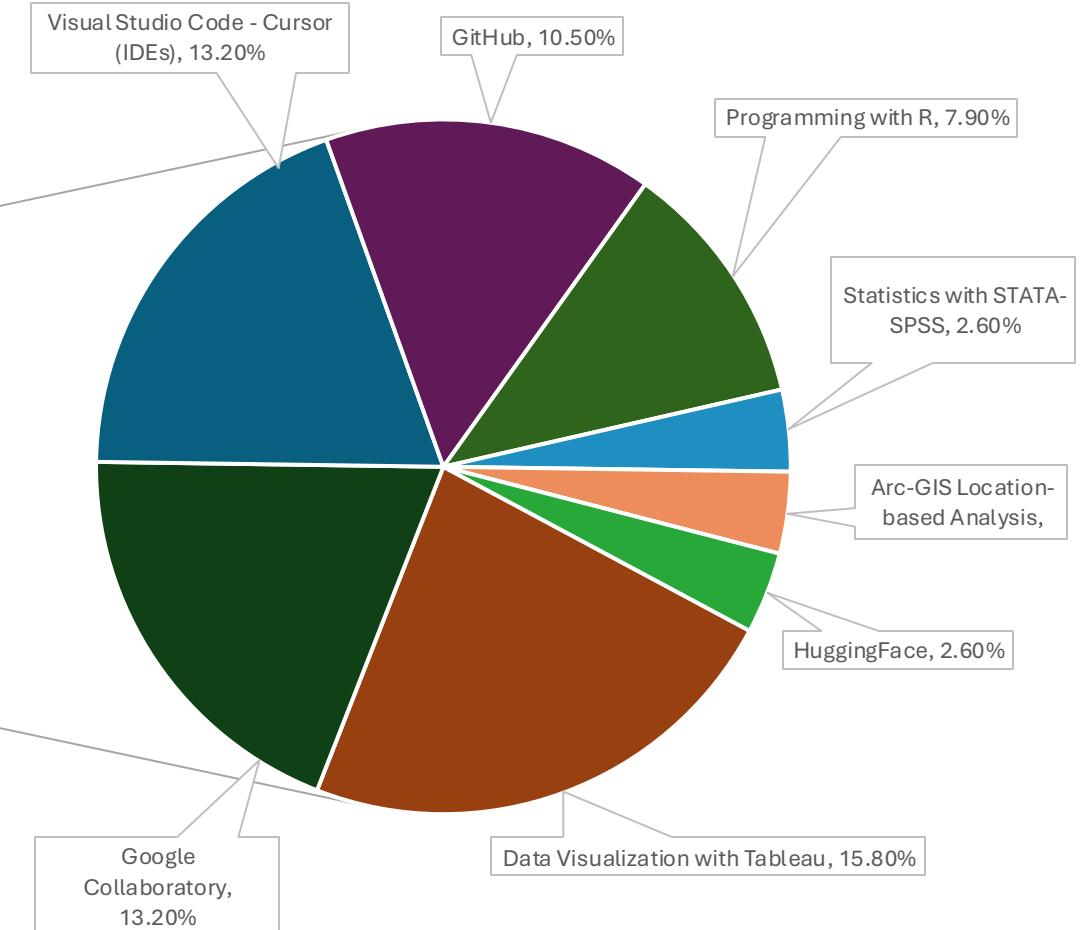
