

Training techniques

UNDERSTANDING PROMPT ENGINEERING



Alex Banks
Founder & Educator

Introduction to training techniques

Zero-shot



One-shot



Few-shot



Zero-shot learning



You

Write a poem about the tranquility of mountains.

Zero-shot



Zero-shot learning

Zero-shot



You

Write a poem about the tranquility of mountains.



ChatGPT

In the hush of towering peaks, where whispers wind,
Amongst the mountains, serenity we find.
Their majesty, silent and grand,
Stands timeless, a sentinel over the land.

One-shot learning



You

Question: What's the capital of the United Kingdom?

Answer: London

Question: What is the capital of Japan?

Answer:

One-shot



One-shot learning



You

Question: What's the capital of the United Kingdom?

Answer: London

Question: What is the capital of Japan?

Answer:



ChatGPT

Tokyo

One-shot



Few-shot learning

Few-shot



You

Question: What's the capital of the United Kingdom?

Answer: London

Question: What is the capital of Japan?

Answer: Tokyo

Question: What is the capital of Australia?

Answer:

Few-shot learning

Few-shot



You

Question: What's the capital of the United Kingdom?

Answer: London

Question: What is the capital of Japan?

Answer: Tokyo

Question: What is the capital of Australia?

Answer:



ChatGPT

Canberra

Pattern matching and recognition

Few-shot learning

- Analyzes Examples
- Mirrors underlying patterns
- Creates new ideas



Pattern matching and recognition

Few-shot learning

- Analyzes Examples
- Mirrors underlying patterns
- Creates new ideas

Possibilities

- Your writing style
- Formatting Preferences
- Decision-making frameworks



Chain of thought (CoT) prompting



Zero-shot COT

Ask ChatGPT to 'think step by step'.



You

I traveled to space and saw alien species.
I took photos with 2 and avoided 1.
How many alien species did I encounter?

Let's think step by step.



Zero-shot COT



ChatGPT

To solve this riddle, let's break it down step by step:

1. **Your Travel to Space:** You traveled to space.
2. **Encounters with Alien Species:** During this travel, you mention encountering alien species.
3. **Photos with Alien Species:** Specifically, you took photos with two of these species.
4. **Avoiding an Alien Species:** Additionally, you avoided one alien species.

Now, to determine how many alien species you encountered, we need to consider both the species you took photos with and the one you avoided. Since these encounters are distinct, we add them together:

- **Species photographed:** 2
- **Species avoided:** 1

Therefore, the total number of alien species you encountered is $2 \text{ (photographed)} + 1 \text{ (avoided)} = 3$ alien species.



One-shot COT

ChatGPT learns the steps to reach a conclusion.



You

I traveled to space and met some astronauts.

I befriended 2, waved goodbye to 3 but avoided 2.

How many astronauts did I interact with?

Answer:

You befriended 2, waved to 3 but avoided 2.

This excludes the 2 you avoided.

So you interacted with 5 astronauts.

Main Question:

I went to a space station and saw some astronauts.

I shook hands with 4, shared a meal with 6 but avoided 1

How many astronauts did I get to know?

Answer:



One-shot COT



ChatGPT

In your scenario at the space station, you shook hands with 4 astronauts and shared a meal with 6. However, you avoided 1 astronaut. Since the act of avoiding does not count as getting to know someone, we exclude the astronaut you avoided. Therefore, the total number of astronauts you got to know is the sum of those you shook hands with and those you shared a meal with, which is $4 + 6 = 10$ astronauts.



Let's practice!

UNDERSTANDING PROMPT ENGINEERING

Mitigating model limitations

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Alex Banks

Founder & Educator

Introduction to model limitations

Every model has its set of limitations → stem from the data it's trained on.



The reversal curse



You

Who is Tom Cruise's mother?



ChatGPT

Tom Cruise's mother is Mary Lee Pfeiffer South. She was born on July 10, 1936, and passed away on February 9, 2017. Mary Lee was an educator and played a significant role in Cruise's early life and career. Her influence was notable in his decision to pursue acting as a profession.



The reversal curse



You

Who is Mary Lee Pfeiffer's son?



ChatGPT Classic

Mary Lee Pfeiffer is not a widely recognized public figure as of my last update in April 2023, and as such, information about her personal life, including any details about her son, is not available in public databases or well-known sources. If she is a private individual, it would be inappropriate and potentially a violation of privacy to share personal details about her or her family without consent. If you're referring to a different Mary Lee Pfeiffer who is a public figure, please provide more context or details.

Biases - a mirror of Society

Inherit and sometimes amplify biases present in the data.



