Generating Answers:

Text is imput informaiton you can also upload the pdf file using Langchain

In [1]:
```
question = "Are side projects important when you are starting to learn about
```

In [2]:
```
text = """
The rapid rise of AI has led to a rapid rise in AI jobs, and many people are

Three key steps of career growth are learning (to gain technical and other s

Initially, you focus on gaining foundational technical skills.
After having gained foundational skills, you lean into project work. During
Later, you might occasionally carry out a job search. Throughout this proces
These phases apply in a wide range of professions, but AI involves unique el

AI is nascent, and many technologies are still evolving. While the foundatic
Project work often means working with stakeholders who lack expertise in AI.
While searching for a job in AI can be similar to searching for a job in oth
Throughout these steps, a supportive community is a big help. Having a group

I'm excited to work with all of you to grow the global AI community, and tha

Last week, I wrote about key steps for building a career in AI: learning tec

More papers have been published on AI than any person can read in a lifetime

Foundational machine learning skills. For example, it's important to underst
Deep learning. This has become such a large fraction of machine learning tha
Math relevant to machine learning. Key areas include linear algebra (vectors
Software development. While you can get a job and make huge contributions wi
This is a lot to learn! Even after you master everything in this list, I hop

How do you gain these skills? There's a lot of good content on the internet,

Finally, keep in mind that no one can cram everything they need to know over

In the last two letters, I wrote about developing a career in AI and shared

It goes without saying that we should only work on projects that are respons

A fruitful career will include many projects, hopefully growing in scope, co

When you're starting out, don't expect others to hand great ideas or resourc

What if you don't have any project ideas? Here are a few ways to generate th

Join existing projects. If you find someone else with an idea, ask to join t
Keep reading and talking to people. I come up with new ideas whenever I spen
```

```
Focus on an application area. Many researchers are trying to advance basic A
Develop a side hustle. Even if you have a full-time job, a fun project that
Given a few project ideas, which one should you jump into? Here's a quick ch

Will the project help you grow technically? Ideally, it should be challengin
Do you have good teammates to work with? If not, are there people you can di
Can it be a stepping stone? If the project is successful, will its technical
Finally, avoid analysis paralysis. It doesn't make sense to spend a month de

"""
```

Install packages and SET UP enviornment

In [3]:
```
!pip install cohere
```

```
Collecting cohere
  Downloading cohere-4.36-py3-none-any.whl (48 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 48.9/48.9 kB 980.7 kB/s eta 0
:00:00
Requirement already satisfied: aiohttp<4.0,>=3.0 in /usr/local/lib/python3.1
0/dist-packages (from cohere) (3.8.6)
Collecting backoff<3.0,>=2.0 (from cohere)
  Downloading backoff-2.2.1-py3-none-any.whl (15 kB)
Collecting fastavro==1.8.2 (from cohere)
  Downloading fastavro-1.8.2-cp310-cp310-manylinux_2_17_x86_64.manylinux2014
_x86_64.whl (2.7 MB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 2.7/2.7 MB 28.9 MB/s eta 0:00
:00
Requirement already satisfied: importlib_metadata<7.0,>=6.0 in /usr/local/li
b/python3.10/dist-packages (from cohere) (6.8.0)
Requirement already satisfied: requests<3.0.0,>=2.25.0 in /usr/local/lib/pyt
hon3.10/dist-packages (from cohere) (2.31.0)
Requirement already satisfied: urllib3<3,>=1.26 in /usr/local/lib/python3.10
/dist-packages (from cohere) (2.0.7)
Requirement already satisfied: attrs>=17.3.0 in /usr/local/lib/python3.10/di
st-packages (from aiohttp<4.0,>=3.0->cohere) (23.1.0)
Requirement already satisfied: charset-normalizer<4.0,>=2.0 in /usr/local/li
b/python3.10/dist-packages (from aiohttp<4.0,>=3.0->cohere) (3.3.2)
Requirement already satisfied: multidict<7.0,>=4.5 in /usr/local/lib/python3
.10/dist-packages (from aiohttp<4.0,>=3.0->cohere) (6.0.4)
Requirement already satisfied: async-timeout<5.0,>=4.0.0a3 in /usr/local/lib
/python3.10/dist-packages (from aiohttp<4.0,>=3.0->cohere) (4.0.3)
Requirement already satisfied: yarl<2.0,>=1.0 in /usr/local/lib/python3.10/d
ist-packages (from aiohttp<4.0,>=3.0->cohere) (1.9.2)
Requirement already satisfied: frozenlist>=1.1.1 in /usr/local/lib/python3.1
0/dist-packages (from aiohttp<4.0,>=3.0->cohere) (1.4.0)
Requirement already satisfied: aiosignal>=1.1.2 in /usr/local/lib/python3.10
/dist-packages (from aiohttp<4.0,>=3.0->cohere) (1.3.1)
Requirement already satisfied: zipp>=0.5 in /usr/local/lib/python3.10/dist-p
ackages (from importlib_metadata<7.0,>=6.0->cohere) (3.17.0)
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.10/dis
t-packages (from requests<3.0.0,>=2.25.0->cohere) (3.4)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.
10/dist-packages (from requests<3.0.0,>=2.25.0->cohere) (2023.7.22)
Installing collected packages: fastavro, backoff, cohere
ERROR: pip's dependency resolver does not currently take into account all th
e packages that are installed. This behaviour is the source of the following
dependency conflicts.
llmx 0.0.15a0 requires openai, which is not installed.
llmx 0.0.15a0 requires tiktoken, which is not installed.
Successfully installed backoff-2.2.1 cohere-4.36 fastavro-1.8.2
```

