

What is ChatGPT?

UNDERSTANDING CHATGPT



James Chapman

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What is ChatGPT?

AI Chatbot application:

- Answer questions
- Perform tasks
- User-inputted text



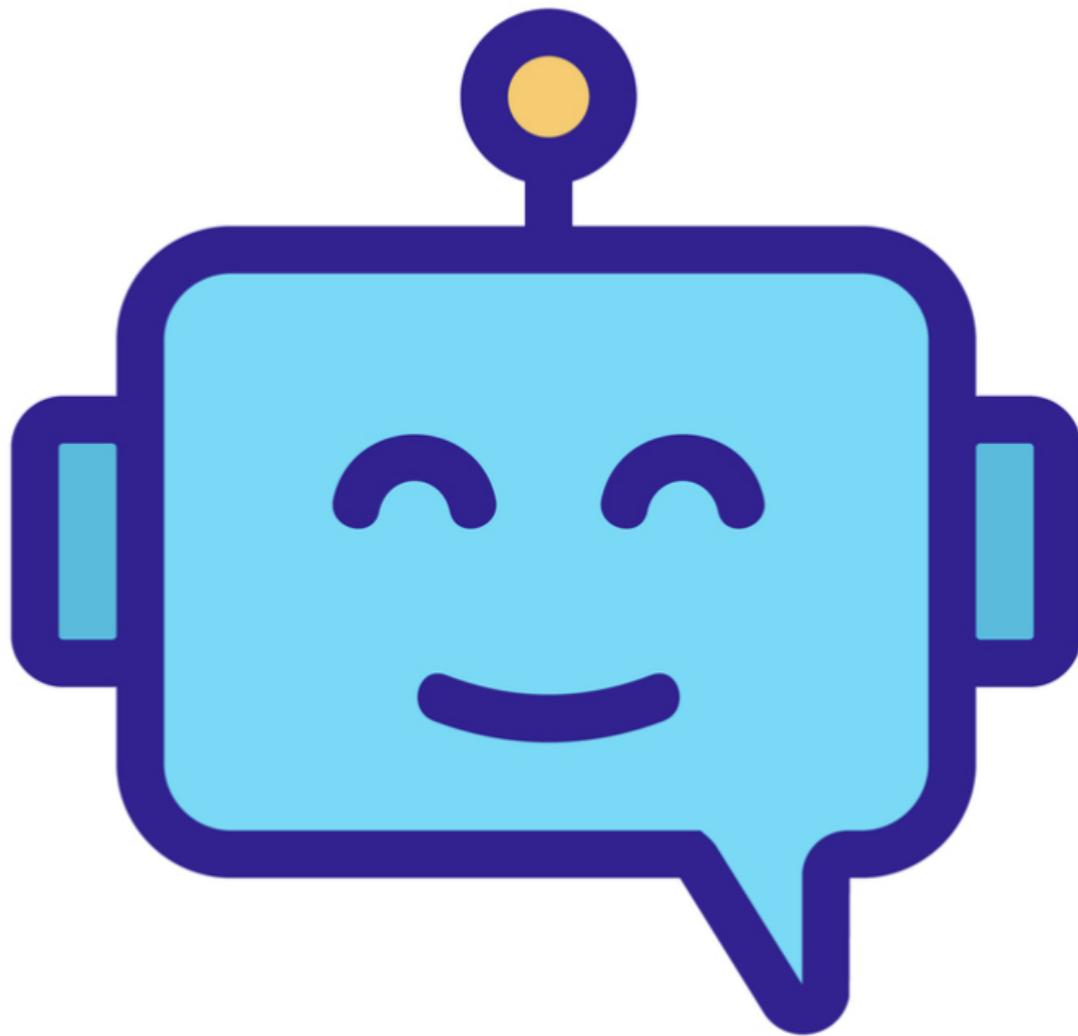
What is ChatGPT?

Traditional chatbots

- Predetermined responses
- Limited questions

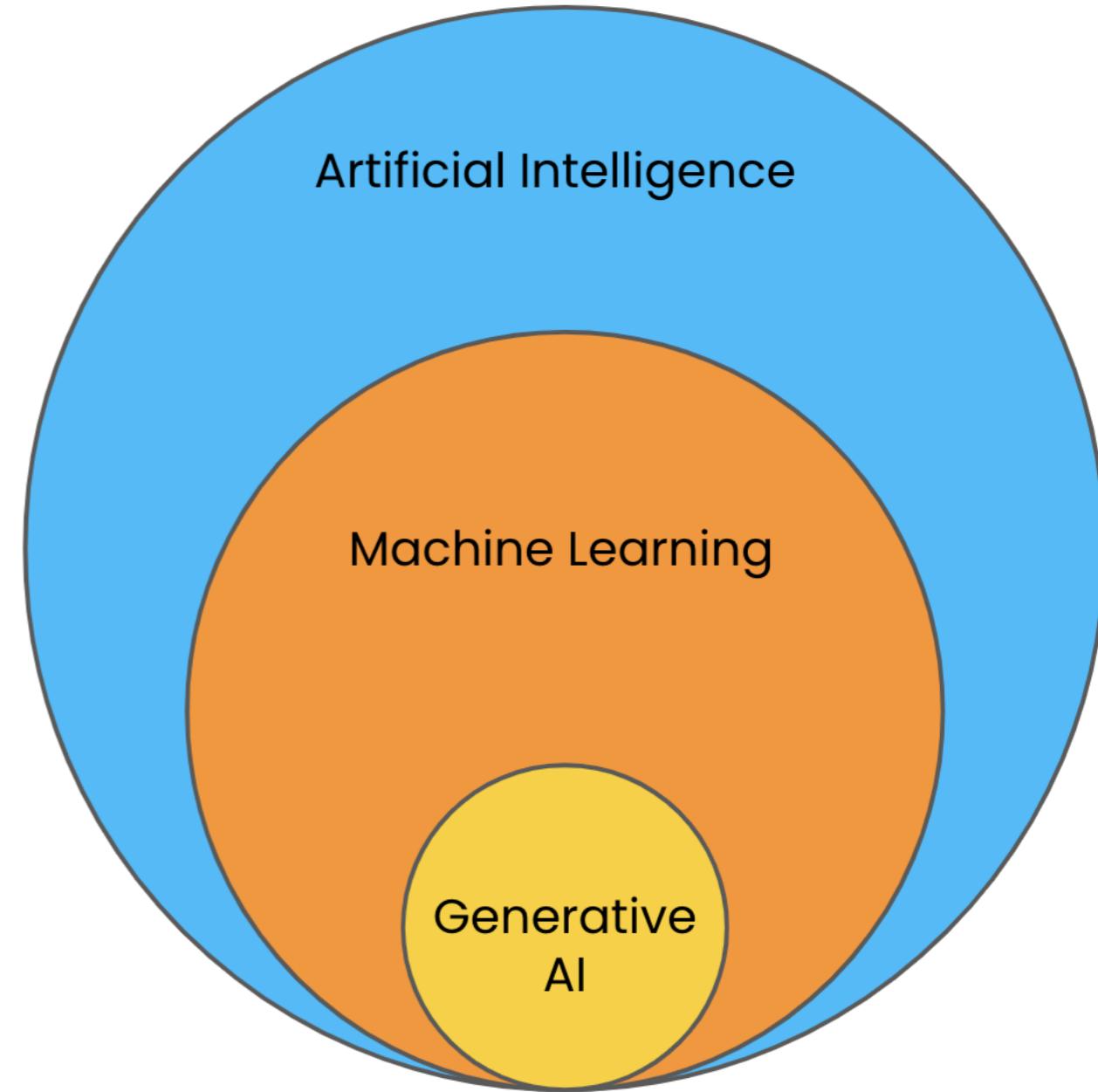
ChatGPT

- More generalizable
- Uses its *understanding of language* to interpret the question and respond
- Wide range of potential applications



