AI vs ML vs DL

1. Artificial Intelligence (AI)

Definition:
AI is the broad field of creating machines that can perform tasks requiring human intelligence such as reasoning, decision-making, problem-solving, and language understanding.

Key idea: *Make machines intelligent.*

Examples (Real Life):

- Google Maps choosing best routes
- Chatbots (customer support bots)
- Chess-playing programs
- Smart assistants (Siri, Alexa)

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2. Machine Learning (ML)

Definition:
ML is a subset of AI where machines learn from data and improve performance **without being explicitly programmed**.

Key idea: *Learn from data.*

How it works:
Uses algorithms like Linear Regression, Decision Trees, KNN, SVM.

Examples (Real Life):

- Email spam detection
- Netflix/YouTube recommendations
- Credit card fraud detection
- Price prediction (houses, stocks)

Deep 3 Learning (DL)

Definition:
DL is a subset of ML that uses **neural networks with many layers** to learn complex patterns automatically.

Key idea: *Learn like the human brain.*

Special feature:
Works best with **large data** and **high computing power (GPUs)**.

Examples (Real Life):

- Face recognition (phones)

- Self-driving cars

- Voice recognition (Google Assistant)

- Medical image analysis (X-rays, MRI)