In [4]:
```
!pip install annoy
```

```
Collecting annoy
  Downloading annoy-1.17.3.tar.gz (647 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 647.5/647.5 kB 10.0 MB/s eta
0:00:00
  Preparing metadata (setup.py) ... done
Building wheels for collected packages: annoy
  Building wheel for annoy (setup.py) ... done
  Created wheel for annoy: filename=annoy-1.17.3-cp310-cp310-linux_x86_64.wh
l size=552451 sha256=98ea31d141ca0d3e0229df64fbf0f1bfb61531656d798d566be3e37
aeb167346
  Stored in directory: /root/.cache/pip/wheels/64/8a/da/f714bcf46c5efdcfcac0
559e63370c21abe961c48e3992465a
Successfully built annoy
Installing collected packages: annoy
Successfully installed annoy-1.17.3
```

In [5]:
```
! pip install python-dotenv
```

```
Collecting python-dotenv
  Downloading python_dotenv-1.0.0-py3-none-any.whl (19 kB)
Installing collected packages: python-dotenv
Successfully installed python-dotenv-1.0.0
```

In [12]:
```
import os
# from dotenv import load_dotenv, find_dotenv
# _ = load_dotenv(find_dotenv())
os.environ['OPENAI_API_KEY']='sk-uZyVrTyI4Y6AsQk7d6QET3BlbkFJNil2hN4WecLHbCV
```

In [13]:
```
import cohere

import numpy as np
import warnings
warnings.filterwarnings('ignore')
```

Chunking

In [14]:
```
# Split into a list of paragraphs
texts = text.split('\n\n')

# Clean up to remove empty spaces and new lines
texts = np.array([t.strip(' \n') for t in texts if t])
```

In [15]:
```
texts[:3]
```

Out[15]:
```
array(['The rapid rise of AI has led to a rapid rise in AI jobs, and many pe
ople are building exciting careers in this field. A career is a decades-long
journey, and the path is not always straightforward. Over many years, I've b
een privileged to see thousands of students as well as engineers in companie
s large and small navigate careers in AI. In this and the next few letters,
I'd like to share a few thoughts that might be useful in charting your own c
ourse.',
       'Three key steps of career growth are learning (to gain technical and
other skills), working on projects (to deepen skills, build a portfolio, and
create impact) and searching for a job. These steps stack on top of each oth
er:',
       'Initially, you focus on gaining foundational technical skills.\nAfte
r having gained foundational skills, you lean into project work. During this
period, you'll probably keep learning.\nLater, you might occasionally carry
out a job search. Throughout this process, you'll probably continue to learn
and work on meaningful projects.\nThese phases apply in a wide range of prof
essions, but AI involves unique elements. For example:'],
      dtype='<U2738')
```

