OpenAI API

Another thing?!

Yes.

So we now have an OpenAI account which will allow everyone in the center to access the OpenAI API so you can programmatically query, or even fine-tune models.

Quick Start Guide

To use the API you will need to:

1. Be invited to the group (Email Phil!)
2. Install their Python Package
3. Make an API Key
4. Consult their Quick Start Guide and start querying
5. Here, is a notebook to get you started!

Installing OpenAI

- If you don’t use a virtual environment manager yet, you should start
- Within your env, you can

pip install

```
pip install openai
```

- Or if using conda (I recommend using a new environment for this)

Conda Install

```
conda activate <env_name>
conda install openai=0.28.1
```

Set up API Key

Follow these instructions to set up a global API key function for your computer.

You don’t need an API key for each project, but each user should have their own API key.

Do your best to use this method to avoid accidentally sharing your key when posting code for the public.

MacOS

1. **Open Terminal**: You can find it in the Applications folder or search for it using Spotlight (Command + Space).
2. **Edit Bash Profile**: Use the command `nano ~/.bash_profile` or `nano ~/.zshrc` (for newer MacOS versions) to open the profile file in a text editor.
3. **Add Environment Variable**: In the editor, add the line below, replacing `your-api-key-here` with your actual API key:

```
export OPENAI_API_KEY='your-api-key-here'
```

4. **Save and Exit**: Press Ctrl+O to write the changes, followed by Ctrl+X to close the editor.
5. **Load Your Profile**: Use the command `source ~/.bash_profile` or `source ~/.zshrc` to load the updated profile.
6. **Verification**: Verify the setup by typing `echo $OPENAI_API_KEY` in the terminal. It should display your API key.

Collapse

Windows

1. **Open Command Prompt**: You can find it by searching "cmd" in the start menu.
2. **Set environment variable in the current session**: To set the environment variable in the current session, use the command below, replacing `your-api-key-here` with your actual API key:

```
setx OPENAI_API_KEY "your-api-key-here"
```

   This command will set the OPENAI_API_KEY environment variable for the current session.
3. **Permanent setup**: To make the setup permanent, add the variable through the system properties as follows:
   - Right-click on 'This PC' or 'My Computer' and select 'Properties'.
   - Click on 'Advanced system settings'.
   - Click the 'Environment Variables' button.
   - In the 'System variables' section, click 'New...' and enter OPENAI_API_KEY as the variable name and your API key as the variable value.
4. **Verification**: To verify the setup, reopen the command prompt and type the command below. It should display your API key: `echo %OPENAI_API_KEY%`

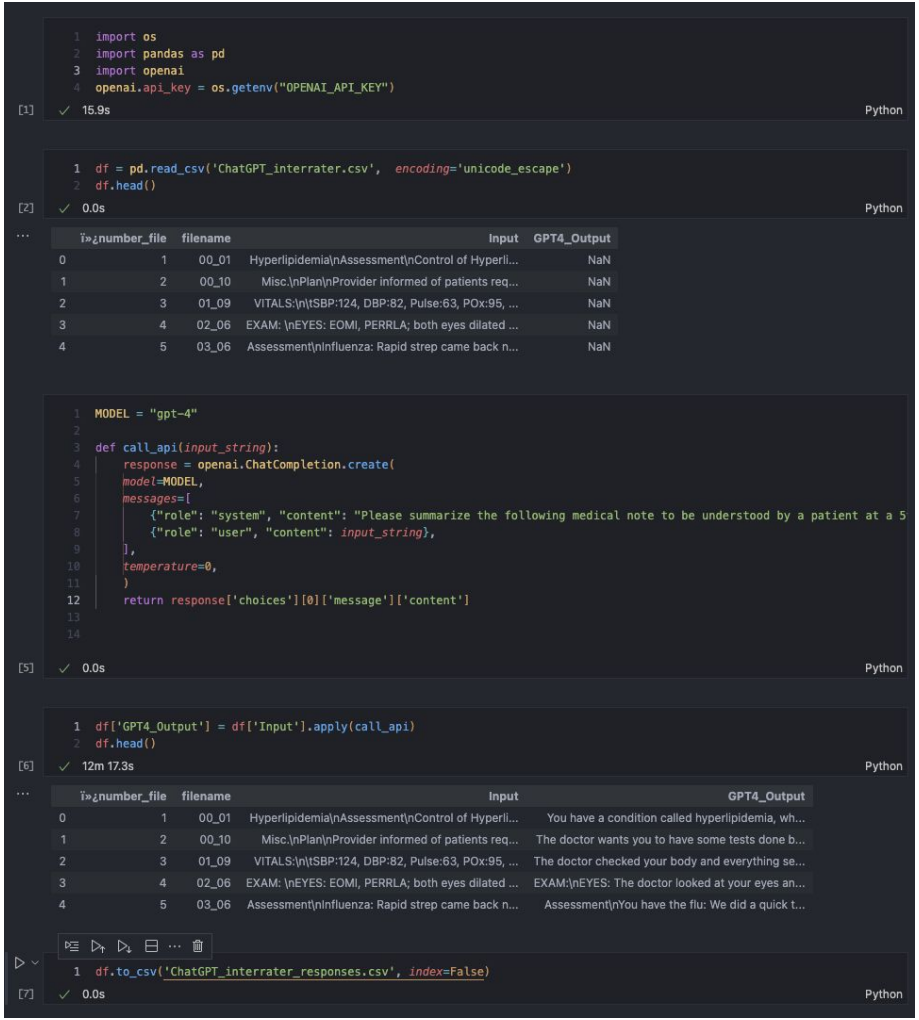
Example!

