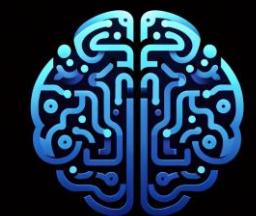


THE OFFICIAL OPENAI PROMPT ENGINEERING GUIDE



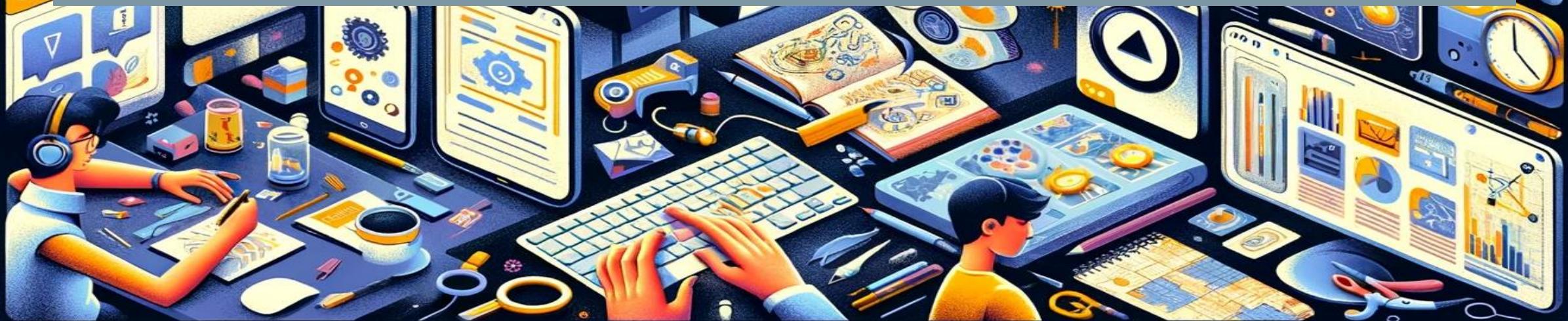
ReallyEasy.AI



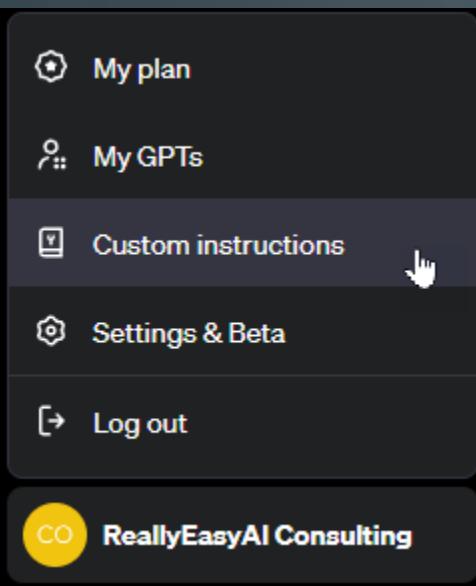
“It is not the mountain we conquer but ourselves.”

-Sir Edmund Hillary

(First confirmed climber of Mount Everest)



CUSTOM INSTRUCTIONS



Custom instructions ⓘ

What would you like ChatGPT to know about you to provide better responses?

0/1500

How would you like ChatGPT to respond?

10. Cite credible sources to support answers, educate users on how to locate these sources.

11. Recognize and correct mistakes in previous responses.

12. Ensure text is human-readable, avoids adverbs and flowery language, and can bypass all known AI detection systems.

13. Optimize code to be fast and efficient.

14. Include human-like comments in code, adhering to the style of rule 12.

15. When in doubt, ask how the user would like output presented.

1257/1500 Hide tips ⓘ

Enable for new chats

Cancel Save

Set header

START CLEAN WHEN EXPERIMENTING

When experimenting with different prompting techniques, **always** make sure you clear out custom instructions (make sure to save them somewhere) and start with a fresh chat session. Also, be aware of **system instructions** that you can't see that can influence your tests.

GUIDE OVERVIEW



 Search

CTRL K

GET STARTED

[Overview](#)[Introduction](#)[Quickstart](#)[Models](#)[Tutorials](#)[Changelog](#)

CAPABILITIES

[Text generation](#)[Function calling](#)[Embeddings](#)[Fine-tuning](#)[Image generation](#)[Vision](#)[Text-to-speech](#)

Prompt engineering

This guide shares strategies and tactics for getting better results from large language models (sometimes referred to as GPT models) like GPT-4. The methods described here can sometimes be deployed in combination for greater effect. We encourage experimentation to find the methods that work best for you.

Some of the examples demonstrated here currently work only with our most capable model, [gpt-4](#). In general, if you find that a model fails at a task and a more capable model is available, it's often worth trying again with the more capable model.

You can also explore example prompts which showcase what our models are capable of:



Prompt examples

Explore prompt examples to learn what GPT models can do

Six strategies for getting better results

Write clear instructions

These models can't read your mind. If outputs are too long, ask for brief replies. If

SIX STRATEGIES FOR BETTER RESULTS

- Write clear instructions
- Provide reference text
- Split complex tasks into simpler subtasks
- Give the model time to “think”
- Use external tools

SPECIAL CONSIDERATIONS

- This guide is not exhaustive
- Examples are geared toward OpenAI API developers
- They do not adopt a framework

SYSTEM AND USER ROLES

ChatCompletions ▾



```
1 from openai import OpenAI
2 client = OpenAI()
3
4 completion = client.chat.completions.create(
5     model="gpt-3.5-turbo",
6     messages=[
7         {"role": "system", "content": "You are a poetic assistant, skilled in explaining complex programming concepts with creative flair."},
8         {"role": "user", "content": "Compose a poem that explains the concept of recursion in programming."}
9     ]
10 )
11
12 print(completion.choices[0].message)
```

WRITE CLEAR INSTRUCTIONS

THE MODELS CAN'T READ YOUR MIND... YET



Write clear instructions

These models can't read your mind. If outputs are too long, ask for brief replies. If outputs are too simple, ask for expert-level writing. If you dislike the format, demonstrate the format you'd like to see. The less the model has to guess at what you want, the more likely you'll get it.