Embeddings:

generating vectors. sementics wrods and sentences have near vectors

In [10]:
```
# import os
# import cohere
# # Set the API key as an environment variable
# os.environ['COHERE_API_KEY'] = 'OtHFcRjD8XKHYuNJAQ562oQE2yfIfURqKwV1RAKX'

# # Now you can use it to instantiate the Cohere client
# co = cohere.Client(api_key=os.environ['COHERE_API_KEY'])
```

In [18]:
```
os.environ['COHERE_API_KEY'] = '3lnU9wcQk2snFCUPIKF7iI78FIjaipgVEzAJXPPK'
co = cohere.Client(os.environ['COHERE_API_KEY'])

# Get the embeddings
response = co.embed(
    texts=texts.tolist(),
).embeddings
```

```
default model on embed will be deprecated in the future, please specify a mo
del in the request.
```

Build a Search index

In [19]:
```
from annoy import AnnoyIndex
import numpy as np
import pandas as pd
```

In [20]:
```
# Check the dimensions of the embeddings
embeds = np.array(response)

# Create the search index, pass the size of embedding
search_index = AnnoyIndex(embeds.shape[1], 'angular')
# Add all the vectors to the search index
for i in range(len(embeds)):
    search_index.add_item(i, embeds[i])

search_index.build(10) # 10 trees
search_index.save('test.ann')
```

Out[20]:
```
True
```

Searching Articles

In [21]:
```
def search_andrews_article(query):
    # Get the query's embedding
    query_embed = co.embed(texts=[query]).embeddings

    # Retrieve the nearest neighbors
    similar_item_ids = search_index.get_nns_by_vector(query_embed[0],
                                                      10,
                                                     include_distances=True)

    search_results = texts[similar_item_ids[0]]

    return search_results
```

In [22]:
```
results = search_andrews_article(
    "Are side projects a good idea when trying to build a career in AI?"
)

print(results[0])
```

```
default model on embed will be deprecated in the future, please specify a mo
del in the request.
```

Join existing projects. If you find someone else with an idea, ask to join t
heir project.
Keep reading and talking to people. I come up with new ideas whenever I spen
d a lot of time reading, taking courses, or talking with domain experts. I'm
confident that you will, too.
Focus on an application area. Many researchers are trying to advance basic A
I technology — say, by inventing the next generation of transformers or furt
her scaling up language models — so, while this is an exciting direction, it
is hard. But the variety of applications to which machine learning has not y
et been applied is vast! I'm fortunate to have been able to apply neural net
works to everything from autonomous helicopter flight to online advertising,
partly because I jumped in when relatively few people were working on those
applications. If your company or school cares about a particular application
, explore the possibilities for machine learning. That can give you a first
look at a potentially creative application — one where you can do unique wor
k — that no one else has done yet.
Develop a side hustle. Even if you have a full-time job, a fun project that
may or may not develop into something bigger can stir the creative juices an
d strengthen bonds with collaborators. When I was a full-time professor, wor
king on online education wasn't part of my "job" (which was doing research a
nd teaching classes). It was a fun hobby that I often worked on out of passi
on for education. My early experiences recording videos at home helped me la
ter in working on online education in a more substantive way. Silicon Valley
abounds with stories of startups that started as side projects. So long as i
t doesn't create a conflict with your employer, these projects can be a step
ping stone to something significant.
Given a few project ideas, which one should you jump into? Here's a quick ch
ecklist of factors to consider:

Generating Answers

In [23]:
```python
def ask_andrews_article(question, num_generations=1):

    # Search the text archive
    results = search_andrews_article(question)

    # Get the top result
    context = results[0]

    # Prepare the prompt
    prompt = f"""
    Excerpt from the article titled "How to Build a Career in AI"
    by Andrew Ng:
    {context}
    Question: {question}

    Extract the answer of the question from the text provided.
    If the text doesn't contain the answer,
    reply that the answer is not available."""

    prediction = co.generate(
        prompt=prompt,
        max_tokens=70,
        model="command-nightly",
        temperature=0.5,
        num_generations=num_generations
    )

    return prediction.generations
```

