we didn't know of before. We were given access to cutting edge tools and equipment which further enhanced our learning and experience. The people working there were very friendly and willing to help us out whenever needed.

Academic courses relevant to the project: Digital Design, Control Systems, Signals and Systems, Microelectronic Circuits.

Learning Outcome: Revised concepts of Digital Design and Control Systems courses, Learnt how to code in VerilogHDL and use Vivado Design Suite tool. Learnt how to use MATLAB software and write code in MATLAB.

Name: SRISTHI AGARWAL .(2022ABPS1575P)

Student Write-up:

PS-I Project Title: Reliability assessment of airborne systems

Short Summary of work done: Reliability assessment of landing gear systems, single cylinder vertical Diesel engine, one shot weapon delivery systems.

Objectives of the project: To carry out reliability assessments of different systems

Tool used: Reliability workbench - Isograph, Python

Details of Papers/patents:-

Brief description of the working environment: Really great environment kindling our spirit for research and opening up a lot of horizons in engineering

Academic courses relevant to the project: Propulsion, engine systems

Learning Outcome: Learnt how to use Isograph workbench, understood the working mechanisms of different systems

PS-I station: Cosmo Engineers, Faridabad

Student

Name: ATHIRAC(2022A1PS1076G)

Student Write-up:

PS-I Project Title: Market research and new product development

Short Summary of work done: The work was mainly related to desktop research about various topics given. We were given topics like various social media platforms, their business model, revenue model, taxation, process for startup etc.

Objectives of the project: The project mainly focused on increasing our knowledge in fields other than the core discipline.

Tool used: Desktop research

Details of Papers/patents: Nothing

Brief description of the working environment: The company representatives were very friendly and helpful during the entire timeframe of the PS-1. They were flexible enough to give attention to our prior commitments. This PS-1 experience has enabled me to adjust to a work environment and helped me understand about the values that an employee requires.

Academic courses relevant to the project: Technical report writing

Learning Outcome: I was able to get to know about the corporate working culture. The internship helped to increase my communication and thinking skills.

Name: ADVAITH ANANTHARAM .(2022A4PS1406H)

Student Write-up:

PS-I Project Title: Market Research and Web Development

Short Summary of work done: We started with a couple simple tasks, before we were asked to submit resumes. Based on that, and an interaction with us, we were assigned primary tasks, which in my case, was to work on the development of a website, similar to that of social media platform Reddit. I worked on the backend for the same, as fellow interns worked on the frontend and the design. As I worked on the same, I was also assigned a few market research tasks, since that was the primary discipline of the station. Following this, we were asked to look into the integration of other tools, and we did research on the same. Finally, we were assigned a few more research tasks related to companies' revenue and how certain functionalities and features affect their revenues. We also looked into what the ideal customer would be for companies, what a Unique Selling Proposition is, what target demographics are, etc.

Objectives of the project: To understand how the market works and analyze the performance of various companies to try and understand why they are succeeding. To understand the basics of web development.

Tool used: Hardware - Laptop; Software - JavaScript, Word, LinkedIn, etc

Details of Papers/patents:None

Brief description of the working environment: The company understood that we were all at home and that an intense work cycle wouldn't be feasible and so, we were allowed to work without too much duress. We still had deadlines to meet, often sharp ones. But there was a very relaxed feeling to the same. The mentors were helpful. They understood the fact that not everyone is an expert at whatever it is they were doing, and patiently lent us all a helping hand whenever required. We didn't get to interact with a lot of people, but since we were online, I think that was a given. Had we been offline, we might've met a few more people, and we might've interacted with professionals a lot more. I learnt a lot over these past two months, and my learnings covered a vast spectrum of fields as well. I found it to be interesting and overall, a very nourishing experience.

Academic courses relevant to the project: Database Management, Object Oriented Programming, Principles of Management

Learning Outcome: To understand how market trends can be analyzed to further understand a company's performance.

To gain a basic understanding in web development

PS-I station: Deccan Mechanical and Chemical Industries Limited (DEMECH), Pune

Student

Name: KEYA CHINCHOLKAR(2022A4PS1292G)

Student Write-up:

PS-I Project Title: mechanics and operations of screw and drag chain conveyors

Short Summary of work done: we, as a team of 9 people, gathered information related to screw and drag chain conveyors and divided the work amongst ourselves. My major focus was to understand and explain the working of the screw conveyors during midsem, and working of the drag chain conveyors during the final submission.

Objectives of the project: This project gives an explanation on how a screw conveyor is designed using certain parameters, what its components are, the types of screw conveyors and its advantages, the working, safety parameters, failures and troubleshooting techniques and the machine's effect on the environment. This project gives an explanation on how a drag chain conveyor is designed using certain parameters, what its components are, the types of chain conveyors and its advantages, the working, safety parameters, failures and troubleshooting techniques and the machine's effect on the environment.

Tool used:

Details of Papers/patents: none

Brief description of the working environment: Working environment was great, everyone was cooperative and friendly. company officials were interactive and conducted meetings to explain the mechanism of various machines (screw and drag chain

conveyors, rotary conveyors). I got to learn how an industry functions and how professional interactions are carried out.

Academic courses relevant to the project: Mechanics of solids, fluid mechanics, mechanisms and machines

Learning Outcome: learning designing and working principles of screw and drag chain conveyors

PS-I station: Delhi Metro Rail Corporation (DMRC) - Civil, New Delhi

Student

Name: AMARDEEP SINGH GREWAL .(2022A2PS0851P)

Student Write-up:

PS-I Project Title: Operations and maintenance intern

Short Summary of work done: Being an intern in DMRC civil (operations and maintenance) I learned about the SOP of the organization along with various methods used to inspect the health of the structure. we also learned how maintenance of entire track, structures is done. we overlooked many maintenance activities such as tunnel inspection, RGM, UCSD, AT Welding, Bearing replacement and many more.

Objectives of the project: understand the SOPs and inspection of structure along with overlooking the maintenance procedure

Tool used: excel and MS word

Details of Papers/patents: N.A

Brief description of the working environment: I actually expected the work related to our course but unfortunately we were placed in a different department. work was to overlook activities and understand the SOPs of the organization. overall it was ok for a 2nd year intern

Academic courses relevant to the project: N.A

Learning Outcome: understanding the working of operations and maintenance department

Name: RIYA GAUTAM .(2022A2PS1125P)

Student Write-up:

PS-I Project Title: Metro station visits

Short Summary of work done: During my PS-I internship at the Delhi Metro Rail Corporation (DMRC), I engaged in a variety of tasks that provided practical experience and enhanced my engineering knowledge. I assisted in on-site construction activities, observed and contributed to project management processes, and gained insights into the maintenance and operation of metro rail systems. My role involved data collection and analysis related to passenger flow and system efficiency. Additionally, I collaborated with multidisciplinary teams, participated in stakeholder interactions, and adhered to safety protocols. This internship offered a comprehensive understanding of the technical and operational aspects of metro rail systems, while also fostering my professional and soft skills.

Objectives of the project: Knowledge about working and construction of metro

Tool used: During my PS-I internship at the Delhi Metro Rail Corporation (DMRC), I utilized a variety of development tools, both hardware and software, to support my tasks and projects. On the hardware side, I used specialized equipment such as tamping machines for

Details of Papers/patents: None

Brief description of the working environment: The working environment at DMRC was a blend of office and fieldwork, providing a comprehensive exposure to both the planning and execution phases of metro rail projects. The office environment was structured and formal, with regular meetings, project briefings, and documentation tasks. In contrast, the fieldwork involved hands-on activities, site visits, and direct interaction with various engineering teams, offering practical insights into the construction and maintenance processes.

DMRC had high expectations from its interns, including:
Professionalism: Demonstrating a strong work ethic, punctuality, and adherence to safety protocols.
Technical Competence: Applying engineering knowledge to real-world problems and learning new tools and technologies.
Team Collaboration: Working effectively within multidisciplinary

teams and contributing to collective goals. Initiative: Taking the initiative to ask questions, seek guidance, and proactively engage in tasks.

Technical Skills: Gaining hands-on experience with tools such as tamping machines, defect detection machines

Safety Practices: Learning and adhering to safety standards and protocols essential for working in a public transportation environment.

Industry Insights: Acquiring knowledge about metro rail systems, industry standards, and best practices in urban transportation and infrastructure development.

Soft Skills: Enhancing communication, teamwork, time management, and critical thinking skills in a professional setting.

Academic courses relevant to the project: Thermodynamics, Surveying, Highway Engineering, Soil Mechanics

Learning Outcome: Completing an internship at the Delhi Metro Rail Corporation (DMRC) has provided me with numerous valuable learning outcomes. I have gained a deeper understanding of engineering concepts specific to metro rail systems, including civil, mechanical, electrical, and electronics engineering. I was exposed to project management, planning, execution, and maintenance of large-scale infrastructure projects, while also learning about the safety standards essential for public transportation. Practical experience was a key component, with hands-on site visits, assisting in construction activities, and addressing real-world problems such as technical failures and project delays. Additionally, I developed skills in data collection, analysis, and interpretation related to passenger flow and system efficiency.

This internship has also fostered my professional skills like teamwork, effective communication, and project documentation. I interacted with various stakeholders, enhancing my ability to collaborate and negotiate. I honed my soft skills, such as time management, adaptability, and critical thinking, in a dynamic work environment. Furthermore, I gained industry insights, learning about standards, best practices, and sustainability within metro rail and urban transportation.

Career development has been another significant aspect, as I built a professional network and gained insights into potential career paths. This experience boosted my confidence, understanding of individual responsibility, and awareness of ethical considerations in engineering practices. Overall, my internship at DMRC has provided me with a robust foundation for future career pursuits in the engineering and transportation sectors, promoting both my professional and personal growth.

Name: PULKIT GARG .(2022A2PS1716P)

Student Write-up:

PS-I Project Title: DMRC

Short Summary of work done: We thoroughly investigated several aspects of metro rail construction and maintenance throughout the course of the project. Week after week, we descended into the depths of track analysis, concentrating on tools like the Calipri machine that allowed us to properly measure and assess rail geometrical attributes. We also studied the techniques used to construct underground metro trains and stations, including the cut-and-cover method and the use of soldier pile technology for support and stability. We also learned about the oscillation monitoring system, which is crucial for ensuring passenger comfort and safety while also lengthening the lifespan of the infrastructure. We learned about specialised tools used in the project, like rail jack machines and bolt tightening machines, which are all necessary.

Objectives of the project: Construction and maintenance for track and Civil Structures.

Tool used: Caliper machine Vibration monitoring system Railway crane machine Bolting machine Tunnel boring machine (TBM) Bi-reflex targets Molds or molds for melting ring segments Reinforcing materials (steel bars or fiber reinforcement) Pressure-based tunnel boring

Details of Papers/patents:NA

Brief description of the working environment: The working atmosphere was dynamic and engaging during the project and provided practical visibility into various aspects of metro construction and maintenance. We were able to visit several areas, including warehouses, foundries, and tunnel construction sites, to see real-world applications of the technology and procedures we studied. Company expectations focused on active engagement, enthusiasm for learning and our ability to adapt to different work environments. We had to interact with the technologies and tools presented to us, ask questions and try to understand their practical impact on subway traffic. Attention to detail and adherence to safety regulations were critical when dealing with specialty equipment and supplies. As we often interacted with experts, engineers and maintenance staff during our travels, the organization respected our teamwork and communication skills. Accuracy and professionalism were important as we represented the company locally. Overall, the organization provided a suitable learning environment that required us to understand the intricacies of metro construction and maintenance and use our knowledge to effectively advance the field in the future.

Academic courses relevant to the project: Surveying, CPT, Mechanics of solids, Civil Engineering Materials, soil mechanics

Learning Outcome: To learn how tracks are maintained and inspected in a metro rail network, how civil structures are inspected for potential defects and how preventive and corrective maintenance is offered; How a tunnel is constructed.

PS-I station: Delhi Metro Rail Corporation (DMRC) - Electronics, New Delhi

Student

Name: SHRISH GUPTA .(2022A3PS1219P)

Student Write-up:

PS-I Project Title: Signalling in DMRC

Short Summary of work done: During my PS-I, I conducted an in-depth study of the signaling system used in the Delhi Metro Rail Corporation (DMRC). My focus was on understanding the principles and functioning of this critical infrastructure, which ensures safe and efficient train operations. I explored various components of the signaling system, examining how they interact to manage train movements and enhance safety. Additionally, I researched the history of DMRC, tracing its evolution from inception to its current status as a vital part of urban transportation in Delhi. This included insights into its operational strategies, technological advancements, and the challenges faced in its development. Through this study, I gained a comprehensive understanding of the significance of DMRC's signaling system and its impact on the overall effectiveness of metro rail services.

Objectives of the project: To explore and tech used in signalling through out the network of Delhi metro

Tool used: Nil

Details of Papers/patents: Nil

Brief description of the working environment: During my PS-I, I had the opportunity to work in a metro depot environment, which provided a hands-on experience in a dynamic and fast-paced setting. The working atmosphere was collaborative, with a strong emphasis on safety and efficiency, as we were surrounded by skilled professionals dedicated to maintaining and operating the metro rail system.

The company expected us to gain a comprehensive understanding of the signaling systems utilized both in the depot and on the mainline. This involved studying the various

components, their functions, and how they contribute to the overall safety and reliability of train operations.

Throughout my time at the depot, I learned not only about the technical aspects of signaling systems but also about the importance of teamwork and communication in ensuring smooth operations. This experience has significantly enriched my knowledge and skills in railway signaling and its critical role in urban transportation.

Academic courses relevant to the project: Electrical Machines

Learning Outcome: Learned about all the systems, and equipment used on mainline and depot of delhi metro and their working as well

Name: MIHIR ANAND .(2022B2A31147P)

Student Write-up:

PS-I Project Title: Signaling Operation and Maintenance

Short Summary of work done: I learned about various department under DMRC like traction, telecommunication, signalling etc. My project was signalling O&M. Under this, I learned about point machines, axel counters, CBTC, ATO, DTO, ATS, PSD, Signalling equipments and much more

Objectives of the project: Understand how signalling department of DMRC functions and various machines used like point machines, axel counter, PSD, etc

Tool used: S/w - LATS MMI

Details of Papers/patents:None

Brief description of the working environment: Good working environment, good mentors, learning outcome include signalling and many others

Academic courses relevant to the project: Electrical Science

Learning Outcome: Signalling, comunication skills, field engineering

Name: SIDDHARTH KHEMANI .(2022B5A30892P)

Student Write-up:

PS-I Project Title: Study of Signalling System

Short Summary of work done: We attended the metro depot to learn about various machines and programs used in signalling

Objectives of the project: Learn about signalling

Tool used: None

Details of Papers/patents: None

Brief description of the working environment: Very accommodating

Academic courses relevant to the project: EEE courses of second year

Learning Outcome: Learnt about signalling

PS-I station: Delhi Metro Rail Corporation (DMRC) - IT, New Delhi

Student

Name: SAHEJ PREET SINGH .(2022A7PS0085P)

Student Write-up:

PS-I Project Title: Optimal Metro Station Selection Model for Delhi Commuters Based on Travel and Waiting Times

Short Summary of work done: In a bustling metropolis like Delhi, efficient commuting is crucial for the daily lives of its residents. This project aims to develop an optimal metro station selection model for Delhi Metro commuters, focused on minimizing the total time required to board a train. The model considers two key components: the travel time to

reach a metro station via road, and the average waiting time at the station, which is influenced by footfall data. By integrating Google Maps API, the model calculates the estimated time of arrival (ETA) to various nearby metro stations from the commuter's location. Additionally, it uses historical footfall data to predict the average waiting time in queues at these stations. The model provides commuters with a list of nearby stations, complete with detailed time estimates, and identifies the station with the minimum total time required from home to the train's door. This innovative approach aims to enhance the commuting experience by offering a data-driven solution for selecting the most time-efficient metro station

Objectives of the project: To learn more about AI/ML

Tool used: S/w

Details of Papers/patents:no

Brief description of the working environment: Working at DMRC was an enriching experience, marked by a healthy and supportive environment. Our mentor played a pivotal role in making this possible, consistently addressing our doubts and providing valuable guidance whenever we encountered challenges. His approachable demeanor and willingness to assist fostered a collaborative atmosphere, encouraging us to seek help without hesitation. Beyond resolving immediate issues, our mentor went above and beyond by sharing additional resources for those interested in further developing the skills needed for the project. This proactive approach not only helped us overcome obstacles but also inspired us to delve deeper into our work. By offering access to important sources of information, he empowered us to expand our knowledge and improve our expertise. The combination of a healthy working environment and a mentor dedicated to our growth made our time at DMRC highly productive and fulfilling. We felt motivated to learn, innovate, and contribute meaningfully to the project. The emphasis on continuous learning and professional development was a testament to the organization's commitment to fostering talent and nurturing a culture of excellence. This experience has left a lasting impression, equipping us with valuable skills and a strong foundation for our future endeavors.

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

Learning Outcome: using google API and python for coding

PS-I station: DHIO Research & Engineering Pvt. Ltd, Bengaluru

Student

Name: ADARSH PAI(2022A4PS0698G)

Student Write-up:

PS-I Project Title: Effect of Quantum Dots in Graphene Nano-ribbons

Short Summary of work done: Most of the work was just learning to operate the software and reading some paper and doing basic research. Not a lot of guidance was given though

Objectives of the project: To learn proprietary software (ASAP) which is used in the industry and to use it on an research project

Tool used: None

Details of Papers/patents: None

Brief description of the working environment: We only had one mentor who was the CEO of the company. He checked in every 2 weeks to see what we have done. Anything besides this we had to do on our own

Academic courses relevant to the project: Mechanics, Oscillations and Waves

Learning Outcome: Learnt how to use software. Additionally learnt Quantum Mechanics and Semiconductor Physics

Name: ADITYA SAMBHAJI GAIKWAD(2022A4PS1001G)

Student Write-up:

PS-I Project Title: Creep Response of Composites

Short Summary of work done: Studied the theory of Composites, understood their composition and how properties are defined, modelled a unit cell of composite, performed numerical testing analysis, found material properties and creep response of the composite.

Objectives of the project: To find creep response of carbon fiber reinforced composite

Tool used: Ansys, Multiscale.Sim

Details of Papers/patents:None

Brief description of the working environment: Good environment, self paced learning process, great mentors and good scope of learning.

Academic courses relevant to the project: Mechanics of Solids, Material Science

Learning Outcome: Learned Ansys, Multiscale.Sim, Literature Analysis

PS-I station: Disha Auto Components Pvt. Ltd, Aurangabad

Student

Name: NITISH V P(2022B5A40264G)

Student Write-up:

PS-I Project Title: Time analysis of CNC threading machines

Short Summary of work done: we were asked to learn the manufacturing process of coupling and tubing products. it included processes like cutting, lathe, threading, phosphating, painting, packing and dispatch. we were mainly focused on threading process. there were 6 cnc machines which were dedicated to work on threading process. we studied the cycle time of all 6 cnc machines on different jobs. we had to come up with efficient ways to increase the production.

Objectives of the project: to find efficient ways to increase the production of coupling products

Tool used: there werent much tool used during our program. but during quality inspection of jobs we came across a lot of tools which are used to check the quality of the job

Details of Papers/patents: NA

Brief description of the working environment: the working environment was very good. we were provided with all basic facilities

Academic courses relevant to the project: mechanical and manufacturing

Learning Outcome: learnt about the manufacturing process taking place in a plant

PS-I station: Dr. NTPS, APGENCO, Vijayawada

Student

Name: ASOORI ROHINI .(2022A5PS1262H)

Student Write-up:

PS-I Project Title: Rebuilding old website into new website using material design

Short Summary of work done: Added new features to the new website, changes layout, design and style of the website. Made the website more accessible to the users and made it user friendly.

Objectives of the project: Rebuilding old APGENCO website

Tool used: HTML,CSS, TailwindCSS, Java script

Details of Papers/patents: N/A

Brief description of the working environment: Friendly work environment, supportive mentor

Academic courses relevant to the project:

Learning Outcome: HTML, CSS ,Tailwind Css, Java script

Name: MOHANA KEERTHI PATHURI .(2022A8PS0738H)

Student Write-up:

PS-I Project Title: Rebuilding the old website to a new a new material design website using react js skillsets.

Short Summary of work done: Firstly, by employing html for the structural framework, Tailwind css for styling, and react js for interactivity, we created a cohesive and efficient web application. Our approach involved meticulous planning, thorough testing, and iterative improvements based on user feedback. This project highlights the importance of adopting modern web technologies to meet the evolving needs of users and stay competitive in the digital landscape. The use of react js allowed for the creation of reusable components and efficient state management, which contributed to the website's maintainability and scalability.

Objectives of the project: The main objective of this project is to make the website responsive, attractive and user-friendly that will answer modern web standards and significantly improve the level of user engagement and satisfaction.

Tool used: React JS and Tailwind CSS

Details of Papers/patents:None

Brief description of the working environment: Working environment was fine. Our mentor was very helpful and the team-mates too.

Academic courses relevant to the project: C-programming

Learning Outcome: Technical skills and creativity

Name: AYYADEVARA SRI HARSHITHA .(2022AAPS0282H)

Student Write-up:

PS-I Project Title: Website Development

Short Summary of work done: We have done rebuilding of a website of APGENCO using react js which is attractive and user-friendly

Objectives of the project: Website Development

Tool used: React js

Details of Papers/patents:NA

Brief description of the working environment: It was nice experience,it would be nice if internet was provided.

Academic courses relevant to the project: .

Learning Outcome: React js

PS-I station: DRDO - Naval Science and Technological Laboratory (NSTL), Visakhapatnam

Student

Name: NALLABILLI SRI VARUN .(2022A4PS0871H)

Student Write-up:

PS-I Project Title: Project Title -Design of ventilation system for cooling of ship's engine room

Short Summary of work done: Propulsion system integration in naval ships involves the design, installation, and coordination of the components providing thrust to the vessel. During my PS-1 at DRDO NSTL, I worked in the Propulsion System Integration Centre of the Environmental Test Facility. This division advances research in developing an indigenous system for coordinating propulsion components, currently managed through foreign collaborations. India aims to develop its own body with indigenous technologies for this task. We were assigned to design a ventilation system for the ship's engine room to regulate temperature. Maintaining a sustainable temperature is crucial as higher temperatures can create extreme conditions, affecting efficiency and the wellbeing of employees maintaining the unit. This impacts both workers and machinery, influencing overall power consumption. The project tackled these issues in three stages: Determining Heat Losses: We modeled heat losses for a two-diesel engine setup,

identifying heat generation points and quantifying dissipation. **Modeling Temperature and Velocity Distributions:** For the actual engine components, we modeled temperature and velocity distributions to identify critical zones needing effective cooling. **Designing a Blower Mechanism:** We designed a blower system to maintain volumetric flow rate, ensuring temperatures stayed within the prescribed range. This involved selecting and positioning blowers optimally for uniform cooling. Applying this design to an actual naval ship, we considered heat loads and compared scenarios with and without ventilation. This comparison demonstrated our ventilation design's effectiveness in maintaining required temperatures and improving propulsion system efficiency.

Objectives of the project: The project was mainly concerned with providing an efficient ventilation system so that the temperature of the engine room can be maintained 10 to 15 Celsius greater than the external environment as per the norms. Usually the temperatures peak up to 75 to 80 Celsius where as our aim was to bring it down to somewhere around 42 to 47 Celsius.

Tool used: ANSYS Fluent

Details of Papers/patents: Cannot disclose as the information is confidential

Brief description of the working environment: The work environment at DRDO NSTL was both challenging and enriching. One significant difficulty we faced was the prohibition of mobile phones and electronic devices within the area, which posed a concern due to the inconvenience it caused in communication and accessing information quickly. Daily security checks were stringent, ensuring strict compliance with safety protocols.

Despite these challenges, we had the opportunity to visit several advanced facilities. The high-speed towing tank showcased cutting-edge hydrodynamic testing capabilities, allowing us to observe how various hull designs perform at different speeds. The wind turbine facility demonstrated innovative research in renewable energy, emphasizing the importance of sustainable power sources for naval applications. At the seakeeping and maneuverability center, we learned about the intricate dynamics of ship stability and control in various sea conditions. The cavitation tunnel provided insights into minimizing cavitation effects on propellers, crucial for enhancing propulsion efficiency. The torpedo integration facility was a highlight, illustrating the complexities of assembling and testing advanced underwater weaponry.

Throughout our time at DRDO NSTL, the mentors were incredibly supportive. They assisted us with both technical and day-to-day problems, always available for guidance and fostering a collaborative and encouraging atmosphere. Their expertise and willingness to help were invaluable, making the learning process smoother and more engaging.

The food canteen, though offering adequate meals, had overall hygiene that was slightly below average. Despite this, the overall experience was positive and valuable. We were committed to meeting expectations through 24x7 coordination with mentors and providing necessary assistance whenever required. This dedication ensured we contributed effectively to our projects and learned extensively from our time at the facility.

In conclusion, working at DRDO NSTL presented its set of challenges, but the knowledge gained, the support from mentors, and the exposure to advanced naval technology made it an incredibly rewarding experience. The hands-on involvement and continuous learning environment significantly contributed to our professional growth and understanding of the field.

Academic courses relevant to the project: Fluid Mechanics (ME F212), Heat Transfer (ME 220)

Learning Outcome: First time hands on experience on CFD analysis using ANSYS Fluent. Study of various theoretically learned phenomenon in the academic curriculum as well as validation of pre taught results.

Name: ANIRUDH TAMVADA .(2022A4PS1415H)

Student Write-up:

PS-I Project Title: Characterization and numerical analysis of composite materials

Short Summary of work done: We worked with a few scientists under the Propulsion System Integration Centre at DRDO. We initially went through a lot of research papers and publications pertaining to our project. The next phase was to model and simulate unidirectional and bidirectional composites under various loads to understand their properties.

Objectives of the project: To study the properties of various types of composites

Tool used: ANSYS Workbench

Details of Papers/patents:-NIL

Brief description of the working environment: Pretty chill working environment. Flexible working hours. Great facilities.

Academic courses relevant to the project: Materials Science, Mechanics of Solids

Learning Outcome: FEA and modeling

PS-I station: Eclipse Prism Medical Device Pvt. Ltd, Navi Mumbai

Student

Name: PARV MATHUR(2022A8PS0690G)

Student Write-up:

PS-I Project Title: ELECTROSURGICAL UNIT, TEST DRIVEN DEVELOPMENT FOR EMBEDDED SYSTEMS USING C/C++, EXPLORING TINA SOFTWARE AND DESAT PROTECTION FOR MOSFETS & IGBT

Short Summary of work done: This project focuses on enhancing the development and reliability of embedded systems through three primary areas: Test-Driven Development (TDD) using C/C++, circuit simulation with TINA software, and DESAT protection in power electronics. By applying TDD with Google Test on an Ubuntu 20.04 platform, the project aims to integrate robust testing practices into the development process of embedded systems, ensuring early fault detection and improved code quality. The exploration of TINA software involves simulating and analyzing various circuits, including operational amplifiers, transistors, and diodes. A specific application is the patient plate PCB circuit used in electro-surgical units, where DC analysis helps identify and troubleshoot potential issues. Additionally, the project delves into the principles and implementation of DESAT protection circuits to mitigate shoot-through faults. A comparative study of Infineon's 2ED and 1ED series gate drivers highlights the superior performance of the 2ED series for driving half-bridge circuits, offering a more robust protection solution. Overall, the project integrates software development practices, advanced simulation tools, and protective circuitry to enhance the reliability and performance of embedded systems and power electronics.

Objectives of the project: The objective of this project is to enhance the development and reliability of embedded systems through the application of Test-Driven Development (TDD) using C/C++, to leverage TINA software for comprehensive circuit simulation and analysis, and to understand and implement DESAT protection circuits to improve fault tolerance in power electronics.

Tool used: S/W tools: Google Test, Tina Software. H/W tools: Infineon 1ED and 2ED gate drivers and testing kit

Details of Papers/patents:NA

Brief description of the working environment: Working Environment

The working environment is dynamic and collaborative, emphasizing innovation and continuous improvement in embedded systems and power electronics. Advanced tools and methodologies like TDD, TINA software, and DESAT protection are utilized to ensure high-quality outcomes. Team members share knowledge and expertise, fostering mutual support and professional growth.

Expectations from the Company

1. ****Access to Resources****:

- Provision of necessary software tools (Google Test, TINA) and hardware for development and testing.
- Access to relevant documentation, tutorials, and learning materials.

2. ****Supportive Learning Environment****:

- Encouragement of continuous learning through workshops, training sessions, and mentorship.
- Constructive feedback and guidance from experienced colleagues and supervisors.

3. ****Collaboration and Innovation****:

- Opportunities for collaboration with cross-functional teams and contribution to innovative projects.
- Open communication for discussing ideas, challenges, and solutions.

Learning

1. ****Technical Skills****:

- Mastery of Test-Driven Development (TDD) for embedded systems using C/C++.
- Proficiency in using TINA software for circuit simulation and analysis.
- Understanding of DESAT protection principles and their application in power electronics.

2. ****Problem-Solving and Analysis****:

- Enhanced ability to troubleshoot and resolve software and hardware issues.
- Analytical skills for evaluating and comparing technical solutions, such as gate drivers for DESAT protection.

3. ****Professional Development****:

- Improved collaboration and communication skills through teamwork.
- Experience in integrating testing and simulation tools for developing reliable and high-performance systems.

Academic courses relevant to the project: Computer Programming, Electrical Sciences, Digital Design, Electronic Devices, Microelectronic Circuits

Learning Outcome: Major Learning Outcomes

1. ****Proficiency in Test-Driven Development (TDD) for Embedded Systems****:

- Understanding the principles of TDD and its application in embedded systems using C/C++.
- Implementing unit tests with Google Test on an Ubuntu 20.04 platform to improve code quality and reliability.

2. ****Advanced Circuit Simulation Skills****:

- Gaining expertise in using TINA software for simulating and analyzing various circuits, including operational amplifiers, transistors, and diodes.

- Conducting DC analysis of a patient plate PCB circuit for electro-surgical units to detect and troubleshoot misbehavior.
3. ****Comprehensive Understanding of DESAT Protection****:
- Learning the principles of DESAT protection and its role in preventing shoot-through faults in power electronics.
 - Comparing and analyzing the performance of different gate drivers, particularly the 2ED and 1ED series from Infineon, to determine the best solutions for driving half-bridge circuits.

Name: SAUMYA PAI(2022AAPS0598G)

Student Write-up:

PS-I Project Title: Electrosurgical Unit, Test Driven Development for Embedded Systems using C++, Exploring TINA Software and DESAT Protection for MOSFETs and IGBT

Short Summary of work done: During my PS-I internship, I worked on a project focused on enhancing the reliability and safety of electrosurgical units (ESUs) and related medical devices. My primary responsibilities included understanding the components and functions of ESUs, implementing Test Driven Development (TDD) methodologies using C++ for embedded systems, and exploring TINA software for circuit simulation and analysis. A significant part of my work involved using the Cpputest framework to write unit tests, which helped ensure the correctness and robustness of the embedded software. This hands-on experience with TDD improved my coding skills and my ability to develop reliable systems. Additionally, I delved into DESAT (Desaturation) protection techniques for safeguarding MOSFETs and IGBT devices. This protection is crucial for preventing damage to these components due to overcurrent or fault conditions. I learned to implement and simulate these protections, which are essential for the safe operation of power electronics in medical devices. Overall, this internship provided me with valuable experience in both hardware and software aspects of medical device development.

