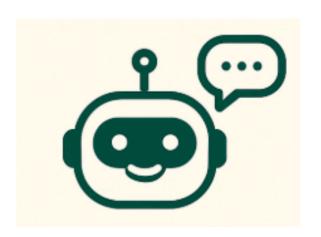
Master ChatGPT

Transform Your Life With AI Chatbots



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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 **R**einforcement **L**earning from **H**uman **F**eedback(**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