Generative AI

- Subset of **AI and Machine Learning**
- Generates new content
- Uses patterns in information it has already seen



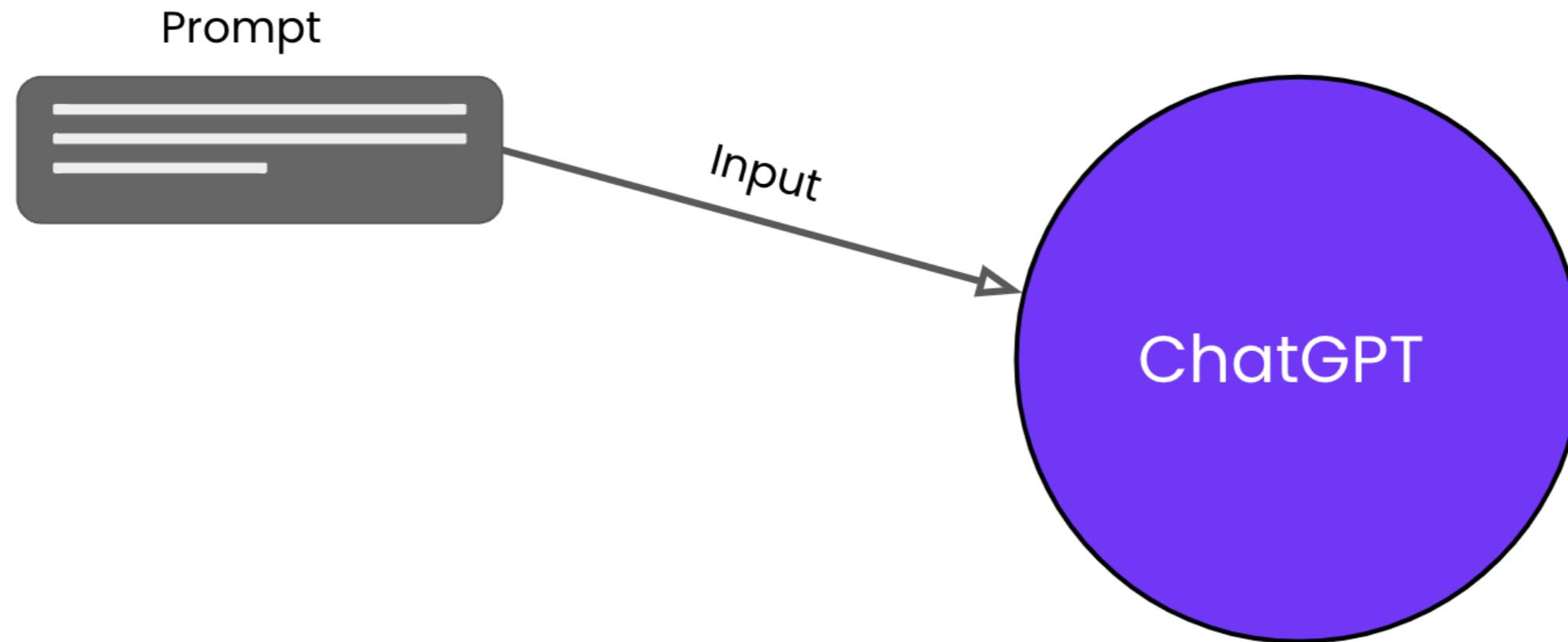
From prompt to response

Prompt



Step 1: User writes a question or instruction: *prompt*

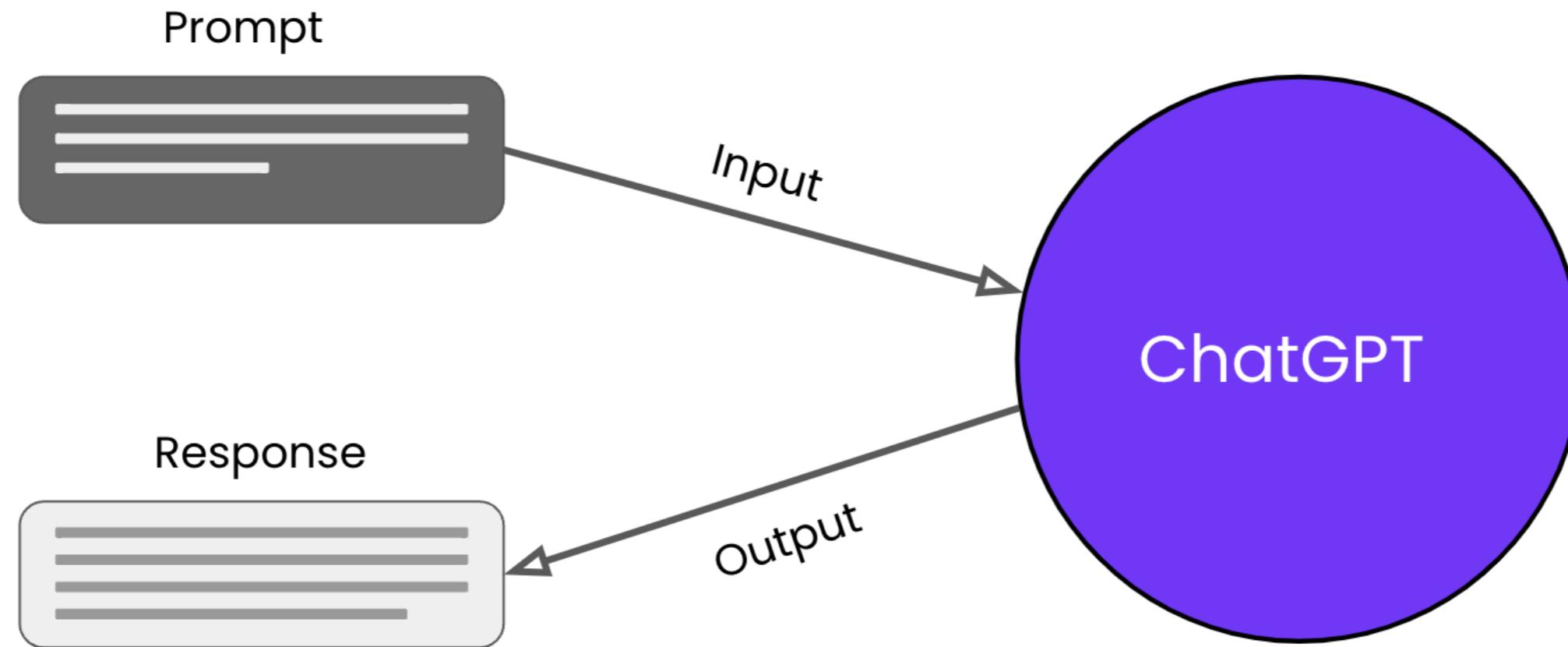
From prompt to response



Step 2: ChatGPT interprets the prompt

Step 3: Generates new, relevant language in response

From prompt to response



Step 4: Response is returned to the user

Summarizing text

- ChatGPT is great at **summarizing** text and **explaining** concepts
- *Save time* when summarizing reports
- Interpret complex information *more easily*





You

Explain generative AI in simple terms.



You

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ChatGPT

Generative AI is like a virtual artist that creates new things on its own, such as images, music, or even text, without directly copying existing examples. It learns patterns and styles from the data it's trained on and then uses that knowledge to come up with its own original creations. It's a bit like how a chef learns different recipes and then invents new dishes by combining ingredients in unique ways. Generative AI can be used for many cool things, like generating realistic-looking faces, composing music, or even writing stories. It's all about creativity and imagination, but powered by algorithms instead of human brains.



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You

Please reduce the summary to two sentences.



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You

Please reduce the summary to two sentences.



ChatGPT

