Training Report – Day 2

Types of Machine Learning

Today, I learned about the **three main types of Machine Learning**, which are categorized based on how the machine learns from data:

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1. Supervised Learning

- In this type, the model is trained using **labeled data** (input and correct output).
- The algorithm learns the relationship between input and output to make future predictions.
- **Goal:** To predict or classify new data.
- **Examples:**
    - Email spam detection
    - House price prediction
    - Disease diagnosis

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2. Unsupervised Learning

- The model is trained using **unlabeled data** (only inputs, no outputs).
- It finds **hidden patterns or structures** in the data.
- **Goal:** To group or organize data meaningfully.
- **Examples:**
    - Customer segmentation
    - Market basket analysis
    - Anomaly detection

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3. Reinforcement Learning

- The model learns by interacting with the environment and receiving **rewards or penalties**.
- It uses **trial and error** to learn the best actions.
- **Goal:** To make a series of decisions that maximize reward.
- **Examples:**
    - Game-playing AI (like chess or Atari)
    - Self-driving cars
    - Robotics path planning

Key Learnings

- I understood the difference between **Supervised, Unsupervised, and Reinforcement Learning**.
- Learned how **data labeling** affects the learning method.
- Realized how different ML types are applied to solve **specific real-world problems**.
- Learned that **Supervised Learning** is widely used for prediction and classification tasks.
- Understood how **Unsupervised Learning** helps find hidden patterns in data.
- Learned how **Reinforcement Learning** is useful in decision-making systems like robots and game AIs.

Activities / Assignments Completed

- Participated in a class discussion on the difference between **Supervised** and **Unsupervised Learning**.
- Identified **real-life examples** for each type of Machine Learning.
- Completed a **worksheet** to match ML problems with the correct learning type.
- Watched a short video demonstrating how **Reinforcement Learning** works in games.
- Took a **short quiz** to test understanding of all three ML types.
- Group activity: Categorized given datasets into appropriate learning types (Supervised or Unsupervised).

Reflection

Today's session gave me a clear understanding of the **three main types of Machine Learning**. I was especially interested in how **Supervised Learning** is used in real-life situations like spam detection and medical diagnosis. I also found it interesting how **Unsupervised Learning** helps in organizing data and discovering patterns.

The concept of **Reinforcement Learning** was new to me, but the video examples helped me understand how machines can learn through rewards and actions. I feel more confident about the basics of Machine Learning and I'm excited to learn about real algorithms in upcoming sessions.