Objectives of the project: The objective of the project was to gain practical experience in the development and testing of electrosurgical units (ESU) and related medical devices. This involved implementing Test Driven Development (TDD) methodologies using C++ for embedded systems, exploring the TINA simulation software for circuit analysis, and safeguarding MOSFETs and IGBT devices with DESAT protection mechanisms. The project aimed to enhance the reliability and safety of medical equipment used in surgical procedures.

Tool used: S/W tools: Google Test, Tina Software. H/W tools: Infineon 1ED and 2ED gate drivers and testing kit

Details of Papers/patents:NA

Brief description of the working environment: The working environment during my PS-I internship was dynamic and collaborative, with a focus on practical, hands-on learning. The company provided a supportive atmosphere where I could explore different aspects of medical device development, including hardware and software integration. The team encouraged open communication and was always available to guide and mentor me through complex tasks, making it an enriching experience.

My expectations from the company were to gain real-world exposure to the development processes of medical devices, specifically electrosurgical units (ESUs), and to enhance my understanding of Test Driven Development (TDD) for embedded systems. I also hoped to learn about the latest tools and technologies used in circuit design and analysis, such as TINA software.

Throughout the internship, I learned extensively about the design and functioning of ESUs, the application of TDD in ensuring software reliability, and the importance of protective mechanisms like DESAT for MOSFETs and IGBTs. The experience also taught me how to work effectively in a professional setting, manage time, and approach problem-solving methodically.

Academic courses relevant to the project: Computer Programming, Electrical Sciences, Digital Design, Electronic Devices, Microelectronic Circuits

Learning Outcome: 1. Understanding of Electrosurgical Units (ESU): Gained in-depth knowledge of the components and functionalities of ESUs, focusing on their application in surgical settings.

2. Test Driven Development (TDD): Acquired hands-on experience with TDD using the Cpputest framework, improving code reliability and testing embedded systems effectively.

3. Exploration of TINA Software: Learned to use TINA software for simulating and analyzing electronic circuits, which is crucial for designing and troubleshooting hardware components.

4. DESAT Protection for MOSFETs & IGBT: Developed a comprehensive understanding of DESAT protection techniques to safeguard MOSFETs and IGBTs in circuits, ensuring their protection from overcurrent and fault conditions.

PS-I station: Emmpe Associates, Coimbatore

Student

Name: ASHWATA SIVANI M.(2022A4PS1485H)

Student Write-up:

PS-I Project Title: Assembly Process Sequencing

Short Summary of work done: Gained a deep understanding of the current state of the assembly processes in the manufacturing facility through real-time process mapping using method, time and work study.

Objectives of the project: To study Panel Air Conditioners Assembly Line and Explore Possible Optimization

Tool used: Time Study, Method Study, Process Flow Diagram

Details of Papers/patents:-

Brief description of the working environment: Learnt how to visually represent the flow of materials and information, as well as identify areas of waste and inefficiencies. Data Analyses was also done through time and method study.

Academic courses relevant to the project: Computer Aided Design , Refrigeration and Air Conditioning

Learning Outcome: Knowledge on Refrigeration and Air Conditioning and Various Assembly Lines

PS-I station: Grain Technik Pvt. Ltd, Noida

Student

Name: AYUSH POPLI .(2022A4PS1489H)

Student Write-up:

PS-I Project Title: Optimizing Production of Industrial ACs

Short Summary of work done: So, i learned at and looked at all the production processes that go into making an AC, all the way from intial enquiry by the customer to final dispatch of the finished AC along with all the manufacturing processes such as assembly and brazing in the midle. I performed elementary time studies of these manufacturing processes and gave the company strategies and methods in order to eliminate the waste activities. I designed racks on SolidEdge to store the variety of sheet metals used by the company.

Objectives of the project: To increase the production rate of ACs, by eliminating waste activities in manufacturing and by reducing space taken up as storage.

Tool used: MS Excel, SolidEdge

Details of Papers/patents:None

Brief description of the working environment: The company had an office in the same building as the factory where ACs were manufactured. The working environment was very friendly and most of the employees were super helpful. The company expected us to understand in detail all the manufacturing processes, perform elementary time studies on these processes and give methods to eliminate waste activities. They also expected us to design racks for the sheet metals they have lying around. Learnings were AC manufacturing, lean manufacturing, time studies, SolidEdge,

Academic courses relevant to the project: Thermodynamics, CAD

Learning Outcome: Learnt about lean manufacturing, time studies, AC manufacturing, AC testing, 3D modelling and designing using CAD

PS-I station: Hindalco Industries Ltd, Renukoot

Student

Name: ANKIT SINGH .(2022A1PS1687H)

Student Write-up:

PS-I Project Title: Refinery

Short Summary of work done: Using a heat exchanger between the "process" condensate and the feed of the evaporator is an effective way to enhance the efficiency of the evaporator system by leveraging energy recovery. This method preheats the feed with waste heat from the process condensate, significantly reducing the external energy—typically steam or electricity—required to bring the feed to boiling. As a result, the evaporator operates more efficiently, requiring less energy to achieve the desired evaporation rate. This efficiency translates directly into cost savings, as lower energy consumption reduces operational costs and decreases the load on the heating system. Additionally, using a plate heat exchanger for this purpose offers advantages over traditional shell-and-tube heat exchangers, such as a larger surface area per unit volume and higher heat transfer coefficients, which further enhance energy efficiency and operational performance. Moreover, this approach has substantial environmental benefits. By reducing the amount of additional energy needed, the system lowers greenhouse gas emissions, contributing to a smaller carbon footprint. When integrated into a Zero Liquid Discharge (ZLD) strategy, the heat exchanger maximizes the recovery of thermal energy, further enhancing sustainability. ZLD systems aim to eliminate liquid waste by recycling all wastewater within the process, resulting in no discharge. This not only conserves water and minimizes waste but also helps industries comply with stringent environmental regulations, promoting a more sustainable and cost-effective operation. The use of plate heat exchangers in these systems provides additional flexibility, as they are compact, easy to maintain, and offer superior resistance to thermal stress and pressure variations compared to shell-and-tube heat exchangers.

Objectives of the project: UTILIZING PROCESS CONDENSATE OF DIGESTER -3 IN EVAPORATION UNIT 4 FOR POSITIVE ECONOMIC AND ENVIRONMENTAL IMPACTS.

Tool used: None

Details of Papers/patents: Journal article on Plate heat exchangers by-Zahid.H.Ayub
Journal on "The Effect of Using Nanoparticles on Corrugated Plate Heat Exchanger Performance" by-A.E. Kabeel , T. Abou El Maaty , Y. El Samadony

Brief description of the working environment: The facility is committed to continuous learning, offering extensive training programs to keep employees abreast of the latest technological advancements and industry best practices. This focus on skill development and career progression fosters a culture of excellence.

Collaboration is a hallmark of the Renukoot workplace, with cross-functional teams working cohesively to meet shared objectives. State-of-the-art infrastructure and cutting-edge technology support this collaborative spirit, enhancing efficiency and productivity. Sustainability is deeply ingrained in the working culture at Renukoot. The facility actively engages employees in initiatives to minimize environmental impact and promote social welfare, aligning with the company's broader commitment to corporate responsibility. This dedication not only enhances Hindalco's reputation but also instills a strong sense of pride and purpose among its workforce.

Overall, Hindalco Renukoot offers a vibrant, growth-oriented environment that prioritizes innovation and sustainability, making it an attractive workplace in the aluminum industry.

Academic courses relevant to the project: Heat transfer , Fluid Mechanics, Separation process, Numerical Methods , Chemical Process Calcula .

Learning Outcome: Studied plate heat exchanger and various methods of heat exchangers optimising it's size and power consumption.

Name: ADITYA RANJAN .(2022A1PS1704H)

Student Write-up:

PS-I Project Title: Refinery

Short Summary of work done: Using a heat exchanger between the process condensate and the evaporator feed boosts efficiency by recovering energy. This preheats the feed, cutting down on external energy needs and reducing costs. Plate heat exchangers are particularly effective, offering more surface area and better heat transfer than traditional shell-and-tube types. This method also has significant environmental benefits. Lower energy use reduces greenhouse gas emissions, and integrating this into a Zero Liquid Discharge (ZLD) system maximizes thermal energy recovery. ZLD systems recycle all wastewater, eliminating liquid discharge, conserving water, and helping industries meet environmental regulations. Plate heat exchangers are compact, easy to maintain, and more resistant to stress and pressure, making them ideal for these applications.

Objectives of the project: UTILIZING PROCESS CONDENSATE OF DIGESTER -3 IN EVAPORATION UNIT 4 FOR POSITIVE ECONOMIC AND ENVIRONMENTAL IMPACTS.

Tool used: None

Details of Papers/patents:Journal article on Plate heat exchangers by-Zahid.H.Ayub
Journal on "The Effect of Using Nanoparticles on Corrugated Plate Heat Exchanger Performance" by-A.E. Kabeel , T. Abou El Maaty , Y. El Samadony

Brief description of the working environment: The facility is dedicated to continuous learning, providing comprehensive training programs to ensure employees stay current

with the latest technological advancements and industry best practices. This emphasis on skill enhancement and career development fosters a culture of excellence. Collaboration is a key feature of the Renukoot workplace, with multidisciplinary teams working together to achieve common goals. Modern infrastructure and advanced technology support this collaborative ethos, boosting efficiency and productivity. Sustainability is a core value at Renukoot, deeply embedded in the workplace culture. The facility actively involves employees in initiatives aimed at reducing environmental impact and promoting social responsibility, aligning with the company's wider commitment to corporate responsibility. This dedication not only strengthens Hindalco's reputation but also instills a strong sense of pride and purpose among employees. In summary, Hindalco Renukoot offers a dynamic, growth-focused environment that prioritizes innovation and sustainability, making it an appealing workplace in the aluminum industry.

Academic courses relevant to the project: Heat transfer, fluid mechanics, separation process, chemical process calculation, numerical methods in chemical engineering

Learning Outcome: Studied plate heat exchanger and various methods of heat exchangers optimising its size and power consumption.

Name: [SAMBHAV KUMAR .\(2022B2A41772H\)](#)

Student Write-up:

PS-I Project Title: Study of boiler and cogeneration plant and heat rate optimisation of 6MW back pressure turbine.

Short Summary of work done: Initially, we covered formation of DM water in the 2 DM plants, this along with the water from alumina plant are segregated according to their varying conductivity and are used in the boilers respectively. The higher conductivity/ impure water is sent to CCTP where after its series of treatment goes to cooling tower, gets cooled down and then sent to the condenser to condense the steam coming from the turbines, the heated water goes again in cooling tower and the cycle is maintained. Then we proceeded towards detail study of Boiler and Cogeneration Plant followed by our major area of analysis which was optimisation of Turbine Heat Rate of 6MW back pressure turbine. Considering inlet temperature and pressure of Main stream to be constant, we will get the optimised heat rate at the value of exhaust pressure of 49.5 Kg/cm². Here we are considering exhaust pressure to be the focal point of our analysis because it is a controllable parameter in the plant. Further, we need to ensure that the exhaust temperature stays within the limit of 444 to 449 degrees Celsius. This will vary

based on the inlet steam temperature and thus, we need to maintain the inlet steam temperature within the range of 524 to 528.8 degrees Celsius. This project can be further expanded to first including the 5.6 MW Turbine as its exhaust steam also goes to the same common header and a total perspective is needed here. In totality, this analysis will be able to conclude the optimum power generation and heat rate from the back pressure turbine.

Objectives of the project: To find the range of exhaust temperature and pressure so that heat rate for 6MW turbine is optimum in order to achieve highest efficiency

Tool used: Tools used were Box and whisker method and Regressive analysis when we sorted it Exhaust temperature and pressure.

Details of Papers/patents:NA

Brief description of the working environment: At Hindalco, all things were very well organised which includes our accommodation, food and the campus is very good. The working environment was very nice, and each and every core functioning of plant as well technical aspects of recording and analysis of data was taught in detail to me.

Academic courses relevant to the project: Analytical Chemistry's Ion exchange methods were used in detail in DM plant, the mechanical core subjects are involved in Boiler functioning, which includes Thermodynamics, heat transfer, and detailed analysis of heat rate.

Learning Outcome: The major learning outcome was that I got to know the concepts of heat rate and its importance as well as its optimisation for the efficiency to be the highest. Exhaust steam pressure of about 49.5 kg/cm² and a temperature range of 444 to 449 degrees Celsius gives us the lowest turbine heat rate. When we plot the graph of total energy production to MS flow, we get to know that the energy which produced is lesser than it should be. Hence, a major overhauling is required for the 6MW turbine.

**PS-I station: Honda Motor Cycle and Scooter India Pvt. Ltd. (HMSI),
Gurgaon**

Student

Name: PRANAV SUD .(2022A8PS0561P)

Student Write-up:

PS-I Project Title: Study of Errors during vehicle inspection

Short Summary of work done: In this study, the various processes involved in Vehicle Quality Inspection processes have been studied. A detailed assessment of the different stages as well as the cycle time of the stages and different vehicle models were calculated. The different types of defects were studied. Bottleneck and points of inefficiencies were found and analyzed. The variations in time taken were mainly caused due to lack of streamlined structure in the pre dyno inspection. This also caused an impact on the time taken during the dyno tests. Solutions were provided which can help in fixing the bottleneck and help in increasing the efficiency

Objectives of the project: Identify areas to increase efficiency of process

Tool used: -

Details of Papers/patents:-

Brief description of the working environment: I really enjoyed the working environment at the company. The atmosphere was collaborative and supportive, which made it easy to communicate ideas and work effectively. The leadership was approachable and encouraged professional growth, offering opportunities for skill development and career advancement.

Academic courses relevant to the project: None

Learning Outcome: Learnt about the various processes involved in vehicle quality inspection.

**PS-I station: Honda Motor Cycle and Scooter India Pvt. Ltd. (HMSI)3,
Kolar**

Student

Name: RAMSANJIVE L.(2022A3PS0475P)

Student Write-up:

PS-I Project Title: Development of diagnostic systems for Induction Motors using Magnetic Flux based smart sensors

Short Summary of work done: IoT,Electrical Machines, Arduino Programming were skills I picked up

Objectives of the project: To Develop diagnostic systems for Induction Motors using Magnetic Flux based smart sensors

Tool used: Nil

Details of Papers/patents: None

Brief description of the working environment: Very comfortable working environment

Academic courses relevant to the project: EMac, MuP, IoT

Learning Outcome: IoT,Electrical Machines, Arduino Programming were skills I picked up

Name: PRIYANSHU GUPTA .(2022A4PS0660P)

Student Write-up:

PS-I Project Title: Precise fuel measurement systems and part contamination reduction

Short Summary of work done: Observation of working of plant, understanding how projects are done, understanding of manufacturing processes and management tasks.

Objectives of the project: To design a measurement system for fuel dispenser, and to optimise the part handling and reduce part contamination on assembly line.

Tool used: N/A

Details of Papers/patents: N/A

Brief description of the working environment: Using PPE uniform, following safety rules, understanding assembly tools

Academic courses relevant to the project: 1. Manufacturing management
2. Mechanisms and machines
3. Fluid mechanics

Learning Outcome: Line optimization, flowmeters, etc.

**PS-I station: Honda Motor Cycle and Scooter India Pvt. Ltd. (HMSI)4,
Ahmedabad**

Student

Name: SUJAL JAIN .(2022A4PS0676P)

Student Write-up:

PS-I Project Title: Hold Vehicle Traceability

Short Summary of work done: Done the quality inspections of any two wheeler vehicle made by Honda.

Objectives of the project: Quality Check and Hold Vehicle analysis

Tool used: AutoCAD

Details of Papers/patents:None

Brief description of the working environment: Good working environment

Academic courses relevant to the project: Heat transfer

Learning Outcome: Quality Checks of two wheeler

PS-I station: IFB Global - IoT, Goa

Student

Name: SANCHAY KETAN SINHA .(2022A3PS0607H)

Student Write-up:

PS-I Project Title: OCR detection

Short Summary of work done: The task was to create a model which will take in invoices and convert the tables into digital formats for the company to use in their other operations

Objectives of the project: Ocr detection of documents to extract information from invoice table

Tool used: Python, opencv, deep learning, paddleOCR, jetson nano

Details of Papers/patents: NA

Brief description of the working environment: Your workstation will be inside the factory in a small room. People are friendly but theres no interns program in their organisation as such, which makes it difficult for any student to adjust. You are expected to do the task on your own. The mentors do provide guidance, but even they have a lot of meetings and so that becomes a challenge.

Academic courses relevant to the project: Computer programming, Electrical sciences

Learning Outcome: Learnt python, paddleOCR, deep learning

PS-I station: IFB Global - R&D, Goa

Student

Name: SIDDHI VENKATESH(2022A4PS0815G)

Student Write-up:

PS-I Project Title: Integrating a Hygroscopic Dehumidification System for Improving Drying Efficacy

Short Summary of work done: The work involved understanding various drying technologies in the market and ideating improvements. This included conducting market research to identify sector developments and reverse engineering relevant innovative designs. I carried out tests and analyzed data for comparative analysis, researched and tested materials to find the optimal one, determined the right placement positions for the material, and 3D modeled necessary parts to integrate into the current dryer assembly.

Objectives of the project: The project explores the use of hygroscopic materials in front load washer-dryers to reduce the relative humidity (RH) of the air sent in for drying, thus enhancing the drying efficiency and preserving the quality of the fabric by restricting their exposure to harsher temperatures.

Tool used: Testing facilities in the R&D unit, Fusion 360, Excel, Research

Details of Papers/patents:-

Brief description of the working environment: The working environment is really nice and welcoming. In the first few days, you'll explore the shop floor and the R&D unit, which are both super fascinating. After that, you'll spend about 1.5 weeks brainstorming a project idea for yourself that's practical and doable. There will be multiple idea reviews before your project is finalized.

You can work on projects together with your friends, and you have a lot of freedom. You are allowed to buy whatever you require to aid your project and all of it is reimbursed. I also got a chance to open up washing machines, which was very thrilling. Their professional setting is open and supportive as you can talk to any senior employee for advice and use any research facilities to help with your project. Plus, they provide lunch, which is delicious.

Academic courses relevant to the project: Thermodynamics, Material Science, Fluid Mechanics

Learning Outcome:

- 1) Understood the functioning of a shop floor and the intricacies of the R&D department.
- 2) Read numerous research papers, gaining an understanding of their structure and content.
- 3) Gained insights into reverse engineering and benchmarking by examining existing washing machines and newer technologies.

- 4) Learned how to run tests on machines, following necessary protocols and analyzing the resulting data for comparison.
- 5) Conducted practical tests on materials, enhancing my theoretical knowledge with real-world applications.
- 6) Applied CAD skills and utilized Fusion360 for hands-on experience.

Name: SAATVIK BHARDWAJ .(2022B1A31555H)

Student Write-up:

PS-I Project Title: Photometric Stereo Prototoe Development for Fabric Recognition

Short Summary of work done: -

Objectives of the project: The project was about developing a photometric stereo hardware device for fabric identification with a focus on macro-style imaging and optimal light adjustments. Created a prototype that captures high-resolution images for detailed analysis. Conducted thorough testing and calibration to ensure accuracy. Presented research findings and proposed further optimizations for improved performance.

Tool used: Raspberry Pi Controller - 4, Python, OpenCV, Raspbian OS

Details of Papers/patents:None

Brief description of the working environment: Encouraging Environment, Freedom to explore about the project interests

Academic courses relevant to the project: -

Learning Outcome: Basic Circuit Designing
Working on with processors like Raspberry Pi, along with using Python and OpenCV for image capturing and enhancement

PS-I station: Indian Railways, Jhansi

Student

Name: SUBODH PAREEK(2022A4PS1323G)

Student Write-up:

PS-I Project Title: Time period of wheel set

Short Summary of work done: Understanding all the machines there were and then finding of how the time period can be improved

Objectives of the project: Reduce the assembly time period of wheel set

Tool used: Machines used

Details of Papers/patents: Nil

Brief description of the working environment: Good environment, getting to know about how the train is assembled and serviced

Academic courses relevant to the project: Mechanical

Learning Outcome: Getting to learn about machines and how they work

PS-I station: L&T Heavy Engineering, IC, Surat

Student

Name: HET DAVE .(2022A4PS1276P)

Student Write-up:

PS-I Project Title: Modelling of furnace door and designing of hinged diverter assembly

Short Summary of work done: Modelling and designing of furnace and hinged diverter

Objectives of the project: To model the furnace door so it can be dis assembled by calculating its weight and make a hinged diverter assembly for diverting flux

Tool used: Solidedge

Details of Papers/patents: No

Brief description of the working environment: Helpful to some extent

Academic courses relevant to the project: Mechanics of solids, advance mechanics of solids, Design of machine elements

Learning Outcome: Designing principles, software modelling

Name: PRAY RASKAPOORWALA(2022A7PS1239G)

Student Write-up:

PS-I Project Title: AI Solution for maximizing efficiency in bussiness operations

Short Summary of work done: I detail the creation of two AI solutions at Larsen & Toubro (L&T) Heavy Engineering: a generative AI system and a scrap auction price prediction model. The generative AI system, utilizing LangChain, Python, and Azure GPT-4o, automates the processing of tender documents, focusing on document comparison and data extraction to enhance efficiency and accuracy. The scrap auction price prediction model employs Stochastic Gradient Descent (SGD) Regression to automate base price setting for quarterly scrap auctions. By leveraging post-2021 historical data, metal indices, and currency conversion rates, the model achieves a prediction accuracy within +/- 10%. These AI-driven systems significantly improve operational efficiency, reduce manual labor, and support data-driven decision-making. I emphasize the scalability and adaptability of these solutions, recommending continuous updates, fine-tuning, integration with other enterprise systems, and exploring further AI applications to sustain L&T's competitive edge and drive innovation.

Objectives of the project: Scrap auction base price prediction and other multiservices for IIm

Tool used: Azure OpenAI Services, Python, Excel, Javascript

Details of Papers/patents:-

Brief description of the working environment: Friendly mentors and decent workload

Academic courses relevant to the project: Discrete Mathematics, Database Management System

Learning Outcome: Industry/Corporate Experience, Application of AI/ML in industry settings.

PS-I station: L&T Precision & Engineering Systems, Talegaon, Talegaon

Student

Name: HARSH GOSWAMI .(2022A3PS1217P)

Student Write-up:

PS-I Project Title: Digitalization at Workplace

Short Summary of work done: Worked on a project to digitalize two major documents used at LnT. Also worked at assembly and testing station of electronic shop.

Objectives of the project: To provide a digitalization solution at the workplace. Most of the work was confidential so can't share much.

Tool used: Ms powerpoint

Details of Papers/patents:None

Brief description of the working environment: During my PS-I internship at L&T, I worked in a detail-oriented environment focused on precision and quality. I gained hands-on experience in assembly processes, PCB Assembly (PCBA) troubleshooting, and environmental screening. The internship exceeded my expectations by allowing me to apply theoretical concepts, like control systems, to real-world machinery. I was encouraged to collaborate, take initiative, and uphold high standards of corporate ethics.

This experience significantly enhanced my technical skills and provided valuable insights into the practical applications of electronics and systems engineering.

Academic courses relevant to the project: Computer programming, Microprocessor and Interfacing, Control Systems, Microelectronics circuits

Learning Outcome: Various digitalization solutions and also of various electronic equipments.

Name: SATVIK SANDEEP SARODE .(2022A4PS0578P)

Student Write-up:

PS-I Project Title: Proposing technologies for components of a structural Health Monitoring system for the shop floor.

Short Summary of work done: Proposed new SHM system for shop floor.

Objectives of the project: 1. Read research papers related to topic 2. Compare different technologies 3. Choose suitable one

Tool used: Fusion 360, Ansys, Google scholar

Details of Papers/patents:NA

Brief description of the working environment: Very hectic working hours, company located very far away from city centre, very strict rules due to ILDC. Company staff was supportive.

Academic courses relevant to the project: CAD, FEM

Learning Outcome: Learnt about Structural Health Monitoring, Sensor Networks, Digital twin

PS-I station: Mangalam Cement Limited, Kota

Student

Name: YUMIT MORWAL(2022A1PS1283G)

Student Write-up:

PS-I Project Title: Comprehensive Study on Cement Production

Short Summary of work done: During my PS-I at Mangalam Cement, I undertook a comprehensive study of the cement production process. This involved both theoretical learning and practical exposure to various stages of cement manufacturing. Initially, we visited the chemical laboratory where we learned about the chemical properties and constituents of the cement and coal used in Mangalam's products. This provided a solid foundation for understanding the quality and composition of raw materials. Our next visit was to Unit-2, where we observed the practical functioning of kilns and cyclones. This hands-on experience was invaluable in understanding the physical aspects of cement production, including the operational dynamics of these critical components. Unfortunately, due to scheduling conflicts, our planned visit to the electrical department to understand the power circuits and their usage in the plant was postponed. However, we gained significant insight into the plant's energy management systems through discussions with our mentors. Throughout the internship, we were guided and supported by our mentors, who ensured we had a comprehensive learning experience. The knowledge gained during this period included understanding the efficiency and cost-effectiveness of the production process, as well as the environmental impacts of cement manufacturing. The internship culminated in the preparation of a detailed report and a presentation, summarizing our findings and experiences. This PS-I experience provided me with a profound understanding of the cement industry and equipped me with practical skills and knowledge that will be beneficial in my future career.

Objectives of the project: 1. To study the entire cement production process from raw material extraction to final product.

Tool used: ****Hardware:**** - Kiln and Cyclones - Various laboratory equipment for chemical analysis ****Software:**** - Microsoft Office Suite (Excel, Word, PowerPoint) for data analysis, documentation, and presentations - SAP ERP for production data management and analy

Details of Papers/patents:None

Brief description of the working environment: The working environment at Mangalam Cement Ltd. was professional and collaborative. We were given access to various

departments, including the chemical lab, physical lab, and the main production units. This provided us with a holistic view of the entire cement production process. The company expected us to understand and analyze the production processes, participate actively in site visits, and contribute to ongoing projects with detailed observations and reports.

During our Practice School-I (PS-I), we learned about the chemical properties and constituents of cement and coal used in Mangalam's products. We also gained practical insights into the operation of kilns and cyclones, understanding their role in the production process. Our visits to different departments, including the electrical department, although postponed, were planned to help us understand the power circuits and their usage in the plant.

We were able to apply our theoretical knowledge in a real-world industrial setting, enhancing our understanding of cement production. Additionally, we developed skills in data analysis and report writing, which were crucial for documenting our findings. The mentorship provided by company professionals was invaluable, offering us guidance and support throughout our internship. Overall, PS-I was a significant learning experience, providing us with practical skills and industry knowledge that will be beneficial in our future careers.

Academic courses relevant to the project: 1. Chemical Engineering

2. Process Engineering
3. Industrial Chemistry
4. Materials Science
5. Thermodynamics
6. Heat and Mass Transfer
7. Mechanical Operations
8. Environmental Engineering
9. Instrumentation and Control Systems
10. Project Management

Learning Outcome: 1. Understanding of cement production processes and technologies.

2. Knowledge of chemical and physical properties of cement materials.
3. Ability to evaluate production efficiency and cost-effectiveness.
4. Hands-on experience with kiln and cyclone operations.
5. Insight into the environmental impacts of cement production.

Name: AKSHITA JAIN(2022A1PS1321G)

Student Write-up:

PS-I Project Title: Comprehensive study on cement production

Short Summary of work done: Practical knowledge of how cement production is done.

Objectives of the project: Understanding the Production Process, Exploring New Technologies, Sustainability and Environmental Impact

Tool used: Excel sheet, google docs

Details of Papers/patents:-

Brief description of the working environment: The working environment is good. Employees are friendly and are willing to help you. They explain each and every thing many times. There are welcoming.

Academic courses relevant to the project: Basic core subjects of chemical engineering

Learning Outcome: Technical knowledge, industry expertise, sustainability awareness

PS-I station: Mechanical Workshop, NE Railway, Gorakhpur

Student

Name: ARUNIKA SRIVASTAVA .(2022B2A41765H)

Student Write-up:

PS-I Project Title: Air brake system in LHB coaches

Short Summary of work done: Learnt the working of air brake system and many railway carriage repair and building procedure.

Objectives of the project: Get a thorough understanding of working and principle of the air brake system.

Tool used: Simulator, distributor valve, vr simulator, working board.

Details of Papers/patents: None

Brief description of the working environment: Working environment was good. Workshop expected us to have a good knowledge of the layout and the working of the system by the end.

Academic courses relevant to the project: Workshop practice.

Learning Outcome: Learnt the working of air brake system and many railway carriage repair and building procedure.

PS-I station: Natturz Bio Kontrol Pvt Ltd (1.5 degree) - Non Tech, New Delhi

Student

Name: SPARSH KUMAR .(2022A1PS1565P)

Student Write-up:

PS-I Project Title: Content and Data Creation at 1.5 Degree

Short Summary of work done: During our two-month internship at Natturz Bio Kontrol Pvt. Ltd., our team focused on the 1.5 Degree brand, contributing significantly to content and data creation. We conducted extensive research to develop engaging content for LinkedIn, which included browsing profiles of health nutritionists to understand industry trends and best practices. Our responsibilities also involved finalizing designs for social media posts and creating content for kiosk displays, standees, and brochures. We actively participated in numerous meetings with the founders, co-founders, and project managers, as well as collaborative sessions with other teams, both within our group and from other colleges working on the 1.5 Degree brand. To enhance our content creation process, we explored and utilized various AI tools, improving the efficiency and quality of our outputs. Additionally, we meticulously planned a content calendar for posts and blogs to ensure a consistent online presence. Through this internship, we not only honed our content development skills but also learned the importance of data-driven strategies and cross-functional collaboration in achieving marketing objectives.

Objectives of the project: 1. To create and optimize engaging content for 1.5 Degree to enhance brand visibility and drive audience engagement. 2. To utilize data analytics for developing data-driven content strategies that align with marketing objectives. 3. To

collaborate with cross-functional teams to ensure cohesive and effective communication across all platforms.

Tool used: Data Analytics: Google Analytics, Excel. Content creation: MS Word, Google Docs, Grammarly. Design and Graphics: Canva, Adobe Photoshop, Pidge.

Details of Papers/patents:N.A.

Brief description of the working environment: During my PS-I at 1.5 Degree, I worked in a collaborative and innovative setting focused on sustainable plant-based dairy products. I engaged in various tasks, including content creation, market research, and SEO strategy, which helped me apply and refine my skills.

I anticipated a challenging and supportive environment where I could learn about the food industry and digital marketing. My expectations were met through practical involvement and impactful projects. I gained insights into market trends, developed expertise in digital marketing, and understood consumer behavior related to sustainability. This internship provided valuable experience and aligned with my career interests, enhancing my knowledge of strategic planning and market analysis in a competitive field.

Academic courses relevant to the project: Principles to Management, Marketing, Data Mining, Data Science

Learning Outcome: 1. Content creation skills. 2. Data-driven decision making. 3. Cross-functional collaboration 4. Utilization of AI tools 5. Project management skills

Name: ARINDAM NATH .(2022A3PS0445P)

Student Write-up:

PS-I Project Title: 1.5 Degrees

Short Summary of work done: During my internship, I collaborated with a team to develop a comprehensive web project. Our tasks included wireframing the website to establish a clear design and functional layout. We utilized HTML, CSS, and JavaScript, alongside front-end frameworks like React, to build a responsive and user-friendly interface. I worked extensively on web scraping using tools such as BeautifulSoup and Selenium. This involved extracting data from various sources and ensuring accurate parsing for further use. Additionally, we integrated a CRM system to streamline client management and improve data handling. This integration supported lead generation by

automating data collection and enhancing our ability to track and manage potential clients effectively. Throughout the project, we employed Git for version control and used Notion for project management, ensuring efficient collaboration and task tracking within the team.

