# ConversationTokenBufferMemory

`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

```
from langchain.memory import ConversationTokenBufferMemory
from langchain.llms import OpenAI

llm = OpenAI()
```

**API Reference:**

- ConversationTokenBufferMemory from `langchain.memory`
- OpenAI from `langchain.llms`

```
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?")
```

**API Reference:**

- ConversationChain from `langchain.chains`

```
    > 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?"
```