In [24]:
```python
results = ask_andrews_article(
    "Are side projects a good idea when trying to build a career in AI?",

)

print(results[0])
```

```
default model on embed will be deprecated in the future, please specify a mo
del in the request.
 Yes, side projects are a good idea when trying to build a career in AI as i
t allows you to strengthen your skills and knowledge in the field, work on s
omething creatively fulfilling, and potentially lead to new opportunities an
d applications. According to the article, side projects can provide numerous
advantages and opportunities for growth and innovation.

Let me know if you
```

In [25]:
```
results = ask_andrews_article(
    "Are side projects a good idea when trying to build a career in AI?",
    num_generations=3
)

for gen in results:
    print(gen)
    print('--')
```

```
default model on embed will be deprecated in the future, please specify a mo
del in the request.
 Yes, side projects are a good idea when trying to build a career in AI as i
t allows you to strengthen your skills and knowledge in the field, work on s
omething creatively fulfilling, and potentially lead to new opportunities an
d networks.
--
 Yes, side projects are a good idea when trying to build a career in AI as i
t allows you to strengthen bonds with collaborators and stir up creative ide
as. Having a side hustle project, specifically in AI, can be a stepping ston
e to something significant and allow you to work on unique untouched applica
tions.
--
 Yes, side projects are a good idea when trying to build a career in AI as i
t allows you to strengthen bonds with collaborators and stir up creative ide
as. Having a side hustle will also give you experience in AI and machine lea
rning applications and can give you a first look at a potentially creative a
pplication.
--
```

In [26]:
```
results = ask_andrews_article(
    "What is the most viewed televised event?",
    num_generations=5
)
```

```
default model on embed will be deprecated in the future, please specify a mo
del in the request.
```

In [27]:
```
for gen in results:
    print(gen)
    print('--')
```

```
 The answer to the question "What is the most viewed televised event?" is no
t available in the provided text.
--
 The question you provided is not included in the excerpt from Andrew Ng's a
rticle that you supplied. Therefore, unfortunately, I don't have an answer t
o provide you with.

If you'd like, you can try providing me with a different question, or perhap
s supply more text from the same article, and I'll do my best to help.
--
 The answer to the question "What is the most viewed televised event?" is no
t available in the provided text.
--
 The answer to the question "What is the most viewed televised event?" is no
t available in the provided text.
--
 The answer to the question "What is the most viewed televised event?" is no
t available in the provided text.
--
```

utils.py

file have following function for the future use not now the below is extra information

In [28]:

```python
def print_result(result):
    """ Print results with colorful formatting """
    for i,item in enumerate(result):
        print(f'item {i}')
        for key in item.keys():
            print(f"{key}:{item.get(key)}")
            print()
        print()


def search_wikipedia_subset(client, query, num_results = 3, results_lang='en
                  properties = ["text", "title", "url", "views", "lang", "_

    nearText = {"concepts": [query]}

    # To filter by language
    if results_lang:
        where_filter = {
        "path": ["lang"],
        "operator": "Equal",
        "valueString": results_lang
        }
        response = (
            client.query
            .get("Articles", properties)
            .with_where(where_filter)
            .with_near_text(nearText)
```

```
            .with_limit(5)
            .do()
        )

    # Search all languages
    else:
        response = (
            client.query
            .get("Articles", properties)
            .with_near_text(nearText)
            .with_limit(5)
            .do()
        )


    result = response['data']['Get']['Articles']

    return result



def generate_given_context(query, weav_client, co_client ):

    results = search(client, query, results_lang='en' )

    title = results[0]['title']
    context = results[0]['text']



    prompt = f"""
    You are a useful AI trained to answer questions based on the context you
    Use the Context Information provided below to answer the questions "{que
    the question is in the context, extract it and print it. If it's not con
    information, say "I do not know".
    ---
    Context information about {title}:
    Context: {context}
    End of Context Information
    ---
    Question: {query}
    """

    # to answer from the Context Information
    prediction = co_client.generate(
        prompt=prompt,
        max_tokens=50,
        # model='command-light',
        # temperature=0.3,
        num_generations=5)


    return prediction, context_title, context_text
```