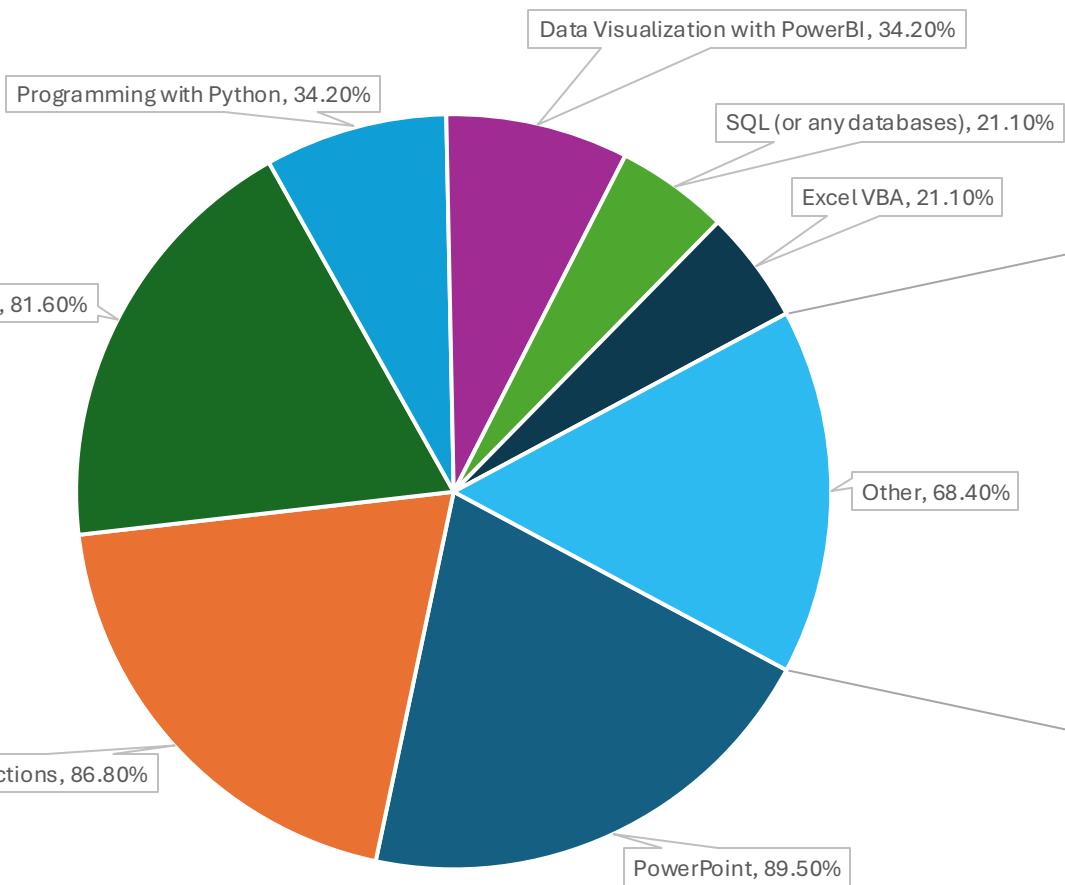




