

Master ChatGPT

Transform Your Life With AI Chatbots



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Aug- Sep 2025

Chapter 1 – What is AI and Machine Learning

1.1 What is Artificial Intelligence?

Artificial Intelligence is the capability of a computer system to mimic human cognitive functions such as learning and problem-solving.

ML(Machine Learning)

ML is a subset of AI. In short it means that you are teaching something to the machine.

Use :

For you suggestions on Netflix.

Suggested posts on social media.

Self-driving cars.

NLP(Natural Language Processing)

It means understanding human languages through a computer.

Artificial Neural Network

The connection between the neurons in the human brain are imitated in the machines.

➡ In traditional programming :-

We give input like $2+2$ and the computer will compute and give output 4.

➡ In machine learning :-

We have to give both input and output, computer have to guess what the function should have been in between. We provide it with a large set of inputs and outputs to enable it to recognize the pattern between these inputs and outputs.

So to receive output 4 we will give various ways to write 4.

1.2 understanding AI Chatbots

➡ The category of artificial intelligence ChatGPT is categorized in is called the chatbots category.

Chatbots simulate human conversations.

Ex. Siri, Alexa

Rule based Chatbots :-

Rules would be written by the programmers.

Retrieval based Chatbots :-

If you ask a question, it will try to “best match” your question with a pre-existing response and will give you that as an answer.

Generative Chatbots :-

In this you are not provided existing responses, rather new responses are created based on your input.

➡ To train these chatbots, large datasets are used. That’s why they are called **Large Language Models(LLM)**.

1. Next token predicting : -

The model is given a sequence of words with the goal of predicting the next word.

Ayushi is a ____.

2. Masked language modeling :-

The model is given a sequence of words with the goal of predicting a ‘masked’ word in the middle.

Ayushi ____ reading.

➡ Siri, that’s loaded in iPhones, also predicts the next word.

➡ While using whatsapp or imessage on the iPhone, there are 3 words written above the keypad.

➡ Siri suggests the next word that you might want to write. The technique used there is called **Long Short Term Memory(LSTM)**.

1. But the model is unable to understand that some of the words around it have more value than others.(This is unable to understand the context).

2. And the second problem is that this model is processing the words individually and unable to understand the whole context.

➡ To overcome these 2 problems in 2017 the google brain team introduced the concept of **Transformers**.

➡ In comparison, LSTM transformers are models that can process all input data at once.

1.3 What makes ChatGPT special

➡ OpenAI is the name of the company that has created ChatGPT.

➡ Their 1st generative pre-training transformers model was launched in 2018 and named GPT-1.

What is ChatGPT ?

ChatGPT combines “Chat”, referring to its chatbot functionality, and “GPT”, which stands for Generative Pre-trained Transformer, a type of LLM.

➡ These 2 large datasets were used as training data.

1. Common Crawl

The big dataset was of millions of internet web pages.

2. Book Corpus

The 2nd dataset was of 11,000 books

➡ In terms of natural language processing, this was a huge achievement. But it had many shortcomings. It always generated a lot of repetitive text. Its text sequences were small. But it works like a foundation.

➡ In February 2019, OpenAI launched its sequel, GPT-2.

It had 1.5 billion parameters. GPT-1 had 117 million parameters.

➡ Parameters are basically the variables based on which the GPT model recognises patterns.

➡ Then, in 2020, The GPT-3 model was launched, in which 100 times more parameters were used. 175 billion parameters.

➡ The total training dataset given to the GPT-3 model weighed a total of 570GB.

➡ The next revolution step was when OpenAI launched ChatGPT 3.5 to the public in Nov 2022. It was only after this that the whole world came to know about ChatGPT.

➡ There was a big critical difference between 3 and 3.5

In 3.5, they used a specific technique called **Reinforcement Learning from Human Feedback(RLHF)**.

1.4 The RLHF method explained

Reinforcement Learning from Human Feedback(RLHF).

◆ Steps in RLHF

1. Supervised Fine-Tuning Model

- A base language model is trained on high-quality, human-labeled data.

- This helps the model learn basic instructions and responses.

2. Reward Model

- Human evaluators rank multiple outputs of the model.
- These rankings are used to train a *reward model*, which guides the AI on what kind of answers are “better.”

3. Reinforcement Learning Model

- The base model is further trained using the reward signals.
- A technique called **Proximal Policy Optimization (PPO)** is often used to update the model in a stable way.

Proximal Policy Optimization(PPO) :-

- It allows the model to **learn from feedback** while avoiding big, unstable changes in its behavior.
- This helps balance exploration and safety during training.

➡ OpenAI introduced its new model, ChatGPT-4 in March 2023.

➡ It is not publicly revealed how many parameters were used in that but it is said that trillions of parameters have been used.

➡ In the end, this model was evaluated based on 3 criterias.

1. Helpfulness
2. Truthfulness
3. Harmlessness