Vectorstore Agent

Contents

This notebook showcases an agent designed to retrieve information from one or more vectorstores, either with or without sources.

Create the Vectorstores

```
from langchain.embeddings.openai import OpenAIEmbeddings
from langchain.vectorstores import Chroma
from langchain.text_splitter import CharacterTextSplitter
from langchain import OpenAI, VectorDBQA
llm = OpenAI(temperature=0)
```

```
from langchain.document_loaders import TextLoader
loader = TextLoader('../../../state_of_the_union.txt')
documents = loader.load()
text_splitter = CharacterTextSplitter(chunk_size=1000, chunk_overlap=0)
texts = text_splitter.split_documents(documents)

embeddings = OpenAIEmbeddings()
state_of_union_store = Chroma.from_documents(texts, embeddings,
collection_name="state-of-union")
```

```
Running Chroma using direct local API.
Using DuckDB in-memory for database. Data will be transient.
```

Skip to main content

```
from langchain.document_loaders import WebBaseLoader
loader = WebBaseLoader("https://beta.ruff.rs/docs/faq/")
docs = loader.load()
ruff_texts = text_splitter.split_documents(docs)
ruff_store = Chroma.from_documents(ruff_texts, embeddings, collection_name="ruff")
```

```
Running Chroma using direct local API.
Using DuckDB in-memory for database. Data will be transient.
```

Initialize Toolkit and Agent

First, we'll create an agent with a single vectorstore.

```
from langchain.agents.agent_toolkits import (
    create_vectorstore_agent,
    VectorStoreToolkit,
    VectorStoreInfo,
)
vectorstore_info = VectorStoreInfo(
    name="state_of_union_address",
    description="the most recent state of the Union adress",
    vectorstore=state_of_union_store
)
toolkit = VectorStoreToolkit(vectorstore_info=vectorstore_info)
agent_executor = create_vectorstore_agent(
    llm=llm,
    toolkit=toolkit,
    verbose=True
)
```

Examples

```
agent_executor.run("What did biden say about ketanji brown jackson is the state of the union address?")
```

```
> Entering new AgentExecutor chain...
 I need to find the answer in the state of the union address
Action: state_of_union_address
Action Input: What did biden say about ketanji brown jackson
```

Skip to main content

```
Thought: I now know the final answer
Final Answer: Biden said that Ketanji Brown Jackson is one of the nation's top
legal minds and that she will continue Justice Breyer's legacy of excellence.

> Finished chain.
```

```
"Biden said that Ketanji Brown Jackson is one of the nation's top legal minds and
that she will continue Justice Breyer's legacy of excellence."
```

```
agent_executor.run("What did biden say about ketanji brown jackson is the state of
the union address? List the source.")
```

```
> Entering new AgentExecutor chain...
 I need to use the state_of_union_address_with_sources tool to answer this
question.
Action: state_of_union_address_with_sources
Action Input: What did biden say about ketanji brown jackson
Observation: {"answer": " Biden said that he nominated Circuit Court of Appeals
Judge Ketanji Brown Jackson to the United States Supreme Court, and that she is
one of the nation's top legal minds who will continue Justice Breyer's legacy of
excellence.\n", "sources": "../../state_of_the_union.txt"}
Thought: I now know the final answer
Final Answer: Biden said that he nominated Circuit Court of Appeals Judge Ketanji
Brown Jackson to the United States Supreme Court, and that she is one of the
nation's top legal minds who will continue Justice Breyer's legacy of excellence.
Sources: ../../state_of_the_union.txt

> Finished chain.
```

```
"Biden said that he nominated Circuit Court of Appeals Judge Ketanji Brown Jackson
to the United States Supreme Court, and that she is one of the nation's top legal
minds who will continue Justice Breyer's legacy of excellence. Sources:
../../state_of_the_union.txt"
```

Multiple Vectorstores

We can also easily use this initialize an agent with multiple vectorstores and use the agent to route between them. To do this. This agent is optimized for routing, so it is a different toolkit and initializer.

```
```

Skip to main content

```
    VectorStoreRouterToolkit,
    VectorStoreInfo,
)
```

```
ruff_vectorstore_info = VectorStoreInfo(
    name="ruff",
    description="Information about the Ruff python linting library",
    vectorstore=ruff_store
)
router_toolkit = VectorStoreRouterToolkit(
    vectorstores=[vectorstore_info, ruff_vectorstore_info],
    llm=llm
)
agent_executor = create_vectorstore_router_agent(
    llm=llm,
    toolkit=router_toolkit,
    verbose=True
)
```

Examples

```
agent_executor.run("What did biden say about ketanji brown jackson is the state of the union address?")
```

```
> Entering new AgentExecutor chain...
 I need to use the state_of_union_address tool to answer this question.
Action: state_of_union_address
Action Input: What did biden say about ketanji brown jackson
Observation:  Biden said that Ketanji Brown Jackson is one of the nation's top legal minds and that she will continue Justice Breyer's legacy of excellence.
Thought: I now know the final answer
Final Answer: Biden said that Ketanji Brown Jackson is one of the nation's top legal minds and that she will continue Justice Breyer's legacy of excellence.

> Finished chain.
```

```
"Biden said that Ketanji Brown Jackson is one of the nation's top legal minds and that she will continue Justice Breyer's legacy of excellence."
```

```
agent_executor.run("What tool does ruff use to run over Jupyter Notebooks?")
```

Skip to main content

```
> Entering new AgentExecutor chain...
 I need to find out what tool ruff uses to run over Jupyter Notebooks
Action: ruff
Action Input: What tool does ruff use to run over Jupyter Notebooks?
Observation:  Ruff is integrated into nbQA, a tool for running linters and code
formatters over Jupyter Notebooks. After installing ruff and nbqa, you can run
Ruff over a notebook like so: > nbqa ruff Untitled.ipynb
Thought: I now know the final answer
Final Answer: Ruff is integrated into nbQA, a tool for running linters and code
formatters over Jupyter Notebooks. After installing ruff and nbqa, you can run
Ruff over a notebook like so: > nbqa ruff Untitled.ipynb

> Finished chain.
```

```
'Ruff is integrated into nbQA, a tool for running linters and code formatters over
Jupyter Notebooks. After installing ruff and nbqa, you can run Ruff over a
notebook like so: > nbqa ruff Untitled.ipynb'
```

```
agent_executor.run("What tool does ruff use to run over Jupyter Notebooks? Did the
president mention that tool in the state of the union?")
```

```
> Entering new AgentExecutor chain...
 I need to find out what tool ruff uses and if the president mentioned it in the
state of the union.
Action: ruff
Action Input: What tool does ruff use to run over Jupyter Notebooks?
Observation:  Ruff is integrated into nbQA, a tool for running linters and code
formatters over Jupyter Notebooks. After installing ruff and nbqa, you can run
Ruff over a notebook like so: > nbqa ruff Untitled.ipynb
Thought: I need to find out if the president mentioned nbQA in the state of the
union.
Action: state_of_union_address
Action Input: Did the president mention nbQA in the state of the union?
Observation:  No, the president did not mention nbQA in the state of the union.
Thought: I now know the final answer.
Final Answer: No, the president did not mention nbQA in the state of the union.

> Finished chain.
```

```
'No, the president did not mention nbQA in the state of the union.'
```