Industrial Visit Report

Submitted in Partial Fulfilment of requirements for the Award of

Degree of Bachelor of Technology in Computer Science and Engineering

Submitted by

Patel Naitikkumar J

(23BCP197)

Submitted To

Dr. Payal Chaudhari

Department of Computer Science and Engineering

School of Technology

Pandit Deendayal Energy University, Gandhinagar

September 2023

Table of Contents:

1. List of Industries Visited

1.1 India Meteorological Department (IMD):

- Location: Ahmedabad
- Date of Visit: 1st October 2024

1.2 eInfochips:

- Location: Ahmedabad
- Date of Visit: 25th March 2025

1.3 Bhaskaracharya Institute for Space Applications and Geoinformatics (BISAG):

- Location: Gandhinagar
- Date of Visit: 2nd April 2025

2. Introduction

This report presents a summary of the industrial visits undertaken as part of the B.Tech program in Computer Science and Engineering at Pandit Deendayal Energy University. These visits were organized to bridge the gap between academic learning and industry practices.

Industrial visits play a vital role in providing students with exposure to real-world work environments. They help students understand the practical implementation of theoretical concepts, modern technologies used in industry, and various professional practices followed in different sectors.

The specific goals of these visits were to observe real-time industry operations, gain insight into technological advancements, and enhance our understanding of how computer science concepts are applied in fields like meteorology, electronics design, and geoinformatics.

3. Objectives of the Industrial Visits

3.1 To gain practical exposure to real-time operations and workflows in various industries.

3.2 To observe the application of computer science and engineering concepts in real world scenarios.

3.3 To understand different technological tools, systems, and methodologies used in meteorology, electronics, and geoinformatics.

3.4 To enhance awareness about the roles and responsibilities of professionals in different technical domains.

3.5 To bridge the gap between academic curriculum and industry practices.

3.6 To develop a broader understanding of interdisciplinary applications of computer science.

4. Description of the Industries

4.1 Industry 1: India Meteorological Department (IMD), Ahmedabad:

The India Meteorological Department (IMD) is the national agency for meteorological observations, weather forecasting, and seismology under the Ministry of Earth Sciences. The Ahmedabad centre plays a significant role in regional weather monitoring and forecasting.

IMD provides a wide range of services including weather predictions, climate data, and alerts for natural disasters such as cyclones, floods, and earthquakes. It serves sectors like agriculture, aviation, shipping, and disaster management.

During our visit, we observed several advanced instruments used for atmospheric measurements, Doppler weather radars, and automated weather stations. We also saw how meteorological data is processed and interpreted using computational models to generate accurate forecasts.

4.2 Industry 2: eInfochips, Ahmedabad:

eInfochips, a subsidiary of Arrow Electronics, is a leading global provider of product engineering and semiconductor design services. Headquartered in Ahmedabad, it has over two decades of experience in delivering innovative solutions across various domains including IoT, AI/ML, embedded systems, and cloud computing.

The company offers services such as chip design, system software development, product testing, and lifecycle management. It caters to clients in industries like consumer electronics, healthcare, aerospace, and automotive.

We learned about their chip design lifecycle, firmware development practices, and quality assurance protocols. One of the key highlights was their use of advanced design verification and validation tools that ensure high reliability in product delivery.

4.3 Industry 3: Bhaskaracharya Institute for Space Applications and Geo-informatics (BISAG), Gandhinagar:

BISAG is a state-level agency under the Government of Gujarat specializing in the application of space and geo-informatics technology. It focuses on satellite communication, remote sensing, and geographic information systems (GIS) for planning and development.

BISAG supports various government departments in sectors like agriculture, urban planning, health, and disaster management by providing data-driven insights and GIS solutions. It also conducts educational broadcasts and provides e-Governance support through its satellite communication network.

During the visit, we observed real-time GIS applications, data analysis tools, and broadcasting facilities. The integration of satellite imagery with advanced analytical models for monitoring and planning was especially impressive.

5. Observations and Learning

5.1 Industry 1: India Meteorological Department (IMD), Ahmedabad:

During our visit to IMD Ahmedabad, we observed how meteorological data is collected from various instruments such as barometers, anemometers, and automated weather stations. We also got to see Doppler weather radar systems in operation, which are crucial for predicting severe weather events.

One key insight was how massive volumes of real-time atmospheric data are processed using computational models to forecast weather patterns. The integration of computer algorithms in modeling and prediction aligned closely with our coursework in data structures and numerical methods.

This visit greatly enhanced our understanding of how technology and meteorology converge to provide accurate and timely forecasts, and its importance in sectors like agriculture, aviation, and disaster response.

5.2 Industry 2: eInfochips, Ahmedabad:

At eInfochips, we observed the functioning of a professional engineering environment focused on chip design, embedded software, and quality testing. Teams demonstrated how projects progress from the ideation phase to the actual hardware and software implementation.

We were introduced to various design tools and simulation environments used in the VLSI design process. The role of rigorous testing in ensuring defect-free semiconductor devices highlighted the importance of quality assurance, which connects with our studies in software engineering and digital electronics.

The visit provided us a practical view of how collaborative workflows and modern toolchains are applied in real-world tech development, emphasizing industry standards and innovation.

5.3 Industry 3: Bhaskaracharya Institute for Space Applications and Geo-informatics (BISAG), Gandhinagar:

At BISAG, we observed live demonstrations of Geographic Information Systems (GIS), satellite communication setups, and remote sensing applications. We saw how satellite imagery is processed and layered with geographic data for analysis and planning.