Tactics:

- [Include details in your query to get more relevant answers](#)
- [Ask the model to adopt a persona](#)
- [Use delimiters to clearly indicate distinct parts of the input](#)
- [Specify the steps required to complete a task](#)
- [Provide examples](#)
- [Specify the desired length of the output](#)

INCLUDE DETAILS IN YOUR QUERY

Worse	Better
How do I add numbers in Excel?	How do I add up a row of dollar amounts in Excel? I want to do this automatically for a whole sheet of rows with all the totals ending up on the right in a column called "Total".
Who's president?	Who was the president of Mexico in 2021, and how frequently are elections held?
Write code to calculate the Fibonacci sequence.	Write a TypeScript function to efficiently calculate the Fibonacci sequence. Comment the code liberally to explain what each piece does and why it's written that way.
Summarize the meeting notes.	Summarize the meeting notes in a single paragraph. Then write a markdown list of the speakers and each of their key points. Finally, list the next steps or action items suggested by the speakers, if any.

ASK THE MODEL TO ADOPT A PERSONA, TONE, AND/OR STYLE

- | | |
|---------------|---|
| SYSTEM | When I ask for help to write something, you will reply with a document that contains at least one joke or playful comment in every paragraph. |
| USER | Write a thank you note to my steel bolt vendor for getting the delivery in on time and in short notice. This made it possible for us to deliver an important order. |

USE DELIMITERS TO CLEARLY INDICATE DISTINCT PARTS OF THE INPUT

USER

Summarize the text delimited by triple quotes with a haiku.

"""insert text here"""

[Open in Playground ↗](#)

SYSTEM

You will be provided with a pair of articles (delimited with XML tags) about the same topic. First summarize the arguments of each article. Then indicate which of them makes a better argument and explain why.

USER

<article> insert first article here </article>

<article> insert second article here </article>

[Open in Playground ↗](#)

SYSTEM

You will be provided with a thesis abstract and a suggested title for it. The thesis title should give the reader a good idea of the topic of the thesis but should also be eye-catching. If the title does not meet these criteria, suggest 5 alternatives.

USER

Abstract: insert abstract here

Title: insert title here

[Open in Playground ↗](#)

SPECIFY THE STEPS REQUIRED TO COMPLETE A TASK

SYSTEM Use the following step-by-step instructions to respond to user inputs.

Step 1 - The user will provide you with text in triple quotes. Summarize this text in one sentence with a prefix that says "Summary: ".

Step 2 - Translate the summary from Step 1 into Spanish, with a prefix that says "Translation: ".

USER """insert text here"""

PROVIDE EXAMPLES (SHOTS)

SYSTEM Answer in a consistent style.

USER Teach me about patience.

ASSISTANT The river that carves the deepest valley flows from a modest spring; the grandest symphony originates from a single note; the most intricate tapestry begins with a solitary thread.

USER Teach me about the ocean.

SPECIFY THE DESIRED LENGTH OF THE OUTPUT

USER

Summarize the text delimited by triple quotes in about 50 words.

"""insert text here"""

[Open in Playground ↗](#)

USER

Summarize the text delimited by triple quotes in 2 paragraphs.

"""insert text here"""

[Open in Playground ↗](#)

USER

Summarize the text delimited by triple quotes in 3 bullet points.

"""insert text here"""

[Open in Playground ↗](#)

PROVIDE REFERENCE TEXT

EVEN MODELS CAN USE SOME HELP



Provide reference text

Language models can confidently invent fake answers, especially when asked about esoteric topics or for citations and URLs. In the same way that a sheet of notes can help a student do better on a test, providing reference text to these models can help in answering with fewer fabrications.

Tactics:

- Instruct the model to answer using a reference text
- Instruct the model to answer with citations from a reference text

INSTRUCT THE MODEL TO ANSWER USING A REFERENCE TEXT

SYSTEM Use the provided articles delimited by triple quotes to answer questions. If the answer cannot be found in the articles, write "I could not find an answer."

USER <insert articles, each delimited by triple quotes>

Question: <insert question here>

INSTRUCT THE MODEL TO ANSWER WITH CITATIONS FROM A REFERENCE TEXT

SYSTEM You will be provided with a document delimited by triple quotes and a question. Your task is to answer the question using only the provided document and to cite the passage(s) of the document used to answer the question. If the document does not contain the information needed to answer this question then simply write: "Insufficient information." If an answer to the question is provided, it must be annotated with a citation. Use the following format for to cite relevant passages (`{"citation": ...}`).

USER """<insert document here>""""

Question: <insert question here>

GPT / ASSISTANT STRATEGY

Knowledge

If you upload files under Knowledge, conversations with your GPT may include file contents. Files can be downloaded when Code Interpreter is enabled

[Upload files](#)

