Learning Objectives

Learners will be able to...

- Analyze the architecture and functionality of the ChatGPT language model by OpenAI, including its capabilities and limitations.
- Utilize the ChatGPT language model to engage in a conversation and generate human-like responses.
- Compare and contrast the different versions of the ChatGPT model, including their features and performance.

info

Make Sure You Know

You are familiar with Python.

Limitations

This is a gentle introduction. So there is a little bit of Python programming. The information might not be the most up to date as OpenAI releases new features.

ChatGPT

ChatGPT is a powerful and innovative language model designed by OpenAI based on the GPT-3.5 architecture. ChatGPT capabilities allow it to understand and respond to natural language input in a way that is strikingly similar to human conversation.

One of the key features of ChatGPT is its ability to generate high-quality responses to a wide range of prompts, from simple questions to complex discussions on a wide variety of topics. This is achieved through its impressive natural language processing (**NLP**) capabilities, which enable it to analyze and understand human language patterns and structures, and generate appropriate responses that are contextually relevant and linguistically fluent.

In addition to its NLP capabilities, ChatGPT is also capable of learning and adapting to new data inputs, allowing it to continually improve its understanding and responses to new topics and conversations. This makes it an incredibly useful tool for a wide range of applications, from customer service and chatbot interactions to language translation and even creative writing.

In terms of how ChatGPT stores information, the model uses a series of attention mechanisms to weigh the importance of different parts of the input sequence. This allows the model to focus on the most relevant parts of the input when generating a response. Please note, ChatGPT is not connected to the internet, and it can occasionally produce incorrect answers. It has limited knowledge of world and events after 2021 and may also occasionally produce harmful instructions or biased content.

GPT

ChatGPT is a powerful language model that is based on the **GPT** (Generative Pre-trained Transformer) architecture. This architecture is widely used in the field of natural language processing and has been responsible for many recent breakthroughs in language generation and understanding.

There are several different versions of the GPT architecture that have been developed over the years, each with its own unique characteristics and capabilities. Here are a few examples:

GPT-1: This was the original version of the GPT architecture, which was introduced by OpenAI in 2018. It was trained on a massive corpus of text data and was capable of generating coherent and grammatically correct text, although its output was sometimes repetitive and lacked coherence.

GPT-2: This was a significantly more advanced version of the GPT architecture, which was introduced by OpenAI in 2019. It was trained on an even larger corpus of text data and was capable of generating much more complex and coherent text. However, it was also more prone to generating biased or offensive content, which led to some controversy around its release.

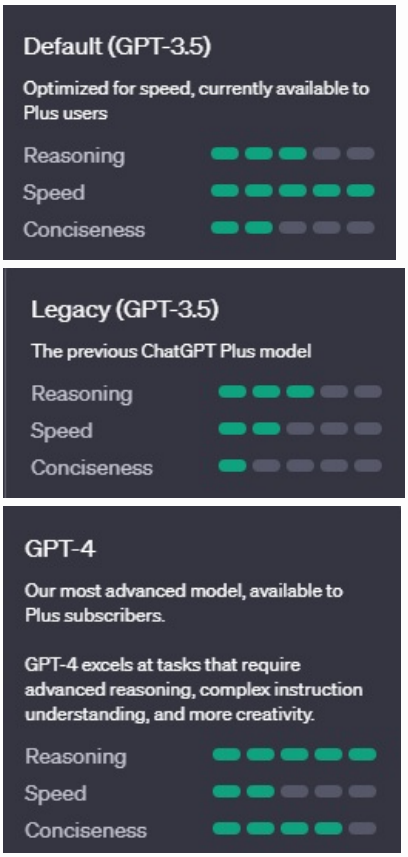
GPT-3: This is the one of most recent and advanced version of the GPT architecture, which was introduced by OpenAI in 2020. It was trained on a massive corpus of text data and is capable of generating text that is often indistinguishable from that written by humans. It also includes a wide range of built-in tasks, such as translation and summarization, making it a versatile tool for a wide range of NLP applications.

In addition to the GPT models, there are several other related architectures and models that have been developed in recent years, such as **BERT**, **XLNet**, and **T5**. These models each have their own unique strengths and weaknesses, and are often used in combination with each other to achieve the best possible results.

Overall, the different models used by ChatGPT and other language models represent a significant step forward in the field of natural language processing, and have the potential to revolutionize the way we interact with and understand human language.