Fall 2025 – Ali Ahmadi

AI coding use
cases for
non-tech
commerce
students

The survey results from the beginning of the class



Agenda

- Intro
- Coding tasks:
 - Getting data from APIs
 - FRED
 - Open Breweries
 - SEC
 - Data Visualization with Plotly
 - Data Scraping with BeautifulSoup
 - Using HuggingFace online models for data interpretation
 - Text Classification with OpenAI API

Where is data?

Every website and service
that you use online

[Kaggle Open Datasets](#)

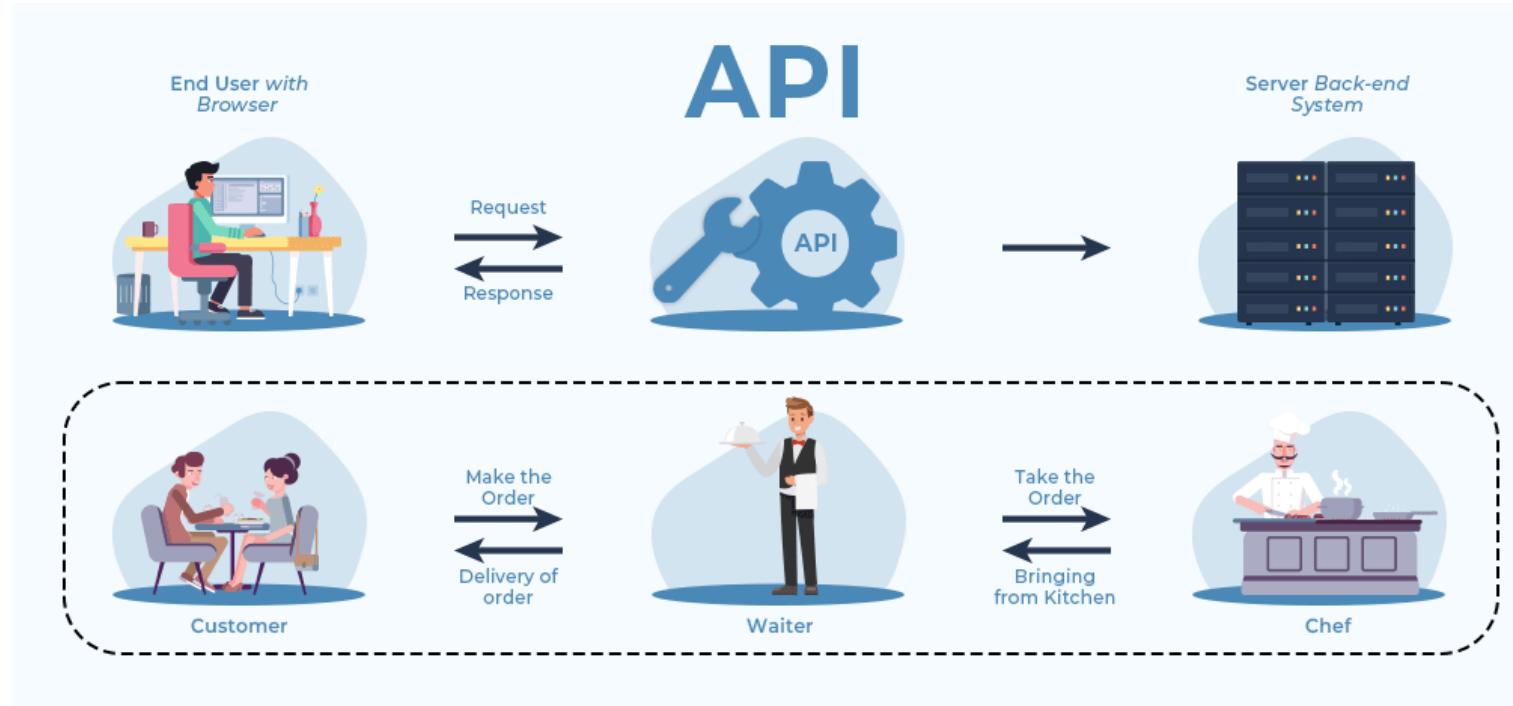
[Google Dataset Search](#)

[HuggingFace Datasets](#)

[Wharton Research Data Services](#)

What is an API?

An **API (Application Programming Interface)** is a set of protocols and tools that allow different software applications to communicate with each other.



Public APIs — A directory of free and public apis

Free Public APIs

Browse by Category

Development 125

APIs for developers and coding tools

[Browse Development](#)

Finance 89

Payment, banking, and financial data APIs

[Browse Finance](#)

Social 67

Social media and communication APIs

[Browse Social](#)

Media 54

Image, video, and multimedia APIs

[Browse Media](#)

Weather 43

Weather data and forecast APIs

[Browse Weather](#)

Maps 38

Geocoding and mapping services

[Browse Maps](#)

News 35

News and content aggregation APIs

[Browse News](#)

E-commerce 32

Shopping and marketplace APIs

[Browse E-Commerce](#)

Music 29

Music streaming and audio APIs

[Browse Music](#)

Sports 27

Sports data and statistics APIs

[Browse Sports](#)

Transportation 24

Travel and transportation APIs

[Browse Transportation](#)

Government 21

Government and public data APIs

[Browse Government](#)

Health 19

Health and medical data APIs

[Browse Health](#)

Education 17

Educational content and tools

[Browse Education](#)

Gaming 15

Gaming data and statistics

[Browse Gaming](#)