Generative AI is like a virtual artist that creates new things, such as images or music, by learning patterns from existing data and generating original content. It uses algorithms to mimic human creativity and imagination, producing unique creations without direct copying.

Creating marketing content



You

Write a tweet encouraging people to acquire data literacy skills.

Creating marketing content



You

Write a tweet encouraging people to acquire data literacy skills.



ChatGPT

"📊 Unlock the power of data! 🔎 Whether you're a student, professional, or simply curious, investing in data literacy skills opens doors to better decision-making, deeper insights, and endless opportunities in our data-driven world.💡 #DataLiteracy #EmpowerYourself"



You

Write an Excel formula to calculate the daily profit from columns containing revenue and cost.



ChatGPT

To calculate the daily profit in Excel based on revenue and cost columns, you can use a simple formula. Assuming your revenue is in column A and your cost is in column B, and you want to calculate the profit in column C, you can use the following formula in cell C1 and drag it down:

Copy code

```
=A1 - B1
```

This formula subtracts the cost (B1) from the revenue (A1) for each row, giving you the profit for that day.

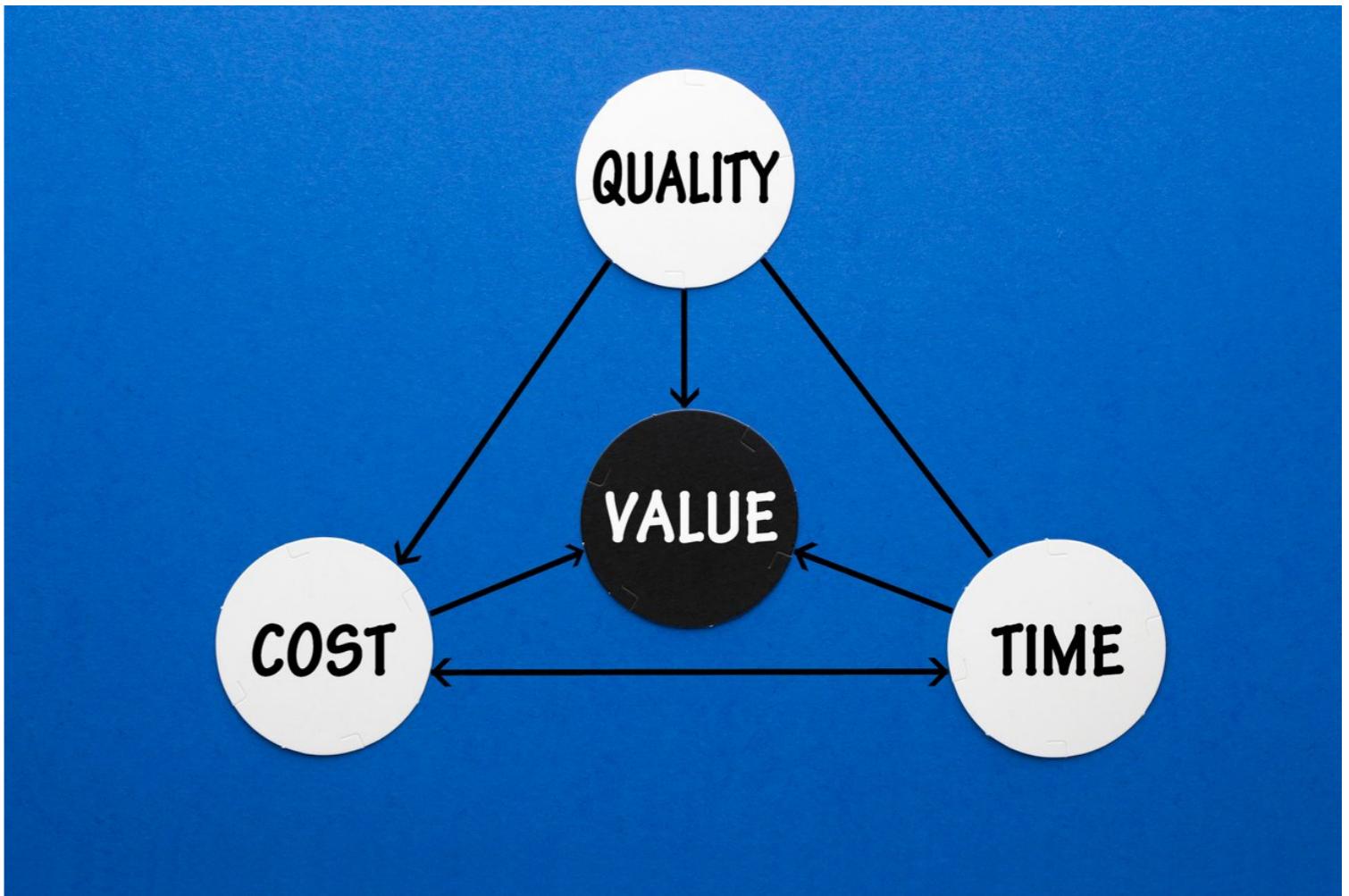
If you have headers in your columns, you can adjust the formula accordingly. For example, if your headers are in row 1, you could use:

Copy code

```
=A2 - B2
```

Why utilize ChatGPT?

- ChatGPT can perform many tasks with greater efficiency
- New workflow: AI → Human
- Save time and money
- Greater personalization



Let's practice!

