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Question-Answering Citations

This notebook shows how to use OpenAI functions ability to extract citations from text.

```python
from langchain.chains import create_citation_fuzzy_match_chain
from langchain.chat_models import ChatOpenAI
```

```
    /Users/harrisonchase/.pyenv/versions/3.9.1/envs/langchain/lib/python3.9/site-
packages/deeplake/util/check_latest_version.py:32: UserWarning: A newer version of deeplake (3.6.4) is
available. It's recommended that you update to the latest version using `pip install -U deeplake`.
    warnings.warn(
```

```python
question = "What did the author do during college?"
context = """
My name is Jason Liu, and I grew up in Toronto Canada but I was born in China.
I went to an arts highschool but in university I studied Computational Mathematics and physics.
As part of coop I worked at many companies including Stitchfix, Facebook.
I also started the Data Science club at the University of Waterloo and I was the president of the club for 2
years.
"""
```

```python
llm = ChatOpenAI(temperature=0, model="gpt-3.5-turbo-0613")
```

```
chain = create_citation_fuzzy_match_chain(llm)
```

```
result = chain.run(question=question, context=context)
```

```
print(result)
```

```
    question='What did the author do during college?' answer=[FactWithEvidence(fact='The author studied
Computational Mathematics and physics in university.', substring_quote=['in university I studied
Computational Mathematics and physics']), FactWithEvidence(fact='The author started the Data Science club at
the University of Waterloo and was the president of the club for 2 years.', substring_quote=['started the
Data Science club at the University of Waterloo', 'president of the club for 2 years'])]
```

```python
def highlight(text, span):
    return (
        "..."
        + text[span[0] - 20 : span[0]]
        + "*"
        + "\033[91m"
        + text[span[0] : span[1]]
        + "\033[0m"
        + "*"
        + text[span[1] : span[1] + 20]
        + "..."
    )
```

```python
for fact in result.answer:
    print("Statement:", fact.fact)
    for span in fact.get_spans(context):
        print("Citation:", highlight(context, span))
    print()
```

```
    Statement: The author studied Computational Mathematics and physics in university.
    Citation: ...arts highschool but *in university I studied Computational Mathematics and physics*.
    As part of coop I...

    Statement: The author started the Data Science club at the University of Waterloo and was the president
of the club for 2 years.
    Citation: ...x, Facebook.
    I also *started the Data Science club at the University of Waterloo* and I was the presi...
    Citation: ...erloo and I was the *president of the club for 2 years*.
    ...
```