Business 13

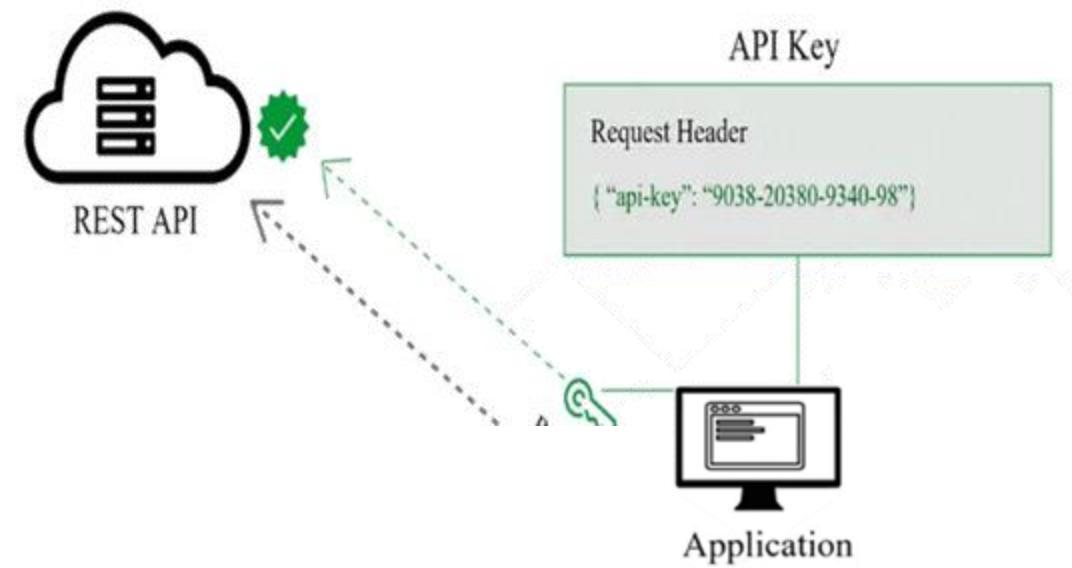
Business tools and productivity

[Browse Business](#)

How can we work with APIs?

What we send:

1. **URL**: where you are asking, like <https://api.example.com/weather>
2. **Method**: what action you want
GET read, POST create, PUT/PATCH update, DELETE remove
3. **Headers**: extra info, often your API key and data type
Authorization: Bearer YOUR_TOKEN, Content-Type: application/json
4. **Body**: Your actual request



What we get back:

1. **Status code**: 200 OK, 201 Created, 400 Bad Request, 401 Unauthorized, 404 Not Found, 429 Too Many Requests, 500 Server Error
2. **Body**: the data we asked for
3. **Headers**: extra details like rate limits

What do we code with?



Where do we code?

The screenshot shows the Google Colab interface with a dark theme. On the left, there's a sidebar titled "Table of contents" containing links like "Welcome to Colab!", "Access popular AI models via ...", "Explore the Gemini API", "Getting started", "Data science", "Machine learning", "More Resources", "Featured examples", and a "+ Section" button. The main content area displays a list of AI-generated code snippets, each starting with "1 Start coding or generate with AI." Below this, there are sections titled "Welcome to Colab!" and "Access popular AI models via Google-Colab-AI Without an API Key". The "Access popular AI models" section includes a note about Python library access and a code example:

```
1 from google.colab import ai
2 response = ai.generate_text("What is the capital of France?")
3 print(response)
```

Further down, there's a section titled "Explore the Gemini API" with a note about Gemini models being multimodal, and a "How to get started?" section with a bullet point:

- Go to [Google AI Studio](#) and log in with your Google account.