UNDERSTANDING CHATGPT

Limitations of ChatGPT

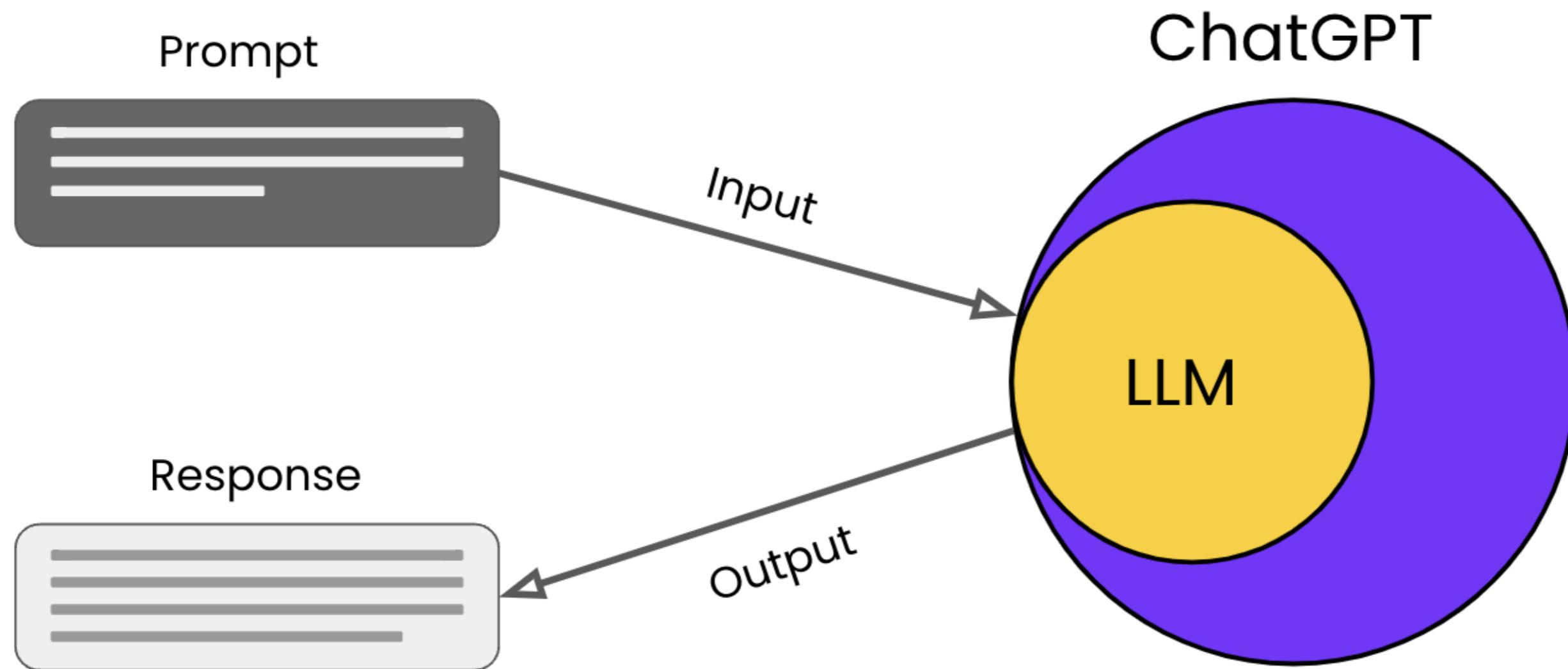
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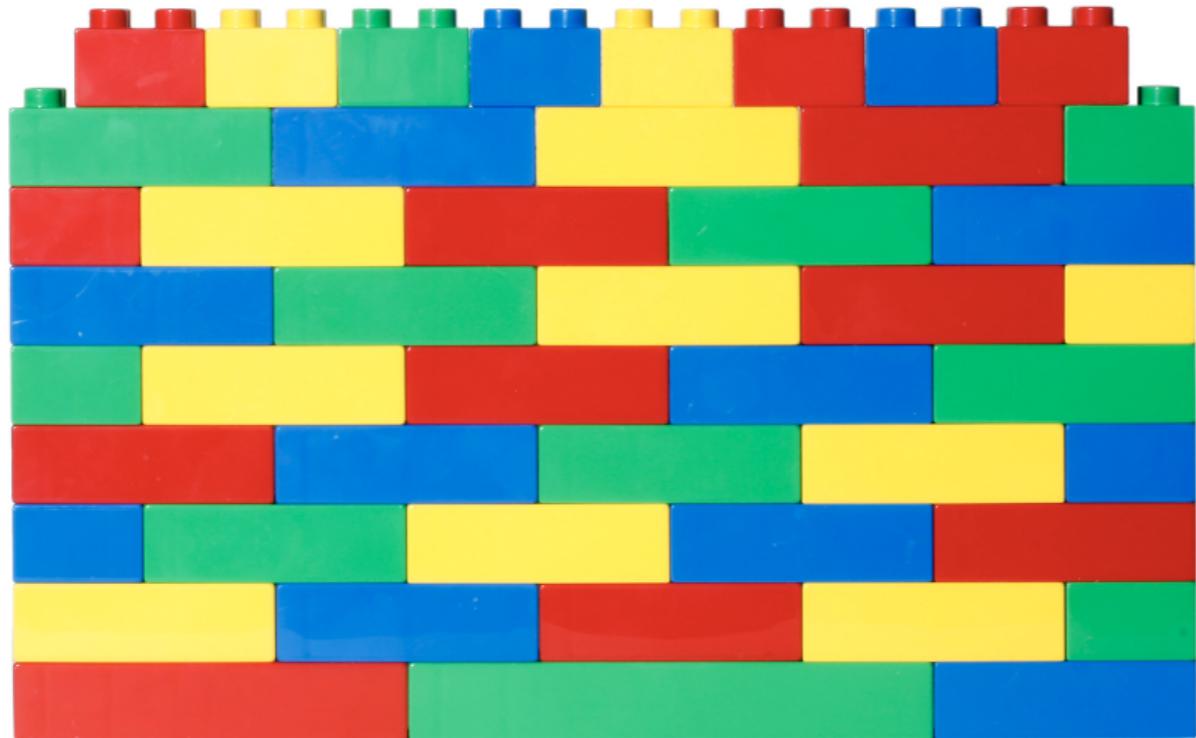
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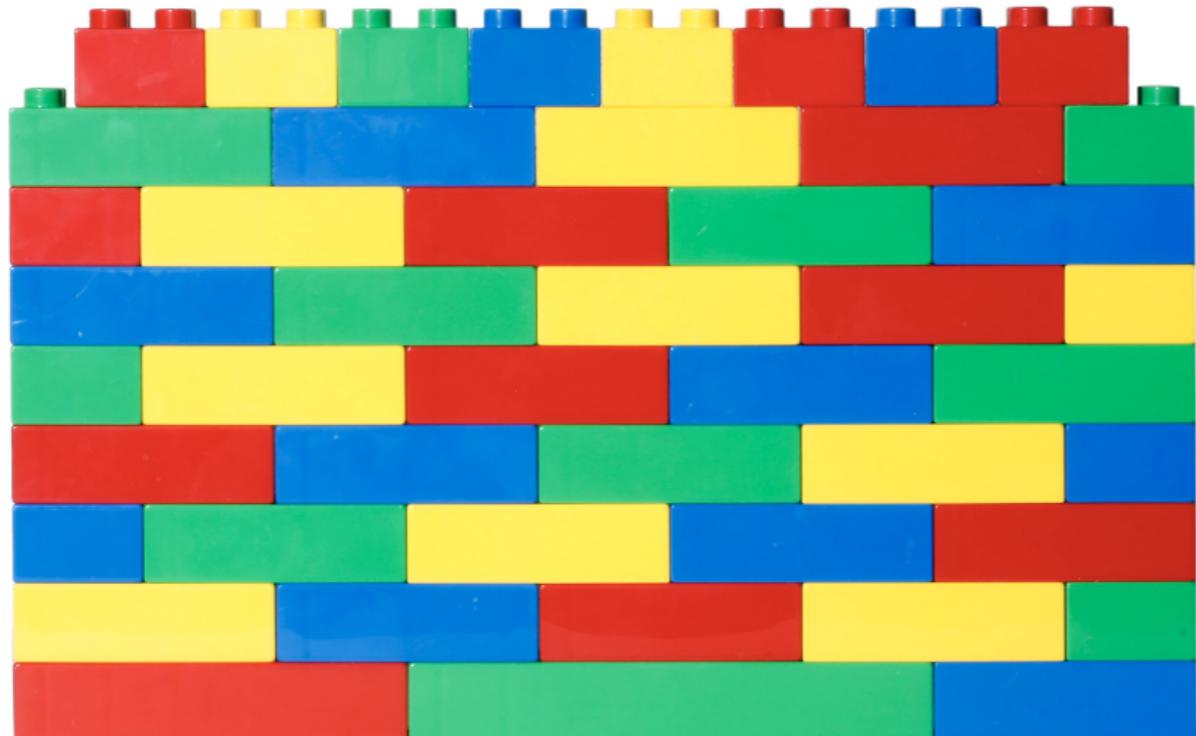
ChatGPT under the hood



