```
pip install openai pinecone-client langchain tiktoken
```

Collecting tiktoken
    Downloading tiktoken-0.8.0-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl.metadata (6.6 kB)
Requirement already satisfied: anyio<5,>=3.5.0 in /usr/local/lib/python3.10/dist-packages (from openai) (3.7.1)
Requirement already satisfied: distro<2,>=1.7.0 in /usr/local/lib/python3.10/dist-packages (from openai) (1.9.0)
Requirement already satisfied: httpx<1,>=0.23.0 in /usr/local/lib/python3.10/dist-packages (from openai) (0.28.1)
Requirement already satisfied: jiter<1,>=0.4.0 in /usr/local/lib/python3.10/dist-packages (from openai) (0.8.2)
Requirement already satisfied: pydantic<3,>=1.9.0 in /usr/local/lib/python3.10/dist-packages (from openai) (2.10.3)
Requirement already satisfied: sniffio in /usr/local/lib/python3.10/dist-packages (from openai) (1.3.1)
Requirement already satisfied: tqdm>4 in /usr/local/lib/python3.10/dist-packages (from openai) (4.67.1)
Requirement already satisfied: typing-extensions<5,>=4.11 in /usr/local/lib/python3.10/dist-packages (from openai) (4.12.2)
Requirement already satisfied: certifi>=2019.11.17 in /usr/local/lib/python3.10/dist-packages (from pinecone-client) (2024.12.14)
Collecting pinecone-plugin-inference<2.0.0,>=1.0.3 (from pinecone-client)
    Downloading pinecone_plugin_inference-1.1.0-py3-none-any.whl.metadata (2.2 kB)
Collecting pinecone-plugin-interface<0.0.8,>=0.0.7 (from pinecone-client)
    Downloading pinecone_plugin_interface-0.0.7-py3-none-any.whl.metadata (1.2 kB)
Requirement already satisfied: urllib3>=1.26.0 in /usr/local/lib/python3.10/dist-packages (from pinecone-client) (2.2.3)
Requirement already satisfied: PyYAML>=5.3 in /usr/local/lib/python3.10/dist-packages (from langchain) (6.0.2)
Requirement already satisfied: SQLAlchemy<3,>=1.4 in /usr/local/lib/python3.10/dist-packages (from langchain) (2.0.36)
Requirement already satisfied: aiohttp<4.0.0,>=3.8.3 in /usr/local/lib/python3.10/dist-packages (from langchain) (3.11.10)
Requirement already satisfied: async-timeout<5.0.0,>=4.0.0 in /usr/local/lib/python3.10/dist-packages (from langchain) (4.0.3)
Requirement already satisfied: langchain-core<0.4.0,>=0.3.25 in /usr/local/lib/python3.10/dist-packages (from langchain) (0.3.25)
Requirement already satisfied: langchain-text-splitters<0.4.0,>=0.3.3 in /usr/local/lib/python3.10/dist-packages (from langchain) (0.3
Requirement already satisfied: langsmith<0.3,>=0.1.17 in /usr/local/lib/python3.10/dist-packages (from langchain) (0.2.3)
Requirement already satisfied: numpy<2,>=1.22.4 in /usr/local/lib/python3.10/dist-packages (from langchain) (1.26.4)
Requirement already satisfied: requests<3,>=2 in /usr/local/lib/python3.10/dist-packages (from langchain) (2.32.3)
Requirement already satisfied: tenacity!=8.4.0,<10,>=8.1.0 in /usr/local/lib/python3.10/dist-packages (from langchain) (9.0.0)
Requirement already satisfied: regex>=2022.1.18 in /usr/local/lib/python3.10/dist-packages (from tiktoken) (2024.11.6)
Requirement already satisfied: aiohappyeyeballs>=2.3.0 in /usr/local/lib/python3.10/dist-packages (from aiohttp<4.0.0,>=3.8.3->langcha
Requirement already satisfied: aiosignal>=1.1.2 in /usr/local/lib/python3.10/dist-packages (from aiohttp<4.0.0,>=3.8.3->langchain) (1
Requirement already satisfied: attrs>=17.3.0 in /usr/local/lib/python3.10/dist-packages (from aiohttp<4.0.0,>=3.8.3->langchain) (24.3
Requirement already satisfied: frozenlist>=1.1.1 in /usr/local/lib/python3.10/dist-packages (from aiohttp<4.0.0,>=3.8.3->langchain) (1
Requirement already satisfied: multidict<7.0,>=4.5 in /usr/local/lib/python3.10/dist-packages (from aiohttp<4.0.0,>=3.8.3->langchain)
Requirement already satisfied: propcache>=0.2.0 in /usr/local/lib/python3.10/dist-packages (from aiohttp<4.0.0,>=3.8.3->langchain) (0
Requirement already satisfied: yarl<2.0,>=1.17.0 in /usr/local/lib/python3.10/dist-packages (from aiohttp<4.0.0,>=3.8.3->langchain) (1
Requirement already satisfied: idna>=2.8 in /usr/local/lib/python3.10/dist-packages (from anyio<5,>=3.5.0->openai) (3.10)
Requirement already satisfied: exceptiongroup in /usr/local/lib/python3.10/dist-packages (from anyio<5,>=3.5.0->openai) (1.2.2)
Requirement already satisfied: httpcore==1.* in /usr/local/lib/python3.10/dist-packages (from httpx<1,>=0.23.0->openai) (1.0.7)
Requirement already satisfied: h11<0.15,>=0.13 in /usr/local/lib/python3.10/dist-packages (from httpcore==1.*->httpx<1,>=0.23.0->opena
Requirement already satisfied: jsonpatch<2.0,>=1.33 in /usr/local/lib/python3.10/dist-packages (from langchain-core<0.4.0,>=0.3.25->la
Requirement already satisfied: packaging<25,>=23.2 in /usr/local/lib/python3.10/dist-packages (from langchain-core<0.4.0,>=0.3.25->lar

