

# Project2

June 18, 2025

```
[1]: ! pip install openai
!pip install --upgrade openai
!pip install --upgrade gradio
```

```
Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: openai in ./local/lib/python3.10/site-packages
(1.88.0)
Requirement already satisfied: anyio<5,>=3.5.0 in
/usr/local/lib/python3.10/site-packages (from openai) (3.7.1)
Requirement already satisfied: distro<2,>=1.7.0 in
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Requirement already satisfied: jiter<1,>=0.4.0 in ./local/lib/python3.10/site-
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Requirement already satisfied: pydantic<3,>=1.9.0 in
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Requirement already satisfied: tqdm>4 in /usr/local/lib/python3.10/site-packages
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Requirement already satisfied: typing-extensions<5,>=4.11 in
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Requirement already satisfied: idna>=2.8 in /usr/local/lib/python3.10/site-
packages (from anyio<5,>=3.5.0->openai) (3.6)
Requirement already satisfied: exceptiongroup in /usr/local/lib/python3.10/site-
packages (from anyio<5,>=3.5.0->openai) (1.2.0)
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Requirement already satisfied: httpcore==1.* in /usr/local/lib/python3.10/site-
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Requirement already satisfied: h11<0.15,>=0.13 in
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httpcore==1.*->httpx<1,>=0.23.0->openai) (0.14.0)
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 Requirement already satisfied: typing-inspection>=0.4.0 in  
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 Requirement already satisfied: fastapi<1.0,>=0.115.2 in

./local/lib/python3.10/site-packages (from gradio) (0.115.13)  
 Requirement already satisfied: ffmpeg in /usr/local/lib/python3.10/site-packages  
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 Requirement already satisfied: gradio-client==1.10.3 in  
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 Requirement already satisfied: groovy~=0.1 in ./local/lib/python3.10/site-  
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 Requirement already satisfied: pandas<3.0,>=1.0 in  
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 Requirement already satisfied: pillow<12.0,>=8.0 in  
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 Requirement already satisfied: pyyaml<7.0,>=5.0 in  
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 Requirement already satisfied: ruff>=0.9.3 in ./local/lib/python3.10/site-  
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 Requirement already satisfied: safehttpx<0.2.0,>=0.1.6 in  
 ./local/lib/python3.10/site-packages (from gradio) (0.1.6)  
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 /usr/local/lib/python3.10/site-packages (from gradio) (2.10.0)  
 Requirement already satisfied: starlette<1.0,>=0.40.0 in  
 ./local/lib/python3.10/site-packages (from gradio) (0.46.2)  
 Requirement already satisfied: tomlkit<0.14.0,>=0.12.0 in  
 /usr/local/lib/python3.10/site-packages (from gradio) (0.12.0)  
 Requirement already satisfied: typer<1.0,>=0.12 in ./local/lib/python3.10/site-  
 packages (from gradio) (0.16.0)  
 Requirement already satisfied: typing-extensions~=4.0 in  
 ./local/lib/python3.10/site-packages (from gradio) (4.14.0)  
 Requirement already satisfied: uvicorn>=0.14.0 in

/usr/local/lib/python3.10/site-packages (from gradio) (0.24.0.post1)  
 Requirement already satisfied: fsspec in /usr/local/lib/python3.10/site-packages  
 (from gradio-client==1.10.3->gradio) (2023.10.0)  