ChatGPT models

ChatGPT when generating a response give users a set of models to choose from. The models are GPT-3.5(default), GPT-3.5(Legacy), GPT-4. When selecting a model for a specific task, ChatGPT considers three key factors: reasoning, speed, and consciousness.



In terms of models the default GPT-3.5 is the fastest model. However, the GPT-4 model has a higher level of reasoning and consciousness.

Reasoning: This refers to the model's ability to understand and process complex relationships and patterns in language. A model with strong reasoning capabilities is able to identify and connect ideas across different sentences and paragraphs, and can generate text that is contextually relevant and coherent. This is especially important for tasks such as natural language understanding and dialogs generation.

Speed: This refers to the model's processing speed and efficiency, which is important for applications that require real-time or near-real-time responses, such as chatbots or voice assistants. A model that is able to

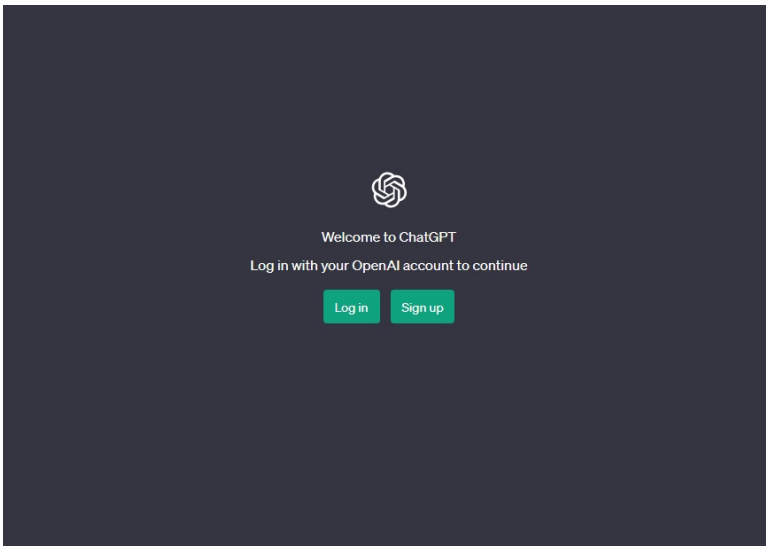
generate responses quickly and accurately can improve the user experience and make the interaction more seamless and natural.

Consciousness: This refers to the model's ability to understand and generate text that is appropriate and sensitive to cultural, social, and ethical considerations. A model that is conscious of these factors is able to generate text that is inclusive, respectful, and unbiased, and can avoid generating content that is offensive or harmful.

Website

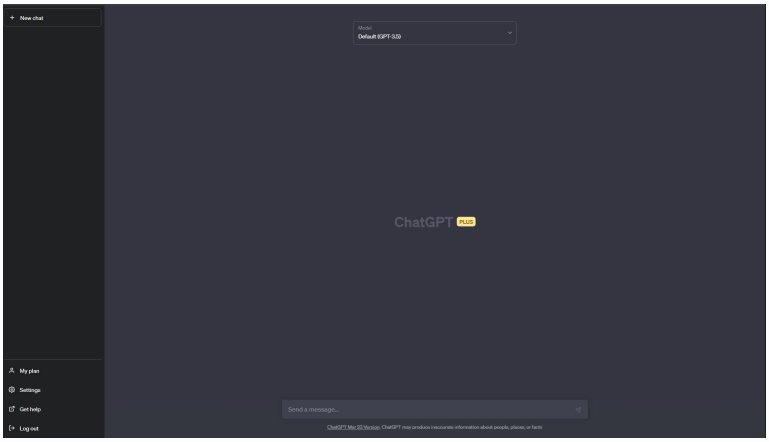
ChatGPT can be accessed using this link: https://chat.openai.com/

The link should bring you to a website that looks like the image below:



An image displaying a welcome message from ChatGPT their logo. With the message to log in or sign up.

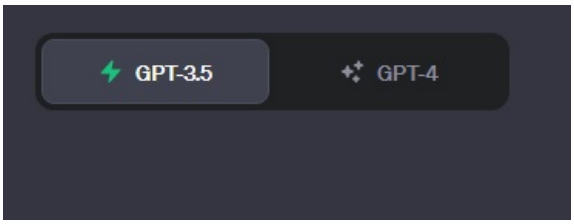
You can enter your credential if you already have an OpenAI account otherwise you will have to sign up.



An image displaying the the ChatGPT website. A user has access to a drop down with the modelts on the center top.