Objectives of the project: Creating tech stack for the launch of the vegan ice cream product

Tool used: HTML, CSS, JavaScript (for web development) React (front-end framework) BeautifulSoup (web scraping) Selenium (web scraping) Git (version control) Notion (project management) CRM System (client management and lead generation)

Details of Papers/patents:NA

Brief description of the working environment: The working environment was collaborative within our team, but lacked sufficient communication and support from the company. While we were responsible for wireframing, web scraping, CRM integration, and lead generation, the company provided minimal guidance or feedback. Expectations were high as we anticipated consistent correspondence and support from the company, which was not met. Midway through the project, a significant portion of our work was outsourced, leading to a sense of underutilization and missed learning opportunities. Despite this, the experience did enhance my technical skills and ability to work in a team setting.

Academic courses relevant to the project: Principles of Economics

Learning Outcome: Web Development Skills
HTML, CSS, JavaScript
Front-end frameworks (React, Angular)
Web Scraping Techniques
Tools like BeautifulSoup, Selenium
Data parsing
Team Collaboration
Version control (Git)
Management with Notion

Name: [DHRUV NAND SANTOSH .\(2022A3PS1337H\)](#)

Student Write-up:

PS-I Project Title: CONTENT CREATION

Short Summary of work done: OUR TEAM CREATED, RESEARCHED AND WROTE CONTENT FOR THE WEBSITE, PACKAGING AND BRANDING OF THE COMPANY. IN THE INITIAL DAYS WE SPENT ALOT OF TIME DOING THIS AND WORKED ALONG SIDE THE FOUNDERS TO PRESENT THEIR STORY IN THE BEST WAY POSSIBLE. AFTER THAT WE MOVED ON TO PACKING AND SOCIAL MEDIA POSTS WHERE AFTER ETENSIVE RESEARCH WE WROTE CONTENT.

Objectives of the project: WRITING CONTENT FOR THE WEBSITE, PACKAGING, SOCIAL MEDIA POSTS AND BRANDING

Tool used: API, CHATGPT

Details of Papers/patents:NA

Brief description of the working environment: IT WAS A PLEASANT EXPERIENCE. PEOPLE OF THE COMPANY WERE NICE, INFORMATIVE, HELPFULL AND MADE US FEEL LIKE HOME. THEY ALLOWED US TO SHOW OUR CREATIVE SIDE AND HELPED IN OVERCOMING ANY CHALLENGES THAT WE FACED DURING THIS PROGRAMME.

Academic courses relevant to the project: TECHNICAL REPORT WRITING

Learning Outcome: 1. COMMUNICATION SKILLS
2. WRITING SKILLS
3. PRESENTATION SKILLS
4. PROPER USE OF AI TOOLS

PS-I station: NHPC Limited - Management, Faridabad

Student

Name: TANISHQ JAIN .(2022B3AA0608H)

Student Write-up:

PS-I Project Title: Economic analysis of NHPC

Short Summary of work done: Work mostly involved obtaining thorough understanding of financials of organisation through the Annual report and other documents. Assisting employees in preparation of financial documents .

Objectives of the project: To obtain understanding of Financial standing of the company

Tool used: Excel, Powerpoint

Details of Papers/patents:-

Brief description of the working environment: Infrastructure of the office is really good with access to all facilities

Academic courses relevant to the project: Fundamentals of Finance and Accounting

Learning Outcome: Learnt the basics of functioning of finance department of NHPC

PS-I station: NHPC Limited - Mechanical, Faridabad

Student

Name: IKSHITA KUMAR .(2022A4PS1030H)

Student Write-up:

PS-I Project Title: Theoretical aspect of hydropower generation

Short Summary of work done: This project report explores diverse aspects of energy generation, initially focusing on global economies' energy sources and policies. The study followed with an analysis of NTPC Limited, investigating its role within the energy sector in India. Furthermore, the report delves into the Electricity Act of 2003, highlighting its policies relevant to hydroelectric power plants. A study of the three types of turbines used in hydroelectric power plants under NHPC is provided, highlighting their functioning and application. Lastly, the report presents a literature review on research papers dedicated to optimising Kaplan turbines, emphasising advancements in turbine efficiency and performance enhancement strategies using recent technologies like Machine Learning.

Objectives of the project: Working and Optimisation of Various Types of Turbines used in Hydroelectric Power Plants

Tool used: No major tools were used

Details of Papers/patents:

Brief description of the working environment: The working environment was like any other office, Being a PSU the work culture was very engaging.

Academic courses relevant to the project: The course was mainly based on study of mechanical and electrical machines. Some courses like fluid mechanics, thermodynamics for mechanical and Control system, electrical machines for phoenix were needed.

Learning Outcome: The summer training at NHPC has been a significant learning experience, providing valuable insights into the operations and optimization of hydroelectric power plants.

Through the comprehensive study of various turbines used in hydroelectric power generation, including Francis, Kaplan, and Pelton turbines, I have gained a deeper understanding of their respective applications, advantages, and limitations.

Understanding the correlation between head and discharge for these turbines has underscored the importance of selecting the appropriate turbine type based on the specific conditions of a hydroelectric project. The technical details and operational parameters of these turbines, as examined during the training, highlight the precision and complexity involved in optimizing their performance for efficient energy generation.

Name: [ASHISH KUMAR JHA\(2022A4PS1232G\)](#)

Student Write-up:

PS-I Project Title: Working and Optimisation of Various Types of Turbines used in Hydroelectric Power Plants under the National Hydroelectric Power Corporation (NHPC)

Short Summary of work done: During my PS-I , I conducted a thorough analysis of NHPC and the Indian hydropower sector. I explored NHPC's business profile, site locations, financials, and corporate operations. I assessed the Indian power scenario, focusing on sector performance, energy sources, and the role of hydropower. I examined the legal framework, including the Electricity Act 2003, Indian Electricity Grid Code 2023, and CERC Tariff Regulation 2024, and studied electricity markets in India and globally, with particular attention to hydro-rich countries like those in Nord Pool. Additionally, I investigated the fundamentals of hydroelectric power plants, including principles, design

calculations, and NHPC's plant locations. I learned about major components such as dams, powerhouses, and switchyards, as well as different types of turbines and generators. I also gained insights into the operation and maintenance of hydro power plants, covering operational norms, scheduling, energy accounting, and start-stop sequences. Furthermore, I acquired knowledge about SCADA systems and Early Warning Systems used for monitoring and managing hydro power plant operations.

Objectives of the project: This project aims to conduct a technical evaluation of NHPC and the Indian hydropower sector, focusing on business dynamics, regulatory frameworks, operational mechanisms, and maintenance protocols. It includes analyzing NHPC's business, the Indian power scenario, legal frameworks, and the operational and maintenance aspects of hydroelectric power plants.

Tool used: Excel, Power Point, Google Docs.

Details of Papers/patents:NA

Brief description of the working environment: The office environment for this project was characterized by a pleasant and welcoming atmosphere. We were checked in on continually and any doubts that we asked were addressed.

Very cooperative work environment. It helped us learn a lot about the functioning of the organisation.

Academic courses relevant to the project: Power Plant Engineering, Thermodynamics, and TRW (Technical Report Writing).

Learning Outcome: During this project, I gained comprehensive insights into NHPC's business dynamics, including its profile, financials, and strategic locations. I analyzed the Indian power sector's performance and energy mix over the past three years, and understood key regulations such as the Electricity Act 2003, the Indian Electricity Grid Code 2023, and the CERC Tariff Regulation 2024. I explored the electricity market in India and hydro-rich countries, and learned the basic principles and design calculations of hydroelectric power plants. I studied major components like dams, powerhouses, and switchyards, and identified various types of turbines and generators, along with their selection criteria and components. Additionally, I acquired knowledge on the norms, scheduling, energy accounting, and operational sequences essential for the operation and maintenance of hydro power plants.

Name: DHRUV SINGH .(2022A4PS1399H)

Student Write-up:**PS-I Project Title:** Techno- Economic Feasibility of Dams**Short Summary of work done:** Theoretical knowledge about basic functioning of Hydropower PSUs and role of hydropower in stabilising the grid. Gaining knowlegde about components, working and types of Dam. Also gave a presentation on a research paper about Kaplan Turbines**Objectives of the project:** Understanding Components and Working of a Dam**Tool used:** none**Details of Papers/patents:**Use of different turbines in a Hydroelectric projects depending on various factors**Brief description of the working environment:** The learning outcome was rather theoretical and module were provided to us for basic understanding of the whole hydropower ecosystem and its auxiliaries. The mentor was quite helpful in making us understand the concepts. Can recommend to someone who is keen to learn other skills during PS break and curriculum is manageable and quite scoring**Academic courses relevant to the project:** Fluid Mechanics**Learning Outcome:** Understanding Components and Working of a Dam

PS-I station: ONGC, Surat**Student****Name:** ANIKET BHAGWAN PRASAD .(2022A1PS0714P)**Student Write-up:****PS-I Project Title:** Emergency Response Plan of Condensate Fractionating Unit (CFU), and Performance Efficiency of a Heat Exchanger.**Short Summary of work done:** Due to our early exposure to ONGC's training program, we were not at par with most of the other trainees who had joined after completing their

third-year courses. This discrepancy led to extended discussions with our industrial mentor about potential projects within our scope of understanding. During our initial tour of the plant, these discussions proved invaluable for comprehending the entire facility. Although the tour could have been completed in two weeks, it was extended to allow for a thorough understanding. Once the tour was complete, we began working on the ERP system. This project involved meticulous observation of each component of the unit and developing procedures to follow in case of hydrocarbon leakage. The task took approximately two weeks, including the preparation of a report and cross-verification of every detail encountered. Simultaneously, we sought online projects as many of our colleagues had transitioned to remote work. After conducting preliminary research, we decided to undertake a heat exchanger project. Initially, we faced challenges due to limited access to Aspen software. However, we eventually secured a desktop from the company equipped with an Aspen license, enabling us to complete the project. With about one week remaining, we considered taking on another project. However, many team members fell ill, so we decided to take it easy and focus on preparing the final report for our PS1 evaluation.

Objectives of the project: Making ERPs for particular cases for emergencies, and to calculate the efficiency of a heat exchanger and to compare the difference because of considering other factors

Tool used: Aspen HYSYS

Details of Papers/patents: None

Brief description of the working environment: Due to the nature of the work, as pre-informed by the training center, we were working in a hazardous environment. This included operating between active production lines containing poisonous gases and areas where steam was continuously ejected to prevent clogging of steam headers. Additionally, we had to walk long distances within the company premises, where we frequently encountered wild animals such as monitor lizards and vipers.

We were provided with safety helmets and were required to purchase safety shoes, as chemical spills in any operational area could corrode normal shoe material. We were also instructed not to carry any items containing batteries, as even the slightest electrostatic discharge could result in explosive combustion, posing fatal risks and significant losses for the company. Furthermore, we were advised against carrying silver or gold items, as they would react with H_2S present in the operational areas, leading to damage of personal property.

Academic courses relevant to the project: Aspen HYSYS

Learning Outcome: How the Chemical Engineering we studied in college is applied at a much larger scale.

Name: NIKUNJ BAGARIA .(2022A1PS0948P)

Student Write-up:

PS-I Project Title: EMERGENCY RESPONSE PLANNING FOR CFU-II & CALCULATING PERFORMANCE EFFICIENCY OF HEAT EXCHANGER E-702 USING ASPEN.

Short Summary of work done: We were explained about the various sections of the plant where the sour gas and condensate are refined at different stage to obtain lpg, kerosene, natural gas ,etc. First the gas from bombay high is received at the gas terminal unit where the gas and liquid condensate is separated . The gas is then sent to the gas sweetening unit where the sour gas is converted to sweet gas , further it is processed the gas dehydration unit to remove liquid in it and further sent to dew point depression unit . The sour gas is sent to the sulphur recovery unit to convert hydrogen sulphide into sulphur before releasing into the atmosphere. The condensate from gtu and gdu is received in condensate fractionation unit where the sour condensate is converted into sweet condensate. We learnt about the erp measures in the CFU plant we can be used in the case of emergency such as leakage which can also result into fire . Our second project was to calculate the heat efficiency of a reboiler for which we learnt aspen and calculated the same.

Objectives of the project: To learn about safety procedures in case of leakage or fire and to calculate the efficiency of a heat reboiler .

Tool used: Aspen software

Details of Papers/patents:-

Brief description of the working environment: The environment at ONGC is great and had a great experience . We expect that the company should regulate their training method like a fix training schedule for the students along with the training they are providing

Academic courses relevant to the project: Heat transfer and separation process

Learning Outcome: Safety measures to shutdown and isolate a plant in case of leakage and fire. Calculated the heat efficiency using aspen which tells about the amount of heat loss.

Name: RAJ MOHAPATRA .(2022A1PS1412H)

Student Write-up:

PS-I Project Title: Emergency Response Plan for CFU -II and Calculating Performance Efficiency of Reboiler E-702

Short Summary of work done: Devised an Emergency Response Plan for the Condensate Fractionation Unit- Phase II in ONGC Hazira which involved thoroughly examining and tracing all the pipelines and components involved in the CFU along with the fire safety procedure. The second project involved using ASPEN software to calculate the optimal performance efficiency of the kettle type reboiler E-702 and compare it with the actual efficiency whilst finding solutions to the problem

Objectives of the project: 1)To devise an Emergency Response Plan alongside the Standard Operating Procedure that can be used in case of a leakage in the CFU for the safety of plant personnel and assets, whilst ensuring operational continuity and preparedness in case of unforeseen events. 2) To compare the optimal and actual heat duty values of the Stripper Reboiler (E-702) using ASPEN HYSYS and EDR to assess how effectively it transfers heat to the process fluid alongside finding problems that might cause the low efficiency prompting maintenance and monitoring for better performance.

Tool used: ASPEN HYSYS, EDR - Software

Details of Papers/patents: None

Brief description of the working environment: The working environment in ONGC was very easy going. All the staff were extremely kind and humble. Our mentor and training instructor were extremely helpful and guided us through every step of the project. The panel workers, even though were extremely busy with their work, took time to explain to us the entire operationing of the plant. Overall the people of the company were very humble. Coming to the working environment, since it was an industry based company there was a lot of field work involved. I learnt a lot in my time at ONGC and I definitely will remember this experience for a very long time.

Academic courses relevant to the project: Separation Process, Heat transfer, Disaster Management

Learning Outcome: Safety measures in a petroleum based plant, General operation of an industry, Working procedure of various components for the processing of natural gas, Usage of ASPEN software to test run simulations or designs of certain components

Name: MAYANK PRASAD(2022A1PS1447G)

Student Write-up:

PS-I Project Title: ERP for Managing Hydrocarbon Leaks in the Condensate Unit at ONGC Hazira Plant Efficiency Calculation of a Kettle Type Reboiler Using AspenPlus

Short Summary of work done: Due to our early exposure to ONGC's training program, we were not at par with most of the other trainees who had joined after completing their third-year courses. This discrepancy led to extended discussions with our industrial mentor about potential projects within our scope of understanding. During our initial tour of the plant, these discussions proved invaluable for comprehending the entire facility. Although the tour could have been completed in two weeks, it was extended to allow for a thorough understanding. Once the tour was complete, we began working on the ERP system. This project involved meticulous observation of each component of the unit and developing procedures to follow in case of hydrocarbon leakage. The task took approximately two weeks, including the preparation of a report and cross-verification of every detail encountered. Simultaneously, we sought online projects as many of our colleagues had transitioned to remote work. After conducting preliminary research, we decided to undertake a heat exchanger project. Initially, we faced challenges due to limited access to Aspen software. However, we eventually secured a desktop from the company equipped with an Aspen license, enabling us to complete the project.

Objectives of the project: Emergency Response Plan for HC Leakage in the Condensate Unit at ONGC Hazira Plant, Simulating and Calculating Heat Exchanger Efficiency/Effectiveness for a Kettle Type Reboiler on AspenPlus

Tool used: Aspen Plus

Details of Papers/patents:none

Brief description of the working environment: Due to the nature of the work, as pre-informed by the training center, we were working in a hazardous environment. This included operating between active production lines containing poisonous gases and areas where steam was continuously ejected to prevent clogging of steam headers. Additionally, we had to walk long distances within the company premises, where we frequently encountered wild animals such as monitor lizards and vipers.

We were provided with safety helmets and were required to purchase safety shoes, as chemical spills in any operational area could corrode normal shoe material. We were also

instructed not to carry any items containing batteries, as even the slightest electrostatic discharge could result in explosive combustion, posing fatal risks and significant losses for the company. Furthermore, we were advised against carrying silver or gold items, as they would react with H₂S present in the operational areas, leading to damage of personal property.

Academic courses relevant to the project: CHE F244 (Separation Processes-1) , CHE F241 (Heat Transfer)

Learning Outcome: The Hazira Plant stands as a cornerstone in India's oil and gas industry, playing a pivotal role in the nation's energy ventures. Its strategic operations contribute significantly to the country's overall production and supply chain, making it a vital asset for energy security and economic growth.

During our training, we had the privilege of interacting with many high-ranking individuals within the industry. This exposure provided us with invaluable insights into the operations, challenges, and advancements in the oil and gas sector. Engaging with these industry leaders not only enhanced our understanding but also inspired us to aspire for excellence in our professional careers.

Teamwork was a fundamental aspect of our experience at the Hazira Plant. Collaborating with colleagues from diverse backgrounds and skill sets enabled us to tackle complex projects effectively. The collective effort and shared knowledge among team members were crucial in navigating the demanding and hazardous work environment, ensuring both safety and productivity.

Name: [AYUSH SRIVASTAVA .\(2022A1PS1677H\)](#)

Student Write-up:

PS-I Project Title: Condensation Fractionation Unit and Calculating Efficiency of Heat Exchanger

Short Summary of work done: Project-1 We traced the line diagram of CFU unit and developed a Emergency Response Plan in case of leaks within the CFU unit. Project-2 - We calculated efficiency of a stripper reboiler within CFU unit using ASPEN software.

Objectives of the project: To develop a emergency response plan for leakage in product line of CFU AND To find the efficiency of a stripper reboiler heat exchanger

Tool used: Aspen

Details of Papers/patents: N.A

Brief description of the working environment: Very good working environment

Academic courses relevant to the project: Chemical Engineering

Learning Outcome: Learnt to trace line diagram of the CFU unit and learnt to use Aspen Hysis

Name: AYUSH PRATAP SINGH .(2022B1A11864H)

Student Write-up:

PS-I Project Title: CFU

Short Summary of work done: Was much hectic but i enjoyed

Objectives of the project: To determine gas condensate

Tool used: Autocad

Details of Papers/patents:Nothing

Brief description of the working environment: Much good

Academic courses relevant to the project: Chemical engineering

Learning Outcome: Got a good experience in ONGC

Name: AMOGH MANN ALOK .(2022B2A11721P)

Student Write-up:

PS-I Project Title: Emergency Response planning for CFU and Calculation of performance efficiency of Heat exchanger using ASPEN

Short Summary of work done: The first project comprised of deriving an emergency response planning for leaks at specific points in the condensate fractionation unit with and without fire. The second project comprised of using ASPEN to run simulation of heat exchanger to calculate its heat duty and subsequently its performance efficiency.

Objectives of the project: To understand working of a plant and the process in case of leak, and to assess the performance efficiency of a heat exchanger.

Tool used: ASPEN Plus, ASPEN HYSIS, ASPEN Exchanger design and rating.

Details of Papers/patents:N/A

Brief description of the working environment: The work environment was decent.

Academic courses relevant to the project: Heat Transfer

Learning Outcome: Understood the working of India's largest gas process plant and simulations using ASPEN.

Name: TANAY SAXENA .(2022B2A41672P)

Student Write-up:

PS-I Project Title: A comprehensive look at Hazira gas processing complex, in compassing cogeneration, utility and process maintenance, and heat loss calculation.

Short Summary of work done: As an intern at ONGC Hazira, I spent almost two months working on a project focused on calculating heat loss through steam headers and determining associated costs. This involved utilizing heat transfer principles and creating isometric drawings of the steam headers using AutoCAD software. The internship was primarily based at the Cogen plant, a complex facility involved in both power generation and steam production. I gained exposure to various components of the plant, including gas turbines, boilers, and heat recovery steam generators.

Objectives of the project: To accurately determine the amount of heat lost through the steam headers in the Cogen plant. This information is crucial for energy efficiency and cost optimization and to estimate the financial implications of heat loss by calculating the associated energy costs. This data can be used to prioritize energy-saving measures.

Tool used: Excel, AutoCad

Details of Papers/patents:None

Brief description of the working environment: The ONGC Hazira campus provided a robust and professional working environment. The Cogen plant, in particular, offered a hands-on experience of large-scale industrial operations. The atmosphere was characterized by a strong emphasis on safety, precision, and teamwork. Despite the complex machinery and high-pressure environment, there was a sense of camaraderie among employees. The company expected interns to be diligent, inquisitive, and eager to learn. There was a clear emphasis on applying theoretical knowledge to practical scenarios. A strong grasp of fundamental engineering principles, especially heat transfer and fluid mechanics, was crucial.

Academic courses relevant to the project: Heat transfer

Learning Outcome: Practical application of heat transfer principles. Understanding how theoretical concepts translate into real-world industrial scenarios. Also mastering the methodologies to quantify heat loss in complex systems. Developing skills in evaluating financial implications and identifying cost-saving opportunities.

Name: DHRUV DEEPAK MALIWAL .(2022B2AB1594P)

Student Write-up:

PS-I Project Title: Project1-Cost of steam lost in steam system including cogen boilers, offsites and process units Project2 - isometric drawing of steam header

Short Summary of work done: Covered the whole process and cogen plant of the ONGC hazira and understood the operations and maintenance challenges and solutions. Did 2 project in the whole time of PS-1

Objectives of the project: Project 1- find the leakages and quantify the energy loss in current market rate terms for repairs and efficiency Project 2 - CAD drawing of steam network around hazira plant for maintenance

Tool used: CAD and microsoft excel

Details of Papers/patents: None

Brief description of the working environment: Working environment was hectic for few days but as we built a network inside it got easier and as we completed the whole overview of each and every operations at plant we came back to our mentors and were given projects. We didn't face a challenge in advance concepts as our mentor use to teach us the concept both on board and by taking us to sites. Well each and every person working at ONGC is a Gate scholar and asking a question about operations and engineering concepts we always use to get precious and we'll explained answers.

Academic courses relevant to the project: Thermodynamic , heat transfer , basic chemistry, basic physics and I/C engines

Learning Outcome: Mechanical maintenance and power generation

PS-I station: Optimum Steels - IT, Delhi

Student

Name: HARSHIT CHOUBEY .(2022A2PS1823H)

Student Write-up:

PS-I Project Title: Developing Full Stack SAAS enabled B2B platform

Short Summary of work done: Developed all the backend side of the project which involves user authentication, authorisation, CRUD operation of products, admin control on products and also implementing auction and user bidding logic at backend side and improving the frontend UI as per backend

Objectives of the project: Developing Product price dashboard for customer and admin and implementing auction for users

Tool used: MERN stack which involves; Node.js and express.js for backend server, nodemailer.js for sending mails, react.js for frontend, tailwind css for styling and daisyUI for user interface

Details of Papers/patents: No

Brief description of the working environment: Working environment in company is very good, time and work is very much flexible according to your need

Academic courses relevant to the project:

Learning Outcome: Learned how to contribute to a project as a team, got some more experience on the technologies used in project

PS-I station: Ordnance Factory, Dehradun

Student

Name: ADITYARAJ SINGH RATHORE(2022A4PS0516G)

Student Write-up:

PS-I Project Title: A detailed overview of various processes and optical devices made in ordnance factory'

Short Summary of work done: I personally liked our factory a lot as we were able to see the making of scopes , periscopes used on tanks and assault rifles and how they are made from scratch how the lenses used in them are manufactured how the parts are manufactured and how they are put together to make such amazing devices. It was a thrilling experience to see all that .

Objectives of the project: To study and learn in detail about various optoelectronic devices used by our indian military forces

Tool used: Matlab . Ms word .

Details of Papers/patents: No

Brief description of the working environment: Working environment was nice. Everyone were very welcoming in the factory and taught us whatever they knew about the operations of military how they spot the enemy using hr bino 830 and how they tell

the snipers about the elevation and angle adjustment to mark the target . All in all it was nice.

Academic courses relevant to the project: No

Learning Outcome: Got to know a lot about scopes , periscopes and various other devices

Name: DIVESH TIWARI .(2022A4PS0624P)

Student Write-up:

PS-I Project Title: Detailed Overview of Learnings At Ordnance Factory

Short Summary of work done: Visit to various sections of the factory ,viz. Machine Shop-I and Machine-Shop-II, Tool Room, Hi-Tech Optics, Optical Production, Quality Check & Material Inspection, Assembly-I & II, O3, Metal Finishing and Drawing Section. Starting with the manufacturing process of the casing and outer shell of the optics and associated instruments at MS-I & II and Tool Room, I saw the detailed process of lens and prism manufacture at Hi-Tech and Optical Production. Coating of metallic parts was done at Metal Finishing and Assembly of all components took place at the Assembly-I & II. Quality of products needs to be assured which is done at QCMI. Along with that I also dedicated time on CNC machine code writing practice(MS-II) and 3D modelling of components at Drawing Section

Objectives of the project: To learn about the manufacturing process of high-tech optical devices being manufactured at Ordnance Factory

Tool used: Handwritten Notes and SolidWorks S/w(provided under Factory licence)

Details of Papers/patents:-

Brief description of the working environment: The working environment is highly supportive as all factory workers and officials were helpful towards explaining the working of the machinery and gave time to cater to our doubts. The PS-I was full of learning potential and helped me gain insight into the factory's working process and defense manufacturing in general.

Academic courses relevant to the project: Workshop Practice, Engineering Graphics, Manufacturing Processes.

Learning Outcome: Knowledge gained about production of lenses and prisms from cutting of glass slab to assembly in optical devices, learning the working process and hands-on code writing of CNC machines, learning 3D-modelling and designing with SolidWorks.

Name: ANURAG THAKAN .(2022A4PS0955P)

Student Write-up:

PS-I Project Title: Optical instruments

Short Summary of work done: Learned in detail process of making scope for assault rifle AK 203

Objectives of the project: Learning about designing and production of optomechanical instruments

Tool used: CNC machine

Details of Papers/patents: Ordinance factory has the patents for producing the AK 203 7.62 mm gun's scope

Brief description of the working environment: Working environment is very good and all the people I meet at factory were very nice and cooperative.

Academic courses relevant to the project: Manufacturing process

Learning Outcome: Learned about functioning of a factory

Name: SURJO DAS .(2022A4PS1274P)

Student Write-up:

PS-I Project Title: Gaining insights into optomechanical instrument production, learning SolidWorks modelling and research on AGS-30 and PAG-17

Short Summary of work done: During my internship, I dedicated a significant portion of my time to acquiring in-depth knowledge of the production processes within various divisions of the factory, including optical and mechanical production, quality assessment, and assembly. I attained proficiency in understanding the operations of the machines, as well as learning CNC coding. In the latter part of my internship, I honed my skills in SolidWorks modeling and undertook a specialized research project entrusted to me.

Objectives of the project: The primary objectives of the project were to gain comprehensive knowledge of the manufacturing processes involved in optomechanical instrument production, to comprehend the equipment manufactured at the factory, and to acquire proficiency in industrial-based design software.

Tool used: S/w : SolidWorks, Research Rabbit ; H/w : CNC, Lathe, Hobb cutting , Grinding, LASER engraving, milling

Details of Papers/patents:NIL

Brief description of the working environment: As a group, we have identified areas for improvement in the work environment and program structure at the allocated station. Additionally, we believe that increased vigilance from the authorities and faculty should be prioritized.

Academic courses relevant to the project: Manufacturing processes
Mechanism and Machines
Workshop

Learning Outcome: 1) Modelling on SolidWorks
2) Learning CNC codes and operations
3) Comprehensive understanding of mechanical and optical production processes
4) Insight into the instruments produced at the factory

Name: [SIDDHARTHARAJA TAMMANA .\(2022B1A40925H\)](#)

Student Write-up:

PS-I Project Title: Sight 104B

Short Summary of work done: Learning the functioning of all the machines present and understanding various manufacturing processes that are involved in the production processes of various opto-mechanical devices used by the Indian Army

Objectives of the project: Learn the assembly and components of sight 104B and suggest changes and improvements

Tool used: None

Details of Papers/patents: None

Brief description of the working environment: None

Academic courses relevant to the project: Workshop, manufacturing processes

Learning Outcome: Various manufacturing processes

Name: VATSAL AGGARWAL .(2022B5A41302P)

Student Write-up:

PS-I Project Title: Gaining insights into opto-mechanical instrument production and learning Solidworks modelling

Short Summary of work done: We learnt about basic manufacturing processes like turning, grinding, hobbing, milling etc. We learnt about optical instruments produced there like HR Bino, Assault rifle telescope etc. We made models and assembled parts in solidworks present in the worksheet which was given by them

Objectives of the project: To know about all the manufacturing instruments used in production of componenets used in sights that are made in the factory, 2)To gain insights on opto mechanical instruments., 3)To learn modelling and assembly in solidworks (CAD Software)

Tool used: -

Details of Papers/patents:-

Brief description of the working environment: We were expected to be given a project based on using CAD softwere. Although we were taught Solidworks but it was during our last days in PS and that too we were not given a specific project to work on but rather worksheet to practice. Despite of that we learned about manufacturing processes which

will be useful in future. The work environment was friendly and most of the people working there were eager to tell us about the things they were working on. Overall environment is great especially for the first time interns.

Academic courses relevant to the project: ME F110 Workshop practice, ME F318 Computer Aided Design

Learning Outcome: Manufacturing processes, insights on optical instruments, hands-on experience on SolidWorks

Name: JAISWAL CHAITANYA DIPAK .(2022B5AB1324P)

Student Write-up:

PS-I Project Title: Assault Rifle Telescope

Short Summary of work done: Observing and analysing the process of Manufacturing, like how raw materials are sourced and processed with fine details on CNC machines to making it a finished product

Objectives of the project: Observe and analyse the process of manufacturing

Tool used: SolidWorks, AutoCAD, CNC Machines

Details of Papers/patents: None

Brief description of the working environment: Environment was like a typical factory, also Air conditioner were installed where needed

Academic courses relevant to the project: AutoCAD, Supply Chain Management

Learning Outcome: Got to learn about the whole manufacturing process, like from a small machine part to a whole finished product

PS-I station: Preto Tooling Systems, Hyderabad

Student

Name: VISHWAM KASTOORI .(2022B2AB1129P)

Student Write-up:

PS-I Project Title: Manufacturing of Press Tools and Tool designing

Short Summary of work done: Understanding press tools and the entire die manufacturing process with various kind of materials used in the sheet metal forming processes

Objectives of the project: To gain an overall understanding of the die making, designing of the tools and mitigating all the defects that occur during the process.

Tool used: CNC, wire cutting machine, lathe, drilling and grinding machines, mechanical press.

Details of Papers/patents:NA

Brief description of the working environment: Very friendly and great environment, supportive and approachable. I wanted industry exposure and have received the same. Overall its a very good company, would definitely recommend it to future batches.

Academic courses relevant to the project: Material Science, Workshop, Technical report writing.