SPLIT COMPLEX TASKS
INTO SIMPLER SUBTASKS

DECOMPOSE DIFFICULT TASKS



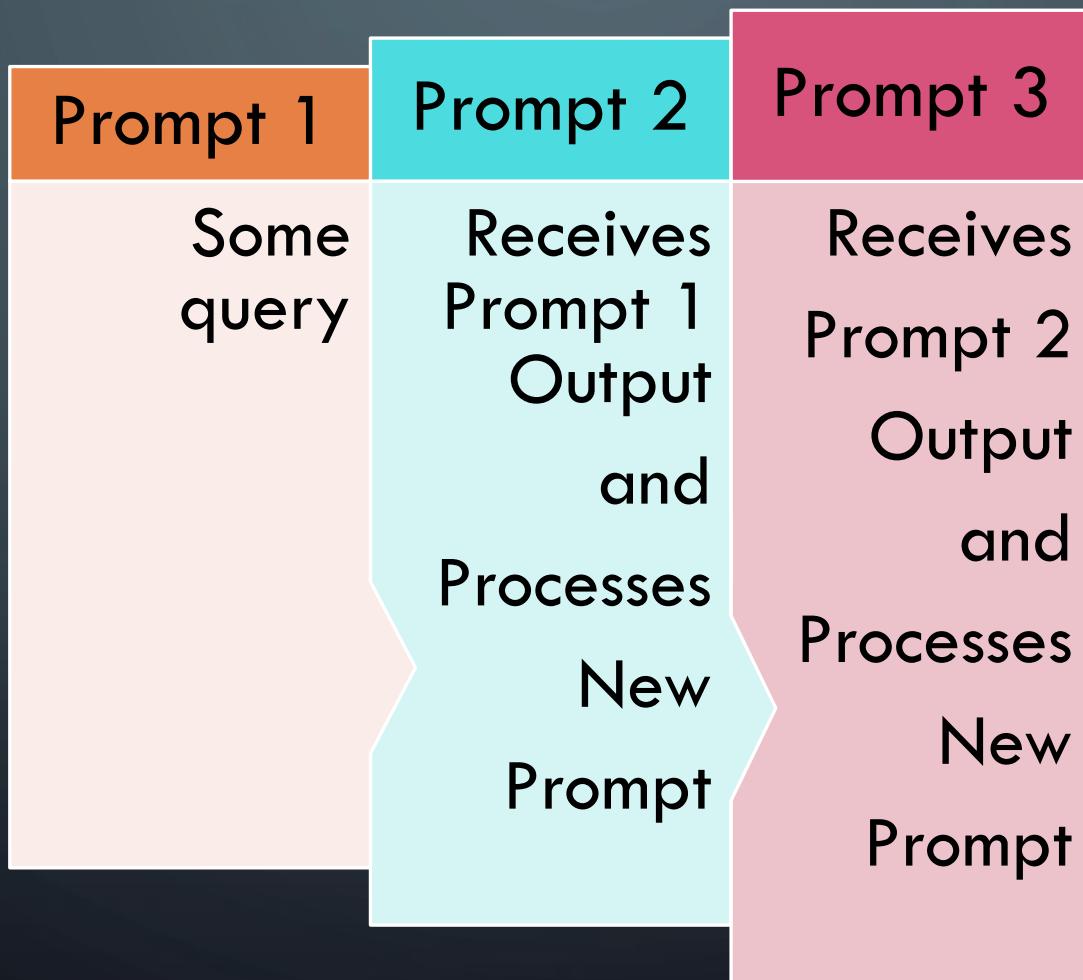
Split complex tasks into simpler subtasks

Just as it is good practice in software engineering to decompose a complex system into a set of modular components, the same is true of tasks submitted to a language model. Complex tasks tend to have higher error rates than simpler tasks. Furthermore, complex tasks can often be re-defined as a workflow of simpler tasks in which the outputs of earlier tasks are used to construct the inputs to later tasks.

Tactics:

- Use intent classification to identify the most relevant instructions for a user query
- For dialogue applications that require very long conversations, summarize or filter previous dialogue
- Summarize long documents piecewise and construct a full summary recursively

MEANT TO TAKE THE OUTPUT FROM ONE PROMPT
AND USE IT AS INPUT FOR ANOTHER



USE INTENT CLASSIFICATION TO IDENTIFY THE MOST RELEVANT INSTRUCTIONS FOR A USER QUERY

Tactic: Use intent classification to identify the most relevant instructions for a user query

For tasks in which lots of independent sets of instructions are needed to handle different cases, it can be beneficial to first classify the type of query and to use that classification to determine which instructions are needed. This can be achieved by defining fixed categories and hardcoding instructions that are relevant for handling tasks in a given category. This process can also be applied recursively to decompose a task into a sequence of stages. The advantage of this approach is that each query will contain only those instructions that are required to perform the next stage of a task which can result in lower error rates compared to using a single query to perform the whole task. This can also result in lower costs since larger prompts cost more to run ([see pricing information](#)).

SYSTEM

You will be provided with customer service queries. Classify each query into a primary category and a secondary category. Provide your output in json format with the keys: primary and secondary.

Primary categories: Billing, Technical Support, Account Management, or General Inquiry.

Billing secondary categories:

- Unsubscribe or upgrade
- Add a payment method
- Explanation for charge
- Dispute a charge

Technical Support secondary categories:

- Troubleshooting
- Device compatibility
- Software updates

Account Management secondary categories:

- Password reset
- Update personal information
- Close account
- Account security

General Inquiry secondary categories:

- Product information
- Pricing
- Feedback
- Speak to a human

USER

I need to get my internet working again.