<https://youtu.be/RLYoEyIHI6A?si=aB4Rb2AI2DsGfdhB>

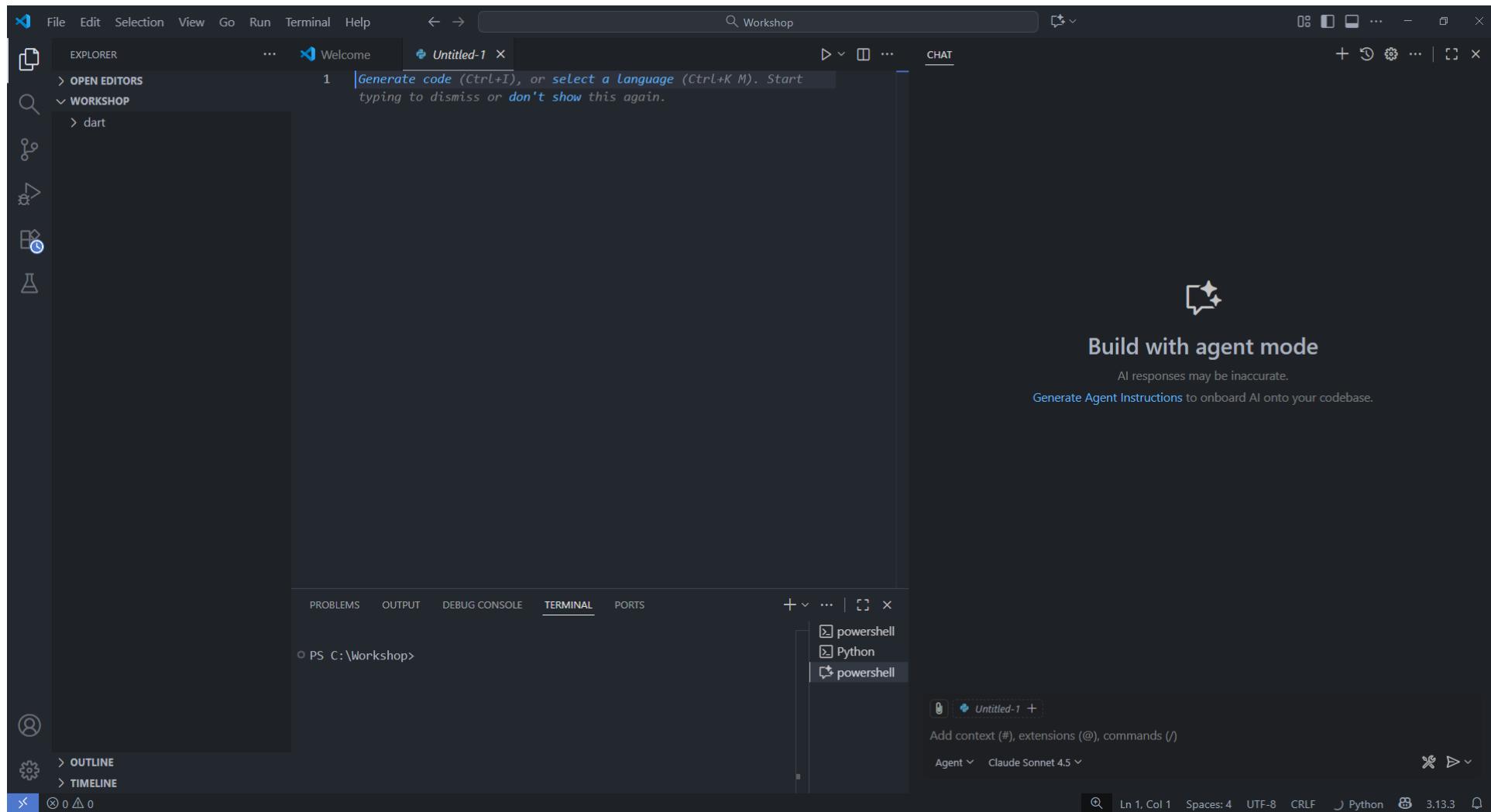
What do we code with?



Where do we code?