Learning Outcome: All the above mentioned have been learnt

PS-I station: Pyrotech Electronics Pvt. Ltd., Udaipur

Student

Name: ROSHIT CHATUR(2022A1PS0944G)

Student Write-up:

PS-I Project Title: Product management - dashboard designing for updation of each stage of production

Short Summary of work done: We made a dashboard which shows all the statistics about the production. This was developed because in the factory the project engineer had to waste a lot of time asking for the report or status of the production in each stage but after this dashboard the authorised person will be able to login and assign the work to the people. This will save everyone's time and they will get a notification too of the work when it will be posted by the authorised person.

Objectives of the project: To create a dashboard which shows all the statistics of the production in each stage

Tool used: We just had searched for a software which holds the records of all the production

Details of Papers/patents: Nil

Brief description of the working environment: How a new product is developed after looking and searching for it online and finally coming to the final stage. All this was for the ease of working in the company for product engineers and managers.

Academic courses relevant to the project: -

Learning Outcome: We got a factory working exposure, the thinking process on a new product and what all things are to keep in centre to create a desired product for time saving

Name: ARYAN SEMLAWAT .(2022A1PS1134P)

Student Write-up:

PS-I Project Title: Proposed Updates for Pyrotech India Website

Short Summary of work done: In this project, we proposed and outlined several updates to enhance the Pyrotech India website, aiming to improve user engagement, customer service, and transparency. The primary features proposed include live product demos, virtual factory visits, and live chat support. Live product demos will provide potential customers with real-time demonstrations of products, showcasing their features, benefits, and applications. This interactive approach is designed to build trust and provide a comprehensive understanding of Pyrotech India's offerings. Virtual factory visits will offer an inside look at the manufacturing processes, quality control measures, and advanced technologies used by Pyrotech India. By using 360-degree videos or interactive VR experiences, customers can explore the factory virtually, enhancing transparency and credibility. Live chat support will enable real-time customer assistance, ensuring quick resolution of inquiries and improving overall customer satisfaction. This feature can be operated by customer service representatives or AI-powered chatbots to handle common questions efficiently. These updates aim to position Pyrotech India as an innovative and transparent leader in the industry, attracting more visitors to the website and converting them into loyal customers. The enhancements are expected to drive business growth by providing a more engaging, informative, and user-friendly online experience. Overall, the project focuses on leveraging digital tools to showcase Pyrotech India's commitment to quality and innovation, ultimately strengthening its market presence and customer relationships.

Objectives of the project: The objective is to enhance Pyrotech India's digital presence with live product demos, virtual factory visits, and live chat support to improve engagement, service, and credibility.

Tool used: HTML, CSS, JavaScript

Details of Papers/patents:-

Brief description of the working environment: The working environment is collaborative and innovative, focusing on integrating advanced digital tools to enhance user experience. The company is expected to provide clear objectives, timely feedback, necessary resources, and access to internal content. Active participation in reviewing designs and supporting live chat systems is crucial for successful project implementation. Overall, the company is expected to be engaged and supportive throughout the project to ensure successful deployment and optimal performance of the updated website features.

Academic courses relevant to the project: CP

Learning Outcome: The major outcome is improved user engagement, customer satisfaction, and trust, leading to increased website traffic and business growth.

Name: ARCHI JAIN(2022A1PS1513G)

Student Write-up:

PS-I Project Title: Interface Designing

Short Summary of work done: Summary- 1. **Practical Experience**: Gaining hands-on experience in your field of study or interest, which helps bridge the gap between theoretical knowledge and real-world application. 2. **Professional Skills**: Developing important workplace skills such as communication, teamwork, problem-solving, and time management. 3. **Industry Insight**: Understanding industry-specific practices, trends, and challenges, and gaining insights into the inner workings of a particular field or organization. 4. **Networking**: Building professional relationships and connections that can be valuable for future job opportunities and career growth. 5. **Career Exploration**: Clarifying your career goals and interests by experiencing different roles and responsibilities within a professional setting. 6. **Feedback and Improvement**: Receiving constructive feedback from supervisors and colleagues to improve your skills and work habits. 7. **Adaptability**: Learning to adapt to various work environments, tasks, and team dynamics, which enhances your flexibility and resilience in the workplace.

Objectives of the project: To design an interface for the company for various stages of production process.

Tool used: Asana

Details of Papers/patents:NA

Brief description of the working environment: The major learning outcomes of an internship typically include:

1. **Practical Experience:** Gaining hands-on experience in your field of study or interest, which helps bridge the gap between theoretical knowledge and real-world application.
2. **Professional Skills** Developing important workplace skills such as communication, teamwork, problem-solving, and time management.
3. **Industry Insight:** Understanding industry-specific practices, trends, and challenges, and gaining insights into the inner workings of a particular field or organization.
4. **Networking:** Building professional relationships and connections that can be valuable for future job opportunities and career growth.
5. **Career Exploration:** Clarifying your career goals and interests by experiencing different roles and responsibilities within a professional setting.
6. **Feedback and Improvement:** Receiving constructive feedback from supervisors and colleagues to improve your skills and work habits.
7. **Adaptability:** Learning to adapt to various work environments, tasks, and team dynamics, which enhances your flexibility and resilience in the workplace.

Academic courses relevant to the project: POM , C

Learning Outcome: We learned how to design an interface, how to work in professional environment.

1. User-Centered Design: Focus on user needs.
2. Design Principles: Apply visual and usability standards.
3. Prototyping: Create and test design prototypes.
4. Collaboration: Work with cross-functional teams.
5. Tools: Use industry-standard design software.
6. Design Thinking: Solve problems creatively.
7. Project Management: Manage design timelines and resources.
8. Feedback Integration: Refine designs based on feedback.

Name: PARIKSHIT CHOUHAN(2022A4PS1457G)

Student Write-up:

PS-I Project Title: Using Modular Principles to make industrial and domestic goods.

Short Summary of work done: During our PS-1 our work was not limited to a single project, we were given several small projects every week. We started by making a modular bed and went on to make different furnitures using fusion 360 as our software for 3-D modelling.

Objectives of the project: To help Pyrotech in making modular furniture

Tool used: Fusion 360, AutoCAD

Details of Papers/patents:No

Brief description of the working environment: They expected us to do some market research as well about the prices at which the products we were making are sold and how we can use techniques like lean manufacturing to reduce waste.

Academic courses relevant to the project: EG, AMOS, material science

Learning Outcome: Fusion 360, AutoCAD, how R&D works

PS-I station: Ramkrishna Forgings Limited, Jamshedpur

Student

Name: SHIVIKA .(2022A5PS1458P)

Student Write-up:

PS-I Project Title: Competitors Comparison

Short Summary of work done: One competitor was assigned to a person and then we saw the difference in manufacturing products, their share price, their global presence and market capitalization, how much an investor is investing in the company, we working on the key customers and their share price with the manufacturing company.

Objectives of the project: Analyzing the different market trends of various competitors of our station

Tool used: S/w

Details of Papers/patents:As such none

Brief description of the working environment: We learned various new things which was new to us, and the company helped us a lot with all these new technical terms which was really useful for our projects.

Since it was in online mode, regular virtual meets were held by our company mentor and our ps faculty to see the progress on the report.

Academic courses relevant to the project:

Learning Outcome: We learned about market capitalization, share price, share of business, and key customers of various competitors

Name: SURABHI CHOUBEY .(2022A7PS1168P)

Student Write-up:

PS-I Project Title: Competitors Comparison

Short Summary of work done: -

Objectives of the project: Comparing competitors of the company

Tool used: Google docs, websites of different companies, annual reports of different companies

Details of Papers/patents:-

Brief description of the working environment: It was nice working with other people.

Academic courses relevant to the project: -

Learning Outcome: Got to know competitors of the company

Name: DIVYANI SINGH .(2022B4A81590H)

Student Write-up:

PS-I Project Title: Supply chain management

Short Summary of work done: We analysed the digitalisation they have adopted in their supply chain

Objectives of the project: To analyse the digitalisation of the company

Tool used: Na

Details of Papers/patents: No

Brief description of the working environment: Working environment was very good
Because of everything being online it was not at all hectic

Academic courses relevant to the project: Its helped us to get know more about the IT part of the company

Learning Outcome: To understand how these company work on digitalisation and how transform their paper work to a more digitalised system

PS-I station: Royal Enfield, Chennai

Student

Name: PARTH PRAVIN HANDE .(2022A4PS1277P)

Student Write-up:

PS-I Project Title: Optimization of Powertrain assembly line (engine shop) workflow

Short Summary of work done: 1. Proposed solutions to implement Japanese Lean Manufacturing principles in the engine assembly line workflow; 2. Proposed solutions to prevent 25% wastage in export unit (CKD); 3. Digitalized quality control process workflow and integrated with Google workspace on company listence; 4. Proposed alternative tools to be used in assembly line to reduce worker fatigue lifting ~5kg component repeatedly.

Objectives of the project: To identify problems and suggest solutions to improve workflow in the 'Engine assembly shop' of Royal Enfield.

Tool used: Kanban Board, Google workspace (sheets, Appsheets, appScript)

Details of Papers/patents:N.A.

Brief description of the working environment: - Freedom and complete access to factory was granted to interns
- Manager was extremely supportive
- Interns were free to identify problems and propose solutions (Although complete implementation was out of scope in a 2 month internship)

Academic courses relevant to the project: Workshop Practice for machining/CNC etc; basic knowledge and understanding of assembly lines, most problems were solved using logic based on first principles and not directly based on academic courses from college.

Learning Outcome: - Identifying workflow problems
- Learning Japanese Lean Manufacturing frameworks
- Learning and working on export of bikes in CKD(Completely Knocked Down) format
- Digitalization of process workflow and integration with Google workspace
- Soft skills: communication with different people: managers, shopfloor workers, HR managers etc.

**PS-I station: SARDAR PATEL RENEWABLE ENERGY RESEARCH
INSTITUTE (SPRERI), Vijapur**

Student

Name: JONATHAN JOSEPH .(2022B1A41575H)

Student Write-up:

PS-I Project Title: Upgradation and Upscaling of Biochar based filtration system

Short Summary of work done: Upscaled and upgraded an already existing reactor using software such as solid works, made changes to the new reactor to make it more efficient

Objectives of the project: To employ a cost effective method to treat dairy effluent

Tool used: NA

Details of Papers/patents: NA

Brief description of the working environment: Small institute, welcoming mentors, hard working and knowledgeable scientists.

Academic courses relevant to the project: NA

Learning Outcome: Biochar and its applications

Name: TASNIM CHAVIWALA (2022B5A80033G)

Student Write-up:

PS-I Project Title: Sustainable Steam Production Using Solar Thermal Energy

Short Summary of work done: During my two-month internship at SPRERI, I focused on achieving sustainable steam production using solar thermal energy with the goal of maintaining a constant steam flow rate for approximately five hours daily. The initial setup involved a Scheffler reflector and a closed tank. We conducted three trials with varying water levels, learning that lower water levels produced more steam but led to uncontrolled flash steam, making consistent flow rates difficult to achieve. Due to subsequent cloudy weather conditions, further experiments were halted. The post-midsem work was mostly literature review and I suggested a new setup incorporating flash tank and a make-up tank. Future work will involve optimizing the parameters, experimenting with nanoparticles and hybrid systems, and automating the system based on real-time DNI data. This project provided invaluable hands-on experience and deepened my understanding of solar thermal energy systems.

Objectives of the project: This project aims to achieve sustainable steam production using solar thermal energy, specifically targeting a constant flow rate for approximately five hours a day.

Tool used: H/w: The Scheffler reflector setup, Pressure gauge, temperature sensors. S/w: Data logging software, Canva (Presentation software), Microsoft word (Documentation software)

Details of Papers/patents: N/A

Brief description of the working environment: We were allowed to choose our division and submit a preference of projects after the orientation. I initially expected to gain a deeper understanding of sustainable development during my time at SPRERI. Although my expectations regarding sustainable development were not fully met, the internship was still highly educational. I gained practical skills in designing and setting up solar experiments and learned how to troubleshoot issues relating to steam output. I gained data analysis and presentation skills by creating detailed reports and presentations to communicate our findings.

Academic courses relevant to the project: BITS F111 Thermodynamics

Learning Outcome: Experimental Design, Problem Solving, Data Analysis, Research and Literature Review

PS-I station: Siemens - Mumbai, Mumbai

Student

Name: DHRUV GUPTA .(2022A3PS1206P)

Student Write-up:

PS-I Project Title: IT/OT Integration

Short Summary of work done: During the internship at Siemens Mumbai, a comprehensive range of tasks and projects were undertaken, primarily focusing on IT/OT integration in the manufacturing process. Initial Phase: The internship began with familiarizing with Siemens' basic products, including contactors and Air Circuit Breakers (ACBs). Understanding these foundational components was essential for grasping the intricacies of the manufacturing process and the role of Operational Technology (OT) within it. Operational Technology (OT): The project delved into the specifics of OT, including sensors, actuators, and Programmable Logic Controllers (PLCs). Hands-on experience was gained in PLC programming, particularly using Siemens LogoSoft Comfort for ladder logic programming. This involved designing control algorithms and learning about data acquisition principles such as the Nyquist rate and sampling theorem to ensure accurate signal reconstruction and analysis. LabVIEW Project: The final phase focused on developing a data acquisition and logging system using LabVIEW. A Virtual Instrument (VI) was created to enhance the calibration lab's efficiency. The VI was designed to streamline data collection, visualization, and storage. The project included designing an intuitive front panel for real-time data display and control, as well as optimizing the block diagram for data processing, error-checking, and automated logging. Testing and troubleshooting ensured the system's reliability and accuracy. IT/OT Integration: The project also emphasized the convergence of IT and OT, integrating real-time data from various sensors and devices with analytical tools. This integration aimed to improve predictive maintenance, optimize resource allocation, and support the digitalization of manufacturing processes. Understanding and implementing MySQL for data management further contributed to the IT side of the project, learning about database management, table creation, and query operations.

Objectives of the project: The IT/OT integration project at Siemens aims to enhance manufacturing processes through several key objectives. It focuses on developing reliable data acquisition and logging systems for real-time data collection and storage using LabVIEW. Improving process control and automation is crucial for streamlining operations and ensuring precise monitoring. The project seeks to create user-friendly interfaces with real-time data visualization in LabVIEW for better operational insights. Ensuring data accuracy and reliability, seamless system integration, and promoting digitalization are essential goals. Additionally, the project aims to support future scalability and flexibility to adapt to technological advancements and evolving operational needs.

Tool used: Siemens Logosoft, NI Labview

Details of Papers/patents:none

Brief description of the working environment: The working environment at Siemens Mumbai was dynamic and collaborative, fostering a culture of continuous learning and innovation. Interns had access to advanced technologies, such as PLC systems and LabVIEW software, and were encouraged to engage with diverse teams. This environment promoted hands-on experience, supported by regular interactions with experienced professionals, providing valuable insights into industry standards and practices. The company anticipated a proactive approach to learning, problem-solving, and adapting to new challenges. Interns were expected to develop a thorough understanding of Siemens' products and processes, actively participate in project tasks, and apply their theoretical knowledge to real-world scenarios, with a focus on achieving measurable outcomes and contributing to project success.

Academic courses relevant to the project: Digital Design ,Signals and System,

Learning Outcome: The IT/OT integration project at Siemens provided valuable learning outcomes in both technical and soft skills. Technically, the project enhanced proficiency in LabVIEW for real-time data acquisition, logging, and creating Virtual Instruments (VIs). It deepened understanding of IT/OT convergence, data analysis, and predictive maintenance. Soft skills improved notably, with better communication of technical concepts, enhanced teamwork, and problem-solving abilities. Documentation skills were strengthened, ensuring clear and detailed reporting. Additionally, adaptability was honed, facilitating adjustments to evolving requirements and technological advancements. Overall, these outcomes foster a comprehensive skill set crucial for careers in industrial automation and digitalization.

Name: PUJAN CHORDIYA .(2022A3PS1296H)

Student Write-up:

PS-I Project Title: IT-OT integration

Short Summary of work done: In initial phase of our PS we gained knowledge on Switchgears and their application along with few different things like transducers, signal acquisition and Signal Processing. In the next phase we learnt about Programmable Logic Circuit(PLC) Programming and tried to replicate some actual machine operations using it. In last phase, we learnt about LabVIEW and developed a software using the same for Calibration Lab at Siemens which will help them to acquire the sensor calibration data

and make a log of it for further process like preparing calibration certificates, analyzing errors and ideality etc.

Objectives of the project: Gaining insight into automation industry and manufacturing of switchgears

Tool used: Siemens LOGO!Soft Comfort V7.0 , LabVIEW. Siemens Logo! PLC

Details of Papers/patents:N/A

Brief description of the working environment: N/A

Academic courses relevant to the project: Signals and System, C programming, Electrical Machines, Microelectronic Circuits, Control System.

Learning Outcome: LabVIEW programming, Overview of Manufacturing processes, Knowledge of Electrical switch gear, Industry standards, PLC programming etc.

Name: AAKASH OJHA .(2022A4PS0865H)

Student Write-up:

PS-I Project Title: Value Stream Optimisation

Short Summary of work done: Learnt about Switchgear products and about VSM methodology. Considered every process, beginning from raw materials to final shipping of the finished product (contactor in my case). It is basically taking a holistic view of the complete value stream and optimizing it to eliminate wastes.

Objectives of the project: Mapping the Value Stream of a product and observing it to dish out inefficiencies.

Tool used: Requires only a pen(cil) and paper. Can use online software to do the same

Details of Papers/patents:NA

Brief description of the working environment: I was assigned to the Industrial Engineering Dept. which takes their trainees seriously and will guide you enough from whatever time that is available to them. They expect you to be regular and focused on your project. I believe I have a fair view of how a huge company manages its operations.

Academic courses relevant to the project: Being in the Mechanical dept. I had no courses relevant to the project.

Learning Outcome: Learnt about Lean Manufacturing and Operations Management.

Name: KUSH NATANI .(2022B4AA1288P)

Student Write-up:

PS-I Project Title: IT/OT Integration

Short Summary of work done: During my PS-I at Siemens, I contributed to a project focused on IT/OT integration, a crucial aspect of modern industrial operations. This project involved bridging the gap between Information Technology (IT) and Operational Technology (OT) to enhance data utilization, efficiency, and decision-making. To achieve this, I began by gaining a comprehensive understanding of the products manufactured in Siemens factories. This foundational knowledge was essential for appreciating the practical applications of IT/OT integration in a real-world industrial setting. A significant portion of my work involved learning and applying PLC (Programmable Logic Controller) programming. PLCs are critical for automating industrial processes, and mastering this technology was vital for our project. Additionally, I gained proficiency in LabVIEW, a powerful software platform used for data acquisition, instrument control, and industrial automation. Leveraging my skills in PLC programming and LabVIEW, I participated in developing a project for a calibration machine. This project entailed using LabVIEW to design and implement a system that ensured precise and accurate calibration of instruments, crucial for maintaining quality and efficiency in manufacturing processes. Overall, my PS-I experience at Siemens was enriching, providing hands-on experience with cutting-edge industrial technologies and their applications in enhancing operational efficiency through IT/OT integration.

Objectives of the project: To Develop Software using LabView , for a calibration machine.

Tool used: H/w -: Plc , S/w -: Labview , Siemens Logosoft software

Details of Papers/patents:None

Brief description of the working environment: During my PS-I at Siemens, the working environment was dynamic and highly collaborative, reflecting the company's commitment

to innovation and excellence. Siemens provided a well-structured program with a clear emphasis on professional growth and practical learning. The workspace was equipped with advanced tools and technologies, fostering an environment conducive to hands-on learning and experimentation.

Expectations from the company were clear and supportive. Siemens expected us to engage actively in projects, demonstrate initiative, and apply our academic knowledge to real-world challenges. The company provided ample resources, including access to experienced mentors and comprehensive training sessions, ensuring we were well-prepared to contribute meaningfully to our projects.

Throughout my internship, I gained invaluable insights and practical skills. Learning about IT/OT integration was a central focus, and I developed a deep understanding of how information technology systems can be seamlessly integrated with operational technology to optimize industrial processes. I also acquired proficiency in PLC programming, which is essential for automating and controlling industrial machinery. Additionally, mastering LabVIEW software was a significant highlight, as it enabled me to design and implement data acquisition and control systems effectively.

Working on a project involving a calibration machine allowed me to apply these skills in a practical context, enhancing my problem-solving abilities and technical proficiency. The collaborative nature of the environment also improved my teamwork and communication skills, as I regularly interacted with colleagues and mentors to discuss ideas and troubleshoot issues.

Overall, my PS-I experience at Siemens was highly enriching, providing a robust foundation for my future career in industrial technology and automation.

Academic courses relevant to the project: DD,SaaS

Learning Outcome: During my internship at Siemens, I gained significant insights into IT/OT integration, which involved connecting information technology systems with operational technology to optimize industrial processes. This experience helped me understand the methodologies and tools necessary for seamless integration. I also acquired hands-on experience in programming and troubleshooting Programmable Logic Controllers (PLCs), which are essential for automating industrial equipment. Additionally, I became proficient in using LabVIEW software for data acquisition and instrument control. One of my key projects was implementing a calibration machine using LabVIEW, which enhanced my practical skills and understanding of the software. Overall, the internship provided me with a deep understanding of industrial systems and their optimization through technology.

PS-I station: South Western Railway, Multi Disciplinary Divisional Training Institute, Bengaluru

Student

Name: AKHIL JACOB .(2022A8PS0814H)

Student Write-up:

PS-I Project Title: Railways electronic interlocking system

Short Summary of work done: We built the Railways electronic interlocking system and a small model of the fiba brake system in locomotives

Objectives of the project: to learn about and build a model of Railways electronic interlocking system

Tool used: gears,wires,switched,LED's,steel tracks,arduinosaurs,sensors,

Details of Papers/patents:none

Brief description of the working environment:

Academic courses relevant to the project: ED,EM,DD

Learning Outcome: practical knowledge of the electrical components and connections

**PS-I station: Steel Authority of India Ltd. (SAIL) Bhilai Steel Plant -
Bhilai, Chhattisgarh**

Student

Name: ANSHUMAN PATHAK(2022A4PS1522G)

Student Write-up:

PS-I Project Title: Analysis of failure of P14 pump of side arm charger of wagon tipler -
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Short Summary of work done: Basic learning of steel plant, input of CO&CCD in steel plant, hydraulic system of P14 pump

Objectives of the project: To find the factors for failure of P14 pump from external condition present at the site.

Tool used: P14 pump catalogue, book for hydraulics

Details of Papers/patents:N/A

Brief description of the working environment: Hazardous but have safety measures and equipments good support from guide, leaning mainly about working of steel plant

Academic courses relevant to the project: Hydraulic fluids

Learning Outcome: Learning of working of hydraulic pumps, hydraulic circuit of side arm charger, and reasons of failure of pumps.

Name: VADALI V G S HARSHITH(2022ABPS1612P)

Student Write-up:

PS-I Project Title: Increasing the disc life of a grizzly roller screen

Short Summary of work done: Worked on increasing the life of a roller screen disc that helps in sorting of coke.

Objectives of the project: To increasing the life of the roller disc used in the roller screen

Tool used: Nothing

Details of Papers/patents: None

Brief description of the working environment: Good

Academic courses relevant to the project: Mechanisms and machines, mechanics of solid

Learning Outcome: Work experience

PS-I station: Sunrise CSP India Pvt. Ltd, Vadodara

Student

Name: ROHAN R VENUGOPAL .(2022AAPS0407H)

Student Write-up:

PS-I Project Title: Development of a low cost pyrheliometer

Short Summary of work done: Read research papers and made a powerpoint presentation based on it

Objectives of the project: Development of a low cost pyrheliometer

Tool used: Python to a minimal extent , mendeley for citation

Details of Papers/patents: None

Brief description of the working environment:

Academic courses relevant to the project: None

Learning Outcome: Familiarize with the industry

Name: DEV RATWANI .(2022B1AB1137P)

Student Write-up:

PS-I Project Title: Fundraising, Business development and product design in startups

Short Summary of work done: Developed a pitch deck for series a funding, worked on many client proposals, made product drawings on AutoCAD.

Objectives of the project: Developing a pitch deck, client proposals and production drawings.

Tool used: Excel, AutoCAD

Details of Papers/patents:-

Brief description of the working environment:

Academic courses relevant to the project: Engineering graphics.

Learning Outcome: Pitch decks, client offers, production drawings, financial projections, financial modeling.

Name: AUMKAR BHAVE(2022B3A30201G)

Student Write-up:

PS-I Project Title: Designing a cost efficient pyrhelimeter

Short Summary of work done: Did literature review of several papers relating to the the development of the pyrhelimeter to make it more cost efficient and tried to develop a model which would be cheap, compared to existing models

Objectives of the project: Designing a cost efficient pyrhelimeter

Tool used: Python, raspberry,google colab

Details of Papers/patents: N/A

Brief description of the working environment: Very rigid regarding timings, and a lot of travel to reach the office, apart from that working environment was okay

Academic courses relevant to the project: None

Learning Outcome: Learnt and understood the csp and cst industry

Name: RISHABH SHAH .(2022B5A30990H)

Student Write-up:

PS-I Project Title: Development of a cost efficient Pyrheliometer

Short Summary of work done: Made a simulator to calculate solar angles for an automatic tracking system for the Pyrheliometer, research on different models of the Pyrheliometer, testing different sensors, documentation of the industry report

Objectives of the project: To develop a low cost Pyrheliometer testing model

Tool used: Jupiter Notebook, MATLAB, Raspberry Pi, Google Scholar

Details of Papers/patents: None

Brief description of the working environment: The company is good if you wish to go for R&D but the station is really far away from Vadodara.

Academic courses relevant to the project: None

Learning Outcome: Python Programming, Raspberry Pi programming, meeting with deadlines, documentation of industry report

PS-I station: Supervisors Training Centre, Northern Railway, Lucknow

Student

Name: AKSHIT GARG .(2022A3PS0429P)

Student Write-up:

PS-I Project Title: Inventory Management System

Short Summary of work done: Design and developed an inventory management website for Northern railways workshop

Objectives of the project: Inventory Management System

Tool used: MERN stack

Details of Papers/patents:no

Brief description of the working environment: good working environment, supportive staff and faculty incharge

Academic courses relevant to the project: No

Learning Outcome: Web Development

Name: DEEKSHA AGARWAL .(2022A3PS0500P)

Student Write-up:

PS-I Project Title: Inventory management

Short Summary of work done: We were asked to make a website for the management of the inventory for easy tracking of all the shop items and reduce the paperwork

Objectives of the project: Improving efficiency in shop floor inventory management using technology

Tool used: Backend, frontend, mongoose, node js, mongoDB

Details of Papers/patents: None

Brief description of the working environment: The environment was very work friendly and supportive. Everyone was corporative and helped where ever needed

Academic courses relevant to the project: IT/CS

Learning Outcome: Web development and UI/UX

Name: PRIYANSHI MALIK .(2022AAPS0294H)

Student Write-up:

PS-I Project Title: Inventory management

Short Summary of work done: Got to know about various disciplines of northern workshop and was given a chance to meet officers of different sections.

Objectives of the project: Web development

Tool used: Figma

Details of Papers/patents: No

Brief description of the working environment: Already told above

Academic courses relevant to the project: No it was not relevant to my stream.i choose the wrong project and wrong team members

Learning Outcome: I didn't learn anything during the project as team work was zero and people were not co operative at all .

Name: AYUSH SHARMA .(2022B5A40670P)

Student Write-up:

PS-I Project Title: Audit of maintenance of cycle time of rolling stock and qr code tagging

Short Summary of work done: It mainly started with exploring about each and every step of periodic overhauling of a coach and ended with making of qr

Objectives of the project: Study of cycle time and creating a qr

Tool used: H/w

Details of Papers/patents: No

Brief description of the working environment: It was really nice experience with supervisors training centre. Most of the person were pretty friendly and knowledgeable

Academic courses relevant to the project:

Learning Outcome: All about periodic overhaul of train

PS-I station: TATA Advanced Systems Ltd, Nagpur

Student

Name: GOKULA KRISHNA TAVVA .(2022A4PS0372P)

Student Write-up:

PS-I Project Title: IMPROVING FIXTURE DESIGN FOR EASIER HANDLING AND BETTER MANAGEMENT ON THE MACHINE SHOP FLOOR TO REDUCE SEARCH TIME

Short Summary of work done: Helped in locating the fixtures of RUAG program, documented fixtures with no calibration tags and also developed a color code system for better management in the shop floor to reduce the search time. Also helped in the audit related works.

Objectives of the project: Primary Objectives Save time, money, and resources. Identify and solve fixture management issues. Areas Covered are Management analysis Design improvements Cognitive analysis of systematic management. Data analysis

Tool used: MATLAB and EXCEL

Details of Papers/patents:NA

Brief description of the working environment: The work environment was unique and dynamic. Everyone is busy and had very less time but they were supportive and helpful.

Academic courses relevant to the project: Manufacturing Processes

Learning Outcome: Importance of a standardized procedure to maintain inventory and making the employees follow it.
Importance of ergonomics in design.
Importance of time in an industry like aerospace and the cost of a mistake or negligence.
Importance of sustainable manufacturing and reduction of waste.
Personal experience of team collaboration and effective communication.
Importance of understanding the dynamics in a workplace.

Name: AMAY HRISHIKESH DHANWATAY(2022A4PS0498G)

Student Write-up:

PS-I Project Title: Reducing work centre ageing

Short Summary of work done: Data driven project which required the collecting data from all operators in the plant to understand problems faced and find solutions to solve recurring problems. Also had to find issues in why the daily dispatch list is not being implemented and suggest changes for its implementation. Also

Objectives of the project: To reduce the number of days a part is present at each work centre to deliver orders on time

Tool used: Excel, Power BI, Pareto chart

Details of Papers/patents:NA

Brief description of the working environment: The learning was more soft skills based and documentation

Academic courses relevant to the project: Manufacturing management

Learning Outcome: Manufacturing ideologies
Machine shop experience
Mock audit conducted

Name: VIKHYAT BHARADWAJ .(2022A4PS0926P)

Student Write-up:

PS-I Project Title: Major Project: To Analyze and Reduce the Setup Change-Over Losses and Loading/Unloading Losses in the Machine Shop at TASL. Minor Project: To develop a Self-Sufficient Unit.

Short Summary of work done: Oversaw a major project at Tata Advanced Systems Limited that aimed to reduce Setup Change-Over Loss and Loading/Unloading Loss for precision machinery that produced vital components like MLGD, Vertical Fin and FAD for prestigious clients like BOEING and RUAG. Using data from the previous month and firsthand observation, utilizing Power BI and Microsoft Excel for thorough data analysis that led to insights and well-informed decisions. Incorporated Pareto Chart (80-20 Rule) and Time and Motion Study to gain further insights into the Setup Change-Over and Loading/Unloading Process. Used 6 Sigma and LEAN Manufacturing Principles like Single Minute Exchange of Die/Dies (SMED), 5S, ECRS and Gemba Walk to reduce these losses. Developed the idea of self sufficient cell, figured out losses in terms of cost incurred and presented the idea to the PS Faculty and Senior Executive at TASL. Also helped in the paperwork of the AS9100 Audit at TASL.

Objectives of the project: Major Project: Reduce the Non-Essential Non-Value-Added time during the Setup Change-Over and Loading/Unloading by the implementation of 6 Sigma LEAN Manufacturing Techniques like SMED, 5S, ECRS and Gemba Walk. Minor Project: Develop a Self Sufficient Cell: A cell which contains all the necessary tools and instruments to reduce the Non-Essential Non-Value Added time that goes in searching them.