 Requirement already satisfied: websockets<16.0,>=10.0 in  
 /usr/local/lib/python3.10/site-packages (from gradio-client==1.10.3->gradio)  
 (11.0.3)  
 Requirement already satisfied: idna>=2.8 in /usr/local/lib/python3.10/site-  
 packages (from anyio<5.0,>=3.0->gradio) (3.6)  
 Requirement already satisfied: sniffio>=1.1 in /usr/local/lib/python3.10/site-  
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 Requirement already satisfied: exceptiongroup in /usr/local/lib/python3.10/site-  
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 Requirement already satisfied: certifi in /usr/local/lib/python3.10/site-  
 packages (from httpx>=0.24.1->gradio) (2023.11.17)  
 Requirement already satisfied: httpcore==1.\* in /usr/local/lib/python3.10/site-  
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 Requirement already satisfied: h11<0.15,>=0.13 in  
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 httpcore==1.\*->httpx>=0.24.1->gradio) (0.14.0)  
 Requirement already satisfied: filelock in /usr/local/lib/python3.10/site-  
 packages (from huggingface-hub>=0.28.1->gradio) (3.13.1)  
 Requirement already satisfied: requests in /usr/local/lib/python3.10/site-  
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 Requirement already satisfied: tqdm>=4.42.1 in /usr/local/lib/python3.10/site-  
 packages (from huggingface-hub>=0.28.1->gradio) (4.66.1)  
 Requirement already satisfied: hf-xet<2.0.0,>=1.1.2 in  
 ./local/lib/python3.10/site-packages (from huggingface-hub>=0.28.1->gradio)  
 (1.1.4)  
 Requirement already satisfied: python-dateutil>=2.8.2 in  
 /usr/local/lib/python3.10/site-packages (from pandas<3.0,>=1.0->gradio) (2.8.2)  
 Requirement already satisfied: pytz>=2020.1 in /usr/local/lib/python3.10/site-  
 packages (from pandas<3.0,>=1.0->gradio) (2023.3.post1)  
 Requirement already satisfied: tzdata>=2022.1 in /usr/local/lib/python3.10/site-  
 packages (from pandas<3.0,>=1.0->gradio) (2023.3)  
 Requirement already satisfied: annotated-types>=0.6.0 in  
 /usr/local/lib/python3.10/site-packages (from pydantic<2.12,>=2.0->gradio)  
 (0.6.0)  
 Requirement already satisfied: pydantic-core==2.33.2 in  
 ./local/lib/python3.10/site-packages (from pydantic<2.12,>=2.0->gradio)  
 (2.33.2)  
 Requirement already satisfied: typing-inspection>=0.4.0 in  
 ./local/lib/python3.10/site-packages (from pydantic<2.12,>=2.0->gradio) (0.4.1)  
 Requirement already satisfied: click>=8.0.0 in /usr/local/lib/python3.10/site-  
 packages (from typer<1.0,>=0.12->gradio) (8.1.7)  
 Requirement already satisfied: shellingham>=1.3.0 in  
 /usr/local/lib/python3.10/site-packages (from typer<1.0,>=0.12->gradio) (1.5.4)  
 Requirement already satisfied: rich>=10.11.0 in /usr/local/lib/python3.10/site-  
 packages (from typer<1.0,>=0.12->gradio) (13.5.3)

Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.10/site-packages (from python-dateutil>=2.8.2->pandas<3.0,>=1.0->gradio) (1.16.0)

Requirement already satisfied: markdown-it-py>=2.2.0 in /usr/local/lib/python3.10/site-packages (from rich>=10.11.0->typer<1.0,>=0.12->gradio) (3.0.0)

Requirement already satisfied: pygments<3.0.0,>=2.13.0 in /usr/local/lib/python3.10/site-packages (from rich>=10.11.0->typer<1.0,>=0.12->gradio) (2.16.1)

Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.10/site-packages (from requests->huggingface-hub>=0.28.1->gradio) (3.3.2)

Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.10/site-packages (from requests->huggingface-hub>=0.28.1->gradio) (1.26.18)

Requirement already satisfied: mdurl~=0.1 in /usr/local/lib/python3.10/site-packages (from markdown-it-py>=2.2.0->rich>=10.11.0->typer<1.0,>=0.12->gradio) (0.1.1)