Visual Studio Code



[Download Python | Python.org](https://www.python.org)

https://youtu.be/cE84Q5IRR6U?si=SxaKOW_s8_dR4LDo

Download Data from API



Example: Federal Reserve Saint Louis API

- [St. Louis Fed Web Services: FRED® API](#)
- You need to ask for a **FREE API Key**
- You need to understand the API structure and parameters (by asking GPT)

Prompt: I want to use the FRED API from federal reserve with the link attached to track **U.S. inflation** year-over-year and compare it with **unemployment rate**

Life is Short, I Use Python



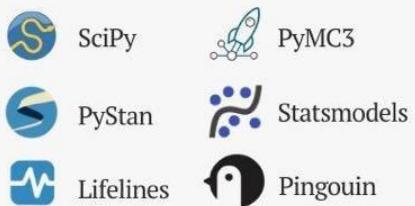
Data Manipulation



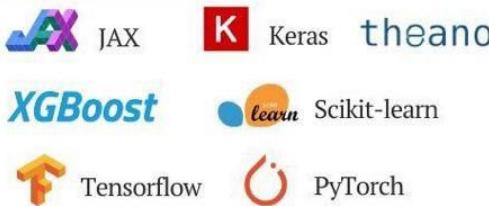
Data Visualization



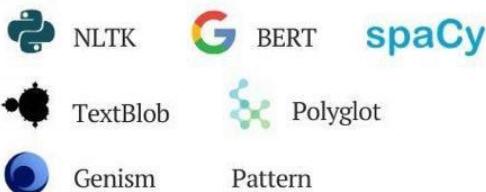
Statistical Analysis



Machine Learning



Natural Language Processing



Database Operations



Time Series Analysis



Web Scraping



Know your options, learn the libraries

Each library has a webpage, you can find the whole package at PyPip, and you can chat with GPT about it.

[PyPI · The Python Package Index](https://pypi.org/)

Scraping with Beautiful Soup

Example: Open Breweries DB



Open Brewery DB is a free dataset and API with public information on breweries, cideries, brewpubs, and bottleshops.

First, extract data for breweries in the state of New York

Second, map them on a geographical map using **Plotly**

Third, scrape the content of the website for every brewery using **Beautiful Soup**

Using Hugging Face Models



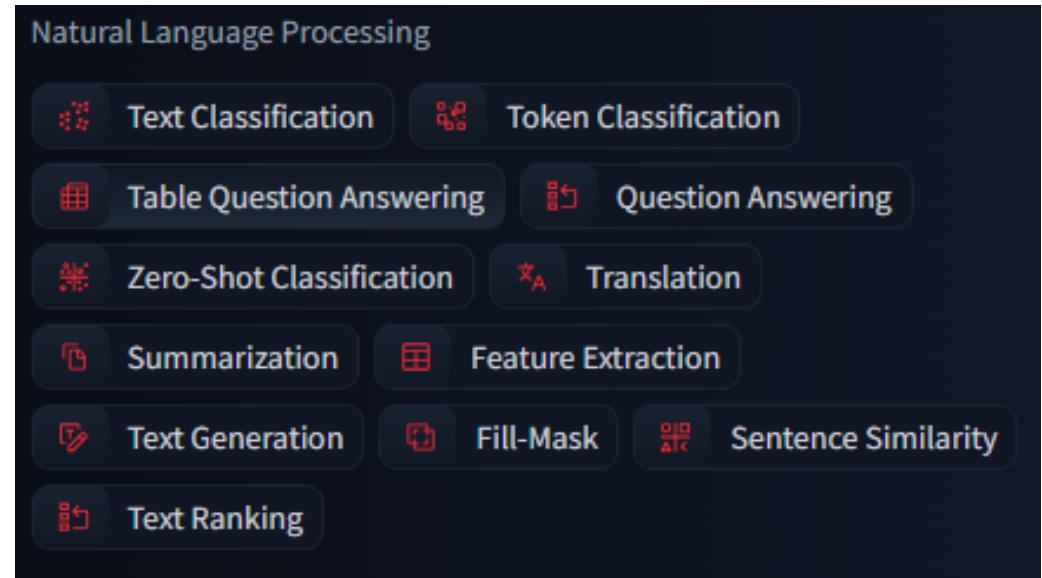
[Models – Hugging Face](#) 2,233,250 Models available

Example: Categorizing Headlines related to ESG
(Environmental, Social, Governance)

Model Name: `yiyanghkust/finbert-esg`
[yiyanghkust/finbert-esg · Hugging Face](#)

Prompt:

Take the ESG headlines from the column "text" and send each row to this transformer pipeline and replace the output in the next column of the input file.