Tool used: Microsoft Excel and Microsoft Power BI

Details of Papers/patents: Nothing as of now.

Brief description of the working environment: Majorly the project lied towards Data Analysis and Visualization.

Majority of the people were very supportive and understood our problems and provided assistance despite being busy.

Academic courses relevant to the project: Workshop Practice
Manufacturing Processes

Learning Outcome: Got an opportunity to work at such a prestigious organization and set foot into Aerospace Industry. Learnt about the functioning of the industry. Learnt Data

Visualization (MS-Excel and Microsoft Power BI), 6 Sigma LEAN Manufacturing Principles.

Name: C S SRIVIBHAV .(2022B2A41032P)

Student Write-up:

PS-I Project Title: Finding probable manufacturing solutions for various steel and aluminium parts of the Boeing 737 Max FanCowl project of TASL.

Short Summary of work done: I was assigned the task of improving the current manufacturing methodologies of the steel and aluminium parts involved in the FanCowl of Boeing 737 Max. In the FanCowl project, there are 4 types of steel parts and 6 types of aluminium parts and are formed using a hydraulic press machine and an extrusion stretch wrapping machine respectively. Upon inspection of the hydraulic press machine, the flange wrinkling was the major problem and the rectification of which causes flatness and contour issues. So, in order to remove the flange wrinkling, we had to change the way of forming of these parts. For the steel parts, there are 2 flanges and initially, both the flanges were formed separately due to which material clouding is caused which leads to wrinkles. So, I suggested the part should be formed at a single stroke and implementation of which reduced the wrinkles observed. I also referred a machine called FIGUR G-15 which uses the incremental sheet forming technology to form complex steel and aluminium parts.

Objectives of the project: Finding probable manufacturing solutions for various steel and aluminium parts of the Boeing 737 Max FanCowl project of TASL.

Tool used: 300 ton hydraulic press machine, Extrusion stretch wrapping machine, heat treatment (annealing and solutionizing), TSA (Tartaric Sulphuric Acid Anodizing), Chemical Milling

Details of Papers/patents:-

Brief description of the working environment: It was an amazing experience working at Tata Advanced Systems Limited. It provided us with a supportive environment for learning room our suggestions seriously without having any inhibition and thereby motivating us to dive deep into the topic and learn much more about it. I was assigned the task of improving the current manufacturing methodologies of the steel and aluminium parts involved in the FanCowl of Boeing 737 Max. In the FanCowl project, there are 4 types of steel parts and 6 types of aluminium parts and are formed using a hydraulic press

machine and an extrusion stretch wrapping machine respectively. Upon inspection of the hydraulic press machine, the flange wrinkling was the major problem and the rectification of which causes flatness and contour issues. So, in order to remove the flange wrinkling, we had to change the way of forming of these parts. For the steel parts, there are 2 flanges and initially, both the flanges were formed separately due to which material clouding is caused which leads to wrinkles. So, i suggested the part should be formed at a single stroke and implementation of which reduced the wrinkles observed. I also referred a machine called FIGUR G-15 which uses the incremental sheet forming technology to form complex steel and aluminium parts.

Academic courses relevant to the project: Lean manufacturing, manufacturing processes, heat transfer

Learning Outcome: Various machining processes involved in the production of complex aircraft structures which includes various types of forming technologies, CNC machines, shape correction, etc.

Name: RAGHAV GOYAL .(2022B4A40727P)

Student Write-up:

PS-I Project Title: Reducing Aging & Delay in C295 Program

Short Summary of work done: My work was to reduce the delay in the manufacturing of Airbus C295 aircrafts. Most of my work revolved around tracking parts which were not completed on time, find out why they are being delayed, and convey it to my supervisor and suggest solutions for the same. In the later half I tried to identify some parts which were quite difficult to manufacture and tried to steer my project towards it. They also manufacture carbon fiber parts, but we couldn't see it as it was highly confidential. So for exposure to the manufacturing and aerospace industry, I would say this company is worth it (just don't expect R&D or some useful work, treat it as a license to explore anything inside the plant). One issue you might face is transport as this company is far from the city and transport is limited.

Objectives of the project: Overview • Prestigious program with lots of new parts • Many unforeseen manufacturing challenges • Need to deliver well before time to gain confidence of potential customers Objectives • Speed up the process • Suggest ways to overcome manufacturing defects • Identify ways to improve the efficiency of the project

Tool used:

Details of Papers/patents:Project was operations based

Brief description of the working environment:

- Expectation - R&D project
- Reality - Operations Management in manufacturing plant
- Supervisors are very supportive
- Fortunate to be part of senior level meetings, helped me know more about corporate culture
- Learnt to take responsibility and be proactive
- Grateful for exposure to manufacturing domain

Academic courses relevant to the project: Manufacturing Processes, Material Science

Learning Outcome:

- How everything is planned, tracked and documented
- Learnt about the various processes & their significance
- How to decide which forming methods to use and why
- Learnt how materials respond to different processes
- Exposed to practical issues faced while manufacturing
- Understood the division of work and communication between different departments

PS-I station: Valvoline Cummins India Pvt. Ltd - IT, Gurgaon

Student

Name: PRIYA RATHI(2022A7PS1096G)

Student Write-up:

PS-I Project Title: Implementation of a Chatbot to ease Customer Complaints

Short Summary of work done: I designed a chatbot aimed at enhancing the efficiency of our organization's customer complaint management system, complete with a tracking feature. My experience working in a corporate environment has been highly rewarding. I had the privilege of working directly under the IT head of Valvoline, who consistently valued and appreciated my ideas.

Objectives of the project: Design a Chatbot which records and tracks customer complaints

Tool used: Figma, NLP

Details of Papers/patents:NA

Brief description of the working environment: All the mentors I interacted with imparted valuable lessons, significantly enriching my learning experience. The company also exceeded my expectations in numerous ways. They maintained regular and open communication with us, ensuring that we felt informed and valued at all times. The supportive environment made us feel comfortable and welcomed, which greatly contributed to our productivity and overall satisfaction. Moreover, Valvoline took great pride in celebrating its employees' successes and other significant occasions, fostering a sense of community and appreciation that further enhanced the positive work culture.

Academic courses relevant to the project: NA

Learning Outcome: Industry Insights, User Experience Design

PS-I station: Valvoline Cummins India Pvt. Ltd - Manufacturing, Gurgaon

Student

Name: MIHIR RAMAN .(2022A4PS1300H)

Student Write-up:

PS-I Project Title: Automation of Cost Tracker

Short Summary of work done: ERP, SAP

Objectives of the project: Automate the existing cost tracker

Tool used: ERP, SAP

Details of Papers/patents: NA

Brief description of the working environment: Good

Academic courses relevant to the project: I had to learn all the concepts from scratch.

Learning Outcome: Learnt about the working culture and Principles at corporate companies.

Name: ANSH AGARWAL .(2022ABPS1569P)

Student Write-up:

PS-I Project Title: Understanding the current process of forecast generation and suggesting gaps and improvement methods.

Short Summary of work done: My experience was incredibly fulfilling. I had the opportunity to connect with industry professionals and gain valuable insights from them. The work culture at Valvoline is notably positive; everyone is welcoming and supportive. The environment fosters a sense of camaraderie and collaboration, which greatly enhanced my learning and growth. Interacting with such knowledgeable and approachable individuals allowed me to absorb a wealth of information and gain a deeper understanding of the field. The overall atmosphere at Valvoline not only made my time there enjoyable but also significantly contributed to my professional development.

Objectives of the project: Analyze data and make an accurate time series forecasting model.

Tool used: Excel,

Details of Papers/patents:NA

Brief description of the working environment: -

Academic courses relevant to the project: Operations Mangement, PnS

Learning Outcome: The demand forecasting project provided a comprehensive and enriching experience, encompassing various analytical techniques and methodologies. Through the application of demand clustering, outlier correction, and in-depth study of time series models, we gained valuable insights into improving the accuracy and reliability of sales forecasts.

PS-I station: Valvoline Cummins India Pvt. Ltd - Sales, Gurgaon

Student

Name: TARUNA KUMARI(2022B3TS1517P)

Student Write-up:

PS-I Project Title: Understanding the genuine oil usage in OEMs

Short Summary of work done: I was there as sales intern working on OEMs. My job was to collect information from market and analyse the potential the company holds. I went to around 14 workshops to acquire information.

Objectives of the project: To find market potential

Tool used: Excel

Details of Papers/patents:None

Brief description of the working environment: The company puts you on a real time project with a mentor. This makes your time in PS 1 feel useful. The working culture is flexible and welcoming.

Overall academically you'll learn a lot.

Academic courses relevant to the project:

Learning Outcome: Vlookup, Database Formation, Customer Handling

PS-I station: Ankle Gaming Private Limited, New Delhi

Student

Name: ANISH B R .(2022B1AA1754H)

Student Write-up:

PS-I Project Title: Development of a 3D-Based Ludo Game Simulator Using the Unity Platform.

Short Summary of work done: Our Ludo game project featured a robust multiplayer mode, enabling users to play with friends and family online or on the same device, as well as against AI opponents for solo play. The game includes customizable settings, allowing players to choose from various board designs and themes, and adjust game rules and difficulty levels to suit their preferences. The interactive UI/UX is designed with smooth animations and user-friendly controls, providing clear visual and audio feedback for player actions. Cross-platform compatibility ensures the game is accessible on PC, mobile, and tablets, with seamless synchronization and game progress saving across devices. To assist new players, the game offers guided tutorials and in-game tips and hints, enhancing the overall gameplay experience. Linear Interpolation (Lerp) is utilized extensively to ensure smooth transitions and animations, creating seamless movements for tokens and improving visual appeal and fluidity. The game employs four separate Game Managers, one for each player, to oversee tokens, manage turn logic, and ensure the correct sequence of gameplay, resulting in better organization and easier debugging. Finally, human input integration with intuitive controls for rolling dice, selecting tokens, and making strategic decisions ensures a responsive and immersive multiplayer experience.

Objectives of the project: To make a Ludo Game that can be multiplayer, or single player while the CPU uses AI logic to take it's choices. Board design, piece movement, dice movement and Game manager development.

Tool used: Unity with C#, Blender, Photoshop/GIMP, Git/Github

Details of Papers/patents:None

Brief description of the working environment: Work timing was flexible with no fixed deadlines. Since we didn't know anything related to game development we were allowed to take ample time to learn it and implement accordingly.

Academic courses relevant to the project: CS F111

Learning Outcome:

- Unity: The primary development environment, chosen for its robust support for 2D and 3D game development, extensive library of assets, and active community support.

- C#: The programming language used for scripting in Unity, providing a powerful and flexible way to implement game mechanics and logic.
- Blender: For creating and animating 3D assets, when needed.
- Photoshop/GIMP: For designing UI elements and game textures.

PS-I station: Armenge Engineering Private Limited, Jaipur

Student

Name: GATTU SAI GANESH SANTHOSH .(2022A2PS1029P)

Student Write-up:

PS-I Project Title: Highway Engineering and Road Design

Short Summary of work done: There was a huge emphasis on getting your Basics cleared, Reading and memorizing important facts from IRC codes, Highway Engineering course has covered most of these aspects, then design a highway using AutoCAD Civil 3D software, covering the process from importing survey data to generating detailed plan and profile sheets. The design process includes creating a surface, designing horizontal and vertical alignments, modeling road cross-sections, and generating a 3D corridor model.

Objectives of the project: N.A.

Tool used: AUTOCAD, CIVIL3D

Details of Papers/patents:N.A.

Brief description of the working environment: Mostly people are busy with their own work, you have to be dedicated enough to learn something new, Highway Design department is pretty supportive and will guide you how to start work with project but later on it is expected from student to gather resources online and work towards your project from them, they highly emphasize you on reading through all basic IRC Codes which is not an easy task.

Academic courses relevant to the project: Highway Engineering

Learning Outcome: Basics of tendering, DPR preparation, Horizontal Alignment Design of a Highway

PS-I station: Aryabhata Research Institute of observational sciences (ARIES), Naini Tal

Student

Name: SOHINI KAYAL .(2022B5A30867H)

Student Write-up:

PS-I Project Title: Spectral Modelling of Type Iax Supernova

Short Summary of work done: Type Iax supernovae (SN Iax) are a distinct subclass of supernovae that share some observational characteristics with normal type-Ia supernovae but exhibit notable differences in their light-curve and spectroscopic evolution. I have defined the different parameters required for modelling in TARDIS and used different methods to obtain each. A re-analysis of the uniform abundance model was done to generate the synthetic spectra and derive the accurate parameters required for further modelling. A different model with a velocity-dependent, stratified abundance structure was proposed for analysis. This model is in conflict with pure deflagration models, the favored models for SNe Iax that predict well-mixed ejecta. A complete modelling with both methods was done. Based on a detailed comparative analysis, the pure deflagration model cannot fully explain the observational properties of SN 2020rea, especially for earlier epochs. Thus in conclusion, the outer layers of the ejecta have a stratified structure rather than a homogenous and well-mixed one.

Objectives of the project: Objectives of the project is to produce a detailed spectral analysis of SN 2020rea. This is to give a deeper insight into the structure of the ejecta of and is used to understand the mechanism and progenitors of Type Iax supernovae and derive a model for it.

Tool used: TARDIS, a open-source Monte Carlo radiative-transfer spectral synthesis code has been used to model the SN ejecta and generate synthetic spectra

Details of Papers/patents: Will be publishing a paper based on results obtained from the work

Brief description of the working environment: Excellent working environment, with complete access to high power computing as well as server access to the main ARIES server. Required data for analysis was also provided as collected from telescopes around the world. Regular updates to mentor were required for continuation and further progress of work. Biweekly meeting were conducted with other professionals outside campus to discuss the results and get expert opinions. Expectations were to continue studying and trying to learn new concept on your own as well as figure out how to apply them to get the required results.

Academic courses relevant to the project: Computational Physics, Data Analysis, Electromagnetic Theory, Optics, Computer Programming, Advanced calculus

Learning Outcome:

1. Physics based mathematical modelling of cosmic phenomenon.
2. Photo metric data has been calibrated and analyzed to generate spectra.
3. Uniform abundance modelling and stratified abundance modelling.
4. The physics of supernovae.
5. Reading and writing research papers.

PS-I station: Balwaan Krishi - Non Tech, Jaipur

Student

Name: RAGHAV MODI(2022A4PS1456G)

Student Write-up:

PS-I Project Title: Product Classification and Analysis of their needs using Data Analysis

Short Summary of work done: During the first four weeks, we focused on exploring and learning different data visualization software such as Looker Studio, PowerBi, and Tableau. The following four weeks were dedicated to building a dashboard for a dataset. We created an Excel file that depicted the growth patterns of important fruits, vegetables, and crops across the nation. Then, we categorized Balwaan Krishi products according to the crops they were intended for and their timeline within the crop cycle. Finally, using the aggregated data, we developed a comprehensive dashboard in Looker Studio. This final dashboard integrated various data elements and was made to be interactive for the company personnel. During the first four weeks, we focused on exploring and learning different data visualization software such as Looker Studio, PowerBi, and Tableau. The

following four weeks were dedicated to building a dashboard for a dataset. We created an Excel file that depicted the growth patterns of important fruits, vegetables, and crops across the nation. Then, we categorized Balwaan Krishi products according to the crops they were intended for and their timeline within the crop cycle. Finally, using the aggregated data, we developed a comprehensive dashboard in Looker Studio. This final dashboard integrated various data elements and was made to be interactive for the company personnel.

Objectives of the project: Creating a cohesive and functional visualisation that highlights key insights and trends.

Tool used: Looker Studio, PowerBI, Tableau and Google Sheets

Details of Papers/patents:NA

Brief description of the working environment: The mode was Hybrid. We were called to the office after completing tasks to evaluate and get assigned to future tasks.

Academic courses relevant to the project: TRW

Learning Outcome: Learnt how to use tools such as Looker Studio and PowerBI, and gained an understanding of the role of a data analyst at the corporate level.

Name: MOKSH GUPTA .(2022A7PS0157P)

Student Write-up:

PS-I Project Title: Flutter & App Development

Short Summary of work done: I developed a new skill in this PS1 which will play a crucial role in my professional life. I also enjoyed working on the project allotted to me at Balwaan Krishi as it really aligned with my interest and my forte.

Objectives of the project: To develop an B2B App, an app for managers

Tool used: S/w - Dart and Flutter

Details of Papers/patents:NA

Brief description of the working environment: Everyone there was very supportive as well as focused to their tasks. Everyone had a motto of taking this startup forward. We enjoyed our time at the office as every one there was polite and welcoming,

Academic courses relevant to the project: Computer Programming (CS F111), Object Oriented Programming (CS F213), Database Systems (CS F212), Data Structures and Algorithm (CS F211)

Learning Outcome: Learning Flutter Framework and Dart Language

PS-I station: CEERI 1, Pilani

Student

Name: DEEPAK GAIROLA .(2022A3PS0535H)

Student Write-up:

PS-I Project Title: Deep learning based ECG/EEG Data analysis

Short Summary of work done: First 2 weeks we spent learning about machine learning and deep learning. Then we read few research paper related to our field to guide us in our work. After that we developed our own code using one of the research papers. After that we analysed our results and compared it to other papers.

Objectives of the project: Developing a deep learning based model which could predict heart related diseases by grouping the result in 5 superclasses.

Tool used: Pytorch, Scikitlearn, Tensorflow

Details of Papers/patents:None

Brief description of the working environment: In terms of learning it was very nice. We got good amount of time gaining knowledge about our project. Our sir guided us through out the project because of which we were able to complete the project in the given time.

Academic courses relevant to the project: Machine learning

Learning Outcome: Gained significant knowledge in the field of AIML and deep learning.

Name: ATHARV BARAI(2022AAPS0333G)

Student Write-up:

PS-I Project Title: Anomaly Detection in Powerline Infrastructure

Short Summary of work done: Implementation of various object detection models. Implemented YOLOV1 from scratch, implemented YOLOV8, YOLOV10, LeYOLO etc. Modified existing YOLO models and ultralytics source code to support modified models. Trained modified models on InsPLAD dataset. Made modifications to YOLOv8 for lower latency and higher accuracy. Also implemented LeYOLO as a computationally efficient alternative to standard models.

Objectives of the project: To train object detection models to detect components of Powerline Infrastructure and any defects present within them

Tool used: PyTorch, Ultralytics, Python

Details of Papers/patents:None

Brief description of the working environment: Working environment is good with good work life balance depending on project and mentor.

Academic courses relevant to the project: None in ECE

Learning Outcome: Learnt about various objects detection models including YOLOV8, YOLOV10, LeYOLO

Name: ARNAV JAIN(2022AAPS0459G)

Student Write-up:

PS-I Project Title: ISA Implementation of RISC-V Architecture

Short Summary of work done: Worked on Cryptography number theory and polynomial multiplication algorithm and implemented them on FPGA

Objectives of the project: Implementation of post quantum cryptography algorithm on FPGA

Tool used: Vivado design suite

Details of Papers/patents:Na

Brief description of the working environment:

Academic courses relevant to the project: Computer architecture,digital design,number theory.

Learning Outcome: Learned about FPGA design

Name: [CHOLLETI LALIT SATHVIK REDDY .\(2022AAPS0463H\)](#)

Student Write-up:

PS-I Project Title: "Hardware Modeling of ML Neural Accelerator"

Short Summary of work done: I was told to learn neural networks and be perfect with digital design concepts and verilog.Then I started designing a neuron and a sigmoid activation function in verilog.After gaining knowledge on neural networks and different cnn architectures we started designing the different components of architecture-convolution layer, activation function and max pooling layers in verilog.Later i analysed its power and resource consumption.

Objectives of the project: To design a CNN accelerator and perform a comparative analysis of its power and resources utilization with the current state-of-the-art.

Tool used: Vivado,Github,Matlab,Verilog

Details of Papers/patents:None

Brief description of the working environment: It was a very great experience working the scientists in CEERI. The entire PS-1 was a constant learning process. My PS-1 station was a government research institute so you are expected to be discipline. Our mentors were very friendly and helpful to me, helping me to understand the concepts and learn new things towards the the completion of project. You have all kinds of facilities and infrastructure and all kinds of hardware tools. The working environment is very good and they really handled us very well without making us feel stress on our project.

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

Learning Outcome: Learnt neural networks and designing its components using verilog

Name: ABHINAV PURBEY(2022AAPS1187G)

Student Write-up:

PS-I Project Title: CNN Accelerator using POSIT Arithmetic

Short Summary of work done: During my summer research internship at CEERI, Pilani, I had the opportunity to work under the guidance of excellent PhD scholars who demonstrated strong work ethics and dedication. Despite the extreme summer heat, the work environment was highly motivating. My primary project involved developing a hardware accelerator for Convolutional Neural Networks (CNNs) using Verilog and posit arithmetic, a novel number representation system. This project combined my knowledge of Machine Learning (ML) and digital design, focusing on optimizing arithmetic operations for efficiency. The experience honed my skills in Verilog and broadened my understanding of advanced ML hardware implementations.

Objectives of the project: Create a CNN accelerator in Verilog using POSIT Arithmetic

Tool used: Xilinx Vivado, Python

Details of Papers/patents: none as of now, in the works

Brief description of the working environment: Had really good PHD mentors, really helped from time to time. Pilani has extreme weather so keep that in mind apart from that projects are really good; you will learn a lot here more than what you would in an online PS station

Academic courses relevant to the project: Digital Design, Microprocessors, Machine learning, Foundation of data science,

Learning Outcome: Extreme Hardwork, Verilog, Machine learning, Research work

Name: ARYAMAN AGARWAL .(2022B1A81572H)

Student Write-up:

PS-I Project Title: Cold Plasma application for biomedical

Short Summary of work done: Our initial focus was on understanding skin dermatoses, particularly psoriasis, exploring its prevalence and underlying mechanisms. We delved into the intricacies of cold plasma, encompassing its generation methods and classifications. Through hands-on experiments, we mastered cold plasma formation and identified key factors influencing its properties. Building upon this foundation, we investigated the interactions between cold plasma and crucial inflammatory mediators, such as cytokines and chemokines, implicated in psoriasis pathogenesis, as revealed through scientific literature.

Objectives of the project: To have a comprehensive study on application of cold plasma in the treatment of skin dermatosis especially psoriasis and skin cancer

Tool used: H/w tools: quartz tube, pin electrode, ring electrode, high voltage tape, mass spectrometer, optical sensor, oscilloscope, feed gas (argon, helium, oxygen, nitrogen), high voltage probe

Details of

Papers/patents: https://www.google.com/search?q=cold+plasma+application+on+psoriasis&oq=cold+plasma+application+on+psoriasis+&gs_lcrp=EgZjaHJvbWUyCwgAEEUYChg5GKAB0gEJMTI3NDIqMGo0qAIBsAIB&client=ms-android-vivo-rvo3&sourceid=chrome-mobile&ie=UTF-8

The following paper will

Brief description of the working environment: The working environment at ceeri is very challenging. The scientists and the PHD scholars are very considerate and always ready to help.

Apart from the project u'll be given the opportunity to explore and grasp more knowledge on other ongoing experiments. On the whole your work experience at CSIR-CEERI pilani will be worth remembering.

Academic courses relevant to the project: MicroBiology

Learning Outcome: Cold plasma can be considered as a significant treatment option for treating various skin disease

Name: EESHAAN GAUTHAM RAO .(2022B4A70881H)

Student Write-up:

PS-I Project Title: Anomaly Detection in Surveillance Videos

Short Summary of work done: Our initial phase started with completing the Deep Learning Specialisation by Dr. Andrew NG on coursera and learning PyTorch, following which we were asked to work on the implementation and understanding of ASTNet as mentioned above.

Objectives of the project: Implementation of the following project - <https://github.com/vt-le/astnet>

Tool used: S/w - PyTorch, NumPy, Pandas and CUDA

Details of Papers/patents:We didn't publish nor write any papers from our side.

Brief description of the working environment: Work environment at CSIR-CEERI is good for students with the zeal and passion to learn. Scientists in the Advanced Information Technology Group will be helpful as long as you are willing to put in the efforts from your side, unlike the other electronics division where active efforts were seen being taken by the scientists to teach their students industry relevant technology. In the IT division, one receives tremendous help if they know what they are doing. For beginners with lack of experience in the field, it might not be that fruitful of a PS. However, one can always utilise the PS to learn and develop their skills with like minded peers in the PS station. Moreover, CSIR-CEERI provides great brand value for masters, and professional job applications. Students who have performed well also receive LORs from their respective scientists.

Academic courses relevant to the project: Foundation of Data Science

Machine Learning

Deep Learning

Generative AI

(All the courses mentioned are good to have - NOT Compulsory)

If one wants to learn the topics from the ground up they can follow the following roadmap

-

1) Learn Basics of Py

Learning Outcome: 1) Understanding of Basic Deep Learning concepts (Neural Networks, Training DL models etc.) and architectures - ANN, FFN and CCN

ANN - Artificial Neural Networks

FFN - Feed Forward Neural Networks

CNN - Convolutational Neural Networks

2) Encoder - Decoder - Neural Network Architecture

3) Familiarity with PyTorch

Name: DIVYANSH RAJAWAT .(2022B5A31161H)

Student Write-up:

PS-I Project Title: Android app for E-assisted tricycle and bicycle

Short Summary of work done: Worked in Kotlin to utilize APIs to integrate map functioning into application

Objectives of the project: IoT integration along with maps and running parameters

Tool used: Kotlin

Details of Papers/patents:-

Brief description of the working environment: Good

Academic courses relevant to the project: IoT

Learning Outcome: Kotlin

PS-I station: District Rural Development Agency, Villupuram

Student

Name: ADITYA PRASAD .(2022B5A21027P)

Student Write-up:

PS-I Project Title: Documentation of the Know Your Administration (Kya) for Government departments of Tamil Nadu

Short Summary of work done: Visit different village and learn about that village and problem faced by that village. Visit different government department and learn and write report about that department. Check the quality of soil, road, bridges, etc. Work on a website for Revenue Department.

Objectives of the project: Write a document

Tool used: Notion, MS Word, Civil Engineering machine.

Details of Papers/patents:none

Brief description of the working environment: Company expected student good in civil engineering to be able to work in quality control lab. Department also expect student who have good knowledge about Notion to make website. Working environment was good with fixed work hour and student are provided there own desk.

Academic courses relevant to the project: Technical Report Writing, Professional Ethics, Civil Engineering Material, Surveying.

Learning Outcome: About Tamil Nadu, How to write official document, how to check quality of soil, road, bridges, etc., How to make website in Notion, Government structure.

PS-I station: Enerzinx, Bangalore

Student

Name: T KARAN BALAKUMAR .(2022A4PS1736H)

Student Write-up:

PS-I Project Title: Load Flow Analysis

Short Summary of work done: In my project, I developed a Python-based application for load flow analysis, utilizing numpy for efficient vectorization and PyQt5 for the graphical user interface (GUI). To perform the load flow analysis, I implemented both the Newton-Raphson and Fast Decoupled methods. By leveraging numpy's vectorized operations, I significantly enhanced the performance of processing large datasets, which enabled rapid and accurate computations. I used PyQt5 to design an intuitive and user-friendly interface that allows users to easily input data, visualize results, and interact with the analysis tools. This combination of advanced numerical methods and a sophisticated GUI resulted in a powerful tool for engineers and analysts working on electrical power systems.

Objectives of the project: making a python based application to do load flow analysis using non linear optimization

Tool used: Python, PyQt5

Details of Papers/patents:none

Brief description of the working environment: the working environment was pretty chill, and very supportive. The company met my expectations and I learnt more about Non linear optimization

Academic courses relevant to the project: EEE F111

Learning Outcome: Non-Linear Optimisation, PyQt5 and Object Oriented Programming

Name: ABHIRAM CHIPPA .(2022AAPS0317H)

Student Write-up:

PS-I Project Title: Automation on work processes

Short Summary of work done: The company has Excel files containing data on work duration and various project details. The main scope of the project is to create a Python script using libraries such as NumPy, pandas, and Matplotlib. Additionally, the analysis should be displayed in a GUI application.

Objectives of the project: To automate excel files and create GUI apps

Tool used: Python libraries like numpy, pandas, matplotlib, streamlit, Tkinter, PyQt5, openpyxl etc. Used VS code and Excel.

Details of Papers/patents:NO

Brief description of the working environment: We used to have an online meeting once/twice in a week. Mentor will teach necessary skills and give task at the end of the meeting

Academic courses relevant to the project: OOP and some concepts related to python.

Learning Outcome: A solid grip on using Python libraries

PS-I station: FinVedas (Dhanam Technologies Private Limited) - Tech, Pune

Student

Name: VANSH AGARWAL(2022A7PS1273G)

Student Write-up:

PS-I Project Title: Backtesting F&O strategies and development of a LumpSum calculator

Short Summary of work done: Our first task was to develop a lumpsum calculator using java, spring boot, thymleaf and html css. Our second task was to backtest various f&o strategies using python and its libraries. Not much was done during the PS. These tasks were took barely 4-5 days in total to complete.

Objectives of the project: Help client make a better investment decision based on the result provided by the strategies developed using python and its libraries and calculate the profit made on doing a lumpsum investment within seconds

Tool used: S/w tools like java html css thymlead spring boot python

Details of Papers/patents:NA

Brief description of the working environment:

Academic courses relevant to the project: Computer programming

Learning Outcome: Learned about the fusion of finance with technology by developing various trading strategies using python and also learned about backend and frontend development while making the calculator

Name: TEJASVINI GOEL .(2022A7PS1672H)

Student Write-up:

PS-I Project Title: Backtesting option trading strategies

Short Summary of work done: The project that we were allotted was very different from the one that was advertised on portal (implementing AI algorithms in SpringBoot etc). Historical option data wasn't available and we ended up testing option trading strategies on stock data.

Objectives of the project: Na

Tool used: python

Details of Papers/patents:na

Brief description of the working environment:

Academic courses relevant to the project: derivatives and risk management

Learning Outcome: python

Name: SHRUTI SOUMYA ROUT(2022AAPS1144G)

Student Write-up:

PS-I Project Title: Springboot backend development, F&O backtesting

Short Summary of work done: The first task was to build the backend of a few calculators inspired from the groww calculators. Second task was to implement various option strategies like butterfly spread, straddle, etc, on 5 years of historical data and evaluate the performance of each strategy using various ratios.

Objectives of the project: 1. To build the backend of a NPS,SIP and Lumpsum Calculator using springboot. 2. Backtest Option and Future strategies on 5 years of data.

Tool used: Java, Springboot, Python

Details of Papers/patents:NA

Brief description of the working environment: Working environment was easy going and comfortable. Expectations from the company were to attend to us more often as sometimes we were unable to reach out to them to ask doubts.

Academic courses relevant to the project: Derivatives and Risk Management

Learning Outcome: Stock market basics, Options, Futures, Strategies, Backend development using Springboot and Java

Name: THOLE ADITYA SANDEEP .(2022B3A70374P)

Student Write-up:

PS-I Project Title: Api using springboot and backtesting using python

Short Summary of work done: I developed an API in Project 1 in Spring Boot which calculates returns from a Systematic Investment Plan (SIP). Here, I learnt technical skills

in Spring Boot and HTML, and learnt more about the stock market, returns. In Project 2, I backtested multiple futures and options (F&O) strategies on five years of historical data. Here, I gained further knowledge about F&O markets and trading strategies like straddles, and iron condors. Also, I became familiar with some Python libraries including yfinance, backtesting.py, pandas, matplotlib, and numpy, which I used for analytics and data visualization for strategy development and optimization.