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Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.10/dist-packages (from requests<3,>=2->langchain) (3
Requirement already satisfied: greenlet!=0.4.17 in /usr/local/lib/python3.10/dist-packages (from SQLAlchemy<3,>=1.4->langchain) (3.1.1
Requirement already satisfied: jsonpointer>=1.9 in /usr/local/lib/python3.10/dist-packages (from jsonpatch<2.0,>=1.33->langchain-core<
Downloading pinecone_client-5.0.1-py3-none-any.whl (244 kB)
                                    ━━━━━━━━━━━━━━━━━━━━━ 244.8/244.8 kB 12.7 MB/s eta 0:00:00
Downloading tiktoken-0.8.0-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (1.2 MB)
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Downloading pinecone_plugin_inference-1.1.0-py3-none-any.whl (85 kB)
                                    ━━━━━━━━━━━━━━━━━━━━━ 85.4/85.4 kB 9.2 MB/s eta 0:00:00
Downloading pinecone_plugin_interface-0.0.7-py3-none-any.whl (6.2 kB)
Installing collected packages: pinecone-plugin-interface, tiktoken, pinecone-plugin-inference, pinecone-client
Successfully installed pinecone-client-5.0.1 pinecone-plugin-inference-1.1.0 pinecone-plugin-interface-0.0.7 tiktoken-0.8.0


pip install -U langchain-community

Requirement already satisfied: frozenlist>=1.1.1 in /usr/local/lib/python3.10/dist-packages (from aiohttp<4.0.0,>=3.8.3->langchain-com
Requirement already satisfied: multidict<7.0,>=4.5 in /usr/local/lib/python3.10/dist-packages (from aiohttp<4.0.0,>=3.8.3->langchain-c
Requirement already satisfied: propcache>=0.2.0 in /usr/local/lib/python3.10/dist-packages (from aiohttp<4.0.0,>=3.8.3->langchain-comm
Requirement already satisfied: yarl<2.0,>=1.17.0 in /usr/local/lib/python3.10/dist-packages (from aiohttp<4.0.0,>=3.8.3->langchain-com
Collecting marshmallow<4.0.0,>=3.18.0 (from dataclasses-json<0.7,>=0.5.7->langchain-community)
  Downloading marshmallow-3.23.2-py3-none-any.whl.metadata (7.1 kB)
Collecting typing-inspect<1,>=0.4.0 (from dataclasses-json<0.7,>=0.5.7->langchain-community)
  Downloading typing_inspect-0.9.0-py3-none-any.whl.metadata (1.5 kB)
```