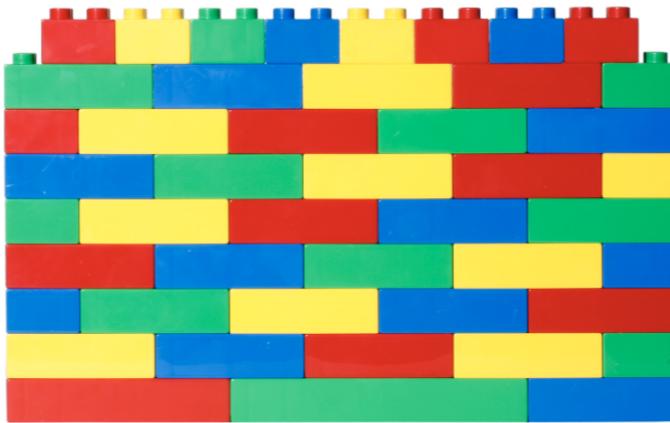
Demystifying the LLM



Demystifying the LLM

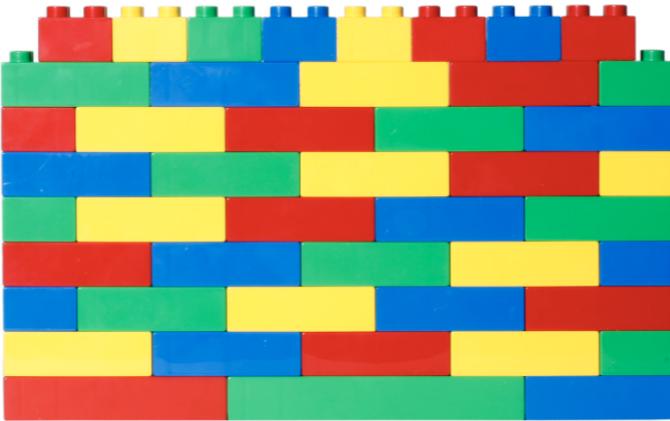


Demystifying the LLM



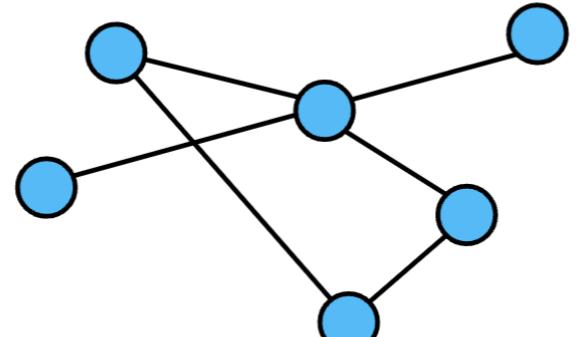
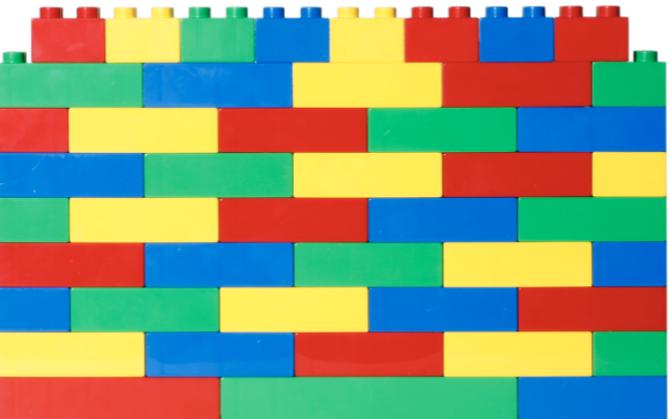
Demystifying the LLM