Objectives of the project: To create a SIP calculator using springboot framework and backtest options strategies using python on 5 year historical data

Tool used: Java, python, html, various python libraries - numpy, yfinance, pandas, backtesting.py etc

Details of Papers/patents:NA

Brief description of the working environment:

Academic courses relevant to the project: Basics of finance and stock market.

Learning Outcome: Understanding Api development using spring boot and learning html basics, for backtesting learning basics of python and it's libraries used for backtesting

Name: PIYUSH RAJ .(2022B3A70592H)

Student Write-up:

PS-I Project Title: Back testing options strategies using Python/R on 5 years of historical data.

Short Summary of work done: We created a SIP calculator using Java Spring Boot. We back tested options strategies like straddle, strangle, iron condor and butterfly spread using Python on 5 years of historical stock data.

Objectives of the project: We had to create option strategies like Straddle, Strangle on Python, and back test it on historical data to see if our strategy generates profits or losses.

Tool used: Java Spring Boot, HTML, Python

Details of Papers/patents:none

Brief description of the working environment:

Academic courses relevant to the project: Derivatives and Risk Management

Learning Outcome: We learnt how to use Java spring boot and created one SIP calculator using it. Also learnt basics of Python as we back tested option strategies on historical data using it. We also learnt about basics of Stock Market.

PS-I station: Goa State Research Foundation, Goa

Student

Name: JANGAM VAMSI PREETHAM(2022A7PS0463G)

Student Write-up:

PS-I Project Title: open journal system for GSRF

Short Summary of work done: OJS, or Open Journal Systems, is an open-source software platform designed for the management and publication of scholarly journals. It facilitates the entire publishing workflow, from submission to peer review, editing, and final publication online. Installing OJS on your own domain involves several steps: 1. **Server Requirements**: Ensure your web server meets OJS's requirements, typically Apache or Nginx, PHP (usually version 7.2 or higher), MySQL or PostgreSQL database. 2. **Download OJS**: Visit the official OJS website or GitHub repository to download the latest version of the software. 3. **Upload Files**: Extract the downloaded files and upload them to your web server using FTP or SSH. Place them in your desired directory (e.g., ``var/www/html/journal``). 4. **Database Setup**: Create a new MySQL or PostgreSQL database and a user with full privileges for that database. 5. **Configuration**: Navigate to the OJS installation URL (e.g., ``http://yourdomain.com/journal``) and follow the on-screen instructions. You will need to provide database details, create an administrative account, and configure basic settings. 6. **File Permissions**: Ensure that appropriate file permissions are set to allow OJS to write to certain directories as needed. 7. **Customization**: Customize the look and feel of your journal by uploading logos, choosing themes, and configuring settings related to journal policies and sections. 8. **Testing and Launch**: Once configured, thoroughly test the installation by submitting a test article, reviewing the workflow, and ensuring that all functionalities work as expected. 9. **Security**: Regularly update OJS to the latest

version to patch security vulnerabilities and ensure ongoing stability. By following these steps, you can successfully install OJS on your domain and begin managing scholarly journals efficiently. OJS's comprehensive features make it a robust choice for academic institutions and publishers looking to manage the entire publishing process online.

Objectives of the project: Creating a journal system to GSRF

Tool used: Xampp, private dns server

Details of Papers/patents:-

Brief description of the working environment:

Academic courses relevant to the project: -

Learning Outcome: Learnt Apache ,php, nginx
And learnt how to use and host website
In command line Linux servers

PS-I station: Grasim Industries -Online-Nagda, Nagda

Student

Name: ADITYA SAHOO(2022A1PS1286G)

Student Write-up:

PS-I Project Title: Effluent Treatment Zero Liquid Discharge Process

Short Summary of work done: Corporate presentation and research based on the company's annual report and recent developments in ZLD was done.

Objectives of the project: The primary objective of the project was to provide a comprehensive analysis of the Zero Liquid Discharge (ZLD) process implemented at Grasim Industries, with a particular focus on the Nagda plant.

Tool used: S/w

Details of Papers/patents: Quantitative & Qualitative insights from interviews and case studies was used to identify key challenges and innovative solutions for ZLD plants in Grasim.

Brief description of the working environment: Well-scheduled online meetings through Google meet.

Academic courses relevant to the project: General Chemistry

Learning Outcome: Research and communication

Name: ADITYA RAJ SRIVASTAVA .(2022A1PS1572P)

Student Write-up:

PS-I Project Title: Viscose machine analysis

Short Summary of work done: To improve the first pass yield for 3 Viscose machines by changing its input parameters Learning about Viscose and production mechanism along with regression analysis

Objectives of the project: To improve the first pass yield for 3 Viscose machines by changing its input parameters

Tool used: Desmos, excel

Details of Papers/patents:-

Brief description of the working environment: Nice and easy working environment

Academic courses relevant to the project: Numerical method of chemical engineering

Learning Outcome: Learning about Viscose and production mechanism along with regression analysis

Name: PALASH BOUNTRA .(2022A1PS1730P)

Student Write-up:

PS-I Project Title: ZLD

Short Summary of work done: During my Practice School internship at Grasim Industries, I had the invaluable opportunity to delve into the Zero Liquid Discharge (ZLD) process, a critical advancement in industrial wastewater management. Learning about ZLD was an eye-opening experience, as it emphasized the importance of sustainable practices and environmental responsibility in modern industries. Through hands-on involvement, I gained insights into the various stages of the ZLD process, such as pre-treatment, evaporation, and crystallization, and how they collectively contribute to achieving zero liquid waste discharge. Working in a group environment was another significant aspect of my internship. Collaborating with a diverse team of professionals allowed me to enhance my communication and teamwork skills. I learned the value of diverse perspectives in problem-solving and the importance of effective collaboration to achieve common goals. This experience taught me how to navigate group dynamics, manage conflicts, and contribute effectively to team projects. Moreover, my internship provided a comprehensive understanding of the industry and its operations. Observing the day-to-day workings of Grasim Industries offered me a glimpse into the complexities of running a large-scale manufacturing operation. I gained exposure to various departments and their interdependencies, learning about supply chain management, quality control, and compliance with environmental regulations.

Objectives of the project: Research on ZLD

Tool used: Microsoft Power Point, Google docs and research paper platforms.

Details of Papers/patents:none

Brief description of the working environment: During my Practice School internship at Grasim Industries, I experienced a professional working environment that balanced learning with practical application. The company emphasized sustainability and innovation, particularly in their implementation of the Zero Liquid Discharge (ZLD) process. Expectations were clear and focused on collaboration, problem-solving, and adherence to environmental standards. The internship provided a platform to engage with industry experts who shared insights into efficient waste management and sustainable practices.

The working environment was dynamic and collaborative, encouraging interns to contribute ideas and participate actively in projects. Grasim Industries expected us to be proactive, reliable, and eager to learn, mirroring the professional standards of the industry. This internship was not only about observing but also about actively participating in tasks that impacted the company's operations.

Throughout my time at Grasim Industries, I gained valuable knowledge about the ZLD process and its importance in reducing industrial waste and promoting environmental sustainability. I learned about the intricate steps involved, such as pre-treatment, evaporation, and crystallization, and how these contribute to achieving zero liquid waste discharge. Moreover, I enhanced my teamwork and communication skills by working closely with a diverse team. I learned how to effectively collaborate, manage group dynamics, and resolve conflicts. Additionally, I gained insights into various operational departments, understanding the interdependencies that drive a successful manufacturing business. Overall, this experience equipped me with both technical knowledge and essential soft skills, preparing me for future professional endeavors.

Academic courses relevant to the project: Chemical Processes, Separation process, basic knowledge of chemicals.

Learning Outcome: team work, group discussions, project handling, report making.

Name: SHAKYADEEP MUKHERJEE(2022A4PS0970G)

Student Write-up:

PS-I Project Title: GROUP H PAYROLL SYSTEM

Short Summary of work done: We developed a Payroll system for the User to get to know about Payslip, Deduction report and Earnings in the website

Objectives of the project: IMPLEMENTATION OF PAYROLL SYSTEM

Tool used: asp.net installer, Visual studio, Excel, Canva,Microsoft SQL expres

Details of Papers/patents:NA

Brief description of the working environment: It was an online station and we had contact with the one mentor allotted by the company . The company expects you to develop a system efficient and time reductant

Academic courses relevant to the project: CSE courses

Learning Outcome: Learning SQL,asp.net and overview of a payroll system

Name: ADVAIT SRIVASTAVA .(2022A4PS1181H)

Student Write-up:

PS-I Project Title: Microfinance/Condition Monitoring

Short Summary of work done: Condition and vibrational analysis of machines especially turbines and bearings

Objectives of the project: Microfinance and condition monitoring/vibrational analysis of machines

Tool used: Excel/PPT

Details of Papers/patents:NA

Brief description of the working environment: In Grasim Industries I enjoyed working with them and gained a lot of experience and knowledge about condition monitoring and vibrational analysis

Academic courses relevant to the project: FOFA/Mechanical CDCs

Learning Outcome: Understanding impact of microfinance and mechanics behind condition monitoring of machines

Name: ADARSH KUMAR .(2022A5PS1259H)

Student Write-up:

PS-I Project Title: MIS Dashboard

Short Summary of work done: It was a great working experience.

Objectives of the project: To make dashboard for efficiency of the company.

Tool used: Google Looker studio

Details of Papers/patents: No

Brief description of the working environment: It was a great working environment. We were working remotely.

Academic courses relevant to the project: Design

Learning Outcome: Learned Design

Name: SHIVANSH SHANKER GUPTA .(2022A7PS0047H)

Student Write-up:

PS-I Project Title: Design MIS Dashboard & Trend-charts : MIS Attendance & Leave Exception Reports Dashboard

Short Summary of work done: Data Processing and extraction from Raw Data provided by mentor also using Python code for finding some data from raw data into your final database google sheets then connecting it to looker studio . Designing a Attendance & Leave Reports in Studio . Using SQL for BigQueries/Big Data .

Objectives of the project: (1) Learning Heavy Excel work & it's tricks (2) Learning Looker Studio Dashboard Designing (3) Learning SQL for data entry & queries

Tool used: Excel , Looker Studio , Oracle SQL & VScode

Details of Papers/patents:N/A

Brief description of the working environment: Very supportive & Good Environment. No Stress of work by FIC or Mentor.

Academic courses relevant to the project: Big Data & Data Analytics

Learning Outcome: Learnt Excel , Google Looker Studio & SQL . Gained Good Soft skills like team work & leadership skills .

Name: KSHIPRA SURESH(2022B1TS1080G)

Student Write-up:

PS-I Project Title: Contamination sorter: Cost effective with higher efficiency

Short Summary of work done: To find out the working of contamination sorters, types of contaminants in fabric, to research the models available in both Indian and international markets. To improve efficiency and reduce cost.

Objectives of the project: To find ways to improve contamination sorter in terms of efficiency and cost

Tool used: -

Details of Papers/patents:N/A

Brief description of the working environment: Online mode

Academic courses relevant to the project: -

Learning Outcome: Functioning of contamination

Name: POOJA SINGH(2022B2TS1535P)

Student Write-up:

PS-I Project Title: Replacement of conventional Demin Plant with RO + MB for demin water preparation

Short Summary of work done: Throughout PS1, I have completed several projects. My first project involved working with Grasim Industries Limited, Nagda, and the Aditya Birla Group. The second project focused on replacing a conventional demineralization plant with a reverse osmosis (RO) and mixed bed (MB) system for enhanced demineralized water preparation.

Objectives of the project: The objective of replacing a conventional demineralization plant with an RO + mixed bed system is to enhance water quality, increase operational efficiency, and reduce costs and environmental impact. This upgrade aims to provide more reliable and consistent water purity while minimizing maintenance and chemical usage

Tool used: Microsoft PowerPoint, Canva and word

Details of Papers/patents:-

Brief description of the working environment: The working environment was highly conducive to learning, with excellent interaction and support from our mentors. Their guidance was invaluable and significantly contributed to our progress. The company maintained clear expectations, fostering a collaborative atmosphere where feedback was readily provided and incorporated. This supportive environment helped us align with company objectives and effectively achieve our project goals.

Academic courses relevant to the project: -

Learning Outcome: The major learning outcomes include understanding advanced water purification techniques (RO + mixed bed), evaluating cost savings and efficiency improvements, and recognizing reduced environmental impact and maintenance needs.

Name: AKSHAT RAJ SINGH .(2022B3A20843H)

Student Write-up:

PS-I Project Title: MIS Dashboard and Trend Charts

Short Summary of work done: During our PS1 project, we focused on developing an MIS Dashboard and Trend Charts for Grasim Industries, Nagda. Our journey began with an initial presentation created using Canva and delivered via Google Meet. This presentation provided a comprehensive overview of the Aditya Birla Group and Grasim Industries, covering the company's background, operations, and financial status, setting a solid foundation for our project. We then had an insightful online meeting with Mr. Rakesh Chouhan from Grasim Industries to gather valuable insights and guidance. Mr. Chouhan shared his vision for the project and emphasized the importance of creating an intuitive and efficient MIS Dashboard to monitor key performance indicators (KPIs) such as monthly overtime, wages, and unit-wise manpower. He also provided examples of past

projects to help us understand the required features and visualizations. We conducted a seminar to update stakeholders on the project's context, challenges, objectives, project plan, and timeline. We outlined the need for a robust MIS Dashboard, identified current data management challenges, and presented our objectives and phases for data collection, integration, dashboard design, testing, and deployment. Throughout the project, we enhanced our skills in dashboard development, presentation creation, seminar delivery, and report writing. We also gained valuable project management experience, ensuring we could effectively communicate our progress and findings and deliver a high-quality solution.

Objectives of the project: The objective of our project was to develop an intuitive and efficient MIS Dashboard and develop Trend Charts based on that using Google Looker Studio and MySQL. This dashboard aimed to monitor and analyze key performance indicators (KPIs) such as monthly overtime, wages, and unit-wise manpower. Our goal was to enhance data accessibility, improve operational efficiency through automation, and facilitate informed decision-making based on accurate and timely data.

Tool used: During our PS1 project, we utilized various hardware tools to support our work. Essential hardware included laptops for development and presentations, smartphones for communication and quick access to information, and headphones for clear audio during vir

Details of Papers/patents:N/A

Brief description of the working environment: Though our PS-I was conducted in an online mode, the working environment was highly supportive and productive. Our Faculty-In-Charge was extremely cooperative from the start. She ensured that we had a structured approach to our work by holding regular meetings and conducting all evaluations promptly. Her guidance was instrumental in keeping us on track and motivated throughout the project.

My specific project was focused on the creation of an MIS Dashboard and Trend Charts for various KPIs of all employees at Grasim Industries, Nagda. Despite the remote nature of our internship, we maintained effective communication and collaboration using digital tools. We utilized platforms such as Google Meet for our meetings, and tools like Google Sheets, Google Docs, and Keep Notes for organizing our data and documentation. This setup allowed us to stay connected and work seamlessly as a team.

The expectations from the company were clearly defined, with an emphasis on developing a user-friendly and efficient dashboard that could accurately monitor key performance indicators such as monthly overtime, wages, and unit-wise manpower. We were also expected to analyze the data thoroughly and provide actionable insights.

During this internship, I learned a great deal about data management, dashboard design, and data visualization. Working with tools like MySQL, Python, Microsoft Power BI, and Google Looker Studio enhanced my technical skills. Additionally, the experience of creating presentations using MS PowerPoint and Canva, and delivering them effectively, improved my communication and presentation skills. Overall, the PS-I provided a

comprehensive learning experience, equipping me with both technical and soft skills that will be valuable in my future career.

Academic courses relevant to the project: The relevant courses for the project were:
BITS F112: Technical Report Writing
CS F212: Database Systems

Learning Outcome: The major learning outcomes of our project included developing hands-on experience in designing and developing an intuitive MIS Dashboard using Google Looker Studio and MySQL. We enhanced our ability to create visually appealing presentations using Canva and deliver them effectively via Google Meet, thereby improving our presentation skills. Through delivering seminars, we improved our public speaking and seminar presentation abilities, effectively communicating our project's progress and findings. Additionally, we developed skills in writing comprehensive reports that documented our work, research findings, and future plans. Overall, we learned to manage a project from inception to completion, including data collection, integration, testing, and deployment, gaining valuable project management experience.

Name: PAYAL(2022D2TS1541P)

Student Write-up:

PS-I Project Title: Hazards in Fiber Manufacturing industry and safety measures/practices

Short Summary of work done: During PS-I, I actively participated in a variety of projects that honed my teamwork and communication skills. These included collaborative presentations with students from different disciplines, group discussions that fostered critical thinking, and the creation of informative posters and reports. One particularly engaging project involved animation making, showcasing my creativity and ability to bring ideas to life. These diverse experiences provided a well-rounded foundation for my academic and professional development.

Objectives of the project: report delves into the various occupational hazards prevalent in the industry, with a focus on the chemicals utilized and their associated risks.

Tool used: Presentation Software: I honed my communication skills by creating compelling presentations using software like Microsoft PowerPoint. This allowed for clear and concise delivery of information to diverse audiences. Collaboration Tools: PS-1 fostered a col

Details of Papers/patents:-

Brief description of the working environment: During PS-I, I experienced a dynamic and collaborative work environment, fostering teamwork through group projects like presentations with diverse students. This instilled the importance of clear communication and adapting to different perspectives.

The program instilled expectations of proactive participation. We actively participated in group discussions, honing critical thinking and problem-solving skills. Likewise, creating reports and posters emphasized attention to detail and effective information delivery.

Academic courses relevant to the project: My academic background, including courses like PAVA (Print and Audio-Visual Advertising), provided valuable knowledge that I actively utilized during PS-1 projects. PAVA's exploration of visual communication techniques benefitted projects like animation c

Learning Outcome: The fiber manufacturing industry, particularly the production of synthetic and semi-synthetic fibers, is fraught with various occupational hazards. In the context of Grasim Industries Limited's manufacturing facility in Nagda, Madhya Pradesh, a leader in viscose staple fiber production, stringent safety measures are imperative to mitigate these risks. The facility's comprehensive safety protocols are designed to protect workers, ensure regulatory compliance, and promote a culture of safety.

PS-I station: Gten Consultancy Digital Pvt. Ltd, Andheri

Student

Name: DIWAKAR MITTAL .(2022AAPS0366P)

Student Write-up:

PS-I Project Title: App Development through Flutter

Short Summary of work done: Learned the basics of application development for the first few weeks and then worked on developing an application for Heritage Marbles along with my group member and mentor.

Objectives of the project: Building an online shopping application for Heritage Marbles

Tool used: Flutter, Dart, Android Studio

Details of Papers/patents:None

Brief description of the working environment: The work environment was very welcoming. The work we did, did not match our expectations but it was still a very good learning experience. We learned a lot about development and how to properly organize a project.

Academic courses relevant to the project: Basic understanding of computer programming

Learning Outcome: Gained experience in application development through flutter and dart and implementing user friendly interfaces.

Name: [SIDDHANT KHUNTETA\(2022B4A71428G\)](#)

Student Write-up:

PS-I Project Title: App Development through Flutter

Short Summary of work done: Initially, we learned the fundamentals of Flutter from our mentor. He'd provided some articles on containers, layouts, and packages. He also explained to us how to call APIs and about Postman, the API Platform. Next, we were tasked with developing an app for Heritage Marbles, a client. We learned how to design a login page, a forgotten password button, and a home page. We also learned how to import images and use them in our application. Finally, our mentor shared some suggestions for creating a filter button.

Objectives of the project: Frontend, To make an app for the client

Tool used: Android Studio, Visual Studio Code, Flutter, Dart, Emulator

Details of Papers/patents:None

Brief description of the working environment: The environment at work was quite friendly. The company assigned us the duty of using Flutter to create an app. Our mentor usually provides us with an article to read and then asks us to implement the packages. Even if the job we did fell short of our expectations, it was still a very worthwhile learning

experience. We gained a lot of knowledge about developing applications and project management techniques.

Academic courses relevant to the project: Computer Programming (CS F111)

Learning Outcome: We gained knowledge on how to use Flutter to develop apps, authenticate passwords and emails, create filter button, and above all work as a team.

PS-I station: IMD, Pune, Pune

Student

Name: AADIT LITAKE(2022A8PS0112G)

Student Write-up:

PS-I Project Title: Solar Sensing Geodesic Dome

Short Summary of work done: We were tasked with making a Solar Sensing Geodesic Dome. Without a 3D printer, we used cardboard to make the dome and after a lot of testing, we connected the LDRs to the dome and later to the keyboard kit. This device is used to Optimise the solar input of a PV panel, by adding a dynamic dual axis tracking system to it.

Objectives of the project: To create a solar sensing geodesic dome, that aims to optimise solar input through dynamic PV panels

Tool used: LDRs, resistance, LEDs, keyboard kit,

Details of Papers/patents:The Scientist that we worked under has a lot of his own patents.

Brief description of the working environment: It is a friendly and highly engaging work environment. You would get to interact with a plethora of highly specialised and educated scientists and their PHD scholars. You would be expected to know coding to a certain extent along with a basic knack for the working of the organisation.

Academic courses relevant to the project: CP, DD

Learning Outcome: Knowledge of basic microelectronic systems and coding

Name: TANMAY WANI .(2022B4A31615H)

Student Write-up:

PS-I Project Title: Temperature Monitoring using sensors and Forecastin

Short Summary of work done: Initially we developed an Arduino based system to measure real-time temperature and pressure, using sensors like bmp280. We compared this data with the IMD metpark thermometer readings and drew some results and conclusion. Our next task was to implement forecasting algorithms (like kalman filter) on IMD AWS temperature data of 3 days. Future Work was to integrate the Arduino based system and using forecasting algorithms on that data

Objectives of the project: To Develop a real-time Arduino-based monitoring system using Arduino for temperature and pressure. Implementing forecasting algorithms to predict future environmental conditions

Tool used: H/w= NodeMCu, BMP280 sensor, Jumper Wires S/w=Arduino IDE, Excel

Details of Papers/patents:Reference Papers used

[1]Anjali, Thottathil & Chandini, K & Kadan, Anoop & V L, Lajish. (2019). Temperature Prediction using Machine Learning Approaches. 1264-1268. 10.1109/ICICICT46008.2019.8993316

Park, I.; Kim, H.S.; Lee, J.; Kim, J.H.; Song, C.H.; Kim

Brief description of the working environment: The working environment was collaborative, with experienced professionals and fellow interns fostering a supportive atmosphere. Regular meetings facilitated project discussions and problem-solving. We also gained some practical knowledge about temperature forecasting by IMD

Academic courses relevant to the project: If your branch is Msc Maths a few topics might be relevant.

Learning Outcome: This project yielded several significant learning outcomes. We gained hands-on experience with Arduino programming and sensor integration for real-time environmental data collection. We also enhanced our data analysis skills by comparing sensor data with IMD Metpark thermometer readings to ensure accuracy. Additionally, we learned to implement and refine forecasting algorithms for predicting

temperature trends. Overall, this project improved our technical, analytical, and problem-solving skills in environmental monitoring and data analysis.

Name: ANSHUL JADHAV .(2022B5A41755H)

Student Write-up:

PS-I Project Title: Efficacy models for ENSO Teleconnection using Data Analysis methods

Short Summary of work done: We assessed already existing literature regarding the topic in question and prepared a brief summary report. We then plotted geospatial maps depicting data for rainfall and sea surface temperatures in the Indian subcontinent and eastern Pacific region respectively. We then ran correlation plots and tested efficacy of prediction tools which make use of model data for various climate stations (for example: UKMO). Prepared a final comprehensive report.

Objectives of the project: Test out the performance of various models already in use to determine monsoon rainfall variability with change in Sea Surface Temperatures due to Teleconnection.

Tool used: Python, matplotlib, various python libraries, etc.

Details of Papers/patents: Persistent efforts for an article publication.

Brief description of the working environment: I take valuable learning from the institute regarding the functioning of a Meteorological department and a government research institute. Teamwork as well as taking diligent efforts towards reaching targets were soft skills that were polished. It was a healthy work environment with enough opportunities provided for learning. We were even exposed to an official weather prediction seminar for the coming week term.

Academic courses relevant to the project: Technical Report Writing.

Learning Outcome: Using data science and analytics tools such as xarray, Netcdf4 files etc. Literature study of Indian Summer Monsoon Rainfall variability. How to conduct a literature review.

PS-I station: Indian Red Cross Society - Non Tech- Dehradun, Dehradun

Student

Name: ANUSHKA ASTHANA .(2022A5PS1444P)

Student Write-up:

PS-I Project Title: Non Tech

Short Summary of work done: social media handling , databse management , conducting surveys , online quizzes , financial management , drafting bills , maintaining records , digitization into excel

Objectives of the project: Social media management

Tool used: ms excel , chatgpt , ms word

Details of Papers/patents:-

Brief description of the working environment: working environment was decent and motivating to work

Academic courses relevant to the project: -

Learning Outcome: social media handling , databse management , conducting surveys , online quizzes , financial management , drafting bills , maintaining records , digitization into excel

PS-I station: Indian Red Cross Society - Non Tech, Guwahati

Student

Name: RISHI BIDHAN DEV(2022A4PS1217G)

Student Write-up:

PS-I Project Title: CSR Project Appraisal

Short Summary of work done: The organisation plans to build two RCC buildings- a training hall and a two-storeyed accommodation facility in its Children Home property; for which I did the architectural design, then put up the dimension accurate floor plans on the software SketchUp (which is widely used by architects and civil engineers) and finally did the cost estimation of the project using CPWD approved rates.

Objectives of the project: Project Management, 2-D Modelling, Financial Skills

Tool used: SketchUp, AutoCAD, MS Excel

Details of Papers/patents:None

Brief description of the working environment: It was a great work experience in a domain which was new to me, unconventional to my mechanical degree and out of my comfort zone.

Academic courses relevant to the project: Engineering Graphics

Learning Outcome: Architecture and Civil Engineering related works

PS-I station: Indian Red Cross Society - Tech- Dehradun, Dehradun

Student

Name: TEJAS AHUJA .(2022A2PS1678P)

Student Write-up:

PS-I Project Title: Web development

Short Summary of work done: Web development,coding etc.

Objectives of the project: Improving website layout

Tool used: Excel,python,Sql

Details of Papers/patents:None

Brief description of the working environment: Good company with cooperative employees.

Academic courses relevant to the project: Database managemnet systems,C programming

Learning Outcome: Data digitalization

Name: HIMANSHI MALIK .(2022A5PS1240H)

Student Write-up:

PS-I Project Title: Social Media Automation and Financial Record Management

Short Summary of work done: I was involved in almost all the tasks to some extent. There was not any clear segregation of projects. There were roughly two divisions: social media(non-tech) and finance. I was majorly involved in the financial division and made the cashoutflow statement record of the IRCS UK state branch for their Audit, Digitized various records dating back from 2010 upto recently which included disaster beneficiary list organization, Staff Attendance and Leaves Record under the RTI act, Bills organization and summarization, District-wise Disaster relief distribution record scanning and digitization, etc. Apart from that I was also involved in technical writing work such as letter templates desgin for the Governor and Health Minister.

Objectives of the project: 1. To develop the backend code for the social media handles' automation program. 2) To prepare, manage and organize various financial records for the purpose of the yearly audit and Vice President's vist.

Tool used: In the automation project, I used python as the main programming language, flask was the framework I used, celery was the scheduler entity that I used to schedule the various social media posts at certain intervals, various social media APIs such as tweep

Details of Papers/patents:Some newsletters and articles describing the Health Minister's visit to the office which included the warehouse visit and checks, flag off of the relief distribution services for the various districts among other things. Some plantation drives and quizzes

Brief description of the working environment: I had chosen the tech role for the IRCS UK PS station, mainly for web development. I majorly worked in the finance division and did some more legal research for the office, as per their work.

The working environment is very peaceful, and the supervisor was very helpful and coordinative. Most of the work was assigned individually. You are expected to arrive on time and be regular. It was a good experience, overall.

Academic courses relevant to the project: Fundamentals of Finance and Accounting, Technical report Writing, Financial Management, DSA

Learning Outcome: Learnt various financial record management techniques, Did legal research, learnt file handling and database management, error correction and organization, among other things.

Name: [SHRISH CHAUHAN .\(2022B1A41095P\)](#)

Student Write-up:

PS-I Project Title: IRCS Dehradun - Tech

Short Summary of work done: Rebuilt the IRCS Uttarakhand website with the help of the IRCS team. Maintained financial records and digitalized the financial records of the past decade that were still in a physical format. Organised online quizzes and tournaments and managed the social media handles of the organization.

Objectives of the project: To rebuild the IRCS website, to manage financial accounting of the branch, to handle social media of the branch

Tool used: Google Forms, Canva, MS Excel, Python IDEs

Details of Papers/patents:None

Brief description of the working environment: The working environment was quite good, with a mutual understanding and respect between the BITSians on PS and the staff

of IRCS Uttarakhand. There was also a good level of team bonding between the members. I expected to get an experience of operating in a professional environment, and IRCS managed to give it to me.

Academic courses relevant to the project: Technical Report Writing, Fundamentals of Finance and Accounting, Print and Audio Visual Advertising

Learning Outcome: Learnt how to operate in an official environment and how to handle multiple jobs of different nature simultaneously

Name: ROHAN CHUGH(2022B4A21744P)

Student Write-up:

PS-I Project Title: Survey

Short Summary of work done: Did a survey where i used python to analyse questionnaire . As an intern at the Indian Red Cross Society in Dehradun, I engaged in various humanitarian and social welfare activities. My responsibilities included assisting in health and sanitation drives, where I helped organize and participate in awareness campaigns about hygiene practices and public health. I also supported blood donation camps by coordinating volunteers and ensuring smooth operations during the events. Additionally, I contributed to disaster management efforts, providing logistical support and helping in the distribution of relief materials to affected areas. This internship provided me with valuable experience in community outreach, project management, and the practical application of social work principles, enhancing my understanding of the challenges and rewards of humanitarian work.

Objectives of the project: To know how 100+ age people in Uttarakhand live and what lessons can people learn from them to live longer.

Tool used: Python , SQL

Details of Papers/patents:None

Brief description of the working environment: The working environment at the Indian Red Cross Society in Dehradun is collaborative and supportive, fostering a sense of community and purpose. The team is comprised of dedicated professionals and volunteers passionate about humanitarian work. The atmosphere is dynamic and engaging, with a focus on teamwork and mutual respect. Interns are encouraged to

actively participate in various projects, gaining hands-on experience and learning from experienced staff. The organization promotes a culture of learning and compassion, providing ample opportunities for personal and professional growth while working towards impactful social causes.

Academic courses relevant to the project: None

Learning Outcome: Learnt importance of time
Learnt how organization work
Learnt python programming for work.

PS-I station: Indian Red Cross Society - Tech-Bengaluru, Bengaluru

Student

Name: SOHAN PALEKAR(2022AAPS0554G)

Student Write-up:

PS-I Project Title: Web Development

Short Summary of work done: Developed a website for the company from designing to creating pages and tabs in the website

Objectives of the project: Make a website for the company

Tool used: Oracle Apex, Figma

Details of Papers/patents:NA

Brief description of the working environment: I was great working and learning experience

Academic courses relevant to the project: OOPS

Learning Outcome: Learnt new languages such as HTML, CSS, Java Script

PS-I station: Indian Red Cross Society - Tech-Kolkata, Kolkata

Student

Name: SHASHWATA GHOSH .(2022B5A31036H)

Student Write-up:

PS-I Project Title: Building a website and payment gateway for public use

Short Summary of work done: I made a working website for IRCS Bengal using HTML, CSS, JS which is ready to be hosted and will be done shortly and a payment form which will be connected to SBI EPAY for donations. I also visited an OPD and suggested how to improve it. The PS will end with a meet and greet with the Governor of west bengal.