```
Requirement already satisfied: exceptiongroup in /usr/local/lib/python3.10/dist-packages (from anyio->httpx<1,>=0.23.0->langsmith<0.3,
Downloading langchain_community-0.3.13-py3-none-any.whl (2.5 MB)
━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 2.5/2.5 MB 43.8 MB/s eta 0:00:00
Downloading dataclasses_json-0.6.7-py3-none-any.whl (28 kB)
Downloading httpx_sse-0.4.0-py3-none-any.whl (7.8 kB)
Downloading langchain-0.3.13-py3-none-any.whl (1.0 MB)
━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 1.0/1.0 MB 58.5 MB/s eta 0:00:00
Downloading langchain_core-0.3.28-py3-none-any.whl (411 kB)
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Downloading pydantic_settings-2.7.0-py3-none-any.whl (29 kB)
Downloading marshmallow-3.23.2-py3-none-any.whl (49 kB)
━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 49.3/49.3 kB 5.2 MB/s eta 0:00:00
Downloading python_dotenv-1.0.1-py3-none-any.whl (19 kB)
Downloading typing_inspect-0.9.0-py3-none-any.whl (8.8 kB)
Downloading mypy_extensions-1.0.0-py3-none-any.whl (4.7 kB)
Installing collected packages: python-dotenv, mypy-extensions, marshmallow, httpx-sse, typing-inspect, pydantic-settings, dataclasses-
  Attempting uninstall: langchain-core
    Found existing installation: langchain-core 0.3.25
    Uninstalling langchain-core-0.3.25:
      Successfully uninstalled langchain-core-0.3.25
  Attempting uninstall: langchain
    Found existing installation: langchain 0.3.12
    Uninstalling langchain-0.3.12:
      Successfully uninstalled langchain-0.3.12
Successfully installed dataclasses-json-0.6.7 httpx-sse-0.4.0 langchain-0.3.13 langchain-community-0.3.13 langchain-core-0.3.28 marshn
```

```python
import os

os.environ["OPENAI_API_KEY"] = "sk-proj-TP3oer9_Kp7fRbExxaVJIOsKXdTCHrE71fN-_uClojyHJ_U75clJr9NfvOODYvQdpLMCEUsv6aT3BlbkFJq1pK73pN4L-QMmSENY
os.environ["PINECONE_API_KEY"] = "pcsk_4DN7pd_AMxk727ip1sVVVXFAcCXNnrkRpYfiVpEvKvhFa2T8Mr5FG66MN9eDVc8G9DV4fz" # Replace with your ACTUAL Pi
os.environ["PINECONE_ENVIRONMENT"] = "us-east-1"  # Replace with your ACTUAL Pinecone environment (e.g., "us-east-1", "gcp-starter", etc.)

# Now continue with the rest of your code:
from pinecone import Pinecone

pc = Pinecone(api_key=os.environ.get("PINECONE_API_KEY"), environment=os.environ.get("PINECONE_ENVIRONMENT"))

# ... rest of your code


from langchain.text_splitter import CharacterTextSplitter
from langchain.document_loaders import TextLoader

def load_and_process_data(file_path):
    loader = TextLoader(file_path)
```

```python
    documents = loader.load()
    text_splitter = CharacterTextSplitter(chunk_size=1000, chunk_overlap=0)
    docs = text_splitter.split_documents(documents)
    return docs


def get_or_create_index(index_name, dimension=1536):
    if index_name not in pc.list_indexes(): # Use pc instance here
        pc.create_index(index_name, dimension=dimension, metric="cosine")
        print(f"Index '{index_name}' created.")
    else:
        print(f"Using existing index '{index_name}'.")
    index = pc.Index(index_name) # Use pc instance here
    return index


from pinecone import Pinecone, ServerlessSpec

def get_or_create_index(index_name, dimension=1536):
    index_list = pc.list_indexes() # Call the method to get the IndexList object
    if index_name not in [index.name for index in index_list]: # Iterate over the list of IndexMetadata objects
        pc.create_index(
            name=index_name,
            dimension=dimension,
            metric="cosine",
            spec=ServerlessSpec(cloud="aws", region="us-east-1"),
        )
        print(f"Index '{index_name}' created.")
    else:
        print(f"Using existing index '{index_name}'.")
    index = pc.Index(index_name)
    return index


from langchain.document_loaders import PyPDFLoader
from langchain.text_splitter import CharacterTextSplitter

def load_and_process_data(file_path):
    loader = PyPDFLoader(file_path)  # Use appropriate loader for your data
    documents = loader.load()
    text_splitter = CharacterTextSplitter(chunk_size=1000, chunk_overlap=0)
    docs = text_splitter.split_documents(documents)
    return docs


PINECONE_INDEX_NAME = "qa-chatbot"  # Replace with your desired index name
```

```
PINECONE_INDEX_NAME = 'qa-chatbot'  # Replace with your desired index name
index = get_or_create_index(PINECONE_INDEX_NAME)
```

⤓ Using existing index 'qa-chatbot'.


