

Module 1 - Fundamentals of AI

What is Artificial Intelligence (AI)?

Artificial Intelligence means making computers or machines smart like humans. AI helps machines think, learn, and solve problems without being told what to do step-by-step.

Example:

- Google Assistant or Siri understanding your voice and giving answers.
- YouTube or Netflix recommending videos based on your interest.
- Self-driving cars recognizing people and traffic signs.

Fundamentals of AI

1. Learning

AI systems learn from data (like how we learn from experience).

- Example: An AI can learn to recognize animals by looking at many animal pictures.

2. Reasoning

AI can make decisions or solve problems logically.

- Example: Chess-playing software thinks of the best moves to win the game.

3. Problem Solving

AI finds the best or fastest way to solve a task.

- Example: GPS showing the shortest route to your destination.

4. Perception

AI can see, hear, or sense things from the environment.

- Example: Face detection in a smartphone camera.

5. Natural Language Processing (NLP)

AI understands and speaks human languages like Hindi or English.

- Example: Chatbots that answer your questions on websites.



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Introduction to Artificial Intelligence

Important AI Terms

Term	Simple Meaning	Example
Algorithm	A set of steps the computer follows to solve a problem	A recipe to bake a cake
Data	Information used by AI to learn and decide	Photos, videos, text
Machine Learning (ML)	A part of AI where machines learn from data	Teaching a computer to recognize cats by showing many cat images
Training	The process of teaching AI using data	Giving lots of examples to AI so it learns
Model	The result after AI is trained	A trained model that can predict marks based on study hours
Robotics	Using AI in machines that can move and do tasks	A robot vacuum cleaner
Chatbot	AI tool that chats with users	Customer care bots on shopping websites

More Applications of AI (Artificial Intelligence)

1. Healthcare

AI helps doctors **diagnose diseases**, **suggest treatments**, and even assist in surgeries.

- Example: AI can detect cancer from X-rays faster than humans.

2. Banking & Finance

AI is used to **detect fraud**, **manage accounts**, and give **loan suggestions**.

- Example: If a suspicious transaction happens, AI can block your card automatically.

3. Education

AI provides **personalized learning** and **doubt-solving bots**.

- Example: An app that adjusts your quiz based on your performance.

4. Agriculture

AI is used for **crop monitoring**, **soil analysis**, and predicting weather for farming.

- Example: Drones with AI detect plant diseases in the field.

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