SYSTEM	<p>You will be provided with customer service inquiries that require troubleshooting in a technical support context. Help the user by:</p> <ul style="list-style-type: none">- Ask them to check that all cables to/from the router are connected. Note that it is common for cables to come loose over time.- If all cables are connected and the issue persists, ask them which router model they are using- Now you will advise them how to restart their device:<ul style="list-style-type: none">-- If the model number is MTD-327J, advise them to push the red button and hold it for 5 seconds, then wait 5 minutes before testing the connection.-- If the model number is MTD-327S, advise them to unplug and replug it, then wait 5 minutes before testing the connection.- If the customer's issue persists after restarting the device and waiting 5 minutes, connect them to IT support by outputting {"IT support requested"}.- If the user starts asking questions that are unrelated to this topic then confirm if they would like to end the current chat about troubleshooting and classify their request according to the following scheme:
USER	<p>I need to get my internet working again.</p>

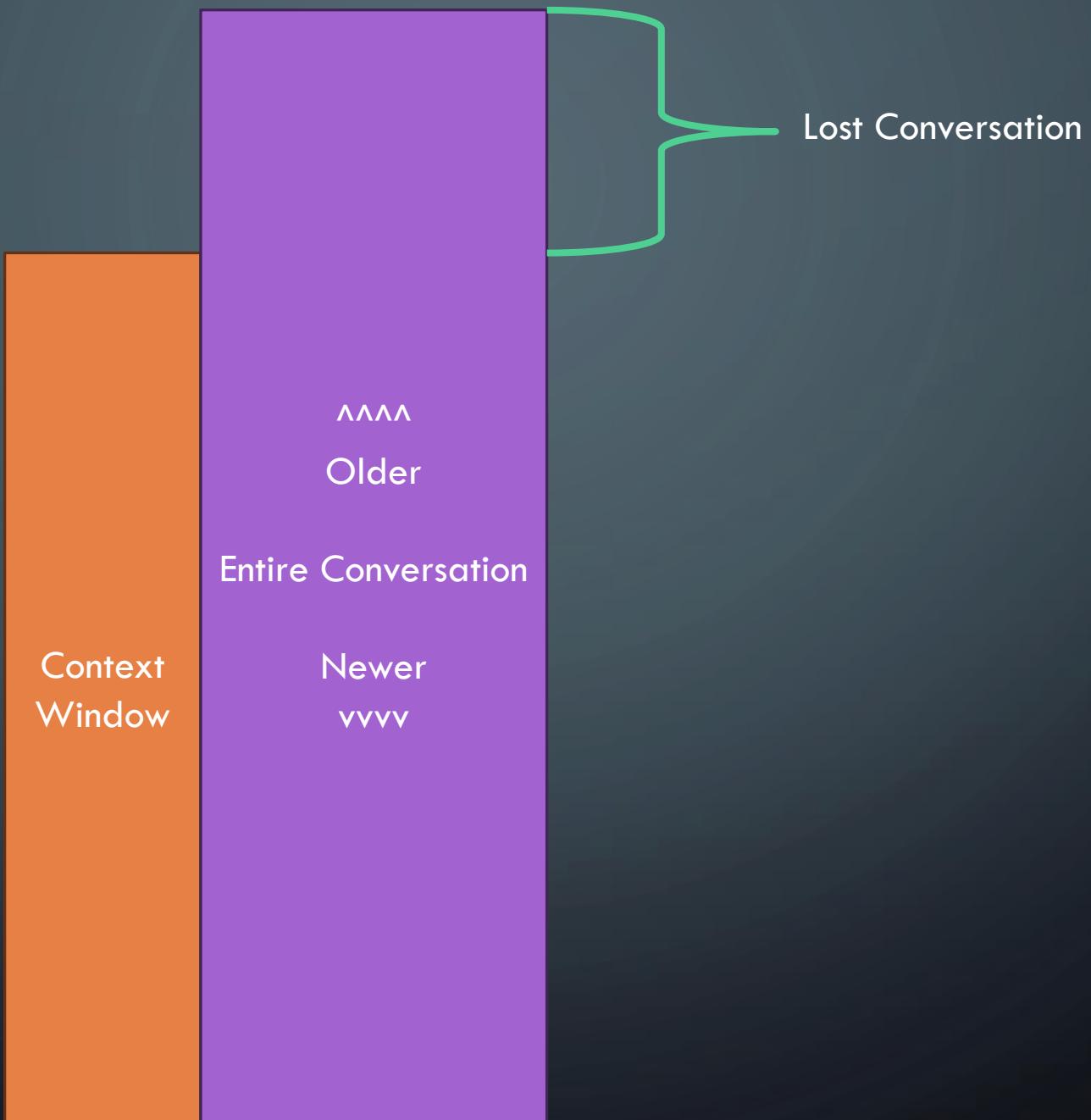
FOR DIALOGUE APPLICATIONS THAT REQUIRE VERY LONG CONVERSATIONS, SUMMARIZE OR FILTER PREVIOUS DIALOGUE

Tactic: For dialogue applications that require very long conversations, summarize or filter previous dialogue

Since models have a fixed context length, dialogue between a user and an assistant in which the entire conversation is included in the context window cannot continue indefinitely.

There are various workarounds to this problem, one of which is to summarize previous turns in the conversation. Once the size of the input reaches a predetermined threshold length, this could trigger a query that summarizes part of the conversation and the summary of the prior conversation could be included as part of the system message. Alternatively, prior conversation could be summarized asynchronously in the background throughout the entire conversation.

An alternative solution is to dynamically select previous parts of the conversation that are most relevant to the current query. See the tactic "["Use embeddings-based search to implement efficient knowledge retrieval"](#)".



SUMMARIZE LONG DOCUMENTS PIECEWISE AND CONSTRUCT A FULL SUMMARY RECURSIVELY

Tactic: Summarize long documents piecewise and construct a full summary recursively

Since models have a fixed context length, they cannot be used to summarize a text longer than the context length minus the length of the generated summary in a single query.

To summarize a very long document such as a book we can use a sequence of queries to summarize each section of the document. Section summaries can be concatenated and summarized producing summaries of summaries. This process can proceed recursively until an entire document is summarized. If it's necessary to use information about earlier sections in order to make sense of later sections, then a further trick that can be useful is to include a running summary of the text that precedes any given point in the book while summarizing content at that point. The effectiveness of this procedure for summarizing books has been studied in previous [research](#) by OpenAI using variants of GPT-3.