Objectives of the project: Developing a website for users to access on Google or other search engines, Building a form using html, css which will connect to a payment gateway

Tool used: HTML, CSS, JS on VS Code and my MacBook Air was the hardware

Details of Papers/patents:No patent for the website

Brief description of the working environment

Academic courses relevant to the project: Not sure

Learning Outcome: Web development and use of Html, css, JavaScript, learnt how a government office works based on hierarchy

PS-I station: Indian Red Cross Society-Jaipur, Jaipur

Student

Name: RIYA DINESHKUMAR KASLIWAL .(2022A3PS1365H)

Student Write-up:

PS-I Project Title: Healthcare

Short Summary of work done: We took first aid training

Objectives of the project: Promoting health and care for vulnerable people and communities

Tool used: None

Details of Papers/patents: None

Brief description of the working environment: It regularly conducts motivational campaigns to organise voluntary blood donation and it also provide first aid training

Academic courses relevant to the project: None

Learning Outcome: Improve health, prevent disease and educate people on disaster

**PS-I station: National Centre for Polar and Ocean Research (NCPOR) -
Data Analytics, Vasco da Gama**

Student

Name: SHREYAS MISHRA .(2022AAPS0241P)

Student Write-up:

PS-I Project Title: Temperature prediction in Antarctica using Deep Learning

Short Summary of work done: Data was retrieved from the Antarctica station of NCPOR. The data was cleaned and preprocessed using numpy, pandas and scikit-learn libraries. The data was then used to predict the future values of five environmental variables, using models written in PyTorch and plotted graphs using matplotlib.

Objectives of the project: To predict the temperature of future time points in Antarctica based on previous years data

Tool used: Python, Numpy, Pandas, PyTorch, Matplotlib

Details of Papers/patents: None

Brief description of the working environment:

Academic courses relevant to the project: Computer Programming, Deep Learning, Probability and Statistics

Learning Outcome: Deep Learning, Data Preprocessing, Matplotlib

PS-I station: National Council of Applied Economic Research (NCAER), Delhi

Student

Name: PARUL SHARMA(2022B3TS1511P)

Student Write-up:

PS-I Project Title: Investor Education and Protection Fund

Short Summary of work done: First one was to analyse the primary data collected in MS Excel. Second was to collect data for SEBI, IFSCA related to frauds and its prevention, grievance redressal, investor education and awareness initiatives taken and analyzing it in MS Excel then prepared a report.

Objectives of the project: To collect secondary data about what SEBI and IFSCA has done for investor education and protection and analyze it

Tool used: MS Word, MS Excel

Details of Papers/patents:.

Brief description of the working environment: .

Academic courses relevant to the project: Any

Learning Outcome: understood SEBI's fraud prevention, grievance redressal mechanisms, and investor education initiatives taken

Name: JATIN KUMAR(2022B3TS1513P)

Student Write-up:

PS-I Project Title: Assessing the Effectiveness of Small Borrowing in India (Microfinance Industry) 2023-24

Short Summary of work done: A detailed instruction manual was developed to ensure consistency, reliability, and validity in data collection. Key contributions include: 1. Comprehensive Guidelines: a. Address diverse scenarios and provide clear instructions for data collection. 2. Training Modules: a. Equip investigators with the necessary knowledge and skills. 3. Standardized Procedures: a. Ensure accuracy and reliability of the data. 4. Ethical Guidelines: a. Emphasize informed consent, confidentiality, and respect for respondents. 5. Technical Support: a. Provide solutions to common field challenges. 6. Literature Review: a. Made a Literature Review of 5 research papers regarding the different areas affected by Microfinance Loans.

Objectives of the project: 1. Profile and Awareness of Microfinance Borrowers: a. Capture the demographic and socio-economic profiles of borrower households. b. Assess awareness of different borrowing sources, loan particulars, and insurance services. 2. Cost and Usage of Microfinance Loans: a. Compare interest rates and total costs across various lending channels. b. Evaluate the suitability of microfinance loans and borrower attitudes towards MFIs. 3. Borrower-Lender Interaction: a. Examine the mode and frequency of interactions, group lending dynamics, and experiences with the repayment process and grievance redressal mechanisms. 4. Digital Adoption: a. Assess access to digital technology, usage of digital payments, and awareness of digital risks.

Tool used: word, powerpoint , canva , excel , python

Details of Papers/patents:no

Brief description of the working environment: I was very good and supportive environment.

Academic courses relevant to the project: C.P

Learning Outcome: 1. Borrowers:

- a. Improved financial products tailored to low-income households.
- b. Enhanced financial literacy and stronger borrower protections.

2. Microfinance Institutions:

- a. Enhanced operational efficiency and better risk management strategies.

3. Policymakers:

- a. Informed policy decisions and targeted interventions to support the microfinance sector.

4. Society at Large:

- a. Economic development and increased financial inclusion.
- b. Promotion of digital financial services and awareness of digital risks.

Name: [DHAIRYA KANSAL .\(2022B4A80772P\)](#)

Student Write-up:

PS-I Project Title: RBI and PFRDA Fraud/Grievance/Policy Analysis

Short Summary of work done: read and analysed past 15 year reports of RBI ANNUAL REPORT, Rbi Financial Stability Report and the Ombudsman Scheme reports, PFRDA Reports and the NPS Trust Scheme Report to extract relevant data related to frauds, grievance schemes, fraud prevention initiatives, awareness programs, no of beneficiaries etc. Then analysed it to create a time series analysis of the past 15 years and created presentations for the IEPF unit so that the reports can be used as a stepping stone for advising policies to the ministry of the corporate affairs

Objectives of the project: To understand and analyse the policies and initiatives taken up by RBI and PFRDA to culminate frauds in India

Tool used: Stata, Power BI, Excel, Docs, PowerPoint

Details of Papers/patents:No

Brief description of the working environment: The working environment was quite good. Though the department I worked under gave too much work and even asked us to work on weekends, the in office experience was very nice. I got to experience corporate life with due diligence and made connections with new peers and the office staff.

Academic courses relevant to the project: POE

Learning Outcome: Workflow of banking sector, regulatory authorities, pension schemes, different frauds happening in the country, their trends over the past 15 years, grievance mechanisms, prevention initiatives and their stats

PS-I station: Palmtree Infotech, Chennai

Student

Name: GUNAPATI SREE NITHISH REDDY .(2022A1B31853H)

Student Write-up:

PS-I Project Title: Named Entity Recognition in English and European Languages

Short Summary of work done: My work was primarily on identifying named entities in a given text. After lots of trials, we settled on GLiNER to be a perfect solution and worked on fine-tuning it.

Objectives of the project: Exploring and choosing effective methods in order to accurately perform Named Entity Recognition on any text

Tool used: GitHub, Python

Details of Papers/patents:NA

Brief description of the working environment: The work given to me was very stimulating and helped me learn a lot. The mentor assigned to us headed the company, and despite his busy schedule, he ensured that he discussed our progress every single day and tried his best in helping us finish tasks and give solutions when faced with an error or a bug.

Academic courses relevant to the project: CS F429 : Natural Language Processing

Learning Outcome: Learnt to use GitHub, and a lot of open source packages like spaCy online in order to perform NER tasks

Name: SIDDHARTH GARG .(2022A3PS0329P)

Student Write-up:

PS-I Project Title: INTEGRATING DAGSTER WITH PRE-EXISTING DATA PIPELINES

Short Summary of work done: Over the past few weeks, I worked on several Dagster projects, focusing on sensors, partitions, and data checking. I started by adding sensors to a practice project and making them work better. This involved fixing errors and looking for solutions, often asking for help from the Dagster online community. Then, I began working with Great Expectations, a tool for checking data quality. I used it to check Facebook Ad data and set up a system to get exchange rates and put them into Google Sheets. During this time, I faced many challenges. I worked on making sensors work better for bigger projects and tried to get Dagster and Great Expectations to work together smoothly. I also learned about I/O Managers, using them in our projects to handle data better. Near the end, I focused on understanding how to use sensors in more difficult situations, like with partitions. I figured out how to fill in missing data and kept learning about Dagster's advanced features. This work helped me get better at data engineering. I learned how important it is to keep trying when solving problems and to be flexible when working on different projects. This internship taught me a lot about managing data projects and working with others in a real job setting.

Objectives of the project: Integrate Dagster, a data orchestration platform, with the existing use cases of the company

Tool used: Hardware - Laptop; Software - VS Code, Git, Dagster, Great Expectations

Details of Papers/patents:None

Brief description of the working environment: During my internship at Palmtree Infotech, I worked in a remote environment that encouraged learning and growth. The company provided a supportive atmosphere where I could ask questions and seek guidance when needed. They used tools like Slack for communication, which helped me stay connected with the team and get quick answers to my questions. The company expected me to be self-motivated and take initiative in my work. They wanted me to learn new technologies, particularly Dagster and Great Expectations, and apply them to real-world data problems. They also expected me to manage my time well and meet project deadlines. Throughout my PS-I, I learned a lot about data engineering practices. I gained

hands-on experience with Dagster, a modern data orchestration tool, and learned how to build and manage data pipelines. I also learned about data validation using Great Expectations, which taught me the importance of ensuring data quality in big data projects. I improved my problem-solving skills by tackling various challenges, like integrating different tools and optimizing data processes. The internship helped me understand how a real tech company operates and the importance of teamwork in software development. I learned to adapt to changing project requirements and how to balance learning new concepts with delivering results. Overall, this experience gave me valuable insights into the data engineering field and prepared me for future challenges in my career.

Academic courses relevant to the project: CS F407: Artificial Intelligence

Learning Outcome: Learning how to work with popular data management and validation softwares like Dagster and Great Expectations, along with Git - a collaborative software development platform

Name: [NAMAHA GUPTA .\(2022A7PS0126P\)](#)

Student Write-up:

PS-I Project Title: Evaluation of data orchestration tool (Dagster) and data analysis tool (Hex) for your data pipelines

Short Summary of work done: My task in PS-1 was to explore and research Dagster, MotherDuck, and Hex.tech. I went through the official documentations of these tools to understand their functionalities and implementation details. I tested and implemented code examples to thoroughly evaluate and demonstrate the capabilities of these technologies.

Objectives of the project: Evaluation of tools - Dagster and Hex

Tool used: Dagster, DuckDB, Hex

Details of Papers/patents: None

Brief description of the working environment: The overall experience was good. Our mentor was very helpful and we had two meetings every day where we would explain our findings and demonstrate any code that we wrote.

Academic courses relevant to the project: None

Learning Outcome: I gained knowledge in the field of data engineering, learning to build data pipelines and working with Python and SQL for visualizations. I also read documentation extensively, which sharpened my ability to implement code directly without demonstrations. Additionally, I improved my communication skills too.

PS-I station: PlastPe Recycling Solutions Pvt. Ltd., Pilani, Pilani

Student

Name: SRI BALA SURYA SIVA NAGA YASWANTH AMBATI(2022AAPS0363H)

Student Write-up:

PS-I Project Title: Automation and Electronics

Short Summary of work done: At PlastPe Recycling Solutions Pvt. Ltd., a Climateverse company dedicated to plastic recycling, my PS-I experience has been transformative. Prior to this internship, I lacked practical knowledge. However, my time here has been incredibly educational and hands-on. I had the opportunity to work with various types of motors, which enhanced my understanding of their functionalities and applications. One of my key projects was designing an automatic door opener. This project involved using Arduino Uno, an HC-SR04 Ultrasonic Sensor, and a Servo Motor, which provided practical insights into automation and sensor integration. My primary responsibility was the design and implementation of a gantry mechanism for pick-and-place sorting. I single-handedly designed this complex system, which included the use of NEMA 17 and NEMA 23 motors, vacuum grippers, and a ball screw for precise movements. The gantry mechanism is designed to pick and place different types of plastic bottles in desired place, significantly improving the efficiency of the recycling process. This experience has not only increased my technical skills but also boosted my confidence in my ability to work at an industry level. I have learned valuable lessons in automation, machinery design, and practical problem-solving. Overall, my PS-I at PlastPe has been an invaluable step in my professional development, providing me with the knowledge and skills necessary for a successful engineering career.

Objectives of the project: Sorting of different types of plastic by Automation

Tool used: Arduino, Raspberry Pi, Jupyter Notebook(Python)

Details of Papers/patents:Getting an LOR from CEO

Brief description of the working environment: At PlastPe Recycling Solutions Pvt. Ltd., the working environment was dynamic and collaborative. The company emphasizes innovation and sustainability, creating an atmosphere that encourages creative problem-solving and continuous learning. My colleagues and supervisors were supportive, providing guidance and feedback that were crucial for my development.

From the company, I expected to gain hands-on experience and practical knowledge that would complement my theoretical understanding. I anticipated working on real-world projects that would challenge me and help me grow as an engineer. PlastPe met and exceeded these expectations by entrusting me with significant responsibilities, such as designing an automatic door opener and a gantry mechanism for pick-and-place sorting. During my PS-I, I learned extensively about different types of motors and their applications, which was a crucial part of my projects. I gained practical experience with Arduino, sensors, and motor controllers, enhancing my technical skills. Designing the gantry mechanism single-handedly was a particularly rewarding experience, as it involved integrating various components.

Overall, my time at PlastPe was highly educational and empowering. The supportive environment and challenging projects helped me build confidence and competence, preparing me for future industry roles. This experience has solidified my interest in automation and machinery design, and I am grateful for the opportunity to contribute to the company's mission of sustainable plastic recycling.

Academic courses relevant to the project: ECE F211, ECE F215, ECE F241

Learning Outcome: Python, PID Controller, Automation, Control Systems, Microcontroller, Microprocessor

Name: HARSH RATHORE(2022B2A41409G)

Student Write-up:

PS-I Project Title: new product development

Short Summary of work done: During my two-month internship at Plastpe, I played an active role in the new product development team. My primary responsibilities included market research, competitive analysis, and contributing to the development strategy for

a new product line. I conducted thorough market research to identify trends and consumer preferences, which informed our product development decisions. I also performed competitive analysis, comparing our potential offerings with existing market products to identify unique selling points and areas for improvement. One of my significant contributions was assisting in the creation of a detailed project plan for the product launch. This involved coordinating with various departments, such as marketing, design, and production, to ensure all aspects of the product development were aligned and on schedule. My analytical skills and attention to detail were acknowledged by my supervisors, who appreciated my ability to provide actionable insights and support the team effectively. This internship provided me with valuable experience in product development processes and cross-functional collaboration, enhancing my understanding of bringing a new product from concept to market. Overall, the experience significantly bolstered my professional development and prepared me for future roles in product management and development.

Objectives of the project: Researching details of product

Tool used: S/w

Details of Papers/patents:

Brief description of the working environment: good working environment

Academic courses relevant to the project: not much

Learning Outcome: learn how to survive in corporate

Name: [ARYAN MITTAL .\(2022B2A41620P\)](#)

Student Write-up:

PS-I Project Title: Product Development in plastic separation and segregation

Short Summary of work done: Enjoyed the journey

Objectives of the project: Sorting different plastics and material and recycle them

Tool used: Robo flow, online submits

Details of Papers/patents: No

Brief description of the working environment: The culture was very good
Cooperative and supportive faculty and people'

Academic courses relevant to the project: I will take in future

Learning Outcome: Get to know about start-up culture, got knowledge about plastics and machinery.

PS-I station: Putty Infra, Hyderabad

Student

Name: RANADEEP TATA .(2022A2PS1092P)

Student Write-up:

PS-I Project Title: 2D and 3D architecture modelling and digital marketing.

Short Summary of work done: I was told to create 2d working drawings of floor plan for a residential building and create a 3D architecture model of a residential building in Revit software.

Objectives of the project: To create 2D working drawings, To create a 3D model of a building. To create an estimated budget for ad campaign.

Tool used: AutoCAD , Revit

Details of Papers/patents:None

Brief description of the working environment: Company gave us freedom of working in hybrid mode. Most of the work was done from home. Expected to learn new software skills and learnt to implement industry standards for the architectural drawings.

Academic courses relevant to the project: Engineering drawing
Construction planning and technology

Learning Outcome: Excelling in AutoCAD and Revit softwares.

Name: HRUSHIKESH SANAPALA .(2022A2PS1719H)

Student Write-up:

PS-I Project Title: 2D Designing & 3D Modeling and Digital marketing.

Short Summary of work done: Did 2D working Drawings of Building using AutoCad. Did 3D models of the Building using Revit. Learnt a new 3D modelling software called SketchUp. And made a review for Digital marketing.

Objectives of the project: Making 2D working Drawings of Building and making 3D models of those Buildings. Digital marketing of their ongoing Projects.

Tool used: AutoCAD, SketchUp, Revit

Details of Papers/patents: None

Brief description of the working environment: It was very good place for working.

Academic courses relevant to the project: Yes

Learning Outcome: I leaned new Software SketchUp and was able to make 3D models of the Revit with near perfection. And learnt the basics needed for digital marketing.

PS-I station: Rajasthan State Industrial Development and Investment Corporation (RIICO), Jaipur

Student

Name: REYAN GUPTA .(2022A2PS1689P)

Student Write-up:

PS-I Project Title: DESIGN OF 4 LANE MAJOR HFL BRIDGE

Short Summary of work done: The proposed Major Bridge-1(HT Line) have been provided with 5 number of spans of length 30.0 m each. The FRL of the HT Line Bridge-1 are proposed at 351.471 m. The highest flood level has been worked out to be 345.90 m. The Superstructure of the bridges is PSC I-Section Girder type of 2.10 m depth. The Total combined Length of the both Bridge is 150.0 m. 4 number of Piers and 2 number of Abutments with Pile foundations have been proposed.

Objectives of the project: GEOMETRIC DESIGN OF ROADS , ELEMENTARY HYDROLOGY ,BRIDGE ENGINEERING

Tool used: autocad , fusion 360 and irc codes

Details of Papers/patents:.

Brief description of the working environment: The proposed Major Bridge-1(HT Line) have been provided with 5 number of spans of length 30.0 m each. The FRL of the HT Line Bridge-1 are proposed at 351.471 m. The highest flood level has been worked out to be 345.90 m. The Superstructure of the bridges is PSC I-Section Girder type of 2.10 m depth. The Total combined Length of the both Bridge is 150.0 m. 4 number of Piers and 2 number of Abutments with Pile foundations have been proposed.

Academic courses relevant to the project: foundation engineering , hydrology and RCC

Learning Outcome: GEOMETRIC DESIGN OF ROADS , ELEMENTARY HYDROLOGY ,BRIDGE ENGINEERING

PS-I station: Samvardhan Greenfields LLP - Non Tech, Hyderabad

Student

Name: SHREYA SINGH .(2022A1PS1411H)

Student Write-up:

PS-I Project Title: ROLE OF DIGITAL MARKETING IN ESTABLISHMENT OF FITNESS START-UP

Short Summary of work done: Team's work on digital marketing aspect of Fitness Fundas start-up is summarized as follows. Starting with description of the concept of digital marketing and its use in business development. The strategies adopted were planned in great detail in regards with our motto. To conclude with a take home message that brand-building is a slow and intricately detailed process. Every step whether it's a post or blog has lasting impact on the audience.

Objectives of the project: To use different marketing techniques to attract right audience to our wellness retreat, use a blend of traditional and modern marketing for brand building

Tool used: Canva Pro

Details of Papers/patents:

Brief description of the working environment: Working environment was good. We were allowed to pick the tasks which were of interest to us. The mentors guided us if we faced any roadblock during the journey.

Academic courses relevant to the project:

Learning Outcome:

1. Learnt about various platforms that can help in digital marketing
2. Content marketing was major portion for my work, I learnt how to take cues from generative AI tools to create impressive content for blogs
3. Used Canva Pro to design social media publicity content
4. Created data base and used it for affiliate marketing

Name: OM SONKUSARE .(2022A2PS1703H)

Student Write-up:

PS-I Project Title: Digital Marketing

Short Summary of work done: During my PS-I internship at Samvardhan Greenfields LLP, I contributed to the digital marketing efforts for the newly launched Fitness Fundas wellness center. My primary task was the development and execution of a newsletter project. This involved creating a structured content calendar, drafting engaging articles, and designing newsletters that matched the center's branding. I assessed various email

marketing platforms and recommended Brevo for its effective newsletter distribution capabilities. My role included content creation based on reliable sources, ensuring accuracy and coherence. I also assisted in designing the newsletter layout, incorporating branding elements and selecting appropriate images. I was involved in the review and approval processes, ensuring quality and consistency. Additionally, I monitored the performance of each newsletter, analyzing metrics like open rates and click-through rates to improve future campaigns. Despite challenges such as database filtering and technical issues with email delivery, the newsletters successfully increased website traffic, promoted events, and encouraged community participation. This internship enhanced my skills in content creation, digital marketing strategy, and project management.

Objectives of the project: Digital Marketing to attract clients to undergo LifeStyle Modification (LSM) residential program for 2-3 weeks. Digital Marketing to attract clients to attract Senior Citizens to book a room and stay in the Retirement Home. They will keep improving their health.

Tool used: Canva, Wix, Brevo

Details of Papers/patents:None

Brief description of the working environment: Working environment was encouraging

Academic courses relevant to the project: None

Learning Outcome: Understanding that effective marketing starts by addressing customer problems in content creation to engage them. Brand Management is an essential part of Publicity.

Name: SRIRAM JAMPANI .(2022B1A31043H)

Student Write-up:

PS-I Project Title: Influencer marketing(digital marketing)

Short Summary of work done: Identifying & Selecting Influencers: This step is about building a database. We need influencers whose content fits with the goals of Fitness Fundas. Specifically, we want to find those who promote health & fitness. Analyzing Data Before the Campaign: Next, we put together data about these influencers. We look at their followers, posts, likes, & comments on social media. This helps us get an idea of how engaged their audience is. Negotiating Deals: Now comes the pitching part. We

need to talk to the influencer. It's important to build trust & explain what Fitness Fundas is all about. The goal is to form a partnership that works well for both the brand & the influencer. Analyzing Data After the Campaign: Finally, we check out any changes in our social media stats. This helps us see how effective the influencer has been in promoting our brand.

Objectives of the project: Brand promotion

Tool used: none

Details of Papers/patents:none

Brief description of the working environment: The working environment involves a dynamic and fast-paced setting where you engage in diverse tasks such as deal pitching to influencers for brand promotion, coordinating with multiple project teams, and managing miscellaneous tasks assigned by the founder. Regular attendance at strategy meetings and collaborative planning sessions with your team are key aspects of the role. The company culture likely emphasizes teamwork, adaptability, and proactive communication to ensure smooth operations and successful project execution.

Expectations from the Company

Efficiency and Productivity: Delivering high-quality work within set deadlines, managing time effectively to balance various tasks.

Collaboration: Actively participating in team meetings, offering valuable insights, and supporting colleagues to achieve common goals.

Innovation and Initiative: Bringing creative ideas to the table, especially in influencer marketing and brand promotion strategies.

Flexibility: Being adaptable to changing priorities and willing to take on a variety of tasks as needed by the founder or the team.

Learning Opportunities

Influencer Marketing: Gaining hands-on experience in pitching deals, negotiating terms, and managing influencer partnerships.

Project Management: Enhancing skills in coordinating with different project teams, tracking progress, and ensuring alignment with strategic goals.

Digital Marketing: Expanding knowledge in digital marketing techniques, newsletter creation, and event management.

Communication and Networking: Improving communication skills through regular interactions with influencers, team members, and project mentors, and building a professional network within the industry.

Academic courses relevant to the project: none

Learning Outcome: deal pitching, negotiation, professional work delegation

Name: SANIA SRIVASTAVA(2022B1A41533G)

Student Write-up:

PS-I Project Title: Digital Marketing

Short Summary of work done: I was assigned the tasks of writing blogs and I wrote over 9 blogs during the course of PS1. I was also responsible for creating social media posts and made over 8 posts for the same.

Objectives of the project: The objective of our project was to publicise the startup through various digital marketing methods and resources.

Tool used: None

Details of Papers/patents:None

Brief description of the working environment: It was an online station. We were supposed to publicise the initiative of Fitness Fundas among as much people as possible. To do this, several digital marketing methods were employed such as running FB and IG Ads, writing blogs and creating social media posts.

Academic courses relevant to the project: None

Learning Outcome: Learnt a lot about digital marketing and how to collaborate among different teams.

Name: SAGNIK PAUL .(2022B3A40852H)

Student Write-up:

PS-I Project Title: Digital Marketing

Short Summary of work done: During my PS-I at Fitness Fundas, I undertook various roles and responsibilities aimed at enhancing brand visibility, community engagement, and operational efficiency. I developed and implemented targeted digital marketing strategies across platforms like Google Ads, Facebook, and Instagram, which significantly

increased our online presence. By optimizing the website's SEO and creating valuable content, I helped improve our organic search rankings. In the realm of social media, I led a team to create and manage engaging content on Instagram, Facebook, and LinkedIn, resulting in substantial growth in followers, impressions, and engagement rates. This included creating over 50 posts and achieving remarkable metrics such as reaching over 2 million accounts and generating over 3 million impressions. I played a crucial role in brand creation, working on the development of a cohesive brand identity, including designing the Brand Kit, brochures, and promotional materials. Additionally, I coordinated collaboration initiatives, reaching out to over 100 influencers and forming strategic partnerships with yoga centers, Ayurvedic practitioners, gated communities, and diagnostic centers. On the financial side, I managed a comprehensive financial tracker and oversaw all financial activities, ensuring prudent resource allocation and sustainable growth. I also collaborated on the website development, ensuring it was user-friendly and regularly updated with fresh, relevant content. Overall, my work at Fitness Fundas involved strategic planning and execution across various domains, contributing to the company's mission of promoting holistic wellness and enhancing operational efficiency. This experience provided me with valuable insights into the wellness industry, market trends, customer preferences, and effective marketing strategies.

Objectives of the project: Enhance brand visibility, foster community engagement, promote holistic wellness, establish a strong brand identity, and ensure financial sustainability.

Tool used: Canva Pro: For designing social media content, brand kits, brochures, and promotional materials. ChatGPT Plus: For generating content ideas, drafting marketing copy, and providing customer engagement strategies. Invideo AI: For creating and editing engaging

Details of Papers/patents: NIL

Brief description of the working environment: The working environment at Fitness Fundas was dynamic and collaborative, fostering creativity and innovation. The company provided a supportive atmosphere where teamwork and individual contributions were equally valued. With a focus on holistic wellness, the environment encouraged a healthy work-life balance, reflecting the company's mission and values. Regular team meetings and open communication channels ensured that everyone was aligned with the company's goals and objectives.

The company expected a high level of professionalism, dedication, and proactive engagement from all team members. There was an emphasis on meeting deadlines, achieving measurable results, and continuously improving processes. The expectations also included the ability to adapt to new challenges, contribute innovative ideas, and maintain a client-centric approach in all activities.

During my PS-I, I gained valuable insights into digital marketing, brand management, and operational efficiency. I learned to develop and execute targeted digital marketing campaigns, optimize website SEO, and create engaging content for social media

platforms. Managing collaborations with influencers and strategic partners provided practical experience in partnership development and outreach.

I also enhanced my skills in financial oversight by managing a comprehensive financial tracker and overseeing budget allocation. This experience taught me the importance of prudent resource management and sustainable growth. Furthermore, working on website development and content management deepened my understanding of creating a user-friendly online presence that effectively communicates the brand's mission and offerings. Overall, my PS-I experience at Fitness Fundas was enriching and provided a well-rounded understanding of the wellness industry, equipping me with practical skills and knowledge that will be invaluable in my future endeavors.

Academic courses relevant to the project: NIL

Learning Outcome: Major Learning Outcomes

Market Trends: Gained understanding of the increasing demand for sustainable health practices and holistic wellness programs.

Customer Preferences: Developed insights into customer preferences, guiding the creation of personalized programs and services.

Competitive Analysis: Identified unique value propositions and differentiated Fitness Fundas in the wellness market.

Marketing Effectiveness: Optimized strategies for better reach and engagement through data-driven analysis of marketing efforts.

Operational Efficiency: Improved resource allocation and financial management for sustainable growth.

PS-I station: Samvardhan Greenfields LLP - Tech, Hyderabad

Student

Name: MANTHAN HADIYA(2022AAPS0371G)

Student Write-up:

PS-I Project Title: SAMVARDHAN'S DIGITAL MARKETING GROWTH HACKING PROJECT

Short Summary of work done: First of all I compared two websites beehiiv and brevo for email marketing and selected the one which is helpful for us. Then after finding a good template from canva for all newsletters 1, 2, 3, 4, arranged the content provided by the

team and added related photos to the content and did necessary editing in it. And sent message from the database provided in whatsapp messaging to the people.

Objectives of the project: engaging potential clients through newsletter and email marketing.

Tool used: none

Details of Papers/patents:none

Brief description of the working environment: There is no such effect of working environment in online ps but yes, we were constantly given energy by the company to work and when it comes to expectations, there were expectations from the company that the company would teach something that if we go to another industry. There is also work and experience of good work. Now let's talk about learning, how to do digital marketing, how to do digital marketing and how to grow a company.

Academic courses relevant to the project: none

Learning Outcome: I got to know how to do digital marketing and what aspect is required in it, I got a good habit of working in a group, I got an increase in design skills, improve ability to source and gather relevant content for digital marketing content, improved public speaking and critical thinking skills during the GD sessions.

Name: SAAKETH DATARAM .(2022B3A70452H)

Student Write-up:

PS-I Project Title: Digital Marketing

Short Summary of work done: We worked for a startup called "Fitness Fundas", which is a subsidiary of Samvardhan Greenfields LLP. Under the digital marketing project, we learned how we can use various softwares and techniques that will help in improving the brand image of a company and help in capturing new audience

Objectives of the project: Using digital marketing to help a startup called "Fitness Fundas" expand its consumer base

Tool used: Powerpoint, excel, canva

Details of Papers/patents:None

Brief description of the working environment: The company being a startup had very few employees. The corporate setting of the company was professional and we learned many marketing techniques and also how AI plays an important role in digital marketing.

Academic courses relevant to the project: None

Learning Outcome: Digital marketing, marketing, use of various softwares related to digital marketing, social media posts designing and analytics

Name: JOE JOSE(2022B3A70536G)

Student Write-up:

PS-I Project Title: Digital marketing for Samwardhan Greenfield

Short Summary of work done: I worked to get clients for the wellness centre. We did projects to market the centre or do digital marketing for the wellness centre.

Objectives of the project: Marketing Fitness Fundas, a wellness centre launched and get clients for it.

Tool used: Nil

Details of Papers/patents:Nil

Brief description of the working environment: Working environment is great.

Academic courses relevant to the project: Nil - for me

Learning Outcome: How digital marketing works

Name: AMISH K SINGHAL(2022B3A71382G)

Student Write-up:

PS-I Project Title: SAMVARDHAN'S DIGITAL MARKETING GROWTH HACKING PROJECT

Short Summary of work done: Implemented various digital marketing strategies like Google Ads, Google My Business, WhatsApp Broadcasting and Website SEO

Objectives of the project: Digital Marketing for upcoming wellness resort Fitness Fundas

Tool used: None

Details of Papers/patents: None

Brief description of the working environment: There is some guidance from the company side which is just one man. He asks to do get things done and we have to find our own way. The environment is pretty lite and you can contact him anytime and he is always willing to help with his experience.

