INTRODUCTION TO AI & MACHINE LEARNING

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AGENDA

- Introduction
- Types of AI
- Types of Machine Learning
- How ML Works?
- AI & ML in Real Life
- Future of AI & ML

Introduction

What Is AI?

AI (Artificial Intelligence) Refers To Computer Systems That Mimic Human Intelligence.
It Can Perform Tasks Like Problem-solving, Learning, Reasoning, And Decision-making.

What Is Machine Learning (ML)?

ML Is A Subset Of AI That Enables Machines To Learn From Data Without Being Explicitly Programmed.
Example: Netflix Recommendations, Spam Email Detection, And Self-driving Cars

TYPES OF AI

AI can be classified into three categories based on its capabilities:

- **1. Narrow AI (Weak AI)**
  - Designed for a specific task.
  - Examples: Google Search, Chatbots, Voice Assistants (Alexa, Siri).
- **2. General AI (Strong AI)**
  - Hypothetical AI that can perform any intellectual task like a human.
  - It has reasoning, problem-solving, and self-learning abilities.
  - Currently, we have not achieved this level of AI.
- **3. Super AI**
  - A theoretical AI that surpasses human intelligence in every aspect.
  - Capable of independent thinking, creativity, and decision-making.
  - Concerns: Ethical issues, control over humanity, AI safety.

TYPES OF MACHINE LEARNING

ML is categorized into three main types

1. Supervised Learning

•The algorithm learns from labeled data (i.e., data with predefined outputs).

•Example: Spam email detection (emails labeled as spam or not spam).

2. Unsupervised Learning

•The algorithm learns from unlabeled data by identifying patterns and relationships.

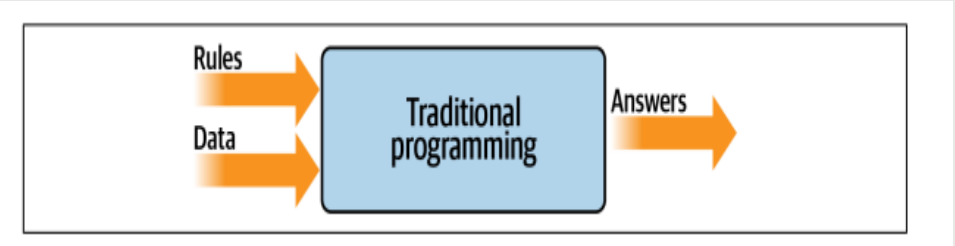
•Example: Customer segmentation in marketing.

3. Reinforcement Learning

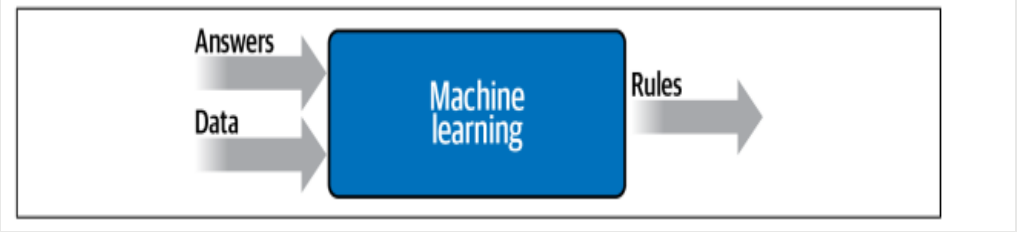
•The algorithm learns by interacting with an environment and receiving feedback (rewards or penalties).

•Example: AlphaGo (AI that beats humans in board games).

HOW ML WORKS?



Traditional Programming



Machine Learning

Step-by-Step Process of Machine Learning:

1. **Data Collection** – Gather raw data from various sources.
2. **Data Preprocessing** – Clean, normalize, and format the data for analysis.
3. **Model Selection** – Choose a suitable ML algorithm.
4. **Training the Model** – The model learns patterns from the data.
5. **Evaluation & Testing** – Measure performance using test data.
6. **Deployment** – Use the trained model in real-world applications.

COMMON ML ALGORITHMS

1. Linear Regression

Used for predicting continuous values (e.g., predicting house prices).

2. Decision Trees

A tree-like model used for classification and decision-making (e.g., diagnosing diseases).

3. Random Forest

An ensemble learning method using multiple decision trees to improve accuracy.

4. K-Means Clustering

Groups similar data points together (e.g., customer segmentation).

5. Neural Networks

Modeled after the human brain, used in deep learning (e.g., image and speech recognition).

AI & ML IN REAL LIFE

Applications of AI & ML in Various Industries:

Healthcare – AI-powered diagnosis, robotic surgeries, drug discovery.

Finance – Fraud detection, stock market predictions, automated trading.

E-commerce – Personalized product recommendations, chatbots for customer support.

Self-Driving Cars – AI processes real-time traffic data for autonomous driving.

Entertainment – Netflix, YouTube, and Spotify use ML for recommendations.

FUTURE OF AI & ML

What's Next for AI & ML?

1. **Advancements in Robotics** – AI-powered robots assisting in various industries.

2. **AI in Education** – Personalized learning experiences and AI tutors.

3. **Ethical Challenges** – Bias in AI, privacy concerns, job displacement

4. **The Rise of Explainable AI** – Making AI decisions more transparent.

5. **Super AI Development** – Ongoing research on achieving human-level AI.

THANK YOU

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