



NEW HORIZON COLLEGE OF ENGINEERING

Autonomous College, Affiliated to VTU | Approved by AICTE New Delhi & UGC
Accredited by NAAC with 'A' Grade & Accredited by NBA

Department of Computer Science and Engineering Event Report

Title	Industrial Visit to CSIR Fourth Paradigm Institute
Date	5-11-2024
Time	9:30 AM – 4:30 PM
Venue	CSIR Fourth Paradigm Institute, HAL, Bengaluru
Brief Description with high resolution Photos	<p>On November 5, 2024, the Department of Computer Science and Engineering arranged a full-day industrial visit for third semester students to the CSIR Fourth Paradigm Institute in Bangalore. The primary objective of this visit was to gain practical knowledge and understand how theoretical concepts are applied in real-world scenarios. This visit aimed to bridge the gap between classroom learning and practical application.</p> <p>Activities and Insights:</p> <ol style="list-style-type: none">1. High-Performance Computing (HPC) and its applications: The visit began with a detailed lecture by Mr. Prabhu on High-Performance Computing (HPC) systems. These systems are characterized by their high-speed processing power, high-performance networks, and large memory capacity, enabling massive parallel processing. We learned about the structure of an HPC cluster, which typically consists of numerous computing nodes connected by a high-performance network. This robust infrastructure supports massive datasets and simulations, driving scientific innovation across various disciplines such as environmental science, physics, and engineering.2. Cybersecurity: Mr. Md Talib Hassan delivered an enlightening session on cybersecurity. He discussed the importance of protecting sensitive research data and computational resources at CSIR. The lecture covered various types of cyberattacks and cyber fraud, including phishing and malware. CSIR employs a multi-layered approach to cybersecurity, incorporating AI threat detection algorithms, encryption, access controls, and real-time monitoring to safeguard its valuable data.3. Artificial Intelligence (AI) as a Boon: Artificial Intelligence, a rapidly evolving field in computer science, was the focus of Mr. Hassan's second lecture. He emphasized AI's role in enabling faster data processing, pattern recognition, and predictive modelling. We explored how machine learning algorithms accelerate data analysis for projects in climate forecasting, anomaly detection, and biomedical research. AI, combined with HPC, allows CSIR to generate more accurate and scalable

predictions, particularly in data-intensive fields like genomics and environmental studies.

4. Climate and Weather Modelling: Dr. Sumana S. presented on climate and weather modelling, a major focus area at CSIR 4PI. We learned about the complex process of building and running climate models, which simulate energy and material transfer through the climate system. The HPC capabilities at CSIR are utilized to predict long-term climate behaviour and immediate weather patterns. These models are crucial for preparing for extreme weather events, supporting policy-making, and contributing to global climate research.

5. History and Applications of Computer Vision: The final session covered the history and applications of computer vision. The team were introduced to various computer vision tasks, including methods for acquiring, processing, analyzing, and understanding digital images. Applications of computer vision discussed included facial recognition, object recognition, and image search. These tasks transform visual images into descriptions that make sense to thought processes and can elicit appropriate actions.

The visit to the CSIR Fourth Paradigm Institute was an enlightening experience that provided a comprehensive understanding of the groundbreaking work being conducted in scientific research and innovation. Through in-depth presentations, facility tours, and interactions with leading researchers, students gained valuable insights into the institute's cutting-edge projects, state-of-the-art technologies, and the profound impact of CSIR's work on various industries and societal advancements.



Report prepared by:

Dr. Ashok K

Associate Professor