Here is an example of something I ran for Beverly.

We read in a csv, define a function, and then I used apply across the entire dataframe and saved it to a new column.

200 Inputs tools about 12 minutes. This may vary depending on the time of day.

This cost $0.84



```
import os
import pandas as pd
import openai
openai.api_key = os.getenv("OPENAI_API_KEY")
```

[1] ✓ 15.9s Python

```
df = pd.read_csv('ChatGPT_interrater.csv',  encoding='unicode_escape')
df.head()
```

[2] ✓ 0.0s Python

	ï»¿number_file	filename	Input	GPT4_Output
0	1	00_01	Hyperlipidemia\nAssessment\nControl of Hyperli...	NaN
1	2	00_10	Misc.\nPlan\nProvider informed of patients req...	NaN
2	3	01_09	VITALS:\n\tSBP:124, DBP:82, Pulse:63, POx:95, ...	NaN
3	4	02_06	EXAM: \nEYES: EOMI, PERRLA; both eyes dilated ...	NaN
4	5	03_06	Assessment\nInfluenza: Rapid strep came back n...	NaN

```
MODEL = "gpt-4"

def call_api(input_string):
    response = openai.ChatCompletion.create(
    model=MODEL,
    messages=[
        {"role": "system", "content": "Please summarize the following medical note to be understood by a patient at a 5
        {"role": "user", "content": input_string},
    ],
    temperature=0,
    )
    return response['choices'][0]['message']['content']
```

[5] ✓ 0.0s Python

```
df['GPT4_Output'] = df['Input'].apply(call_api)
df.head()
```

[6] ✓ 12m 17.3s Python

	ï»¿number_file	filename	Input	GPT4_Output
0	1	00_01	Hyperlipidemia\nAssessment\nControl of Hyperli...	You have a condition called hyperlipidemia, wh...
1	2	00_10	Misc.\nPlan\nProvider informed of patients req...	The doctor wants you to have some tests done b...
2	3	01_09	VITALS:\n\tSBP:124, DBP:82, Pulse:63, POx:95, ...	The doctor checked your body and everything se...
3	4	02_06	EXAM: \nEYES: EOMI, PERRLA; both eyes dilated ...	EXAM:\nEYES: The doctor looked at your eyes an...
4	5	03_06	Assessment\nInfluenza: Rapid strep came back n...	Assessment\nYou have the flu: We did a quick t...

```
df.to_csv('ChatGPT_interrater_responses.csv', index=False)
```

[7] ✓ 0.0s Python

Pricing

GPT-4

With broad general knowledge and domain expertise, GPT-4 can follow complex instructions in natural language and solve difficult problems with accuracy.

Learn about GPT-4

Model	Input	Output
8K context	$0.03 / 1K tokens	$0.06 / 1K tokens
32K context	$0.06 / 1K tokens	$0.12 / 1K tokens

GPT-3.5 Turbo

GPT-3.5 Turbo models are capable and cost-effective.

`gpt-3.5-turbo` is the flagship model of this family and is optimized for dialog.

`gpt-3.5-turbo-instruct` is an Instruct model and only supports a 4K context window.

Learn about GPT-3.5 Turbo ↗

Model	Input	Output
4K context	$0.0015 / 1K tokens	$0.002 / 1K tokens
16K context	$0.003 / 1K tokens	$0.004 / 1K tokens

Example Output

Hyperlipidemia
Assessment
Control of Hyperlipidemia is worse.
LDL not in goal range of less than 70 per patient report; he is taking gemfibrozil and niacin. He has had adverse reaction to statins and is not tolerating niacin well (causes significant flushing about 4 time per week); he has not been using aspirin to help control flushing.
Plan
Start Niacin ER 1000 mg daily today to decrease LDL and HDL
Start Gemfibrozil 600 mg BID today to decrease LDL and HDL
Start Aspirin 81 mg daily today to decrease Flushing
Check Lipid panel

You have a condition called hyperlipidemia, which means you have too much fat in your blood. This can be bad for your heart. Right now, your levels are not where we want them to be. LDL is a type of fat in your blood that we want to keep under 70, but yours is higher than that. You've been taking two medicines, gemfibrozil and niacin, to help lower these fats. But, you've had some bad reactions to other medicines like statins, and niacin is making your skin feel hot and red (this is called flushing) about 4 times a week.
So, we're going to change your medicines a bit. We're going to give you a different type of niacin that you only have to take once a day, and it should help lower your fats and stop the flushing. We're also going to keep you on gemfibrozil, but you'll take it twice a day. And, we're going to start you on a small dose of aspirin every day, which should also help with the flushing. We'll need to check your blood again to see how these fats are doing. So, remember to take your medicines every day as we've talked about.