



☰ FlashRank reranker

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FlashRank is the Ultra-lite & Super-fast Python library to add re-ranking to your existing search & retrieval pipelines. It is based on SoTA cross-encoders, with gratitude to all the model owners.

This notebook shows how to use **flashrank** for document compression and retrieval.

```
pip install -qU flashrank
pip install -qU faiss

# OR (depending on Python version)

pip install -qU faiss_cpu
```



```
# Helper function for printing docs
```



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

Set up the base vector store retriever



start by initializing a simple vector store retriever and storing the 2023 State of



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```
import os

os.environ["OPENAI_API_KEY"] = getpass.getpass()
```

```
from langchain_community.document_loaders import TextLoader
from langchain_community.vectorstores import FAISS
from langchain_openai import OpenAIEmbeddings
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)
for idx, text in enumerate(texts):
    text.metadata["id"] = idx

embedding = OpenAIEmbeddings(model="text-embedding-ada-002")
retriever = FAISS.from_documents(texts, embedding).as_retriever(search_kwargs={})

query = "What did the president say about Ketanji Brown Jackson"
docs = retriever.invoke(query)
pretty_print_docs(docs)
```





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And I did that 4 days ago, when I nominated Circuit Court of Appeals Judge Ketanji Brown Jackson to the Supreme Court.

Document 2:

As I said last year, especially to our younger transgender Americans, I will always stand up for them.

While it often appears that we never agree, that isn't true. I signed 80 bipartisan bills into law.

Document 3:

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

And if we are to advance liberty and justice, we need to secure the Border and protect our communities.

Document 4:

He met the Ukrainian people.

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

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

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

Document 5:

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

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 bottom up and the middle out, not from the top down.

Document 6:

鸟成长说，我今晚宣布司法部将任命一位首席检察官。



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Lowering your costs also means demanding more competition.

I'm a capitalist, but capitalism without competition isn't capitalism.

It's exploitation—and it drives up prices.

Document 7:

I spoke with their families and told them that we are forever in debt for the

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 8:

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

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 9:

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

Document 10:



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

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 11:

I'm also calling on Congress: pass a law to make sure veterans devastated by

And fourth, let's end cancer as we know it.

This is personal to me and Jill, to Kamala, and to so many of you.

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

Document 12:

Headaches. Numbness. Dizziness.

A cancer that would put them in a flag-draped coffin.

I know.

One of those soldiers was my son Major Beau Biden.

We don't know for sure if a burn pit was the cause of his brain cancer, or th

But I'm committed to finding out everything we can.

Committed to military families like Danielle Robinson from Ohio.

The widow of Sergeant First Class Heath Robinson.

Document 13:

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



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And so many families are living paycheck to paycheck, struggling to keep up with the cost of living.

I understand.

Document 14:

When we invest in our workers, when we build the economy from the bottom up and not just at the top.

For more than two years, COVID-19 has impacted every decision in our lives and every aspect of our economy.

And I know you're tired, frustrated, and exhausted.

But I also know this.

Document 15:

And soon, we'll strengthen the Violence Against Women Act that I first wrote.

So tonight I'm offering a Unity Agenda for the Nation. Four big things we can do.

First, beat the opioid epidemic.

There is so much we can do. Increase funding for prevention, treatment, harm reduction, and recovery.

Document 16:

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 pressures.

First - cut the cost of prescription drugs. Just look at insulin. One in ten Americans with diabetes can't afford it.

Document 17:

My plan will not only lower costs to give families a fair shot, it will lower the deficit.

The previous Administration not only ballooned the deficit with tax cuts for the rich and corporations, but they also failed to invest in our country.



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Document 18:

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 enforcement accountable.

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

Document 19:

I understand.

I remember when my Dad had to leave our home in Scranton, Pennsylvania to fight in Vietnam.

That's why one of the first things I did as President was fight to pass the Fairness in Policing Act.

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 20:

And we will, as one people.

One America.

The United States of America.

May God bless you all. May God protect our troops.

Doing reranking with FlashRank

Now let's wrap our base retriever with a `ContextualCompressionRetriever`, using `FlashrankRerank` as a compressor.





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```
llm = ChatOpenAI(temperature=0)

compressor = FlashrankRerank()
compression_retriever = ContextualCompressionRetriever(
    base_compressor=compressor, base_retriever=retriever
)

compressed_docs = compression_retriever.invoke(
    "What did the president say about Ketanji Jackson Brown"
)
print([doc.metadata["id"] for doc in compressed_docs])
```

[0, 5, 3]



After reranking, the top 3 documents are different from the top 3 documents retrieved by the base retriever.

```
pretty_print_docs(compressed_docs)
```





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And I did that 4 days ago, when I nominated Circuit Court of Appeals Judge Ketanji Brown Jackson to the Supreme Court.

Document 2:

He met the Ukrainian people.

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

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

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

Document 3:

And tonight, I'm announcing that the Justice Department will name a chief prosecutor for the trial of Russian President Vladimir Putin.

By the end of this year, the deficit will be down to less than half what it was.

The only president ever to cut the deficit by more than one trillion dollars.

Lowering your costs also means demanding more competition.

I'm a capitalist, but capitalism without competition isn't capitalism.

It's exploitation—and it drives up prices.

QA reranking with FlashRank

```
from langchain_classic.chains import RetrievalQA  
  
chain = RetrievalQA.from_chain_type(llm=llm, retriever=compression_retriever)
```

```
chain.in.invoke(query)
```



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