We wont be generating prompts yet, however we will go over the different settings we have access to on their website. First, at the center top we can see two buttons allowing us to choose between two versions of ChatGPT

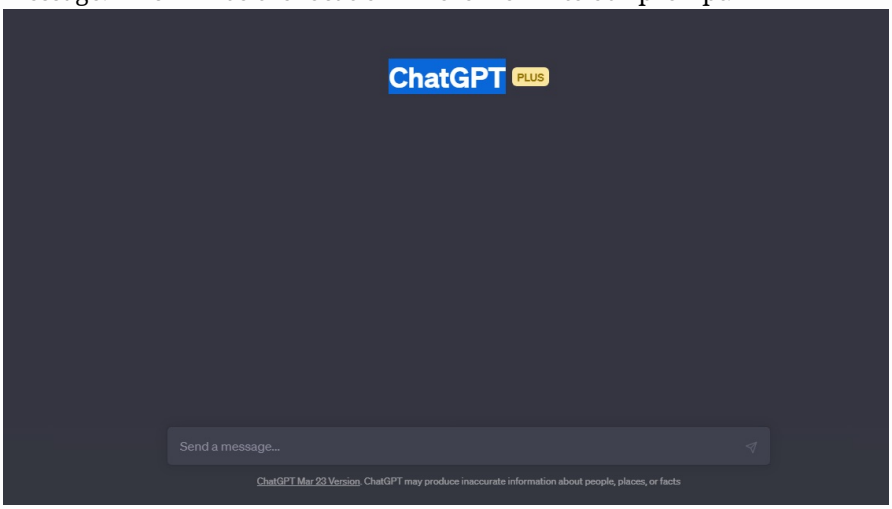
models to use.



In the previous version there was a drop down with the model we will use for the response we want to generate.

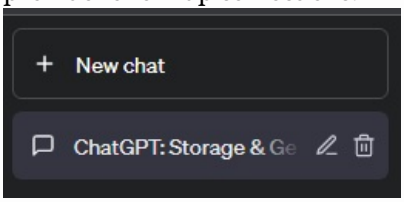
A dropdown menu displaying 3 models provided by ChatGPT. The 3 models are Default(GPT-3.5),Legacy(GPT-3.5),GPT-4

At the bottom in the middle of the page, there is space for us users to send a message. This will be the location where we write our prompt.

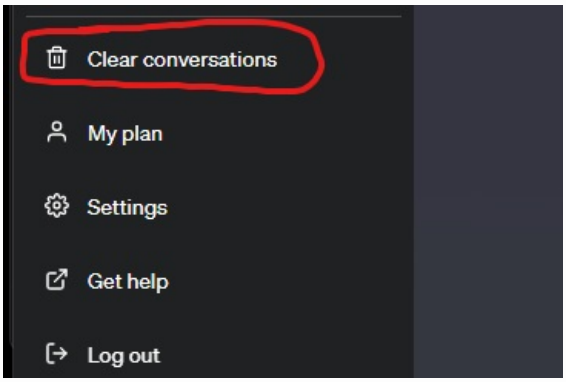


On the top left, there should be space that says create a new chat. Under the new chat, there should be a history of all your previous interactions with ChatGPT. This is one of the most amazing features of ChatGPT its ability to

remember what user said earlier in the conversation. It also allows user to provide follow-up corrections.



One of the unique feature of ChatGPT is that it can remember conversation. You can interact with a previous conversation with the pencil next to the chat history. You can delete a previous conversation by clicking the trashcan next to it then confirming. If you want to generate a whole new conversation you can click on the new chat button. You can further clear all conversation using the clear conversations located at the bottom left.



Bottom left Settings

Please note that the bottom left setting can look a little different if you have ChatGPT subscription.

Plus:

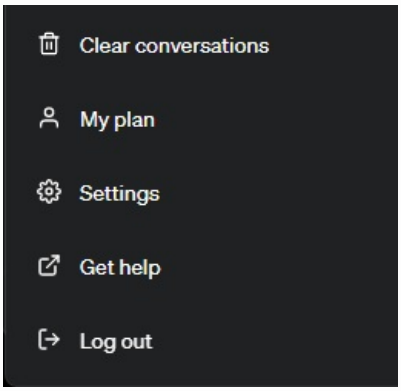
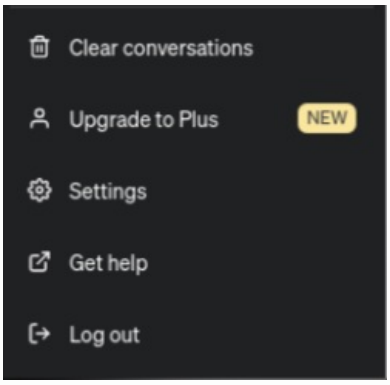