A major takeaway was how geospatial technology supports decision-making in critical areas like disaster management, crop health monitoring, and urban development. The use of spatial databases and remote data acquisition relates closely to our academic learning in database systems and data visualization.

This visit helped us understand the depth and scope of geoinformatics, and its growing relevance in solving real-world problems using a combination of spatial data, programming, and analytics.

6. Conclusions

The industrial visits to IMD Ahmedabad, eInfochips, and BISAG provided invaluable exposure to real-world applications of computer science and engineering principles. Each visit offered a unique perspective into how different sectors leverage technology to solve practical challenges.

At IMD, we gained insight into meteorological data collection and weather forecasting models. The experience emphasized the significance of computational tools in predicting natural phenomena. At eInfochips, we witnessed the complete lifecycle of chip design and embedded systems development, reinforcing the importance of precision, testing, and innovation in the tech industry. At BISAG, we explored the integration of spatial data with satellite technologies, showcasing how GIS and remote sensing are used in planning and governance.

These experiences not only deepened our technical understanding but also helped us connect theoretical concepts to practical applications. The visits enriched our academic journey by broadening our knowledge base and inspiring us to explore interdisciplinary applications of computer science in diverse industries.

7. Recommendations

7.1 Curriculum Enhancement: Introduce specialized elective courses in fields such as meteorology and geoinformatics to align with emerging interdisciplinary applications of computer science.

7.2 Hands-on Projects: Encourage students to undertake mini projects based on technologies observed during industrial visits, such as weather forecasting models, chip simulation, or GIS applications.

7.3 Industry-Academia Collaboration: Strengthen ties with organizations like IMD, eInfochips, and BISAG to facilitate internships, workshops, and joint research initiatives that offer practical exposure to students.

7.4 Post-visit Reflections: Include a structured session post-visit for students to share insights, which can enhance retention and promote collaborative learning.

8. Acknowledgments

I would like to express my sincere gratitude to the Department of Computer Science and Engineering, School of Technology, Pandit Deendayal Energy University, for organizing these insightful industrial visits.

Special thanks to the coordinators and faculty members who accompanied us and ensured the visits were informative and well-structured. I also extend my appreciation to the staff at IMD Ahmedabad, eInfochips, and BISAG for their warm welcome, detailed explanations, and valuable time.

9. References

9.1 Official website of India Meteorological Department (https://mausam.imd.gov.in)

9.2 Official website of eInfochips (https://www.einfochips.com)

9.3 Official website of BISAG (https://www.bisag-n.gov.in)

10.Appendices

Appendix A: Photographs from IMD – Met Centre Ahmedabad (1st October 2024)

- **Fig-1:** Rain/Snow Gauge

  A mechanical tipping bucket-type device used to measure rainfall intensity and total precipitation.

- **Fig-2**: Automated Weather Station Data Logger

  Used for real-time recording of environmental data such as temperature, humidity, wind speed, and solar radiation.

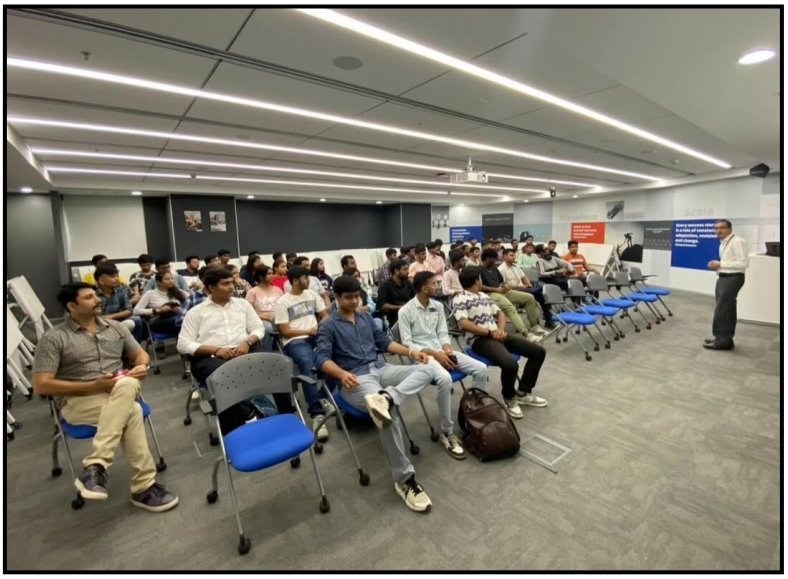
- **Fig-3:** Multiplate Radiation Shield

  A multiplate radiation shield is a device used to protect temperature, humidity, or other weather sensors from the effects of solar radiation and precipitation, ensuring accurate measurements

Appendix B: Photographs from eInfochips – An Arrow Company (21st March 2025)

- **Fig-1:** Interaction Session with Company Professionals

  Interactive Session with Industry Experts at eInfochips – Insights into Embedded Systems and IoT Solutions



Appendix C: Photographs from BISAG – Gandhinagar (2nd April 2025)

- **Fig-1:** Satellite Communication Dishes at BISAG

  The satellite ground station at BISAG facilitates high-frequency data transmission for geospatial and remote sensing applications. These parabolic antennas support communication with Earth observation satellites and enable real-time data reception.

- **Fig-2:** Digital Studio Infrastructure at BISAG

  A professional studio setup with green screen and broadcasting equipment used for educational content production.