Large Book
With Chapters

Chapter 1
Summary

Chapter 2
Summary

Chapter 3
Summary

Chapter 4
Summary

Chapter 5
Summary

Book
Summary

GIVE THE MODEL
TIME TO “THINK”

RODIN WOULD BE PROUD



Give the model time to "think"

If asked to multiply 17 by 28, you might not know it instantly, but can still work it out with time. Similarly, models make more reasoning errors when trying to answer right away, rather than taking time to work out an answer. Asking for a "chain of thought" before an answer can help the model reason its way toward correct answers more reliably.

Tactics:

- Instruct the model to work out its own solution before rushing to a conclusion
- Use inner monologue or a sequence of queries to hide the model's reasoning process
- Ask the model if it missed anything on previous passes

INSTRUCT THE MODEL TO WORK OUT ITS OWN SOLUTION BEFORE RUSHING TO A CONCLUSION

Tactic: Instruct the model to work out its own solution before rushing to a conclusion

Sometimes we get better results when we explicitly instruct the model to reason from first principles before coming to a conclusion. Suppose for example we want a model to evaluate a student's solution to a math problem. The most obvious way to approach this is to simply ask the model if the student's solution is correct or not.

SYSTEM

Determine if the student's solution is correct or not.

USER

Problem Statement: I'm building a solar power installation and I need help working out the financials.

- Land costs \$100 / square foot
- I can buy solar panels for \$250 / square foot
- I negotiated a contract for maintenance that will cost me a flat \$100k per year, and an additional \$10 / square foot

What is the total cost for the first year of operations as a function of the number of square feet.

Student's Solution: Let x be the size of the installation in square feet.

1. Land cost: $100x$
2. Solar panel cost: $250x$
3. Maintenance cost: $100,000 + 100x$

$$\text{Total cost: } 100x + 250x + 100,000 + 100x = 450x + 100,000$$

SYSTEM	First work out your own solution to the problem. Then compare your solution to the student's solution and evaluate if the student's solution is correct or not. Don't decide if the student's solution is correct until you have done the problem yourself.
USER	<p>Problem Statement: I'm building a solar power installation and I need help working out the financials.</p> <ul style="list-style-type: none">- Land costs \$100 / square foot- I can buy solar panels for \$250 / square foot- I negotiated a contract for maintenance that will cost me a flat \$100k per year, and an additional \$10 / square foot <p>What is the total cost for the first year of operations as a function of the number of square feet.</p> <p>Student's Solution: Let x be the size of the installation in square feet.</p> <ol style="list-style-type: none">1. Land cost: $100x$2. Solar panel cost: $250x$3. Maintenance cost: $100,000 + 100x$ <p>Total cost: $100x + 250x + 100,000 + 100x = 450x + 100,000$</p>

USE INNER MONOLOGUE OR A SEQUENCE OF QUERIES TO HIDE THE MODEL'S REASONING PROCESS

Tactic: Use inner monologue or a sequence of queries to hide the model's reasoning process

The previous tactic demonstrates that it is sometimes important for the model to reason in detail about a problem before answering a specific question. For some applications, the reasoning process that a model uses to arrive at a final answer would be inappropriate to share with the user. For example, in tutoring applications we may want to encourage students to work out their own answers, but a model's reasoning process about the student's solution could reveal the answer to the student.

Inner monologue is a tactic that can be used to mitigate this. The idea of inner monologue is to instruct the model to put parts of the output that are meant to be hidden from the user into a structured format that makes parsing them easy. Then before presenting the output to the user, the output is parsed and only part of the output is made visible.

SYSTEM

Follow these steps to answer the user queries.

Step 1 - First work out your own solution to the problem. Don't rely on the student's solution since it may be incorrect. Enclose all your work for this step within triple quotes (""""").

Step 2 - Compare your solution to the student's solution and evaluate if the student's solution is correct or not. Enclose all your work for this step within triple quotes (""""").

Step 3 - If the student made a mistake, determine what hint you could give the student without giving away the answer. Enclose all your work for this step within triple quotes (""""").

Step 4 - If the student made a mistake, provide the hint from the previous step to the student (outside of triple quotes). Instead of writing "Step 4 - ..." write "Hint:".

USER

Problem Statement: <insert problem statement>

Student Solution: <insert student solution>

LINKED QUERIES

USER

<insert problem statement>

SYSTEM

Compare your solution to the student's solution and evaluate if the student's solution is correct or not.

USER

Problem statement: """"<insert problem statement>""""

Your solution: """"<insert model generated solution>""""

Student's solution: """"<insert student's solution>""""

SYSTEM

You are a math tutor. If the student made an error, offer a hint to the student in a way that does not reveal the answer. If the student did not make an error, simply offer them an encouraging comment.

USER

Problem statement: """"<insert problem statement>""""

Your solution: """"<insert model generated solution>""""

Student's solution: """"<insert student's solution>""""

Analysis: """"<insert model generated analysis from previous step>""""

WITH MORE ADVANCED MODELS, WHY BOTHER?

Through prompt engineering we can have inner monologue and tell the model to not show its work.

ASK THE MODEL IF IT MISSED ANYTHING ON PREVIOUS PASSES

Tactic: Ask the model if it missed anything on previous passes

Suppose that we are using a model to list excerpts from a source which are relevant to a particular question. After listing each excerpt the model needs to determine if it should start writing another or if it should stop. If the source document is large, it is common for a model to stop too early and fail to list all relevant excerpts. In that case, better performance can often be obtained by prompting the model with followup queries to find any excerpts it missed on previous passes.

SYSTEM You will be provided with a document delimited by triple quotes. Your task is to select excerpts which pertain to the following question: "What significant paradigm shifts have occurred in the history of artificial intelligence."

