DAILY TASKS

DAY – 1

INTRODUCTION

Artificial Intelligence (AI) is the technology that enables machines to mimic human intelligence, such as decision-making, learning, and problem-solving. Machine Learning (ML) is a subfield of AI that allows systems to learn from data and improve over time without being explicitly programmed. In today's fast-paced world, AI and ML are becoming essential in almost every industry—from healthcare and finance to education and transportation—because they help automate tasks, analyze large amounts of data, and make smarter decisions. I chose to do this course to gain practical knowledge in this rapidly growing field and stay ahead in my career. Through the course, I will learn the basics of AI and ML, different types of ML (like supervised and unsupervised learning), and how these technologies are applied in real-life scenarios. This knowledge will help me understand how AI/ML can be used to solve modern problems efficiently.

🌐 What is Artificial Intelligence (AI)?

AI is the branch of computer science that aims to create machines or software that can mimic human intelligence — like learning, problem-solving, reasoning, and decision-making.

AI systems are designed to think and act like humans or think and act rationally.

Examples of AI:

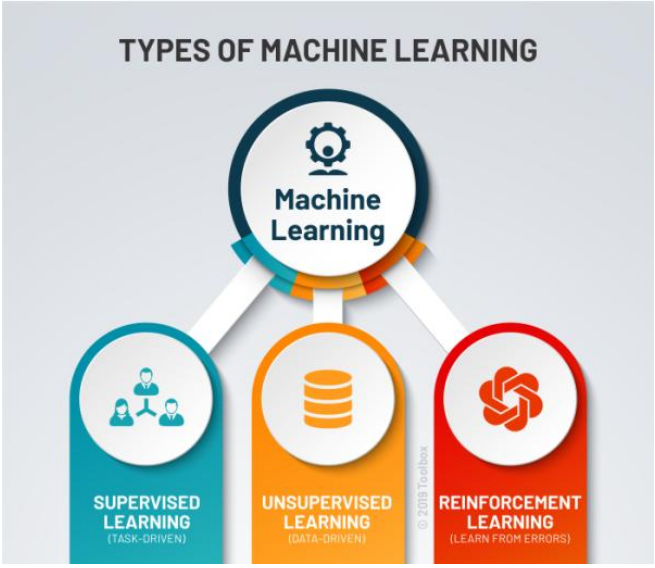
- Voice assistants (e.g., Siri, Alexa)
- Self-driving cars
- Chatbots
- Facial recognition systems
- Language translation tools

🤖 What is Machine Learning (ML)?

Machine Learning is a **subfield of AI** that gives computers the ability to **learn from data** and improve their performance **without being explicitly programmed**.

ML is how we make AI systems **smarter over time**, by feeding them data and allowing them to find patterns or make decisions.

TYPES OF MACHINE LEARNING



1. Supervised Learning

✅ Labeled data (input and correct output provided)
📌 The model learns to map input to the correct output.

Examples:

- Spam email detection
- House price prediction
- Child Learning

2. Unsupervised Learning

❌ Unlabeled data (only input data provided)
📌 The model finds patterns or groups in the data.

Examples:

- Customer segmentation
- Market basket analysis
- Anomaly detection

3. Reinforcement Learning

🏁 Agent learns by interacting with the environment, using rewards & punishments
📌 The goal is to maximize cumulative reward.

Examples:

- Game playing (e.g., Chess)
- Robotics control
- Self-driving cars

K-Nearest Neighbours (KNN) Algorithm

KNN is a supervised machine learning algorithm used for classification and regression.
It is called a lazy learner because it doesn't learn from the training data immediately. Instead, it stores the entire dataset and performs calculations only when making a prediction.

How does KNN work?

1. Choose the number of neighbours (K):This is the number of nearby points we will look at.
2. Calculate the distance between the new data point and all points in the dataset (commonly using Euclidean distance).
3. Find the K nearest neighbours – the K points that are closest to the new point.
4. Make the prediction:
    - Classification: Use majority voting — the class most common among the neighbours.
    - Regression: Take the average value of the neighbours.