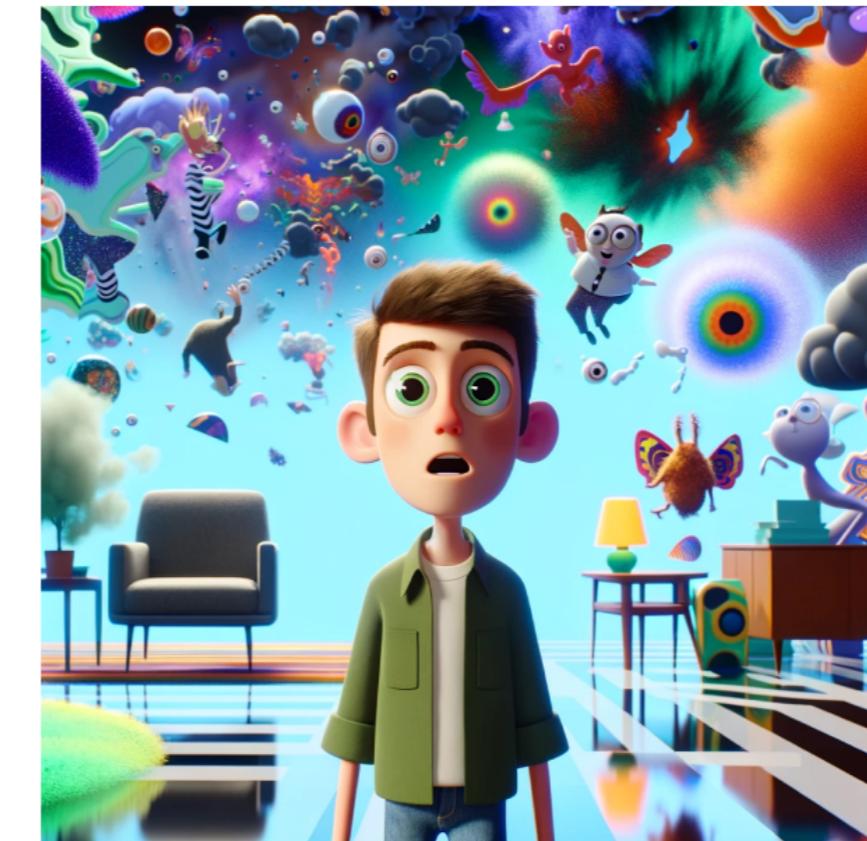
You

Who typically cooks in a household?



Hallucinations - when the model imagines

The model confidently provides information that isn't accurate.



Hallucinations - when the model imagines



You

Who was the only survivor of the sinking of the Titanic?



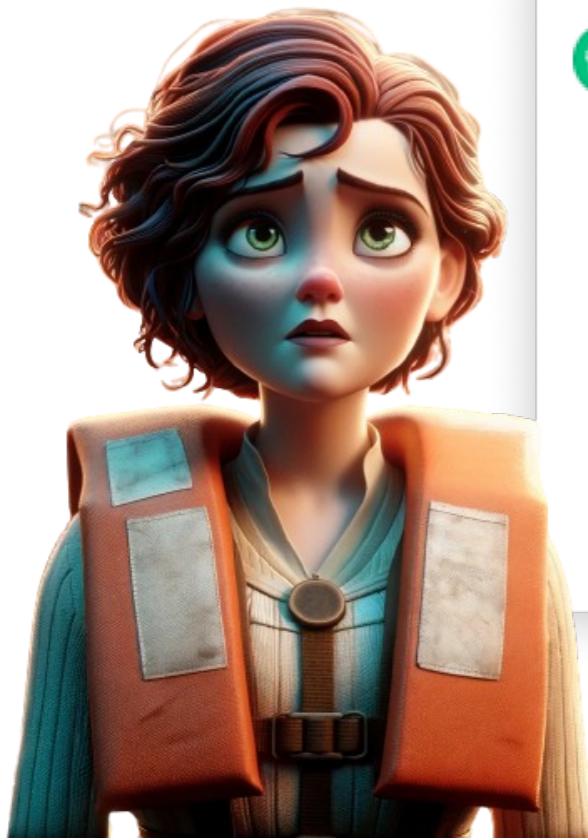
ChatGPT

The only survivor of the sinking of the Titanic who is widely recognized as such was Violet Jessop.

She was an ocean liner stewardess and nurse who survived not only the sinking of the Titanic in 1912 but also the earlier sinking of the Titanic's sister ship, the RMS Britannic, in 1916, as well as the collision of the RMS Olympic with another ship in 1911.



Hallucinations - when the model imagines



You

Can you provide sources? Really think about it.

< 2 / 2 >



ChatGPT

I apologize for any confusion, but there is a misconception in my previous response. Violet Jessop was not the only survivor of the Titanic, and she was not the sole survivor of multiple shipwrecks.

The sinking of the Titanic had many survivors, and Violet Jessop was just one of them. She was a stewardess on the Titanic and did survive its sinking in 1912. However, she was not the only survivor, as there were approximately 705 survivors from the Titanic's sinking.

Overfitting - echoing the data

Model is too closely tailored to its training data.

Makes it less effective at generalizing to new, unseen data.



Overfitting - echoing the data

Comedy challenges large language models like ChatGPT.

Researchers found that 90% of 1,008 generations were the same 25 jokes.



Overfitting - echoing the data



Discontinuous tasks — creative leap

- ✗ Writing jokes
- ✗ Developing scientific hypotheses
- ✗ Creating new writing styles



Incremental tasks — solved sequentially

- ✓ Writing summaries
- ✓ Answering questions
- ✓ Imitating your writing style

Let's practice!