Training Data



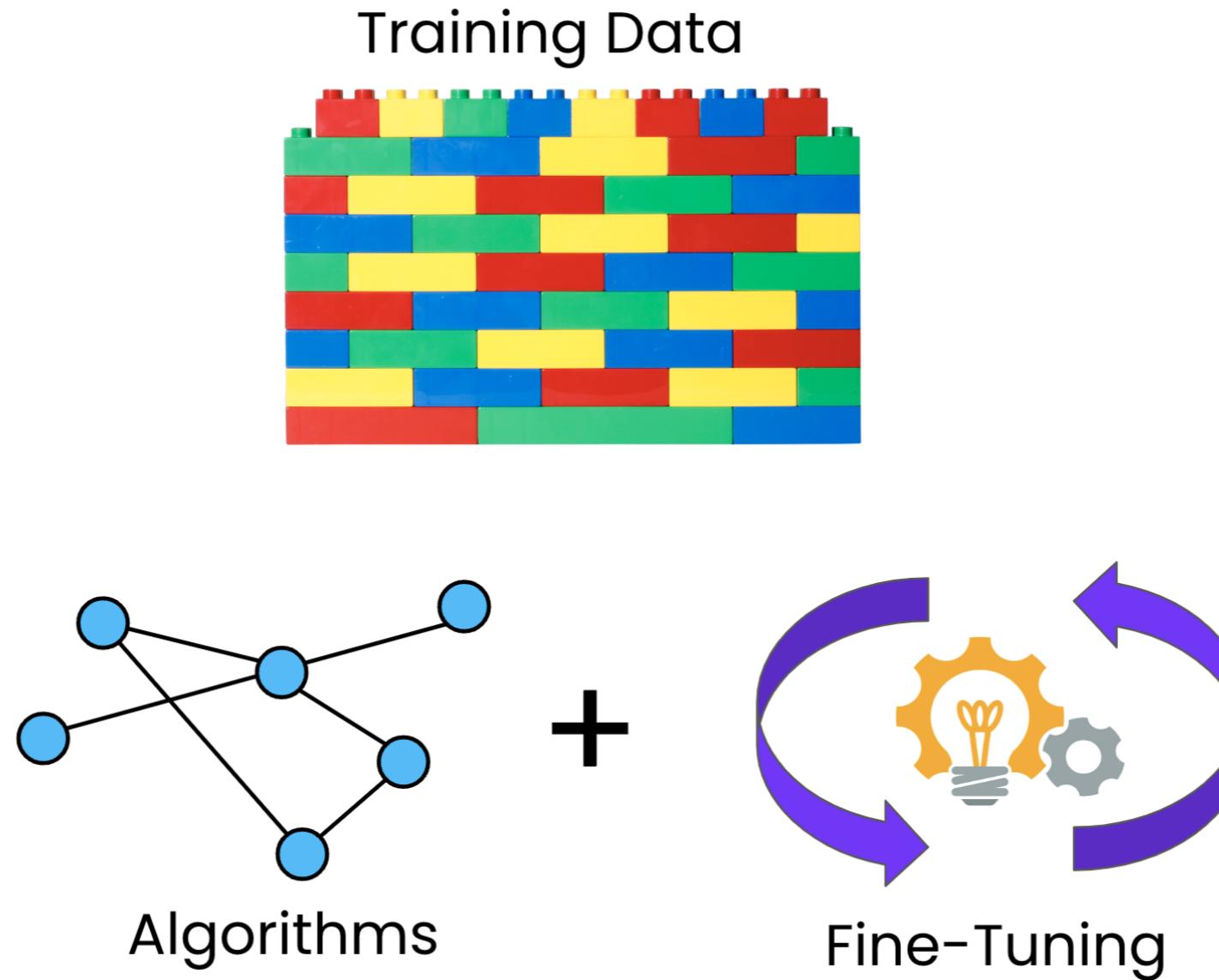
Demystifying the LLM

Training Data



Algorithms

Demystifying the LLM



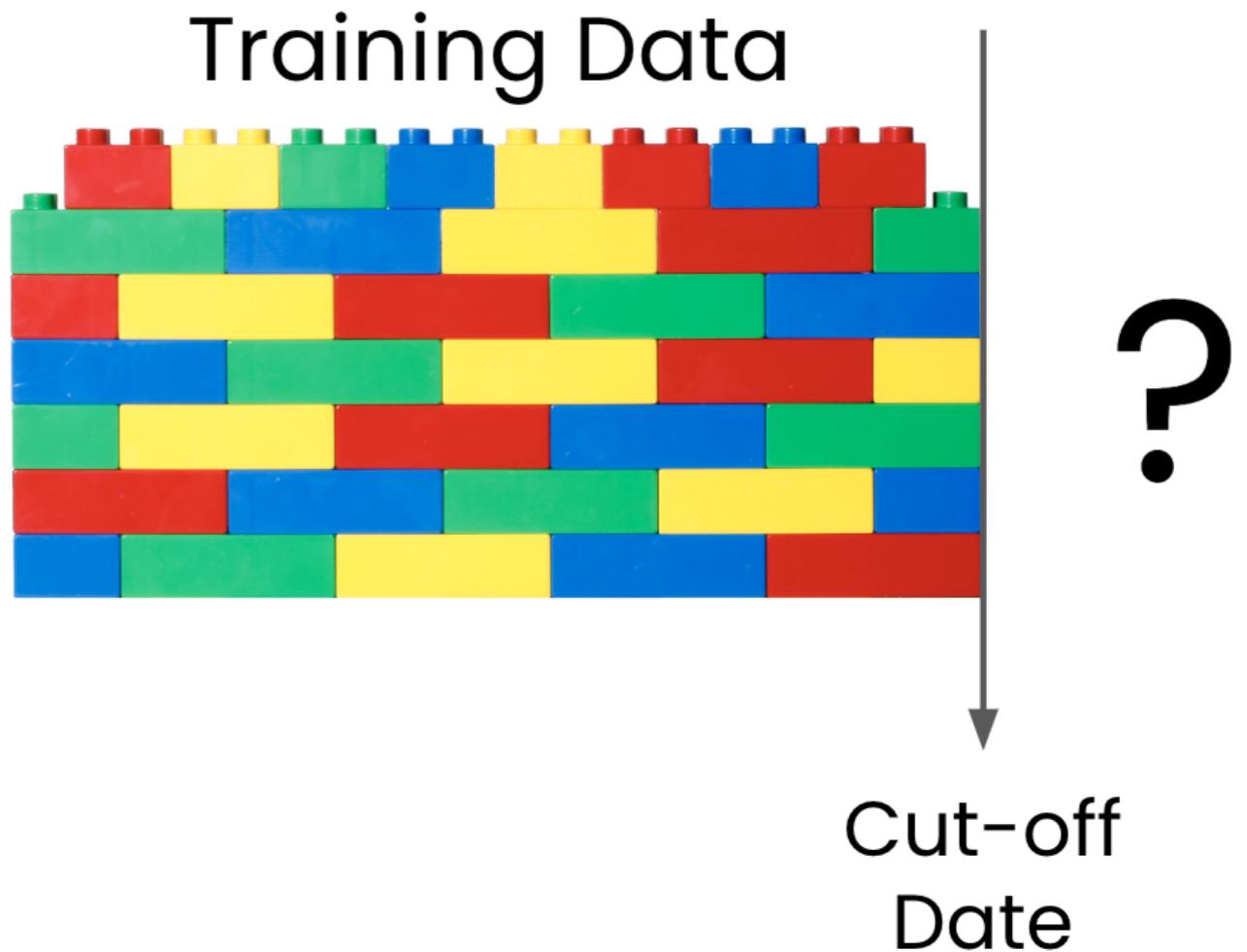
Demystifying the LLM

ChatGPT



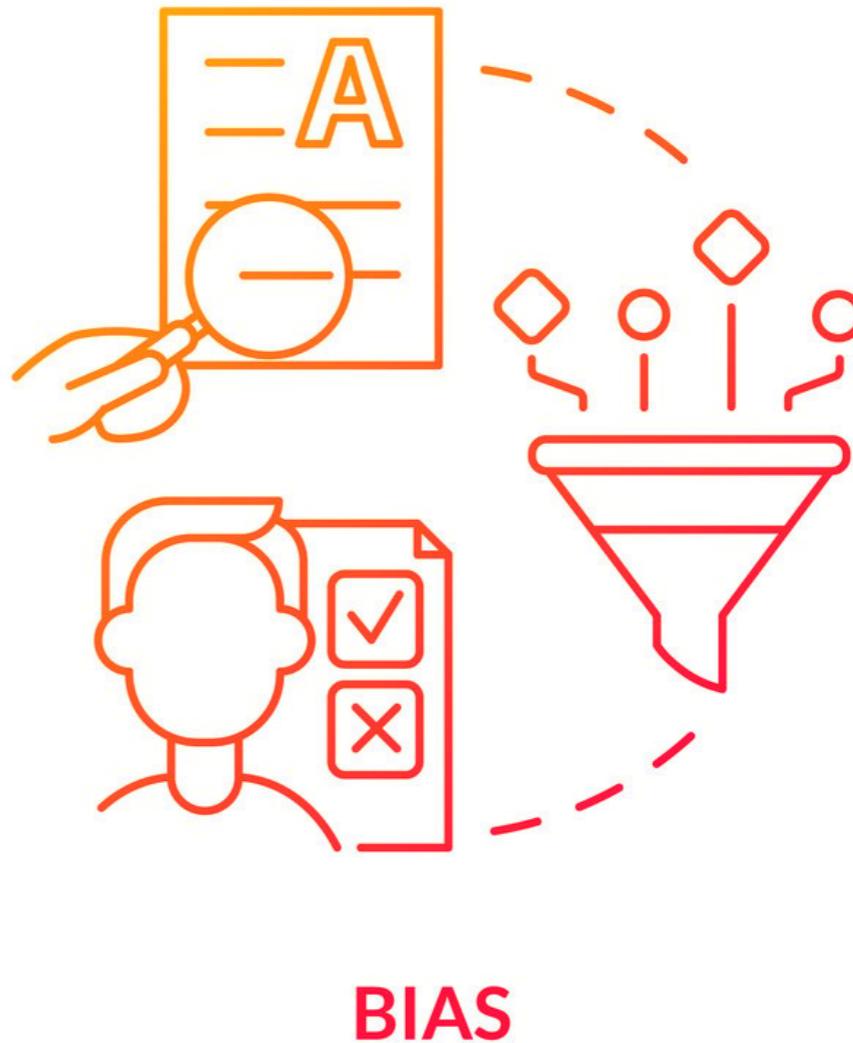
Limitation 1 - Knowledge cutoff

- Trained on data from up to a certain date:
 - GPT 3.5: January 2022
 - GPT 4: April 2023
- Isn't aware of events beyond this date

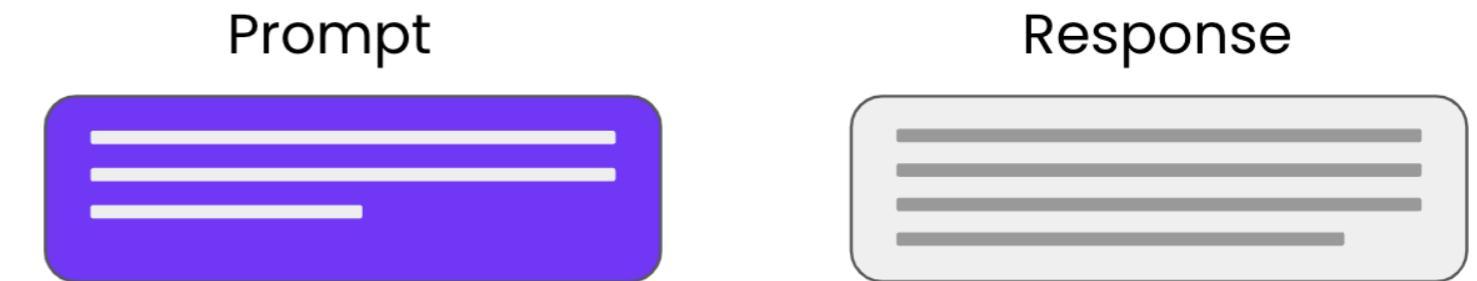


Limitation 2 - Training data bias

- ChatGPT was trained on a huge text dataset, including:
 - Books
 - Articles
 - Websites
- Model may learn the biases from the training data
- Could bias the responses



Limitation 3 - Context tracking



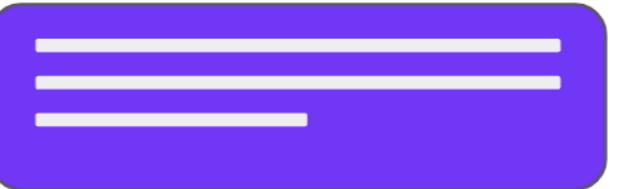
Limitation 3 - Context tracking



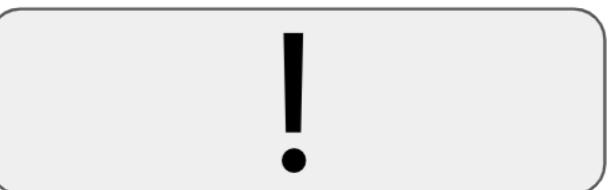