```
!pip install pypdf
```

⤓ Collecting pypdf
       Downloading pypdf-5.1.0-py3-none-any.whl.metadata (7.2 kB)
     Requirement already satisfied: typing_extensions>=4.0 in /usr/local/lib/python3.10/dist-packages (from pypdf) (4.12.2)
     Downloading pypdf-5.1.0-py3-none-any.whl (297 kB)
     ━━━ 298.0/298.0 kB 8.9 MB/s eta 0:00:00
     Installing collected packages: pypdf
     Successfully installed pypdf-5.1.0


```
from langchain_openai import OpenAIEmbeddings
from langchain.document_loaders import PyPDFLoader # Or other loader as needed
from langchain.text_splitter import CharacterTextSplitter
from langchain.vectorstores import Pinecone
from google.colab import files

# 1. Load and Process Data:
def load_and_process_data(file_path):
    loader = PyPDFLoader(file_path) #Or other loader as needed
    documents = loader.load()
    text_splitter = CharacterTextSplitter(chunk_size=1000, chunk_overlap=0)
    docs = text_splitter.split_documents(documents)
    return docs

# Upload File (Colab Specific):
uploaded = files.upload()
file_path = list(uploaded.keys())[0]

docs = load_and_process_data(file_path)
```

⤓ [Choose Files] budget_speech.pdf
       • **budget_speech.pdf**(application/pdf) - 779225 bytes, last modified: 12/29/2024 - 100% done


```
from langchain_openai import OpenAIEmbeddings
from langchain.vectorstores import Pinecone
```

```python
from langchain.embeddings import OpenAIEmbeddings as LegacyOpenAIEmbeddings # if you have older langchain

embeddings = OpenAIEmbeddings() #Use new import
# if you have older langchain use this
#embeddings = LegacyOpenAIEmbeddings()

if index.describe_index_stats()['total_vector_count'] == 0:
    batch_size = 8  # Reduced batch size to avoid hitting rate limits
    for i in range(0, len(docs), batch_size):
        batch = docs[i:i + batch_size]
        try:
            Pinecone.from_documents(batch, embeddings, index_name=PINECONE_INDEX_NAME)
            print(f"Upserted vectors {i} to {min(i + batch_size, len(docs))}")
        except Exception as e: #Catch any exception and print it.
            print(f"Error upserting batch {i} to {min(i + batch_size, len(docs))}: {e}")
            if "RateLimitError" in str(e): #If it's a RateLimitError, wait and retry
                print("Rate limit hit. Waiting 30 seconds before retrying...") # Increased wait time
                import time
                time.sleep(30) # Increased wait time to 30 seconds
                continue #Retry current batch
            else: #If it's other error, break from loop
                break
    print("Finished embedding and upserting (or encountered an error).")
else:
    print("Vectors already present in Pinecone, skipping embedding.")
```

```
Error upserting batch 0 to 8: Error code: 429 - {'error': {'message': 'You exceeded your current quota, please check your plan and billi
Finished embedding and upserting (or encountered an error).
```

```python
from langchain.chains import RetrievalQA
from langchain.llms import OpenAI
from langchain.vectorstores import Pinecone


# Assuming you have already initialized your OpenAIEmbeddings as 'embeddings'
   # and have your PINECONE_INDEX_NAME set

vectorstore = Pinecone(index, embeddings.embed_query, text_key="text")
qa = RetrievalQA.from_chain_type(llm=OpenAI(), chain_type="stuff", retriever=vectorstore.as_retriever())
```

```
<ipython-input-35-3c1f67859153>:4: LangChainDeprecationWarning: The class `Pinecone` was deprecated in LangChain 0.0.18 and will be remo
    vectorstore = Pinecone(index, embeddings.embed_query, text_key="text")
  /usr/local/lib/python3.10/dist-packages/langchain_community/vectorstores/pinecone.py:68: UserWarning: Passing in `embedding` as a Callab
```

```
  warnings.warn(
<ipython-input-35-3c1f67859153>:5: LangChainDeprecationWarning: The class `OpenAI` was deprecated in LangChain 0.0.10 and will be remove
  qa = RetrievalQA.from_chain_type(llm=OpenAI(), chain_type="stuff", retriever=vectorstore.as_retriever())
```

```python
query = "What is the main topic of the document?"  # Replace with your question
result=qa.run(query)
print(result)
```