

Module 1

Chapter 3 notes

Understanding ChatGPT & Technologies:

- When we hear "ChatGPT," several terms come to mind like:-

- AI, Chatbot
- Large Language Model,
- Generative AI,
- Deep Learning,
- Machine Learning,
- Transformer,
- Neural Network,
- "Is my job at risk?"

Let's simplify and understand these terms in a structured way:

- **AI (Artificial Intelligence)**: AI is a program that simulates human intelligence.
- **Machine Learning**: A subset of AI, it refers to algorithms that learn on their own without explicit programming. Initially, you provide input and output, and the algorithm figures out the process in between. For example, if you give it 100,000 dog photos and label them as dogs, the algorithm will learn to identify a dog in new photos.

Types of Machine Learning:

- **Supervised Learning:** The data is labeled, helping the algorithm detect patterns and make predictions.
- **Unsupervised Learning:** The algorithm learns on its own by observing similarities and differences in the data, but it can be tricky and lead to out-of-control algorithms.
- **Reinforcement Learning:** Similar to a student-teacher relationship, the algorithm learns through a manual feedback loop without labeled data.
- **Large Language Model:** With this, we can give instructions in plain English instead of coding languages. It's like a best friend who predicts your intentions and communicates effectively on your behalf.

In ChatGPT's case, it was trained on 560GB of text data, including millions of web pages (common crawl) and 11,000 books (book corpus). ChatGPT converts words into tokens or numbers for processing.

Tokenization in ChatGPT:

- A phrase like "Hello cutie" is broken down into tokens (in this case, three tokens).
 - Hello
 - Cut
 - ie
- The free version of GPT-3.5 has a token limit of 4096, and GPT-4 has a limit of 32,768 tokens.

Why Tokenization?

Human language is complex, with nuances that change meanings based on how and where you pause. ChatGPT converts text into tokens to model this complexity.

ChatGPT's Training:

- It underwent three steps of training: providing fine feedback, setting up a reward model where human raters score the responses, and learning to improve based on this feedback loop.
- Generative AI: It processes existing data to create something new, recognizing patterns and generating responses based on that.

Transformers and Contextual Understanding:
Google's transformer technology allows ChatGPT to understand the bigger picture and context, not just focusing on individual words or tokens.

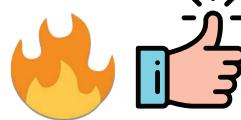
Key Takeaways and Notes:

- Understanding AI and Its Layers: AI, Machine Learning, and Deep Learning are parts of a complex structure that leads to intelligent systems like ChatGPT.
- Machine Learning Categories: Understanding the differences between supervised, unsupervised, and reinforcement learning is crucial.
- Deep Learning's Role: Deep learning mimics the human brain's functioning, crucial for AI's decision-making processes.
- Large Language Models: These models have revolutionised how we interact with machines, allowing for communication in plain English.

- Tokenization in ChatGPT: This process is vital for ChatGPT to understand and generate human-like language.
- Generative AI: ChatGPT's ability to create new content based on existing data patterns is a key feature of generative AI.
- Transformers in AI: These are essential for ChatGPT to understand context and provide relevant responses.



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