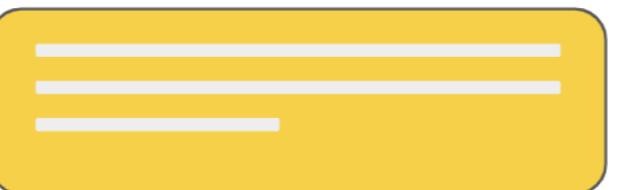
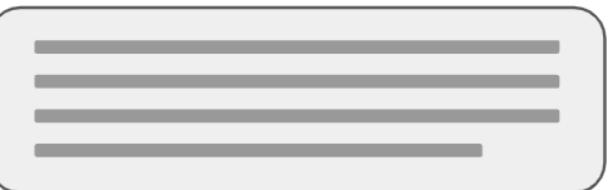
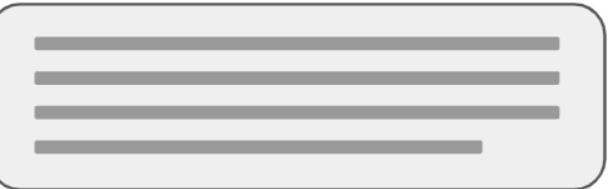
Limitation 3 - Context tracking

- Struggles to keep track of the context if the focus shifts
- Can lead to inaccurate or irrelevant results
- **Tip:** Keep conversations to a single topic

Prompt



Response



Limitation 4 - Hallucination

- Model confidently **provides inaccurate information**
- Often occurs when trying to go beyond the model's knowledge or abilities



¹ [https://en.wikipedia.org/wiki/Hallucination_\(artificial_intelligence\)](https://en.wikipedia.org/wiki/Hallucination_(artificial_intelligence))

Limitation 5 - Legal and ethical considerations

- **Example:** Creating a song in the style of an existing artist
 - Who owns the new song?



