Complete (beginner-friendly) Guide to

OpenAI's Python API

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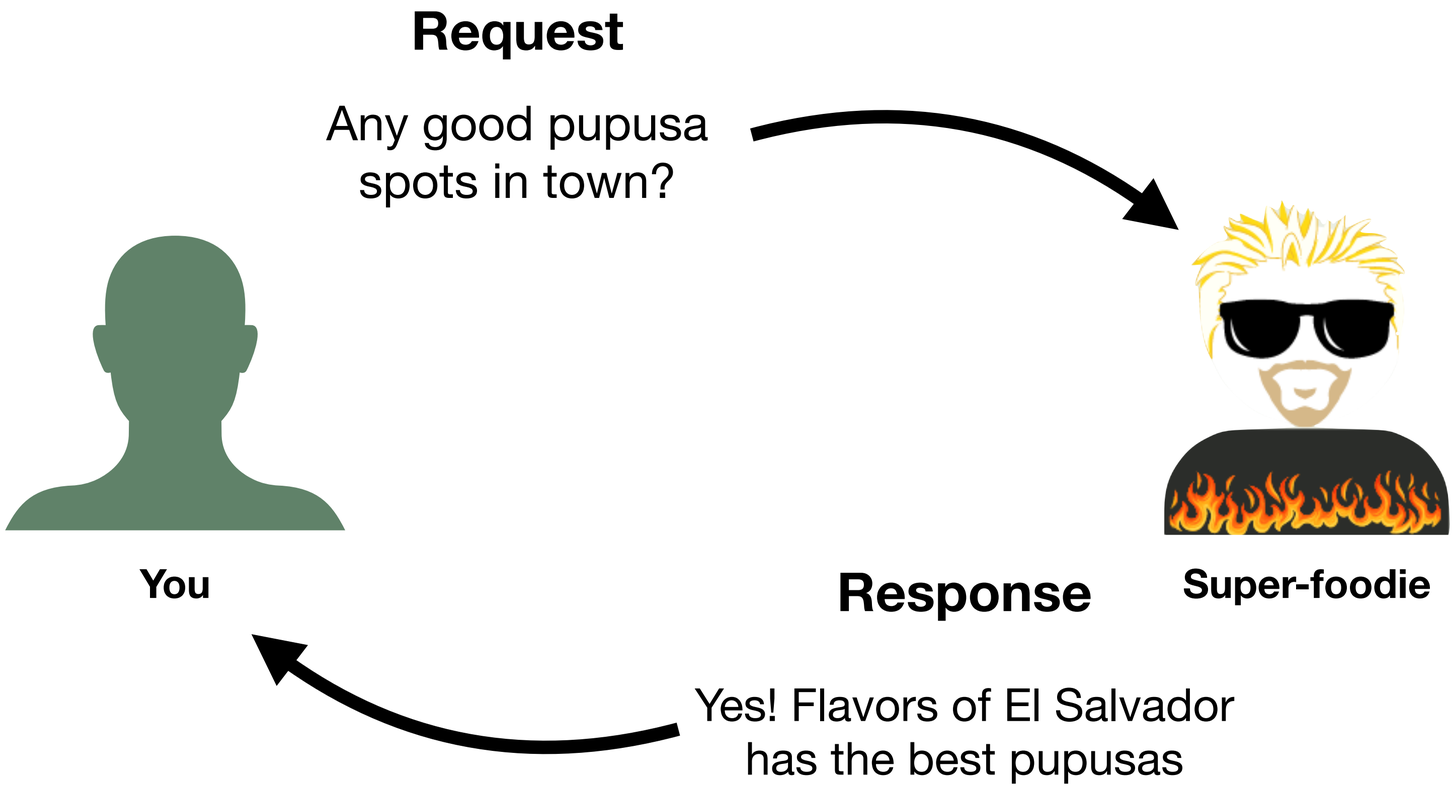
Outline

1. **What's an API?**
2. **OpenAI's (Python) API**
3. **Getting Started (4 steps)**
4. **Example Code:** The basics + Chatbot Demo