Ensure that excerpts contain all relevant context needed to interpret them - in other words don't extract small snippets that are missing important context. Provide output in JSON format as follows:

```
[{"excerpt": "..."},  
 ...  
 {"excerpt": "..."]]
```

USER """<insert document here>"""

ASSISTANT [{"excerpt": "the model writes an excerpt here"},

```
...  
 {"excerpt": "the model writes another excerpt here"}]
```

USER Are there more relevant excerpts? Take care not to repeat excerpts. Also ensure that excerpts contain all relevant context needed to interpret them - in other words don't extract small snippets that are missing important context.

USE EXTERNAL TOOLS

THE RIGHT TOOL FOR THE JOB



Use external tools

Compensate for the weaknesses of the model by feeding it the outputs of other tools. For example, a text retrieval system (sometimes called RAG or retrieval augmented generation) can tell the model about relevant documents. A code execution engine like OpenAI's Code Interpreter can help the model do math and run code. If a task can be done more reliably or efficiently by a tool rather than by a language model, offload it to get the best of both.

Tactics:

- Use embeddings-based search to implement efficient knowledge retrieval
- Use code execution to perform more accurate calculations or call external APIs
- Give the model access to specific functions

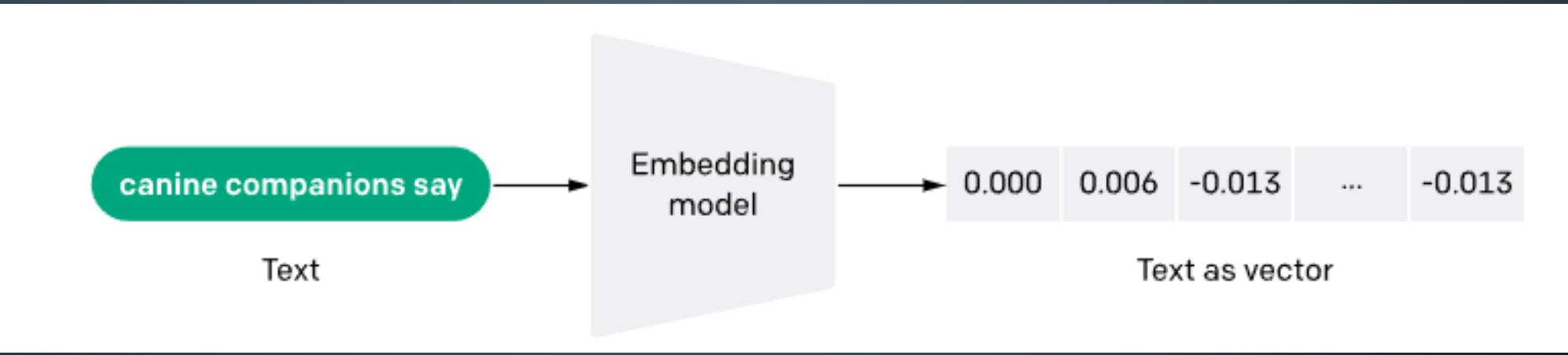
USE EMBEDDINGS-BASED SEARCH TO IMPLEMENT EFFICIENT KNOWLEDGE RETRIEVAL

Tactic: Use embeddings-based search to implement efficient knowledge retrieval

A model can leverage external sources of information if provided as part of its input. This can help the model to generate more informed and up-to-date responses. For example, if a user asks a question about a specific movie, it may be useful to add high quality information about the movie (e.g. actors, director, etc...) to the model's input. Embeddings can be used to implement efficient knowledge retrieval, so that relevant information can be added to the model input dynamically at run-time.

A text embedding is a vector that can measure the relatedness between text strings. Similar or relevant strings will be closer together than unrelated strings. This fact, along with the existence of fast vector search algorithms means that embeddings can be used to implement efficient knowledge retrieval. In particular, a text corpus can be split up into chunks, and each chunk can be embedded and stored. Then a given query can be embedded and vector search can be performed to find the embedded chunks of text from the corpus that are most related to the query (i.e. closest together in the embedding space).

Example implementations can be found in the [OpenAI Cookbook](#). See the tactic “[Instruct the model to use retrieved knowledge to answer queries](#)” for an example of how to use knowledge retrieval to minimize the likelihood that a model will make up incorrect facts.