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?

Limitation 5 - Legal and ethical considerations

- Example: Creating a song in the style of an existing artist
 - Who owns the new song?



- Easy to fall into a legal gray area
- Ownership and privacy → Chapter 2



Let's practice!

UNDERSTANDING CHATGPT

Writing effective prompts

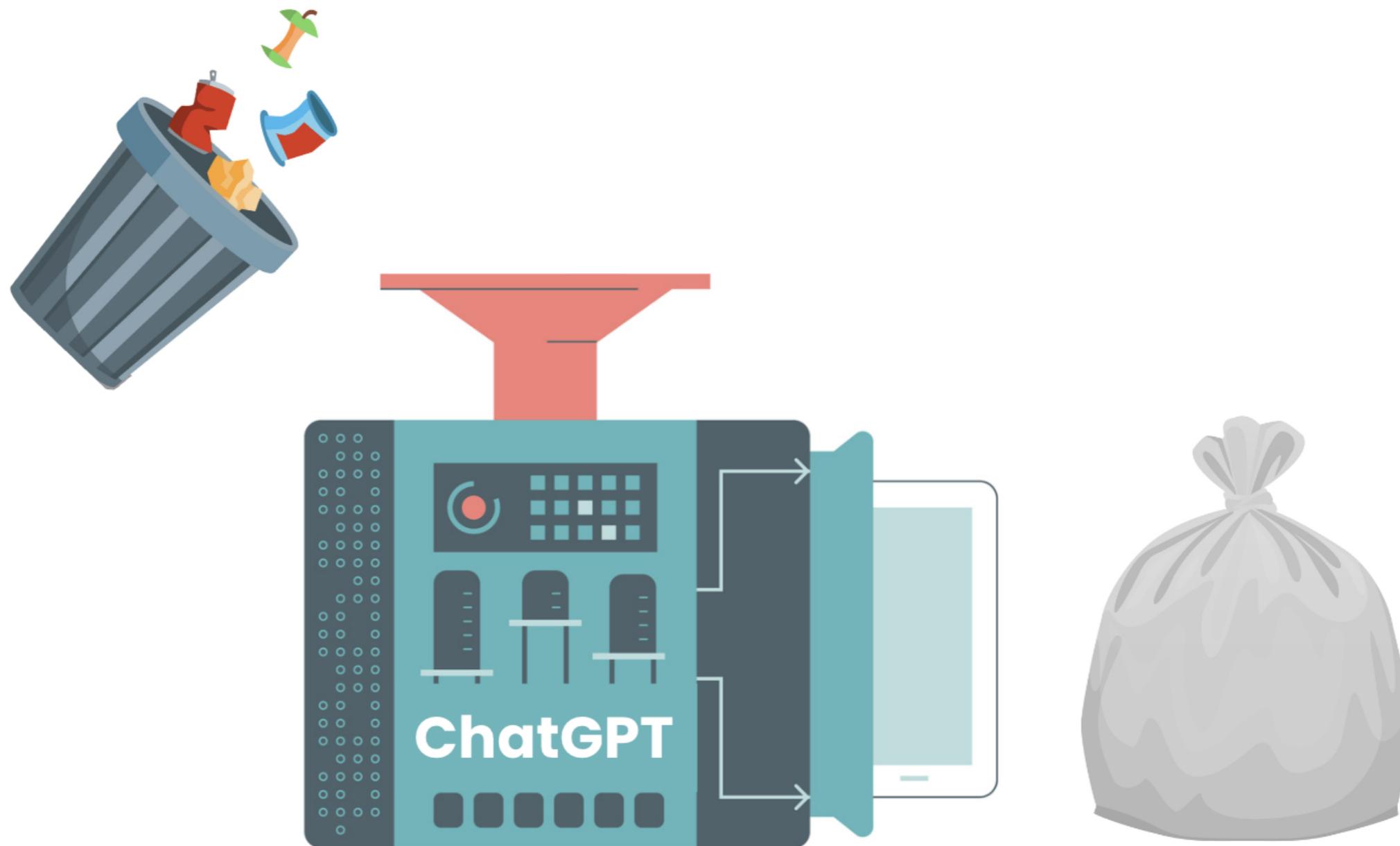
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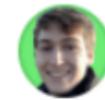
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Garbage in, garbage out



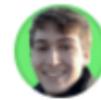
How does ChatGPT interpret a prompt?



You

Please write a job description for a data scientist based in New York.

How does ChatGPT interpret a prompt?



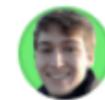
You

Please write a job description for a data scientist based in New York.

1. Identify the topic

Please write a **job description** for a **data scientist** based in **New York**.

How does ChatGPT interpret a prompt?



You

Please write a job description for a data scientist based in New York.

2. Understand the prompt

Please **write** a **job description** for a **data scientist** based in **New York**.

3. Generate response



You

Please write a job description for a data scientist based in New York.



ChatGPT

Job Title: Data Scientist

Location: New York, NY

About Us:

[Your Company Name] is a leading [industry type, e.g., financial services, healthcare, technology] firm based in New York. We leverage cutting-edge technology and data analytics to drive our mission of [brief description of mission, e.g., delivering innovative financial solutions, improving patient care, advancing technological boundaries]. Our team is composed of passionate professionals dedicated to making a significant impact through data-driven decisions and innovations.

Prompt engineering

- **Prompt engineering** is the process of writing prompts to maximize the *quality* and *relevance* of the response



Writing tips for prompt engineering

Be clear and specific

- Include any necessary information
- Example: in a summarizing task, specify the desired length



Keep it concise

- Remove any information that doesn't provide useful context

Use correct grammar and spelling

- ChatGPT uses grammar when interpreting the task

Provide examples if necessary...

- Can be a much *quicker* way of providing context

Example: Generating example customers

- Want the form:

Full Name, Age (Occupation)



You

Write a list of example names, ages, and occupations. For example, John Smith, 34 (Builder).



You

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ChatGPT

1. Emily Johnson, 28 (Graphic Designer)
2. Michael Chen, 45 (Software Engineer)
3. Sofia Martinez, 32 (Marketing Manager)
4. David Kim, 53 (Surgeon)
5. Aisha Patel, 26 (Elementary School Teacher)
6. Carlos Garcia, 39 (Real Estate Agent)
7. Jessica Li, 22 (Graduate Student)
8. Benjamin Wilson, 48 (Architect)
9. Priya Singh, 31 (Financial Analyst)
10. Andre Brown, 37 (Mechanical Engineer)

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