

Generating Answers

In []:

```
question = "Are side projects important when you are starting to learn about AI?"
```

In [2]:

```
text = """
The rapid rise of AI has led to a rapid rise in AI jobs, and many people are build
Three key steps of career growth are learning (to gain technical and other skills)

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

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

I'm excited to work with all of you to grow the global AI community, and that incl
Last week, I wrote about key steps for building a career in AI: learning technical
More papers have been published on AI than any person can read in a lifetime. So,

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

How do you gain these skills? There's a lot of good content on the internet, and i
Finally, keep in mind that no one can cram everything they need to know over a wee
In the last two letters, I wrote about developing a career in AI and shared tips f
It goes without saying that we should only work on projects that are responsible a
A fruitful career will include many projects, hopefully growing in scope, complexi
When you're starting out, don't expect others to hand great ideas or resources to
What if you don't have any project ideas? Here are a few ways to generate them:

Join existing projects. If you find someone else with an idea, ask to join their p
Keep reading and talking to people. I come up with new ideas whenever I spend a lc
Focus on an application area. Many researchers are trying to advance basic AI tech
Develop a side hustle. Even if you have a full-time job, a fun project that may or
Given a few project ideas, which one should you jump into? Here's a quick checklis

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

Setup

Load needed API keys and relevant Python libraries.

In [3]:

```
import os
from dotenv import load_dotenv, find_dotenv
_ = load_dotenv(find_dotenv()) # read local .env file
```

In []:

```
import cohere

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

Chunking

In [4]:

```
# 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 [6]:

```
texts[:3]
```

```
array(['The rapid rise of AI has led to a rapid rise in AI jobs, and m
any people 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 been privileged to see thousands of students as well
as engineers in companies large and small navigate careers in AI. In t
his and the next few letters, I'd like to share a few thoughts that mi
ght be useful in charting your own course.',
```

```
      'Three key steps of career growth are learning (to gain technic
al and other skills), working on projects (to deepen skills, build a p
ortfolio, and create impact) and searching for a job. These steps stac
k on top of each other:',
```

```
      'Initially, you focus on gaining foundational technical skill
s.\nAfter having gained foundational skills, you lean into project wor
k. During this period, you'll probably keep learning.\nLater, you migh
t occasionally carry out a job search. Throughout this process, you'll
probably continue to learn and work on meaningful projects.\nThese pha
ses apply in a wide range of professions, but AI involves unique eleme
nts. For example:'],
      dtype='<U2738')
```

Embeddings

In [7]:

```
co = cohere.Client(os.environ[ 'COHERE_API_KEY' ])

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

Build a search index

In [8]:

```
from annoy import AnnoyIndex
import numpy as np
import pandas as pd
```

In [9]:

```
# 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')
```

True

Searching Articles

In [10]:

```
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 [11]:

```
results = search_andrews_article(  
    "Are side projects a good idea when trying to build a career in AI?"  
)  
  
print(results[0])
```

Join existing projects. If you find someone else with an idea, ask to join their project.

Keep reading and talking to people. I come up with new ideas whenever I spend 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 AI technology – say, by inventing the next generation of transformers or further 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 yet been applied is vast! I'm fortunate to have been able to apply neural networks 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 work – 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 and strengthen bonds with collaborators. When I was a full-time professor, working on online education wasn't part of my "job" (which was doing research and teaching classes). It was a fun hobby that I often worked on out of passion for education. My early experiences recording videos at home helped me later 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 it doesn't create a conflict with your employer, these projects can be a stepping stone to something significant.

Given a few project ideas, which one should you jump into? Here's a quick checklist of factors to consider:

Generating Answers

In [43]:

```
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 [22]:

```
results = ask_andrews_article(
    "Are side projects a good idea when trying to build a career in AI?",
)

print(results[0])
```

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('--')
```

Yes, side projects are a good idea when trying to build a career in AI. They can help you develop your skills and knowledge, and can also be a stepping stone to a more substantive project. However, it is important to ensure that your side project does not create a conflict with your employer.

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Yes. Side projects are a good idea when trying to build a career in AI. They can help you to develop new ideas and to strengthen bonds with collaborators. They can also be a stepping stone to something more significant. However, it is important to note that you should not create a conflict with your employer.

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Yes. A side hustle can stir the creative juices and strengthen bonds with collaborators.

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In [44]:

```
results = ask_andrews_article(  
    "What is the most viewed televised event?",  
    num_generations=5  
)
```

In [45]:

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

The most viewed televised event is the Super Bowl.

--

The most viewed televised event is the Super Bowl.

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The most viewed televised event is the Super Bowl.

--

The most viewed televised event is the Super Bowl.

--

The most viewed televised event is the Super Bowl.

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In []:

In []:

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In []:

Congratulations on finishing the course!

To start building with the Cohere LLMs, get your API key by registering [here](https://dashboard.cohere.ai/welcome/register?utm_source=partner&utm_medium=website&utm_campaign=DeeplearningAI) (https://dashboard.cohere.ai/welcome/register?utm_source=partner&utm_medium=website&utm_campaign=DeeplearningAI).

Learn more about LLMs at Cohere's LLM.University (<https://LLM.University>).