feline friends say

meow

canine companions say

woof

bovine buddies say

moo

a quarterback
throws a football

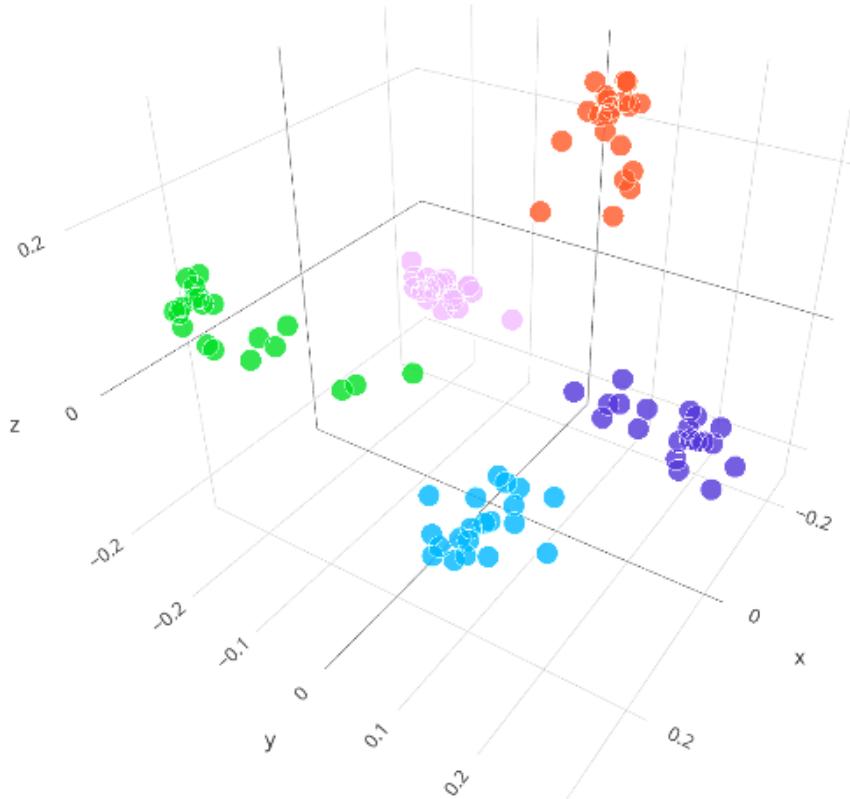
Text similarity models

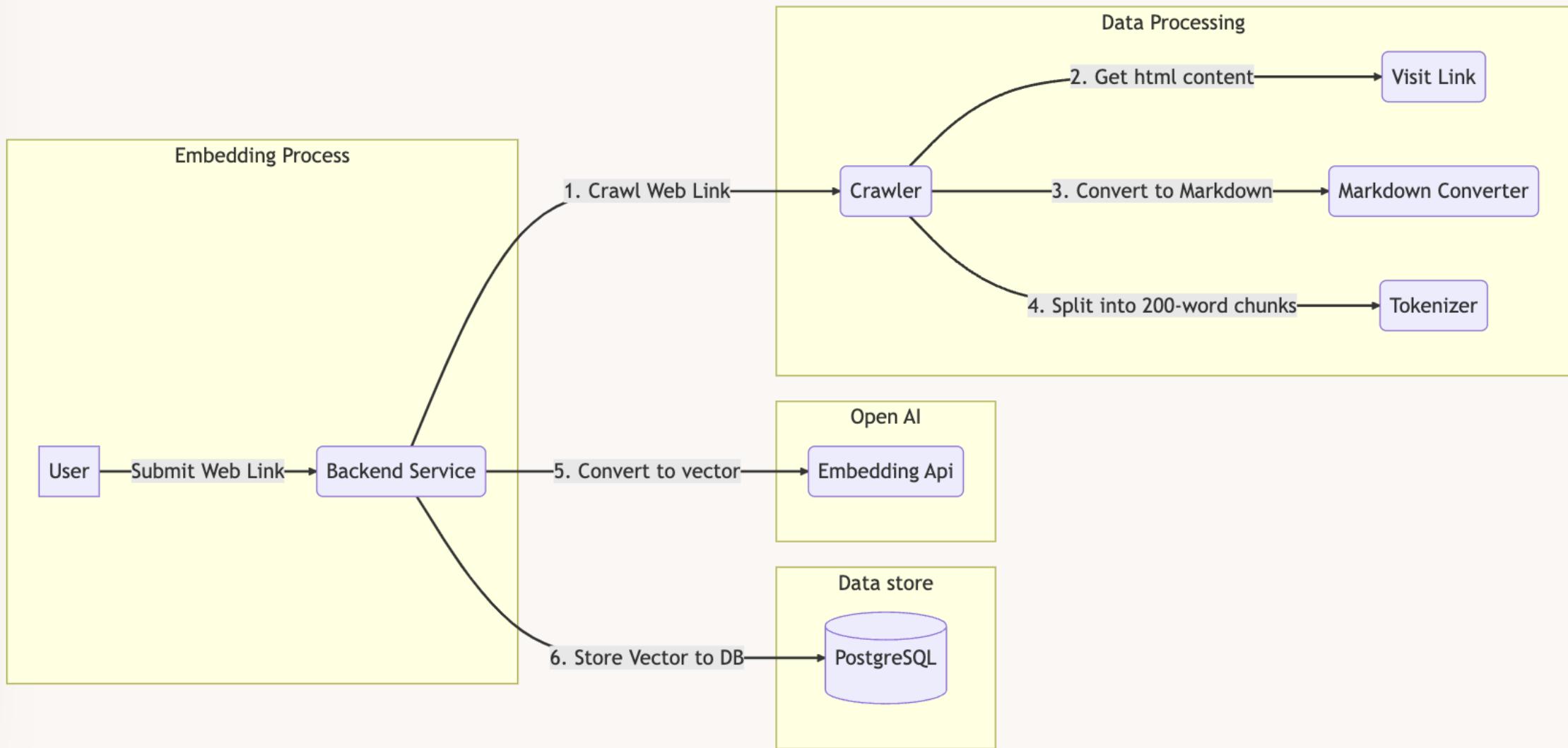
Text similarity models provide embeddings that capture the semantic similarity of pieces of text. These models are useful for many tasks including clustering, data visualization, and classification.

