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Cohere is a Canadian startup that provides natural language processing models that help companies improve human-machine interactions.

This notebook shows how to use Cohere's rerank endpoint in a retriever.

```
pip install -qU cohene
```



```
pip install -qU faiss
```



```
# OR (depending on Python version)
```

```
pip install -qU faiss-cpu
```

```
# get a new token: https://dashboard.cohere.ai/
```



```
import getpass  
import os
```

```
if "COHERE_API_KEY" not in os.environ:
```

```
    os.environ["COHERE_API_KEY"] = getpass.getpass("Cohere API Key:")
```

```
if "LANGSMITH_API_KEY" not in os.environ:
```

```
    os.environ["LANGSMITH_API_KEY"] = getpass.getpass("Langsmith API Key:")
```





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```
print(  
    f"\n{'-' * 100}\n".join(  
        [f"Document {i + 1}:\n\n" + d.page_content for i, d in enumerate(  
            documents)  
        ]  
    )  
)
```

Set up the base vector store retriever

Let's start by initializing a simple vector store retriever and storing the 2023 State of the Union speech (in chunks). We can set up the retriever to retrieve a high number (20) of docs.

```
from langchain_community.document_loaders import TextLoader  
from langchain_cohere import CohereEmbeddings  
from langchain_community.vectorstores import FAISS  
from langchain_text_splitters import RecursiveCharacterTextSplitter  
  
documents = TextLoader("../how_to/state_of_the_union.txt").load()  
text_splitter = RecursiveCharacterTextSplitter(chunk_size=500, chunk_overlap=0)  
texts = text_splitter.split_documents(documents)  
retriever = FAISS.from_documents(  
    texts, CohereEmbeddings(model="embed-english-v3.0"))  
.as_retriever(search_kwargs={"k": 20})  
  
query = "What did the president say about Ketanji Brown Jackson"  
docs = retriever.invoke(query)  
pretty_print_docs(docs)
```





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Document 1:

One of the most serious constitutional responsibilities a President has is no

And I did that 4 days ago, when I nominated Circuit Court of Appeals Judge Ket

Document 2:

We cannot let this happen.

Tonight. I call on the Senate to: Pass the Freedom to Vote Act. Pass the John

Tonight, I'd like to honor someone who has dedicated his life to serve this c

Document 3:

As I said last year, especially to our younger transgender Americans, I will

While it often appears that we never agree, that isn't true. I signed 80 bipa



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I've worked on these issues a long time.

I know what works: Investing in crime prevention and community police officer

So let's not abandon our streets. Or choose between safety and equal justice

Document 5:

He met the Ukrainian people.

From President Zelenskyy to every Ukrainian, their fearlessness, their courage

Groups of citizens blocking tanks with their bodies. Everyone from students to

In this struggle as President Zelenskyy said in his speech to the European Par

Document 6:

So let's not abandon our streets. Or choose between safety and equal justice

Let's come together to protect our communities, restore trust, and hold law en

That's why the Justice Department required body cameras, banned chokeholds, and

Document 7:

But that trickle-down theory led to weaker economic growth, lower wages, bigger

Vice President Harris and I ran for office with a new economic vision for America

Invest in America. Educate Americans. Grow the workforce. Build the economy from the middle out, not from the top down.

Document 8:

former top litigator in private practice. A former federal public defender



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He was born a soldier. Army National Guard. Combat medic in Kosovo and Iraq.

Stationed near Baghdad, just yards from burn pits the size of football fields.

Heath's widow Danielle is here with us tonight. They loved going to Ohio State.

But cancer from prolonged exposure to burn pits ravaged Heath's lungs and body.

Danielle says Heath was a fighter to the very end.

Document 10:

As I've told Xi Jinping, it is never a good bet to bet against the American people.

We'll create good jobs for millions of Americans, modernizing roads, airports,

And we'll do it all to withstand the devastating effects of the climate crisis.

Document 11:

As Ohio Senator Sherrod Brown says, "It's time to bury the label "Rust Belt."

It's time.

But with all the bright spots in our economy, record job growth and higher wages,

Inflation is robbing them of the gains they might otherwise feel.

I get it. That's why my top priority is getting prices under control.

Document 12:

This was a bipartisan effort, and I want to thank the members of both parties

we're done talking about infrastructure weeks.





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Document 13:

He will never extinguish their love of freedom. He will never weaken the res

We meet tonight in an America that has lived through two of the hardest years

The pandemic has been punishing.

And so many families are living paycheck to paycheck, struggling to keep up w

I understand.

Document 14:

I understand.

I remember when my Dad had to leave our home in Scranton, Pennsylvania to fi

That's why one of the first things I did as President was fight to pass the A

Because people were hurting. We needed to act, and we did.

Few pieces of legislation have done more in a critical moment in our history

Document 15:

My administration is providing assistance with job training and housing, and

Our troops in Iraq and Afghanistan faced many dangers.

One was stationed at bases and breathing in toxic smoke from “burn pits” tha

When they came home, many of the world’s fittest and best trained warriors we

Headaches. Numbness. Dizziness.





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Through her pain she found purpose to demand we do better.

Tonight, Danielle—we are.

The VA is pioneering new ways of linking toxic exposures to diseases, already

And tonight, I'm announcing we're expanding eligibility to veterans suffering

Document 17:

Cancer is the #2 cause of death in America—second only to heart disease.

Last month, I announced our plan to supercharge
the Cancer Moonshot that President Obama asked me to lead six years ago.

Our goal is to cut the cancer death rate by at least 50% over the next 25 years.

More support for patients and families.

To get there, I call on Congress to fund ARPA-H, the Advanced Research Project

Document 18:

My plan to fight inflation will lower your costs and lower the deficit.

17 Nobel laureates in economics say my plan will ease long-term inflationary

First – cut the cost of prescription drugs. Just look at insulin. One in ten

Document 19:

Let's pass the Paycheck Fairness Act and paid leave.

Raise the minimum wage to \$15 an hour and extend the Child Tax Credit, so no

 Let's increase Pell Grants and increase our historic support of HBCUs, and in



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Madam Speaker, Madam Vice President, our First Lady and Second Gentleman. Mer

Last year COVID-19 kept us apart. This year we are finally together again.

Tonight, we meet as Democrats Republicans and Independents. But most importan

With a duty to one another to the American people to the Constitution.

And with an unwavering resolve that freedom will always triumph over tyranny

Doing reranking with CohereRerank

Now let's wrap our base retriever with a `ContextualCompressionRetriever`. We'll add an `CohereRerank`, uses the Cohere rerank endpoint to rerank the returned results. Do note that it is mandatory to specify the model name in `CohereRerank`!

```
from langsmith import Client
from langchain_classic.retrievers.contextual_compression import (
    ContextualCompressionRetriever,
)
from langchain_cohere import ChatCohere, CohereRerank

llm = ChatCohere(temperature=0)
compressor = CohereRerank(model="rerank-english-v3.0")
compression_retriever = ContextualCompressionRetriever(
    base_compressor=compressor, base_retriever=retriever
)

compressed_docs = compression_retriever.invoke(
    "What did the president say about Ketanji Jackson Brown"
)
pretty_print_docs(compressed_docs)
```

You can of course use this retriever within a QA pipeline



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```
def format_docs(docs):
    return "\n\n".join(doc.page_content for doc in docs)

qa_chain = (
    {
        "context": compression_retriever | format_docs,
        "question": RunnablePassthrough(),
    }
    | prompt
    | llm
    | StrOutputParser()
)
```

qa_chain.invoke("What did the president say about Ketanji Jackson")



" The president speaks highly of Ketanji Brown Jackson, stating



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