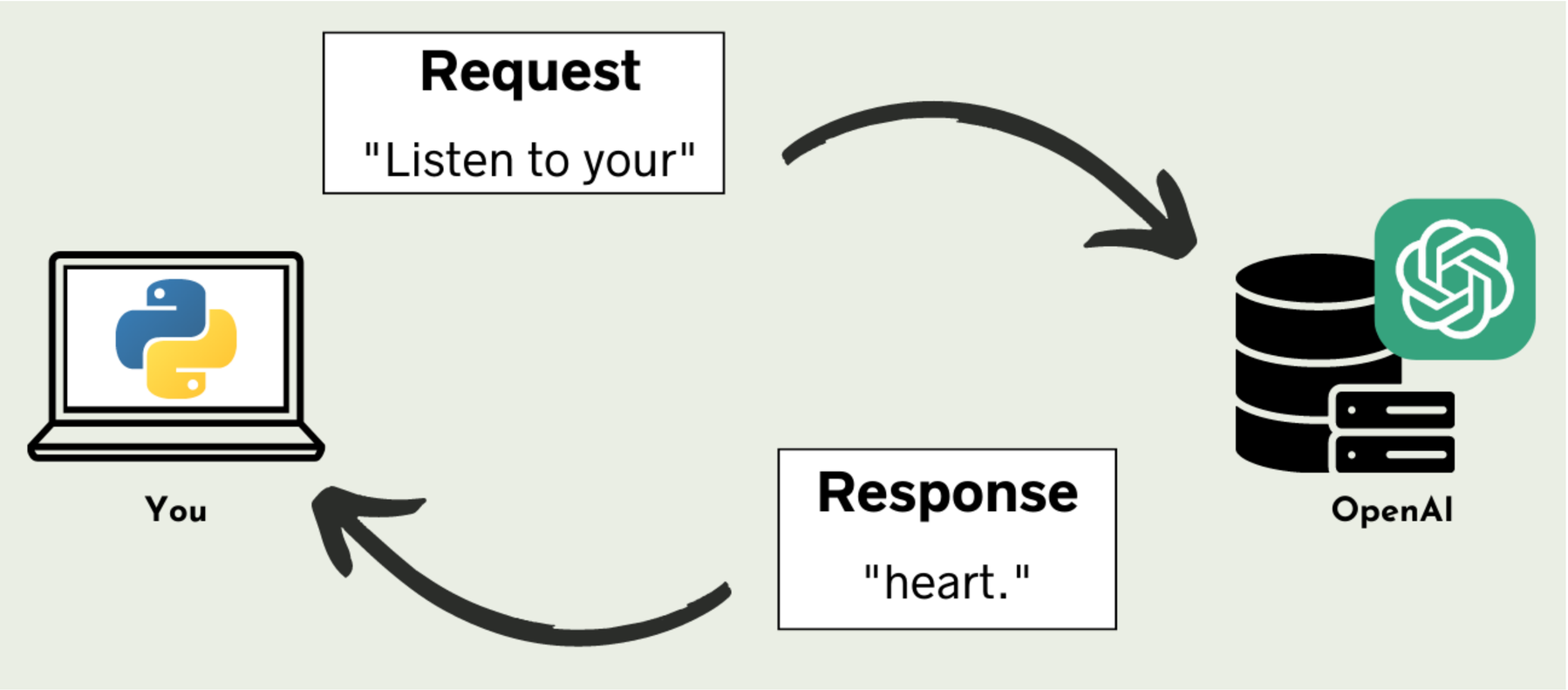
What’s an API?

Application Programming Interface (API) = way to interact with a remote application programmatically



OpenAI’s (Python) API

It’s like ChatGPT but with Python



OpenAI’s (Python) API

It’s like ChatGPT but with Python (and more features!)

1) Customizable System Message

“I am ChatGPT, a large language model trained by OpenAI, based on the GPT-3.5 architecture. My knowledge is based on information available up until September 2021. Today’s date is July 13, 2023.”

2) Adjust Input Parameters (e.g. max response length, number of responses, and temperature)

3) Process images and other file types

4) Extract helpful word embeddings for down stream tasks

5) Input audio for transcription and translation

6) Model fine-tuning functionality

OpenAI API Models

Language Models and more

- **GPT-4**: OpenAI's latest large multimodal model. Significant improvement in "complex reasoning tasks" compared to GPT-3.5 models. Optimized for chat. (***Input***: text/image. ***Output***: text.)
- **GPT-3.5-turbo**: Model running the free version of ChatGPT. Optimized for chat. (***Input***: text. ***Output***: text.)
- **Whisper**: General purpose speech recognition model. Can do transcription, translation, and detect language. Model is open source. (***Input***: audio. ***Output***: text.)
- **Embeddings**: Generates (useful) vector representation of text which can be used for downstream tasks e.g. text similarity. (***Input***: text. ***Output***: numerical vector.)
- **GPT-3 models**: Original ChatGPT models. Less powerful than GPT-3.5 models, however, GPT-3 models are cheaper. (***Input***: text. ***Output***: text.)
- **Moderation**: A fine-tuned model to detect NSFW content. (***Input***: text. ***Output***: Category (e.g. hate, harassment, ...))
- **DALL-E:** Creates realistic images based on user prompts. (***Input***: text or image. ***Output***: image.)