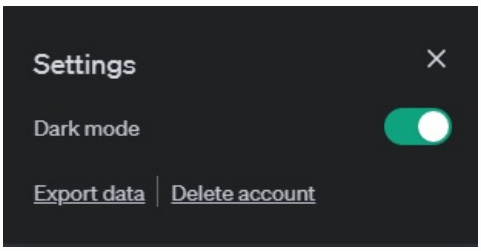
image showing the following text: clear conversation, myplan, settings , get help and log out.

No ChatGPT Plus:



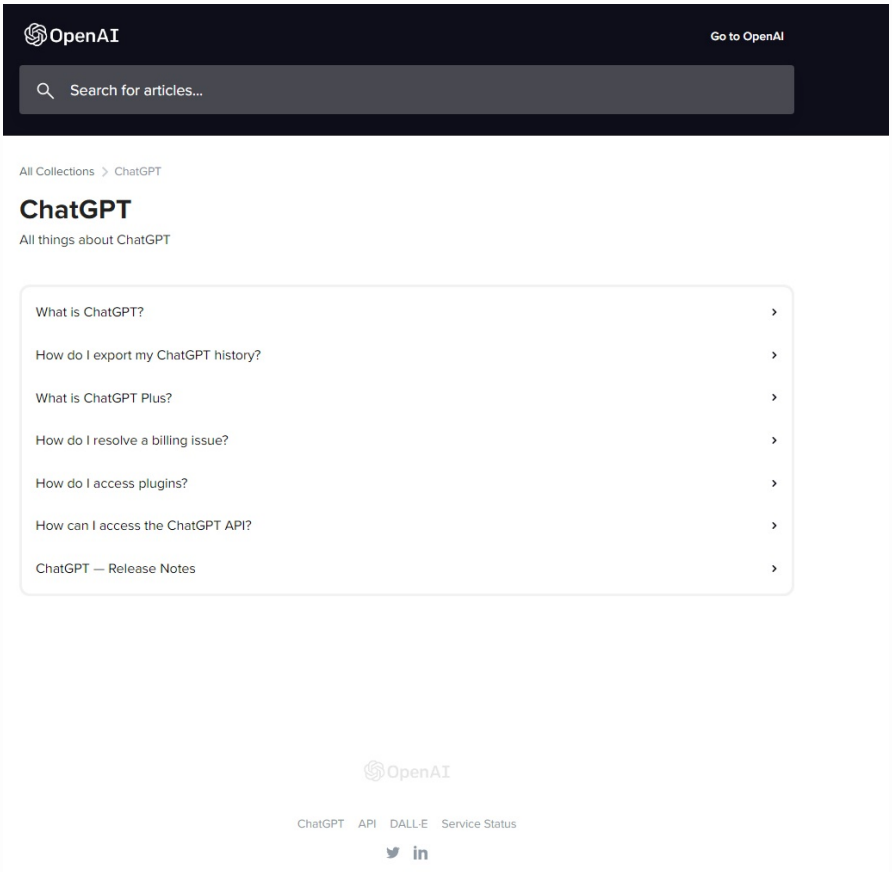
The main difference, is the second thing under `clear conversations`. If you have a subscription you should see `my plan` and if not you should see `upgrade to Plus`.

Under that we can access the settings button. Inside the settings tab, we can switch our ChatGPT to a dark version mode. Additionally, we can use to export our data. The delete account, which will be used to delete our ChatGPT account.



img/settings

After the setting, the is the get help link. Following, that we have the logout button.



Take some time and look at the help section provided by ChatGPT.