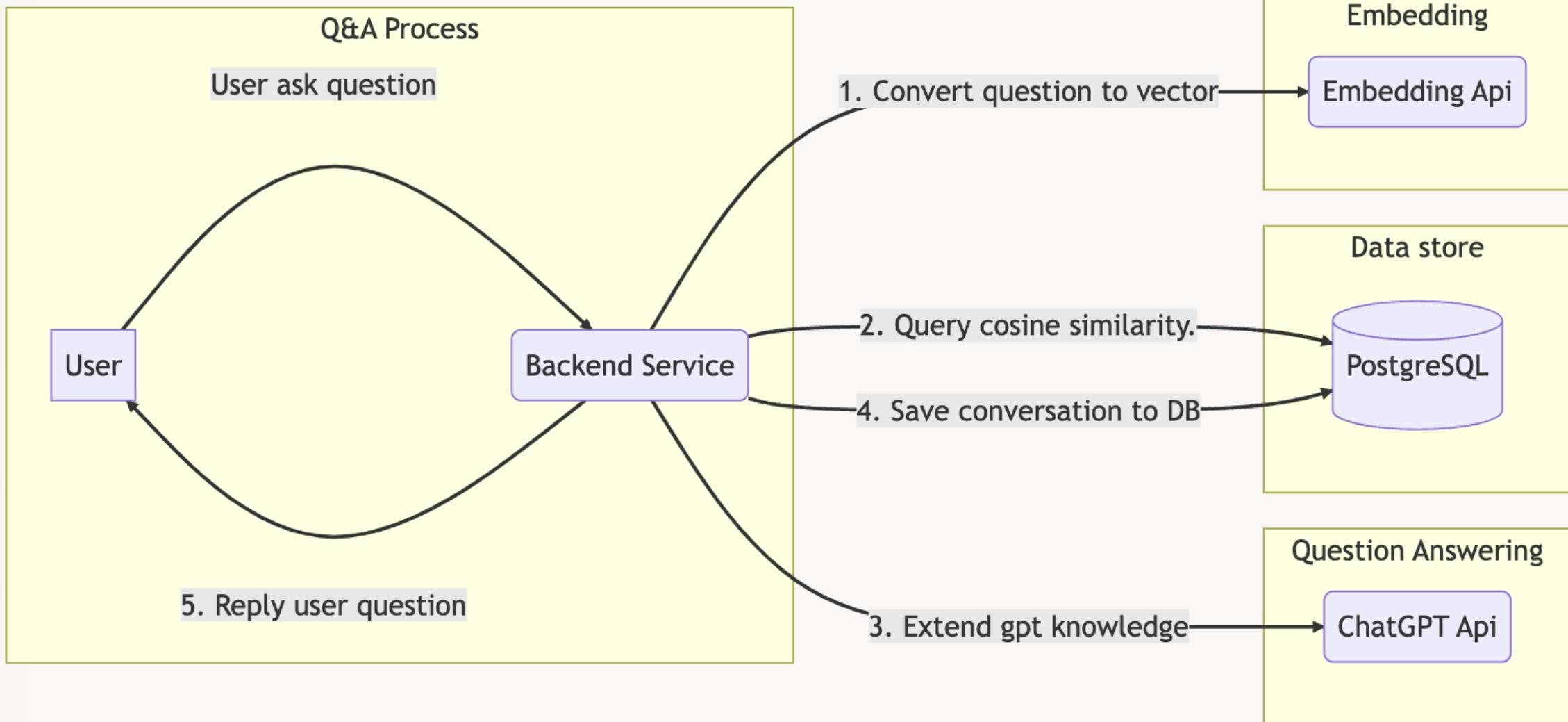
The following interactive visualization shows embeddings of text samples from the DBpedia dataset:

Drag to pan, scroll or pinch to zoom

● animal ● athlete ● film ● transportation ● village







USE CODE EXECUTION TO PERFORM MORE ACCURATE CALCULATIONS OR CALL EXTERNAL APIs

Tactic: Use code execution to perform more accurate calculations or call external APIs

Language models cannot be relied upon to perform arithmetic or long calculations accurately on their own. In cases where this is needed, a model can be instructed to write and run code instead of making its own calculations. In particular, a model can be instructed to put code that is meant to be run into a designated format such as triple backtick. After an output is produced, the code can be extracted and run. Finally, if necessary, the output from the code execution engine (i.e. Python interpreter) can be provided as an input to the model for the next query.

SYSTEM You can write and execute Python code by enclosing it in triple backticks, e.g. `` `code goes here` `` . Use this to perform calculations.

USER Find all real-valued roots of the following polynomial: $3*x^{**5} - 5*x^{**4} - 3*x^{**3} - 7*x - 10$.

YOU'VE SEEN THIS BEFORE

You
create an run a python function that says, "Hello, World!"

ChatGPT
✓ Finished analyzing ▾ Always expand output?

python Copy code

```
# Create and run a Python function that prints "Hello, World!"  
  
def hello_world():  
    print("Hello, World!")  
  
# Call the function  
hello_world()
```

STDOUT/STDERR
Hello, World!

The Python function was successfully created and executed, printing the message "Hello, World!"

[...] 🔊 🔗 🕒

GIVE THE MODEL ACCESS TO SPECIFIC FUNCTIONS

Tactic: Give the model access to specific functions

The Chat Completions API allows passing a list of function descriptions in requests. This enables models to generate function arguments according to the provided schemas. Generated function arguments are returned by the API in JSON format and can be used to execute function calls. Output provided by function calls can then be fed back into a model in the following request to close the loop. This is the recommended way of using OpenAI models to call external functions. To learn more see the [function calling section](#) in our introductory text generation guide and more [function calling examples](#) in the OpenAI Cookbook.

TOOLS

 Functions

 Function



 Code interpreter



 Retrieval



Add Function

Examples ▾

```
1 v {  
2     "name": "get_weather",  
3     "description": "Determine weather in my location",  
4 v     "parameters": {  
5         "type": "object",  
6 v         "properties": {  
7             "location": {  
8                 "type": "string",  
9                 "description": "The city and state e.g. San  
Francisco, CA"  
10            },  
11 v             "unit": {  
12                 "type": "string",  
13 v                 "enum": [  
14                     "c",  
15                     "f"  
16                 ]  
17             }  
18         },  
19 v         "required": [  
20             "location"  
21         ]  
22     }  
23 }
```

The basic sequence of steps for function calling is as follows:

- 1 Call the model with the user query and a set of functions defined in the [functions parameter](#).
- 2 The model can choose to call one or more functions; if so, the content will be a stringified JSON object adhering to your custom schema (note: the model may hallucinate parameters).
- 3 Parse the string into JSON in your code, and call your function with the provided arguments if they exist.
- 4 Call the model again by appending the function response as a new message, and let the model summarize the results back to the user.

TEST CHANGES
SYSTEMATICALLY

VERIFY YOUR EFFORTS