https://platform.openai.com/docs/models

Tokens & Pricing

Tokens = a set of words and characters represented by a set of numbers

Text		Integers
“The end.”	→	(73, 102, 6)

“The”	→	73
“ end”	→	102
“.”	→	6

https://openai.com/pricing

Getting Started (4 Steps)

Step 1: Make an Account

Step 2: Add Payment Method

Step 3: Set Usage Limits

Step 4: Get Secret Key

Example Code: the basics

Set-up

set-up

In [1]:
```
import openai
from sk import my_sk #import secret key from sk.py file
import time
```

In [2]:
```
openai.api_key = my_sk # use imported sk or just copy-paste it here
```


https://github.com/ShawhinT/YouTube-Blog

Example Code: the basics

1st API call

First call

```
In [3]: # create a chat completion
        chat_completion = openai.ChatCompletion.create(model="gpt-3.5-turbo",
                                                       messages=[{"role": "user", "content": "Listen to your"}])

In [4]: chat_completion.to_dict()

Out[4]: {'id': 'chatcmpl-7dk1Jkf5SDm2422nYRPL9x0QrlhI4',
         'object': 'chat.completion',
         'created': 1689706049,
         'model': 'gpt-3.5-t...0613',
         'choices': [<OpenAIObject at 0x7f9d1a862b80> JSON: {
            "index": 0,
            "message": {
              "role": "assistant",
              "content": "heart."
            },
            "finish_reason": "stop"
          }],
         'usage': <OpenAIObject at 0x7f9d1a862c70> JSON: {
           "prompt_tokens": 10,
           "completion_tokens": 2,
           "total_tokens": 12
         }}
```

```
In [5]: # print the chat completion
        print(chat_completion.choices[0].message.content)

heart.
```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Example Code: the basics

max_tokens

max tokens

In [6]:

```
# create a chat completion
chat_completion = openai.ChatCompletion.create(model="gpt-3.5-turbo",
                                               messages=[{"role": "user", "content": "Listen to your"}],
                                               max_tokens = 1)

# print the chat completion
print(chat_completion.choices[0].message.content)
```

```
heart
```


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Example Code: the basics

n

n = number of chat completions

In [7]:

```
# create a chat completion
chat_completion = openai.ChatCompletion.create(model="gpt-3.5-turbo",
                                               messages=[{"role": "user", "content": "Listen to your"}],
                                               max_tokens = 2,
                                               n=5)

# print the chat completion
for i in range(len(chat_completion.choices)):
    print(chat_completion.choices[i].message.content)
```

```
heart.
heart and
heart.

heart,

heart,
```


Example Code: the basics

temperature (= 0)

temperature

In [8]:

```
# create a chat completion
chat_completion = openai.ChatCompletion.create(model="gpt-3.5-turbo",
                                               messages=[{"role": "user", "content": "Listen to your"}],
                                               max_tokens = 2,
                                               n=5,
                                               temperature=0)

# print the chat completion
for i in range(len(chat_completion.choices)):
    print(chat_completion.choices[i].message.content)
```

```
heart.
heart.
heart.
heart.
heart.
```


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Example Code: the basics

temperature (= 2)

In [9]:

```
# create a chat completion
chat_completion = openai.ChatCompletion.create(model="gpt-3.5-turbo",
                                               messages=[{"role": "user", "content": "Listen to your"}],
                                               max_tokens = 2,
                                               n=5,
                                               temperature=2)

# print the chat completion
for i in range(len(chat_completion.choices)):
    print(chat_completion.choices[i].message.content)
```

```
judgment
Advice
.inner awareness
heart.

ging ist
```


Example Code: Chatbot Demo

https://github.com/ShawhinT/YouTube-Blog

What’s Next?

The AI community building the future.

Build, train and deploy state of the art models powered by the reference open source in machine learning.

https://huggingface.co/

🤗 Transformers

Makes downloading and training powerful pre-trained models easy