```
[2]: !pip show openai
```

```
Name: openai
Version: 1.88.0
Summary: The official Python library for the openai API
Home-page:
Author:
Author-email: OpenAI <support@openai.com>
License: Apache-2.0
Location: /voc/work/.local/lib/python3.10/site-packages
Requires: anyio, distro, httpx, jiter, pydantic, sniffio, tqdm, typing-extensions
Required-by:
```

```
[3]: import openai
import os
import requests
import gradio as gr
from PIL import Image as PILImage
import io
from openai import OpenAI
import base64
from IPython.display import Image
from IPython.display import display
!pip install gradio requests Pillow openai
```

Defaulting to user installation because normal site-packages is not writeable

Requirement already satisfied: gradio in ./local/lib/python3.10/site-packages (5.34.1)

Requirement already satisfied: requests in /usr/local/lib/python3.10/site-

packages (2.31.0)  
 Requirement already satisfied: Pillow in /usr/local/lib/python3.10/site-packages (10.1.0)  
 Requirement already satisfied: openai in ./local/lib/python3.10/site-packages (1.88.0)  
 Requirement already satisfied: aiofiles<25.0,>=22.0 in /usr/local/lib/python3.10/site-packages (from gradio) (23.2.1)  
 Requirement already satisfied: anyio<5.0,>=3.0 in /usr/local/lib/python3.10/site-packages (from gradio) (3.7.1)  
 Requirement already satisfied: fastapi<1.0,>=0.115.2 in ./local/lib/python3.10/site-packages (from gradio) (0.115.13)  
 Requirement already satisfied: ffmpeg in /usr/local/lib/python3.10/site-packages (from gradio) (0.3.1)  
 Requirement already satisfied: gradio-client==1.10.3 in ./local/lib/python3.10/site-packages (from gradio) (1.10.3)  
 Requirement already satisfied: groovy~=0.1 in ./local/lib/python3.10/site-packages (from gradio) (0.1.2)  
 Requirement already satisfied: httpx>=0.24.1 in /usr/local/lib/python3.10/site-packages (from gradio) (0.25.2)  
 Requirement already satisfied: huggingface-hub>=0.28.1 in ./local/lib/python3.10/site-packages (from gradio) (0.33.0)  
 Requirement already satisfied: jinja2<4.0 in /usr/local/lib/python3.10/site-packages (from gradio) (3.1.2)  
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 Requirement already satisfied: numpy<3.0,>=1.0 in /usr/local/lib/python3.10/site-packages (from gradio) (1.26.2)  
 Requirement already satisfied: orjson~=3.0 in ./local/lib/python3.10/site-packages (from gradio) (3.10.18)  
 Requirement already satisfied: packaging in /usr/local/lib/python3.10/site-packages (from gradio) (23.2)  
 Requirement already satisfied: pandas<3.0,>=1.0 in /usr/local/lib/python3.10/site-packages (from gradio) (2.1.3)  
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 Requirement already satisfied: pydub in /usr/local/lib/python3.10/site-packages (from gradio) (0.25.1)  
 Requirement already satisfied: python-multipart>=0.0.18 in ./local/lib/python3.10/site-packages (from gradio) (0.0.20)  
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 packages (from requests) (3.6)  
 Requirement already satisfied: urllib3<3,>=1.21.1 in  
 /usr/local/lib/python3.10/site-packages (from requests) (1.26.18)  
 Requirement already satisfied: certifi>=2017.4.17 in  
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 Requirement already satisfied: filelock in /usr/local/lib/python3.10/site-  
 packages (from huggingface-hub>=0.28.1->gradio) (3.13.1)  
 Requirement already satisfied: hf-xet<2.0.0,>=1.1.2 in  
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 Requirement already satisfied: tzdata>=2022.1 in /usr/local/lib/python3.10/site-  
 packages (from pandas<3.0,>=1.0->gradio) (2023.3)

Requirement already satisfied: annotated-types>=0.6.0 in /usr/local/lib/python3.10/site-packages (from pydantic<2.12,>=2.0->gradio) (0.6.0)

Requirement already satisfied: pydantic-core==2.33.2 in ./usr/local/lib/python3.10/site-packages (from pydantic<2.12,>=2.0->gradio) (2.33.2)

Requirement already satisfied: typing-inspection>=0.4.0 in ./usr/local/lib/python3.10/site-packages (from pydantic<2.12,>=2.0->gradio) (0.4.1)

Requirement already satisfied: click>=8.0.0 in /usr/local/lib/python3.10/site-packages (from typer<1.0,>=0.12->gradio) (8.1.7)

Requirement already satisfied: shellingham>=1.3.0 in /usr/local/lib/python3.10/site-packages (from typer<1.0,>=0.12->gradio) (1.5.4)

Requirement already satisfied: rich>=10.11.0 in /usr/local/lib/python3.10/site-packages (from typer<1.0,>=0.12->gradio) (13.5.3)

Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.10/site-packages (from python-dateutil>=2.8.2->pandas<3.0,>=1.0->gradio) (1.16.0)

Requirement already satisfied: markdown-it-py>=2.2.0 in /usr/local/lib/python3.10/site-packages (from rich>=10.11.0->typer<1.0,>=0.12->gradio) (3.0.0)

Requirement already satisfied: pygments<3.0.0,>=2.13.0 in /usr/local/lib/python3.10/site-packages (from rich>=10.11.0->typer<1.0,>=0.12->gradio) (2.16.1)

Requirement already satisfied: mdurl~=0.1 in /usr/local/lib/python3.10/site-packages (from markdown-it-py>=2.2.0->rich>=10.11.0->typer<1.0,>=0.12->gradio) (0.1.1)