Academic courses relevant to the project: None

Learning Outcome: Learning a bit about Digital Marketing

PS-I station: SimpleWorks Solutions Pvt. Ltd. (SimpleCRM), Nagapur

Student

Name: ATHARVA MANDHANIYA(2022B1A70037G)

Student Write-up:

PS-I Project Title: Role of BA in SimpleCRM

Short Summary of work done: We made a CRM demonstration for a mock company and use case scenario, initially we were given the resources to understand what and how

the CRM system works in the company. The CRM system is in house and is not a "transferrable" skill per say. We also went through with the Figma course which was more useful for personal developement. Also learnt about the marketing and sales automation but nothing that was out of the blue.

Objectives of the project: Learning the Customer Relationship Manager software and its working

Tool used: The in house CRM system. No coding or technical skills required throught the internship.

Details of Papers/patents: None

Brief description of the working environment:

We worked alongside with other interns from local colleges who went through the same training as us though their objective was to get a job in the company. The working environment was fairly good.

Our mentor was accomodating and gave us some freedom, but the timings are pretty strict.

The work is completely non-technical and is Business analyst role instead of technical IT based role.

Academic courses relevant to the project: none

Learning Outcome: Learned about in house CRM software and its working. Also developed a BRD (business requirement document). We were also provided with some Udemy courses which were unrelated to this work but quite useful in other part(Figma, Excel and Google Workplace)

PS-I station: Starfish Accelerator Partners Private Limited, Hyderabad

Student

Name: ADITYA RANJAN .(2022A3PS1647H)

Student Write-up:

PS-I Project Title: Investment Banking at Starfish

Short Summary of work done: The following report gives the reader a better understanding of the Investment Banking division of Starfish Ventures & Partners. The work has been divided and individuals have been assigned at least two companies each. Our work involves database creation, forming investment decks for companies in the Starfish ecosystem, and building relationships with investors. The report contains a detailed breakdown of the functions performed and the necessity of this work. This report aims to give the reader a clear idea about the work and its objectives.

Objectives of the project: The work involved database creation, forming investment decks for companies in the Starfish ecosystem, and building relationships with investors.

Tool used: NA

Details of Papers/patents:NA

Brief description of the working environment: NA

Academic courses relevant to the project: Technical Report Writing

Learning Outcome: Understanding Corporate Dynamics, Investment Banking Insights, Database Management and Analytical Skills, Networking and Relationship Building, Public Relations and Brand Exposure, Adaptability and Problem-Solving, Use of Automation Tools.

Name: JEEVAN JOYCE .(2022AAPS0219P)

Student Write-up:

PS-I Project Title: Health Insure-tech Company Launch Support and UI/UX Web Development for Clients

Short Summary of work done: I helped with the launch of a health insure-tech company called winq in the US market. I also helped with designing different web page sections for clients

Objectives of the project: To support the launch of a health insure-tech company in the US market.

Tool used: Figma, Excel, Canva, Powerpoint

Details of Papers/patents:N/A

Brief description of the working environment: It was nice but it was online

Academic courses relevant to the project: Computer Programming

Learning Outcome: Teamwork, workplace etiquette and strategic thinking

Name: [KANISHK AGARWAL .\(2022B3A71390H\)](#)

Student Write-up:

PS-I Project Title: Connecting with investors and creating master data sheet of investors.

Short Summary of work done: Connecting with investors to facilitate investments in startups, and creating a comprehensive master data sheet of over 4,000 investors from various sectors and with diverse preferences.

Objectives of the project: Establish and maintain effective communication with potential and current investors. Develop and organize a comprehensive master data sheet that contains detailed information about investors.

Tool used: Excel, linkedin

Details of Papers/patents:-

Brief description of the working environment: The work environment is excellent, and the company expects commitment and a strong desire to work for them. Learning are gaining valuable insights into how corporations operate efficiently and understand what investors seek in a startup.

Academic courses relevant to the project: TRW, FOFA

Learning Outcome: Networking, communication skills

PS-I station: Survey of India, Dehradun, Dehradun

Student

Name: VISHUDDH JAIN .(2022A2PS1024P)

Student Write-up:

PS-I Project Title: Development of a Python Program for performing Least Square Adjustment on

Short Summary of work done: Our work was to basically build a python program from scratch which could ultimately work as a Geodetic Processor for performing Least Square Adjustment on the raw data of Level nets and GPS Observations. Our main aim was to calculate the datum heights in Level nets and 3D Coordinates in GPS Observations. At the end we performed a few statistical tests like the Chi-Squared test and the Tau test to check the sanctity of our output and remove those observations which were highly erroneous.

Objectives of the project: Using the concept of Least Square Adjustment to solve, adjust and analyse the Level Nets and GPS Observations

Tool used: SALSA, Python, Excel

Details of Papers/patents:None

Brief description of the working environment: The people were very helpful and supportive. We were guided by our mentor at each and every step. The working environment was pretty chill with not much burden.

Academic courses relevant to the project: Surveying and Computer Programming

Learning Outcome: Concepts related to Linear Algebra, Python Programming, Excel, SALSA Software

Name: ICY TRISHA .(2022A2PS1655P)

Student Write-up:

PS-I Project Title: Developing of a program to adjust large geodetic networks

Short Summary of work done: We were first tasked with literature survey on High Precision Levelling and its current objectives and projects. We learnt how Least Square Adjustment is performed and how to implement it through Excel and Python. Then we moved on to the second project which was 3-D adjustment of GPS coordinates for which we were given another literature survey before proceeding with the Python program. We then spent several days learning about and computing various statistics for the results to further improve data, weighting strategies, networks, redundancies, Global Standard Tests, Local Tests etc. The last part of this project was to improve its UI by making an executable and spec file, and a Config folder.

Objectives of the project: Using least square adjustment to solve, adjust, compute statistics for level nets and GPS networks

Tool used: SALSA, MATLAB, Python

Details of Papers/patents:no

Brief description of the working environment: Extremely good, we interacted with several people who helped and worked with us in every step of our way

Academic courses relevant to the project: Surveying, CP

Learning Outcome: Linear algebra, Python programming, Excel, literature survey, geodesy

PS-I station: Tamil Nadu Startup and Innovation Mission, Chennai

Student

Name: ADITYA HANUMANT BHAGWAT .(2022A8PS1253P)

Student Write-up:

PS-I Project Title: Stakeholder Engagement

Short Summary of work done: This internship provided me with valuable practical experience in the field of startup incubation and support. I was able to apply theoretical knowledge to real-world scenarios, which significantly enhanced my understanding and skills. The experience also reinforced the importance of collaboration and effective communication in achieving organizational goals.

Objectives of the project: Incubation, Data Analysis

Tool used: Google Sheets, Excel, Canva

Details of Papers/patents:no patents

Brief description of the working environment: When categorizing the nature of your work during your internship at the government firm overseeing incubation centers, you can break it down into the following categories:

Research:

Market Research: Analyzing the needs and trends in the market to help incubation centers align their projects with current demands.

Policy Research: Studying governmental policies and their impact on incubation centers to provide informed advice and support.

New Product Development:

Idea Generation: Assisting startups in brainstorming and developing new product ideas.

Prototyping: Supporting the creation of initial versions of products to test and refine concepts.

Design:

Product Design: Helping startups with the design aspects of their products, ensuring they are user-friendly and market-ready.

Service Design: Assisting in the development of service models that incubation centers or their startups may offer.

Academic courses relevant to the project: Principles of Management, Business Communication

Learning Outcome: Management, Communication Skills

Name: SANJAY SRIRAM(2022AAPS0113G)

Student Write-up:

PS-I Project Title: Startup TN-Investments team, Investment analysis of startups in TamilNadu for the TANFUND platform

Short Summary of work done: 1. Lead Contact: Over 550 leads have been contacted. 2. Pitch Decks: More than 90 new pitch decks have been sourced, reviewed, and made investment-ready, with at least two follow-up interactions with the founders. 3. Incubator Outreach: The team has reached out to incubators in Tamil Nadu, such as the IITM Research Park, Anna Business Incubator, PSG, SRIIC, and Golden Jubilee Biotech. We contacted all possible leads in these locations with a special focus on deep tech and climate tech. 4. VC and PE Firms: The team has reached out to VC and PE firms such as Bain Capital, Kedaara Capital, South Park Ventures and Rainmatter Capital to inform them of potential investment opportunities on boarded by StartupTN. 5. Pitching Sessions: The team organized multiple pitching sessions with various VCs and also assisted with "Startup Tamizha" (a TV show modeled after Shark Tank). We interacted with and gained valuable insights from eminent investors like Dr. Velumani (Thyrocare Pvt Ltd) and Mr. Kumar Vembu. The team was present for over 35 pitches and ensured their smooth functioning. 6. TANFUND Portal: The team worked to make the UI of the TANFUND portal more user-friendly by adding specific features for investors and startups who use it. 7. Academic Outreach: The team contacted Heads of Departments (HODs) of 3 nanotechnology, biotech, and computer science departments of state universities to learn about research developments and companies started by academics. 8. Curated Lists of Top Startups in Chennai: The team curated lists of the top startups in Chennai across different sectors like SAAS, Deeptech, and Aerospace, which were used by VCs to shortlist startups for investments. 9. Sector-Specific Sourcing: Sourced companies in the fintech, waste management, and renewable energy sectors. 10. SAAS Networking Event: Helped organize a SAAS networking event, in which over 20 startups and 2 VCs participated.

Objectives of the project: Sector Knowledge and Industry Trends: The team constantly learns and stays updated on different sectors within the Tamil Nadu startup ecosystem. They remain informed about the latest industry trends, policies, and schemes. 2. Database Creation: The team contributes to creating a sector-wise database of startups across Tamil Nadu. This database includes vital information such as founder details, contact information, and funding status. 3. Founder Outreach: Team members reach out to startup founders through phone calls to understand their requirements in terms of funding and mentorship. They also collect pitch decks from these founders and maintain an updated database of each startup and its history with StartupTN. 4. Pitch Deck Review: The team reviews pitch decks to ensure they cover all aspects an investor would need to know, such as financial projections, competitor analysis, and cap table split. They follow up with founders to guide them on refining their pitch decks according to suitable formats and inform them about various funding opportunities and schemes from StartupTN and Startup India. 5. Investor Connect: The team informs founders if their startup is shortlisted by an investor for a pitching session. They also actively contribute to organizing investor connect (pitching) sessions and ensure the smooth running of these meetings.

Tool used: Excel, word, canva

Details of Papers/patents:n/a

Brief description of the working environment: speaking for the investments team , it had knowledgeable and friendly mentors, good work environment , learning and networking opportunities, There is ample work to do, work hours are strict from 10-6 pm, investments team works late as well sometimes till 7:30 , no WFH, 1st and 3rd Saturdays are working.

Academic courses relevant to the project: principles of management, business analysis and valuation

Learning Outcome: Learned about startup ecosystem in TN, and the process of funding through venture capital, private equity and debt financing

Name: RISHI CHANDRAMOULI .(2022B1A41228H)

Student Write-up:

PS-I Project Title: Data Analysis, Evaluation, Fund Analysis and Investment of Startups under TN SC/ST Startup Fund

Short Summary of work done: Microsoft Excel was used for the data-clean up of the database, and various excel functions were used to map each startup record to its respect hub, and incubator. The district was found from the address details using another excel function which had “IF” logic to be used. Graphs and charts were made to statistically analyse the data, and the trends of incubators and startup founders from the respective 38 districts of Tamil Nadu, and it was all combined into a detailed report on Microsoft Word. A standard operating procedure was made using Word and Canva of how a startup founder can register with StartupTN and proceed. I then learnt about pitchdeck analysis, and I began by going through multiple websites with pitchdecks of over 100 companies, and then I was given a standard 6 format to develop a pitchdeck. To get greater experience, I made a pitchdeck of a virtual Laddoo startup, conducting market research, market and competitor analysis of the food and sweet food industry in India, and made a rough financial model using excel functions to potential develop how much funding would be required and where the costs would go. I learnt to make a guesstimate here. I performed financial modelling and statistically determined using excel functions how much funding was given to startups from 2022, and selected the best startups to invest in from 2023 along with my mentor. I then used multiple excel functions to exactly determine the number of startups already invested in, how much was given

tranchwise, which startups are yet to be funded, and which startup could be enlisted for another Innovation program, all by mapping it with the original database I prepared. I used Google sheets to map over 4000 startups in the DPIIT sheet for startups based in Chennai, and worked with a team on it. I also attended multiple pitching sessions to understand how startup founders pitch their idea to potential investors and Venture Capital firms.

Objectives of the project: To understand the number of applications under the SC/ST Startup Fund for the last 3 years, analyse the data to understand which districts in Tamil Nadu require better support for startups and accessibility to incubators and hence address the challenges of startups from marginalized communities and from interiors of Tamil Nadu, so that they can get an opportunity to get their startup to grow through equity funding and pitching. To understand the startup ecosystem better, understand the different funding schemes under the TN Government. Perform financial modelling, data analysis and document verification for already funded startups. To get an idea of pitching to Venture Capital firms and Angel Investors and the flow of how a startup is formed, outreach to various startups from marginalized communities to help them apply, get feedback and potentially get funding for various funds and opportunities to help their venture grow. To match data of over 4000 Startups from Chennai as part of DPIIT Registration

Tool used: Microsoft Excel, Canva, Microsoft Word

Details of Papers/patents:None

Brief description of the working environment: Work environment was decent, kind people. Hectic work hours at times, sometimes left the PS station at 8pm.

Academic courses relevant to the project: Fundamental of Finance and Accounting, Principle of Economics, Business Analysis and Valuation, New Venture Creation

Learning Outcome: Learnt thoroughly about the startup ecosystem, the different funds under

StartupTN for startups and how they can grow their startup

Learnt technical terms like Due Diligence, and got a good insight on Project Management and Equity Funding

Got a live experience of how a pitching sessions occurs to Venture Capitalists to procure funds

Learnt how to make a pitchdeck, analyse a pitchdeck, and make changes to it by doing market research and competition analysis

Got a good experience to analyse big sets of data

Learnt how to do financial modelling, manage a database

Improved my communication skills, by doing outreach

Developed on soft skills like team building, interpersonal skills and time management

PS-I station: T-Work Foundation - Firmware/Software, Hyderabad

Student

Name: YASH KANTAMNENI .(2022A7PS0120H)

Student Write-up:

PS-I Project Title: Training in Web Development and Building a Client Portal

Short Summary of work done: The first month and a half included a comprehensive training in web development, both frontend and backend. We learnt HTML, CSS and JavaScript through several resources, mostly YouTube playlists, provided by our mentor and he gave us regular tasks and projects, which took less than 2 hours each. Then we moved to backend - Node.js and MongoDB. Made many more projects almost everyday. We were allotted a project for the last 2 weeks which involved using Softr (a no-code web app building platform) to make a client portal for T-Works' SmartSuite database.

Objectives of the project: 1. Comprehensive web dev training including both frontend and backend, 2. Building a client portal for T-Works' SmartSuite database

Tool used: HTML, CSS, JavaScript, Node.js, MongoDB, SmartSuite, Softr

Details of Papers/patents:-

Brief description of the working environment: The mech and electronics interns got their projects very early on, but the two of us in software went through training for 75% of the internship. The mentor was great and I would have probably never learnt web dev if not for this internship. Great office too with lots of parking space and in a perfect location.

Academic courses relevant to the project: DBMS, if I had to pick one, for the project

Learning Outcome: Skills gained: HTML, CSS, JavaScript, Node.js, MongoDB, using several frameworks and APIs, working with large databases

PS-I station: Udhyam Learning Foundation, Bengaluru

Student

Name: SHIVAY GUPTA .(2022A7PS1342H)

Student Write-up:

PS-I Project Title: Teams Leaderboard

Short Summary of work done: just a great experience , learnt how things work in industry and improved my development skills

Objectives of the project: Creating a Dashboard for teams

Tool used: React, mongodb,postman

Details of Papers/patents:N/A

Brief description of the working environment: Our mentors were chill and taught us many things , appreciated our work always

Academic courses relevant to the project: No academic course was relevent. Everything required for the industry is something we need to learn by our own

Learning Outcome: learnt to work with react and postman

Name: NITIN NAYAN .(2022A8PS1244P)

Student Write-up:

PS-I Project Title: DASHBOARD, WEB DEVELOPMENT

Short Summary of work done: Made a landing page for mobile app and a educational website

Objectives of the project: Landing page, website

Tool used: Figma,react,htm+css, javascript

Details of Papers/patents:NA

Brief description of the working environment: Great

Academic courses relevant to the project: NA

Learning Outcome: Learn design basic principles and how react work

PS-I station: Zusic Marketing LLP, Gwalior

Student

Name: SHASHWAT GOYAL .(2022A7PS0115P)

Student Write-up:

PS-I Project Title: Website Development

Short Summary of work done: During my internship, I acquired practical skills in JavaScript, HTML, and CSS, which were pivotal in my contributions to various website development projects. I learned to create and optimize websites tailored to meet specific marketing objectives, enhancing my technical proficiency and problem-solving abilities in web development. Simultaneously, I developed expertise in content creation, mastering the art of crafting professional articles and effectively formatting content for different platforms. This skill set was instrumental in supporting Zusic Marketing LLP's digital marketing efforts, demonstrating my capability to communicate ideas clearly and engage target audiences through compelling written content.

Objectives of the project: Designing and developing a single-page dual-tone minimalist website with use extensive use animations.

Tool used: JavaScript, HTML, and CSS

Details of Papers/patents:NA

Brief description of the working environment: I am deeply grateful for the opportunity provided by BITS Pilani's Practice School program, which facilitated this enriching internship experience. I extend my sincere thanks to our mentor, who provided invaluable guidance and support throughout this journey. Additionally, I am thankful to the Practice School coordinator, whose efforts were instrumental in ensuring a smooth and rewarding internship experience. Their mentorship played a pivotal role in my personal and professional development, for which I am truly appreciative.

In conclusion, my internship at Zusic Marketing LLP was a pivotal experience that equipped me with essential skills, expanded my knowledge base, and prepared me for a successful career in the field of digital marketing. I am excited to leverage these learnings and experiences as I embark on the next phase of my professional journey.

Academic courses relevant to the project: NA

Learning Outcome: Teamwork, Web Development, Content Writing

PS-I station: ArcelorMittal Nippon Steel India Limited, Surat

Student

Name: ARYAN RAE .(2022A4PS0875H)

Student Write-up:

PS-I Project Title: Cooling Systems and Plant Parts of Blast Furnace

Short Summary of work done: Understanding existing Cooling systems, Hearth and Stave Cooling. Understood their specification with detailed engineering drawing available at plant. Understood Different Plant Parts with Graduate Engineers, Pulverized Coal Injection Complex, Hot Metal Desulphurization Plant, Cast House Stock. Detailed Study of the Process Flow between all those parts. Importance and Requirement of Cooling, current maintenance problems and Overall Analysis.

Objectives of the project: Analyze existing Cooling Systems and Plant Parts of Blast Furnace

Tool used: Excel, Matlab, Study of Engineering Drawing Systems

Details of Papers/patents:Received Letter of Recommendation from Manager.

Brief description of the working environment: Great Working Environment friendly employees, open to helping students and interns learn.

Expectations from the company were only learning networking, and helping me get familiarized with the Core Industry domain. All which happened, Referral for future job interview at the company, which was a great outcome.

Academic courses relevant to the project: Mechanical 2nd Year- Mechanisms and Machines, Heat Transfer. Advanced Thermodynamics

Learning Outcome: Maintenance of Steel Powerplant, Repair of Parts, Understanding Process Flow of Blast Furnace and Steel Making.

Name: NITANT ASHIT SHAH .(2022B3A31268P)

Student Write-up:

PS-I Project Title: Overdrawl / Underdrawl

Short Summary of work done: We created a model to predict the energy requirement based on 16 input parameters to predict the energy consumption for 4 electric arc furnaces in the steel making plant 1.

Objectives of the project: To minimise the fine paid by AMNS due to underdrawing or overdrawing of power from the grid.

Tool used: Python (Pytorch, Matplotlib, Scikit Learn) and Excel

Details of Papers/patents:N.A

Brief description of the working environment: Friendly to us. Kind and providing help to us in form of materials and advices. There are several upskilling programs, lectures and webinars for employees.

Academic courses relevant to the project: Computer Programming, Econometrics

Learning Outcome: Machine Learning, Open Access grid and Steel Making process

Name: SHRADDHA WAKHARE .(2022B5A30850P)

Student Write-up:

PS-I Project Title: OD/UD Problem

Short Summary of work done: Used input data of furnaces to predict energy consumption

Objectives of the project: Prediction and Algorithm Design

Tool used: ML, Python

Details of Papers/patents: No patents

Brief description of the working environment: Very Cooperative and helpful. Mentors were available for our guidance all the time during working hours.

Academic courses relevant to the project: No

Learning Outcome: ML, Python, Assemble Learning

PS-I station: JSW Steel, Vijaynagar

Student

Name: ADVIK DESHPANDE(2022A1PS1288G)

Student Write-up:

PS-I Project Title: Coke oven gas processing and by-product plant (BPP)

Short Summary of work done: Upon finishing studying about the BPP I took part in a mini project wherein I reviewed literature related to coal tar filtration and build up and consequently suggested ways to deal with the same

Objectives of the project: To learn and understand the working of the coke oven gas by product plant and attempt to resolve issue faced in it

Tool used: Basic microsoft word ppt etc

Details of Papers/patents:-

Brief description of the working environment: Relaxed working environment allowed me to work at my pace, only expectation was sincerity in whatever work is undertaken

Academic courses relevant to the project: Separation processes I and Heat Transfer

Learning Outcome: Scale of Steel industry
Balance between efficiency and economic feasibility of processes
Teamwork and communication skills

Name: AMAN JAISWAL .(2022A4PS0742H)

Student Write-up:

PS-I Project Title: BLAST FURNACE

Short Summary of work done: I interned at JSW Steel Limited, focusing on the utilization of coke oven gas (COG) in blast furnaces to reduce CO₂ emissions and enhance sustainability in steelmaking. During the internship, Aman analyzed the properties of COG, including its composition and purification processes, and outlined methods for injecting COG into blast furnaces. Two primary methods, cold and hot injection, were studied, each with its own advantages and challenges. Aman assessed the infrastructure requirements, including gas holders, pipelines, compressors, and purification systems, estimating a total project cost of 100 to 125 crore rupees. Aman also explored the economic and environmental benefits of COG, noting that it is cheaper than coke and can significantly reduce carbon emissions and improve system efficiency. Challenges like RAFT (Runaway Furnace Temperature) were addressed, proposing solutions such as oxygen enrichment and gas preheating to optimize performance. The internship emphasized the importance of ongoing research, collaboration with industrial partners, and the development of new technologies to further advance COG utilization in

the steel industry. Aman concluded with a feasibility analysis of the project, highlighting the importance of continuous learning and industry cooperation for sustainable development.

Objectives of the project: COG gas implementation research and preparing a cost structure

Tool used: Research , Solidworks

Details of Papers/patents:Will be published

Brief description of the working environment: Smooth and efficient weekly work

Academic courses relevant to the project: Mechanical engineering/Chemical engineering

Learning Outcome: function of the blast furnace and various innovation undergoing the steel industry to reduce cost and carbon foot print . Specifically the use of COG as fuel and reducing agent instead of coke

Name: [ARNAB MAROTHIA .\(2022A4PS0792P\)](#)

Student Write-up:

PS-I Project Title: By Product Plant of the coke oven gas

Short Summary of work done: The work done was studying about the By Product Plant of the coke oven gas. Regular online meets were conducted with the Jsw instructor where he explained various components of the BPP and cleared our doubts at the end of every meet. Various videos were shared by the mentor in order to give us a better understanding of the plant along with real pictures of the plant. At the end new ideas were given to the mentor to reduce the wastage and increase efficiency of the BPP.

Objectives of the project: In order to study about the refining and recovery section of the BPP

Tool used: S/w

Details of Papers/patents:None

Brief description of the working environment: The company was good and the mentor was very helpful in the doubts we were asking and taught us a lot of new things regarding the topic we were researching.

Academic courses relevant to the project: Heat transfer is the only related course I have studied till now which is somewhat relevant.

Learning Outcome: In the recovery system new alternatives were suggested to to Jsw mentor that they could try to reduce wastage.

Name: SHARDUL SINGH TOMAR(2022A4PS1084G)

Student Write-up:

PS-I Project Title: Coke Oven Gas usage in Blast Furnace

Short Summary of work done: Learnt about how a Blast Furnace works in detail, the chemical reactions involved and the basics involved in steel manufacturing. Researched and learnt about reduction in a Blast Furnace using Coal, and how we could use Coke Oven Gas as a substitute to reduce carbon emissions. Did a thorough research about the chemical compositions of the gas, the components required to implement this system and the physical properties of the gas that can affect the efficiency of the system. Worked on a cost analysis for the system's components, and adhered to the budget given to us by JSW, including costs like labour costs and varying costs, but focused on operational costs. Also worked on price per 500 tons of Coal and the similar amount's price for the gas. Learnt a lot about the sector and also worked on cost analysis, beneficial for future experiences.

Objectives of the project: To do a cost analysis of implementing a coke oven gas system to reduce Carbon Footprint

Tool used: Google Slides, Google Sheets/Excel, Google Scholar

Details of Papers/patents:none

Brief description of the working environment: As our work was remote, we did not have a proper exposure to the working environment of the company on-site, but our mentor was a very good guide, who gave us the required parameters whenever needed to work on our project. Their expectations were clear from the beginning, to have a proper cost analysis done for the system, and to fit it in the budget they approximated from their

end. The learnings I got were how to do a cost analysis and how to work on research for implementing any new system on an existing component like Blast Furnace.

Academic courses relevant to the project: Material Science and Engineering, Manufacturing Processes

Learning Outcome: Learnt about Blast furnace's workings, steel making, carbon emissions in a steel making plant. Also understood how to do a cost analysis for a project like this and to work under a fixed budget provided to us by the company.

Name: HARMAN SINGH JOHAR .(2022A4PS1164H)

Student Write-up:

PS-I Project Title: Reducing rework due to (edge burr and edge damage defects) due to trimmer

Short Summary of work done: We researched about the edge burr defect, edge damage defect, slag carry over defect and cutter mark defect. We studied how they were formed, their causes and effects. We focused our research on the ways to prevent them while manufacturing and the ways to treat them later, post manufacturing. We also researched about JSW as a whole, and then about the Vvijayanagara works. We were also tasked to study about the SDG (Sustainable Development Goals) taken into consideration by JSW.

Objectives of the project: To come out with suitable measures that would reduce the amount of rework (due to edge burr and edge damage defects) required to produce metal sheets on Cold Rolling Mill

Tool used: -

Details of Papers/patents:-

Brief description of the working environment: Being an online station, the task given to us was pretty lenient and we were given enough time to work on it. Work wasn't forced upon us, which helped us learn a lot outside of PS as well. My expectations from the company were high and the coordinators matched it.

Academic courses relevant to the project: ME F219 (Manufacturing Processes)

Learning Outcome: We learnt about various damages that can occur on a cold rolling mill, along with its causes and effects, and how to prevent them.

Name: SHIVESH DWIVEDI .(2022A4PS1289P)

Student Write-up:

PS-I Project Title: Blast Furnace

Short Summary of work done: We were asked to research about coke oven gas and how blast furnace functions. Also researched about how usage of this gas helps in reduction of carbon emission.

Objectives of the project: Implementation of coke oven gas in blast furnace in order to reduce carbon emissions in steel manufacturing.

Tool used: Google Scholar, MS Word, ChatGpt

Details of Papers/patents:No papers were published

Brief description of the working environment: The project coordinator was really helpful and provided various inputs as and when required. Gained valuable experience in researching for the project.

Academic courses relevant to the project: Mechanics of Solids, Fluid Mechanics and Heat Transfer.

Learning Outcome: Learned the composition of coke oven gas along with the applications of the same. Also learned about the various steps involved in steel production.

Name: UDAY GUPTA .(2022A4PS1737H)

Student Write-up:

PS-I Project Title: Coke Oven

Short Summary of work done: By-Product Plant (BPP)" from JSW Steel Ltd.'s Vijayanagar Works details the essential operations of their By-Product Plant (BPP), crucial for the steel production process. This facility efficiently manages by-products like coke oven gas (COG), coal tar, ammonia, and sulfur, ensuring compliance with quality standards for industrial use. Key aspects covered include the plant's functions, techno-economic parameters, and the process flow involved in COG treatment. Critical equipment like gas-liquid separators, decanters, primary gas coolers, electrostatic tar precipitators, and desulphurization units are highlighted for their role in enhancing operational efficiency and environmental sustainability by reducing emissions and recovering valuable by-products. The report also addresses challenges such as coal tar accumulation on heat exchangers post-filtration, exploring innovative solutions like catalytic adsorption and detackification chemicals. This comprehensive overview underscores the BPP's significance in supporting sustainable steel production practices, ensuring resource efficiency and environmental responsibility in the industry.

Objectives of the project: Deep Understanding of the working of coke oven and BY product Plant

Tool used: Canva, Powerpoint

Details of Papers/patents:N/A

Brief description of the working environment: During Practice School I (PS-I) at JSW Steel Ltd. - Vijayanagar Works, the working environment was characterized by its fast-paced and industrious atmosphere, typical of heavy industry settings. The company's expectations were clear: to actively engage in the operations of the By-Product Plant (BPP), focusing on coke oven gas (COG) refinement and by-product recovery. This involved hands-on learning in areas such as gas purification techniques, coal tar management, and the utilization of ammonia and sulfur by-products.

The experience provided an in-depth understanding of industrial processes and operational challenges within the steel manufacturing sector. Practical exposure to sophisticated equipment like gas-liquid separators and electrostatic tar precipitators enriched technical skills and problem-solving abilities. Addressing issues such as coal tar deposition on heat exchangers fostered innovative thinking, exploring solutions such as catalytic adsorption methods.

PS-I at JSW Steel Ltd. not only enhanced technical proficiency but also underscored the importance of safety, environmental compliance, and efficiency in industrial practices. It was a pivotal opportunity to integrate classroom knowledge with real-world applications, preparing for future roles in chemical engineering with a strong emphasis on sustainability and operational excellence.

Academic courses relevant to the project: Thermodynamics

Learning Outcome: A deep understanding of coke oven and by-product plant operations enhances efficiency, quality control, safety, and environmental impact management, fostering innovation and cost optimization in industrial processes.

Name: SUJAL GARG .(2022A8PS0515P)

Student Write-up:

PS-I Project Title: Safety mechanisms in EOT Crane

Short Summary of work done: We made 2 project reports and did 2 seminars on safety mechanisms of EOT cranes. Presented real time machine problems and solutions on safety.

Objectives of the project: Study project on safety mechanisms of EOT cranes.

Tool used: Canva, ms word, powerpoint

Details of Papers/patents:None

Brief description of the working environment: Group of 5 students under one mentor from the company. Coordinated well in the group and presented group seminar.

Academic courses relevant to the project: None

Learning Outcome: Communication skills, presentation skills, steel industry.

Name: SRISHTI YADAV .(2022AAPS0505H)

Student Write-up:

PS-I Project Title: Optimization of loading of steel coils in a wagon

Short Summary of work done: We started with the Excel Solver approach, but it did not take the input above a certain level, so we quickly moved on to Dynamic programming, greedy algorithms and python pulp library.

Objectives of the project: Making a model for the same

Tool used: VSCode, Excel

Details of Papers/patents: nil

Brief description of the working environment: PS was online, GDs were helpful in improving communication skills

Academic courses relevant to the project: Computer Programming

Learning Outcome: Python PuLP Library, Dynamic Programming in C++, Excel Solver

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



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Practice School Division
PS Chronicles