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# Conversation Token Buffer

`ConversationTokenBufferMemory` keeps a buffer of recent interactions in memory, and uses token length rather than number of interactions to determine when to flush interactions.

Let's first walk through how to use the utilities.

## Using memory with LLM

```
from langchain.memory import  
ConversationTokenBufferMemory  
from langchain_openai import OpenAI  
  
llm = OpenAI()
```

```
memory =  
ConversationTokenBufferMemory(llm=llm,  
max_token_limit=10)  
memory.save_context({"input": "hi"},  
{"output": "whats up"})
```

```
memory.save_context({"input": "not much  
you"}, {"output": "not much"})
```

```
memory.load_memory_variables({})
```

```
{'history': 'Human: not much you\nAI: not  
much'}
```

We can also get the history as a list of messages (this is useful if you are using this with a chat model).

```
memory = ConversationTokenBufferMemory(  
    llm=llm, max_token_limit=10,  
    return_messages=True  
)  
memory.save_context({"input": "hi"},  
    {"output": "whats up"})  
memory.save_context({"input": "not much  
you"}, {"output": "not much"})
```

## Using in a chain

Let's walk through an example, again setting `verbose=True` so we can see the prompt.

```
from langchain.chains import ConversationChain

conversation_with_summary = ConversationChain(
    llm=llm,
    # We set a very low max_token_limit for the
    purposes of testing.

    memory=ConversationTokenBufferMemory(llm=OpenAI
max_token_limit=60),
    verbose=True,
)
conversation_with_summary.predict(input="Hi,
what's up?")
```

> Entering new ConversationChain chain...

Prompt after formatting:

The following is a friendly conversation between a human and an AI. The AI is talkative and provides lots of specific details from its context. If the AI does not know the answer to a question, it truthfully says it does not know.

Current conversation:

Human: Hi, what's up?

AI:

```
> Finished chain.
```

```
" Hi there! I'm doing great, just enjoying  
the day. How about you?"
```

```
conversation_with_summary.predict(input="Just  
working on writing some documentation!")
```

```
> Entering new ConversationChain chain...
```

```
Prompt after formatting:
```

```
The following is a friendly conversation  
between a human and an AI. The AI is  
talkative and provides lots of specific  
details from its context. If the AI does not  
know the answer to a question, it truthfully  
says it does not know.
```

```
Current conversation:
```

```
Human: Hi, what's up?
```

```
AI: Hi there! I'm doing great, just enjoying  
the day. How about you?
```

```
Human: Just working on writing some  
documentation!
```

```
AI:
```

```
> Finished chain.
```

```
' Sounds like a productive day! What kind of  
documentation are you writing?'
```

```
conversation_with_summary.predict(input="For  
LangChain! Have you heard of it?")
```

```
> Entering new ConversationChain chain...
```

```
Prompt after formatting:
```

```
The following is a friendly conversation  
between a human and an AI. The AI is  
talkative and provides lots of specific  
details from its context. If the AI does not  
know the answer to a question, it truthfully  
says it does not know.
```

```
Current conversation:
```

```
Human: Hi, what's up?
```

```
AI: Hi there! I'm doing great, just enjoying  
the day. How about you?
```

```
Human: Just working on writing some  
documentation!
```

```
AI: Sounds like a productive day! What kind
```

of documentation are you writing?

Human: For LangChain! Have you heard of it?

AI:

> Finished chain.

" Yes, I have heard of LangChain! It is a decentralized language-learning platform that connects native speakers and learners in real time. Is that the documentation you're writing about?"

```
# We can see here that the buffer is updated
conversation_with_summary.predict(
    input="Haha nope, although a lot of
people confuse it for that"
)
```

> Entering new ConversationChain chain...

Prompt after formatting:

The following is a friendly conversation between a human and an AI. The AI is talkative and provides lots of specific details from its context. If the AI does not know the answer to a question, it truthfully

says it does not know.

Current conversation:

Human: For LangChain! Have you heard of it?

AI: Yes, I have heard of LangChain! It is a decentralized language-learning platform that connects native speakers and learners in real time. Is that the documentation you're writing about?

Human: Haha nope, although a lot of people confuse it for that

AI:

> Finished chain.

" Oh, I see. Is there another language learning platform you're referring to?"