-
- # text
 - 1 Tower Hamlets protesters vent fury over tax at Barclays headquarters
 - 2 United Kingdom is going into reverse on clean energy, says former Environment Agency head
 - 3 Renewables cut Europe's carbon emissions by 10% in 2015, says EEA
 - 5 City of London buys into new Dorset solar farm to help power Square Mile with Lionel Messi

SEC Edgar API download



You can access all filings through the SEC portal (SEC.gov) but you have to search firm by firm, and access one by one, filing by filing

A screenshot of the SEC Edgar search interface. The page has a dark blue header with the SEC logo. Below the header, there are several search filters: a text input for "Document word or phrase" with placeholder text "Keywords to search for in filing documents"; a dropdown for "Filed date range" set to "Last 5 years"; a dropdown for "Filed from" set to "2018-09-28"; a dropdown for "Filed to" set to "2023-09-28"; a dropdown for "Filing category" set to "View all"; a button for "Browse filing types"; a dropdown for "Principal executive offices in" set to "View all"; and a link "- less search options". At the bottom are two buttons: a yellow "SEARCH" button and a blue "Clear all" button.

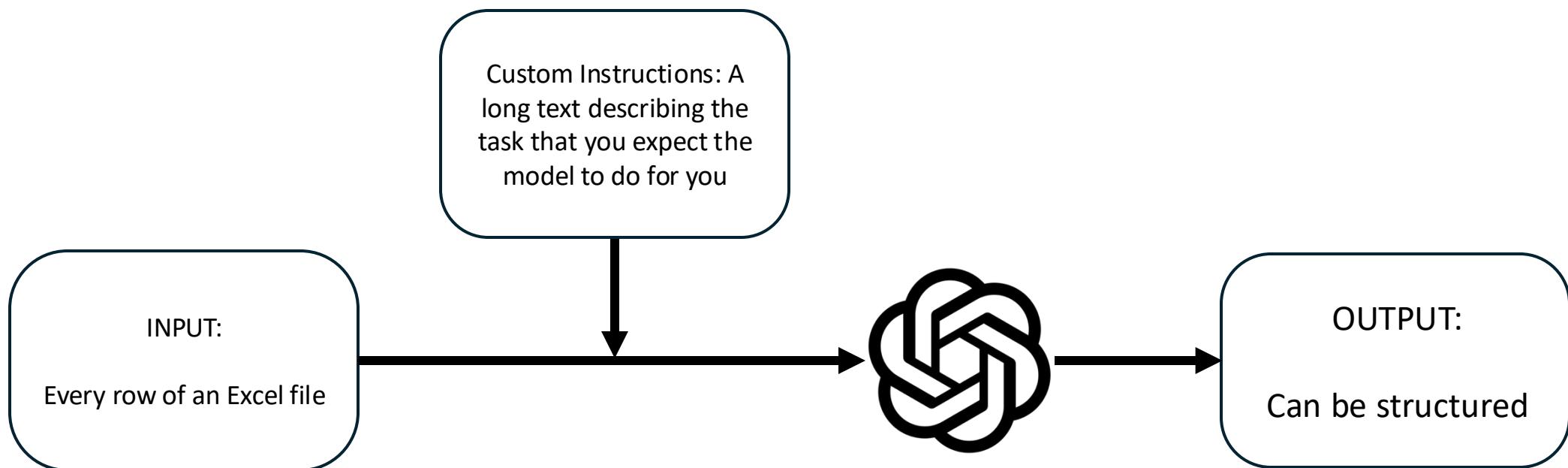
SEC Edgar API download

- **Prompt:**
- Lets download Apple's 10K filings for the last 5 years using SEC Edgar API.
- For headers put my email and name:
my email address : 21aa80@queensu.ca
my name: Ali Ahmadi
- download them and after saving them, extract and parse each section of every file into an excel file.

OpenAI API

- **Prompt:**

I want to use the responses API by openai. the api key is in the secrets named "GPT" Come up with an example request yourself



Ali Ahmadi

Ali Ahmadi