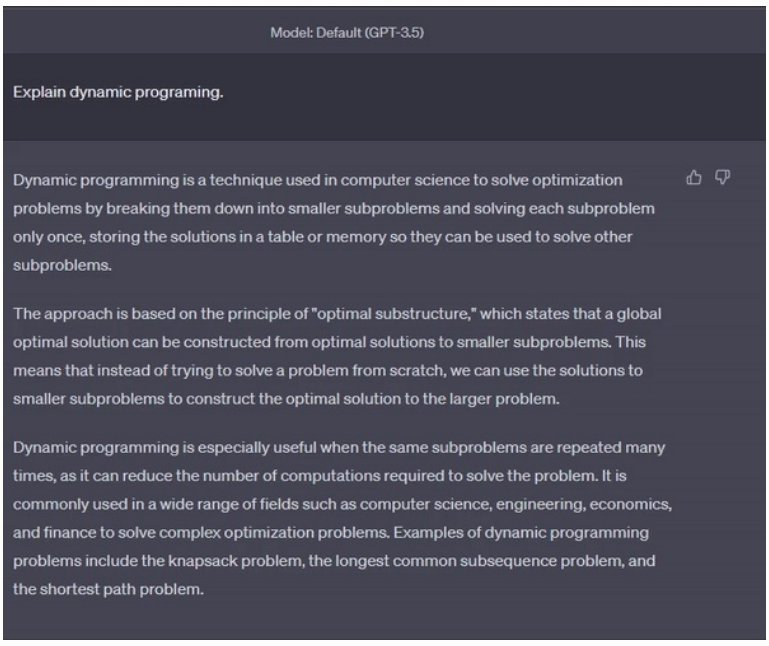
Results

ChatGPT can be used to generate prompts now go to the webpage and try the following prompts. This will help with practice and interaction with the product. Also, feel free to generate the responses in different chats.

> **Explain dynamic programming.**

One of the feature we can make use of is the ability to edit our past prompts. Click the edit button on the prompt you wrote earlier, not the result.Now change your prompt to the following:

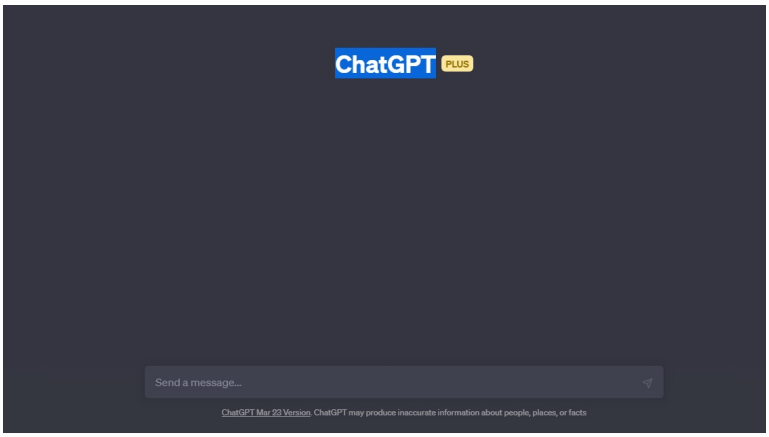
> **Explain dynamic programming to a 6 year old.**



ezgif.com-video-to-gif

Additionally, in the gif, you can see next to the response generated there are thumps up and down if you want as a user to give some feedback.

> Create a new chat and try the following prompts
> * Got any good ideas for a birthday card for my mom
> * Can you write the instructions in french?
> * Can you write python code to generate a heart?

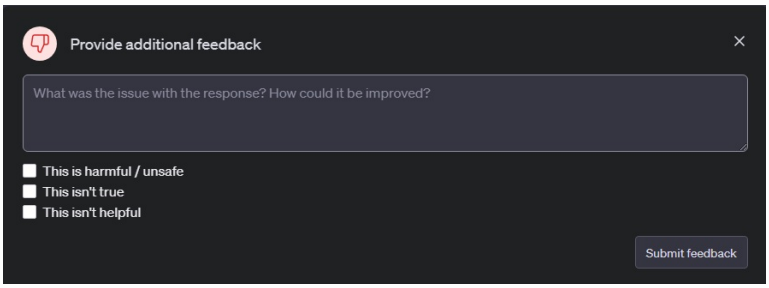


img/message

To help generate better results, there are a few strategies that can be employed. Firstly, it is important to provide clear and specific prompts or questions to ChatGPT. This helps the model to understand what information is being requested and generate more relevant responses.

Another strategy is to fine-tune the model on specific tasks or domains. This involves training the model on a smaller dataset that is specific to the task at hand, such as answering customer support questions or generating poetry. Fine-tuning helps to improve the model's accuracy and generate more relevant responses for a particular task.

Finally, it is important to continually update ChatGPT with new data and feedback.



img/feebdack

This helps the model to learn and adapt to new patterns and trends in language, and generate even better results over time.

Coding Exercise

Coding Exercise Requirement :
* Use the lowest in cost model
* Print only the string response