

AI (Artificial Intelligence) is a branch of computer science focused on creating systems that can perform tasks that normally require human intelligence.

These tasks include:

- **Learning** from data
- **Understanding language** (like reading or conversation)
- **Recognizing images, speech, and patterns**
- **Making decisions or recommendations**
- **Solving problems and planning actions**

## Simple Examples of AI

- Virtual assistants like **Siri, Alexa, and Google Assistant**
- Recommendation systems on **Netflix, YouTube, and Spotify**
- Language models like **ChatGPT**
- Self-driving car technology
- Fraud detection systems used by banks

## How AI Works

Most modern AI systems learn from large amounts of data. For example:

- An AI trained on millions of photos can learn to recognize cats and dogs.
- An AI trained on text can learn grammar, facts, and patterns in language.

A common approach today is **machine learning**, especially **deep learning**, where artificial neural networks learn patterns from data.

## Types of AI

1. **Narrow AI (Weak AI)** – Designed for specific tasks.
  - Examples: Chatbots, image recognition, translation tools.
  - This is the type of AI we have today.
2. **General AI (Strong AI)** – A hypothetical AI that could perform any intellectual task a human can do.
  - This does not yet exist.

## In One Sentence

AI is the technology that enables computers and machines to mimic certain aspects of human intelligence, such as learning, reasoning, understanding language, and making decisions.

## Learn Python

Python is the most widely used language in AI.

Topics to cover:

- Variables, loops, functions
- Lists, dictionaries, classes
- File handling
- Basic libraries

You can learn from

<https://docs.python.org/3/tutorial/>

## Learn the Essential Math

You don't need advanced math immediately, but these topics help:

- Algebra
- Probability
- Statistics
- Basic linear algebra

## Learn AI Tools and Libraries

Start with:

- NumPy
- Pandas
- Matplotlib
- Scikit-learn

<https://pandas.pydata.org/>

<https://scikit-learn.org/stable/>

## Build Projects

Projects teach more than courses.

Beginner ideas:

- Spam email detector
- House price predictor
- Movie recommender
- Sentiment analysis on reviews
- AI chatbot using an API

## Learn Modern Generative AI

Study:

- Transformers
- LLMs
- Prompt engineering
- Retrieval-Augmented Generation (RAG)
- AI agents

<https://developers.openai.com/api/docs>

<https://huggingface.co/learn>