```
[6]: #from dotenv import load_dotenv
      #from openai import OpenAI

      #load_dotenv()

      openai.api_key = os.environ.get("OPENAI_API_KEY")
```

```
[4]: import os
      print(os.environ.get("OPENAI_API_KEY"))
```

voc-18388271122723729097684efa54be9505.70098779

```
[8]: try:
      api_key = openai.api_key
      if not api_key:
          print("Warning: 'secretName' secret not found. Please add it to Colab_
↳ secrets.")
      except Exception as e:
          print(f"Error retrieving secret: {e}")
          print("Warning: Could not retrieve 'OPENAI_API_KEY' secret. Please add it_
↳ to Colab secrets.")
```



```

api_key = None # Ensure api_key is None if retrieval fails

# Initialize the OpenAI client with the retrieved API key
# The 'OpenAI' client is the current standard way to interact with the API
client = None # Initialize client as None
if api_key:
    try:
        client = OpenAI(api_key=api_key)
        #print(client)
    except Exception as e:
        print(f"Error initializing OpenAI client: {e}")
        print("Image generation will not work without a valid API key.")

def generate_image(text_prompt):
    # Check if the OpenAI client was successfully initialized
    if client is None:
        return "Error: OpenAI API key is not set or client initialization failed."

    if not text_prompt or not text_prompt.strip():
        # Return a message if the prompt is empty or contains only whitespace
        return "Please enter a text prompt to generate an image."

    try:
        # Step 1: Call OpenAI API using the modern client
        # Use client.images.generate for the newer API
        # print(text_prompt)
        response = client.images.generate(
            model="dall-e-2", # Specify the DALL-E model, dall-e-2 is generally
            ↪available
            prompt=text_prompt,
            n=1,
            size="512x512"
        )
        #print(response)
        # The structure of the response from client.images.generate is slightly
        ↪different
        # It's a list of Image objects with a 'url' attribute
        if response and response.data and response.data[0].url:
            image_url = response.data[0].url
            #print(image_url)
            # Step 2: Download the image
            response_img = requests.get(image_url)

            # Check if download was successful

```

```

        response_img.raise_for_status() # Raise an exception for bad status
        ↪ codes (4xx or 5xx)

        # Step 3: Open and return the image
        #img = Image.open(io.BytesIO(response_img.content))
        img= PILImage.open(io.BytesIO(response_img.content))
        return img
    else:
        print("OpenAI API did not return valid image data.")
        # Provide a user-friendly message
        return "Error: OpenAI API did not return valid image data. Please try
        ↪ again."

    except requests.exceptions.RequestException as req_err:
        print(f"Error downloading image: {req_err}")
        return f"Error downloading image: {req_err}"
    except openai.APIError as api_err:
        # Catch specific OpenAI API errors
        print(f"OpenAI API error: {api_err}")
        # Provide a user-friendly message for common API errors
        if "InvalidAuthenticationError" in str(api_err):
            return "Error: Invalid OpenAI API key. Please check your key in Colab
            ↪ secrets."
        elif "RateLimitError" in str(api_err):
            return "Error: OpenAI API rate limit exceeded. Please try again later.
            ↪ "
        elif "invalid_request_error" in str(api_err):
            # Catch potential content policy violations or invalid prompts
            return f"Error: Invalid request or content policy violation. Details:
            ↪ {api_err}"
        else:
            return f"OpenAI API error: {api_err}"
    except Exception as e:
        # Catch any other unexpected errors
        print(f"An unexpected error occurred: {e}")
        return f"An unexpected error occurred: {e}"

```

```

[ ]: iface = gr.Interface(
    fn=generate_image,
    inputs=gr.Textbox(label="Enter image prompt"),
    outputs=gr.Image(type="pil", label="Generated Image", interactive=False),
    title="OpenAI DALL-E Image Generator",
    description="Enter a text prompt to generate an image using OpenAI DALL-E
    ↪ via its API."
)

```

```
iface.launch(debug=True, share=True) # Set share=True if you want a public link
```

\* Running on local URL: <http://127.0.0.1:7860>

\* Running on public URL: <https://9d5855b0dbd8fd3e67.gradio.live>

This share link expires in 1 week. For free permanent hosting and GPU upgrades, run ``gradio deploy`` from the terminal in the working directory to deploy to Hugging Face Spaces (<https://huggingface.co/spaces>)

<IPython.core.display.HTML object>

[ ]:

[ ]: