Training Day 8 Report:

Date: *4 July,2025(Friday)*

Location:*PG Block HPC Lab*

Guided by:*Training Instructors (Classroom-Based)*

Main Objective:

To recap core steps in Exploratory Data Analysis (EDA), understand its importance before machine learning, and begin planning a real-time IoT dashboard mini project.

Summary of the Day's Work

Today's session focused on the workflow and principles of EDA for quality data analysis, explored why data cleaning and visualization matter before ML, and introduced dashboard data flow using sensors, the cloud, and custom code.

Topics/Areas Covered:

- Recap of Exploratory Data Analysis (EDA)
- Why EDA is important before Machine Learning
- Steps in EDA:
    - ➢ Data Types
    - ➢ Summary Stats
    - ➢ Missing Values
    - ➢ Correlation & Visuals
- Real-Time IoT Dashboard – Mini Project Introduction

Concepts Learned:

- EDA helps to understand patterns, data quality, and relationships.
- Before applying ML, data must be cleaned and explored properly.

- IoT Dashboard Project: Sensor → ESP32 → ThingSpeak → Web Page
- Flow of real-time data from sensor to graph via cloud.
- Custom dashboards can be built using HTML + JavaScript.

Tools / Platforms Used

- ESP32 Board
- Wokwi Simulator
- ThingSpeak Cloud
- HTML / JavaScript

Tasks Assigned:

- Prepare overview of EDA with key steps.
- Study the Real-Time IoT Dashboard project flow.
- Understand the architecture: Sensor → WiFi → Cloud → Dashboard.
- Sketch or refer to a flowchart showing how data moves in the system.

Observations / Reflections

Today's session gave me better clarity on both data analysis and real-time IoT systems. I found the dashboard idea interesting, and I look forward to building it practically.

Key Takeaways

- Gained understanding of EDA process and its application in IoT projects.
- Learned how IoT dashboards visualize real-time sensor data via cloud and web technologies.
- Recognized importance of proper data cleaning/EDA before ML modeling.