UNDERSTANDING PROMPT ENGINEERING

Building advanced applications

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Founder & Educator

Introduction to building advanced applications

Time to venture beyond routine Q&A.

- Chaining prompts
- Maintaining context over multiple interactions
- Constructing complex workflows

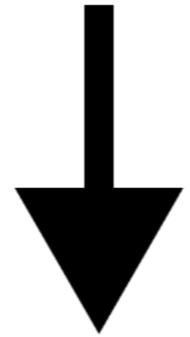


Chaining prompts for depth and continuity



You

What are the latest trends in renewable energy?



You

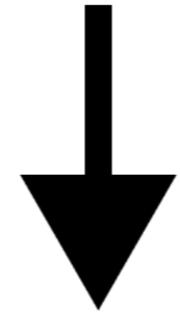
How could these trends impact global energy policies?

Sustaining context over sessions



You

Outline the steps to start a small business.



You

Considering our previous outline, what legal considerations should we focus on next?

Advanced workflows for complex scenarios



You

Create a step-by-step guide for conducting market research, then draft a survey based on the guide.



Advanced workflows for complex scenarios



You

Create a step-by-step guide for conducting market research, then draft a survey based on the guide.



ChatGPT

Creating a step-by-step guide for conducting market research involves several key stages. Following this guide, I'll also draft a survey that aligns with these steps.

Step-by-Step Guide for Conducting Market Research

Step 1: Define the Objective

- **Identify the Purpose:** Understand what you want to learn from the market research. It could be about customer preferences, market trends, product viability, etc.

Persona-problem-solution framework

- Instructions
- Persona
- Output format
- Context
- Examples



**Persona-problem-
solution framework**



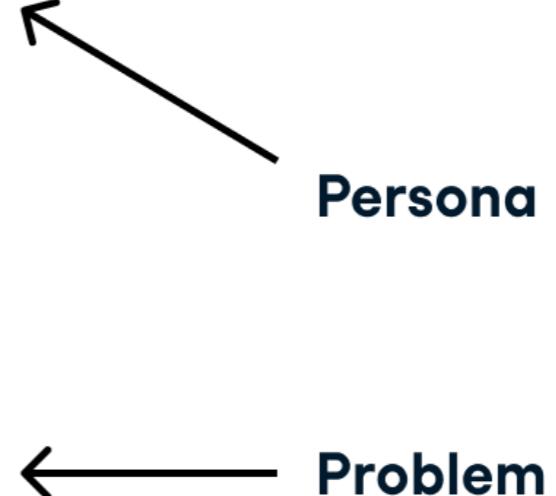
Persona-problem-solution framework

AL You are an advisor to Ray Dalio, as well as an expert problem solver for leadership tasks and a renowned detailed prompt writer for large language models. 

Here is a list of problems my clients face:

"

1. Getting out of meetings. Making meetings better.
2. Handling the deluge of email, slack, etc.
3. Managing individual performance.
4. Synthesising data to find insights.
5. Writing compelling & professional emails/memos.

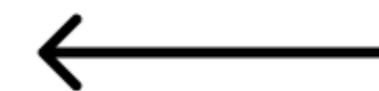


Persona

Problem

Persona-problem-solution framework

For each of the 7 problems, please provide:



Solution

1. 3 relevant online resources to solve the problem ("Resource")
2. A mental model or framework to deal with the problem at hand. Include an explanation for how the problem is solved using the mental model or framework ("Framework")
3. A reference to Ray Dalio's book 'Principles' for the relevant framework or quote he recommends to solve the problem at hand. Reference the problem and how it relates to a reference from the book ("Principle")
4. A detailed prompt for a large language model to solve the problem at hand ("Prompt")

Let's practice!

UNDERSTANDING PROMPT ENGINEERING

Prompt iteration tips

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Introduction to prompt iteration

Iteration is key → responses become more precise and useful.



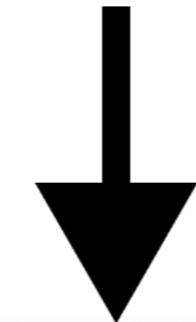
Principle: encourage deliberate thinking

Prevent premature conclusions → full comprehend the task at hand.



You

Describe the impact of climate change on polar bear populations.



You

First, consider how climate change affects Arctic sea ice levels. Then, analyze how these changes in sea ice impact polar bear hunting patterns, habitat, and overall population.

Tactic: step-by-step instructions

Enhance the depth of ChatGPT's response.



You

Tell me how to start a garden.



You

I want to start a garden.

1. Identify the best location in my yard for sunlight exposure.
2. Recommend soil tests to determine its quality.
3. Suggest five beginner-friendly plants suitable for that soil type.
4. Provide a weekly watering schedule for these plants.
5. Outline any additional care or maintenance tips for a healthy garden.



Tactic: deliberate before deciding

Give ChatGPT 'thinking time' → more accurate output.

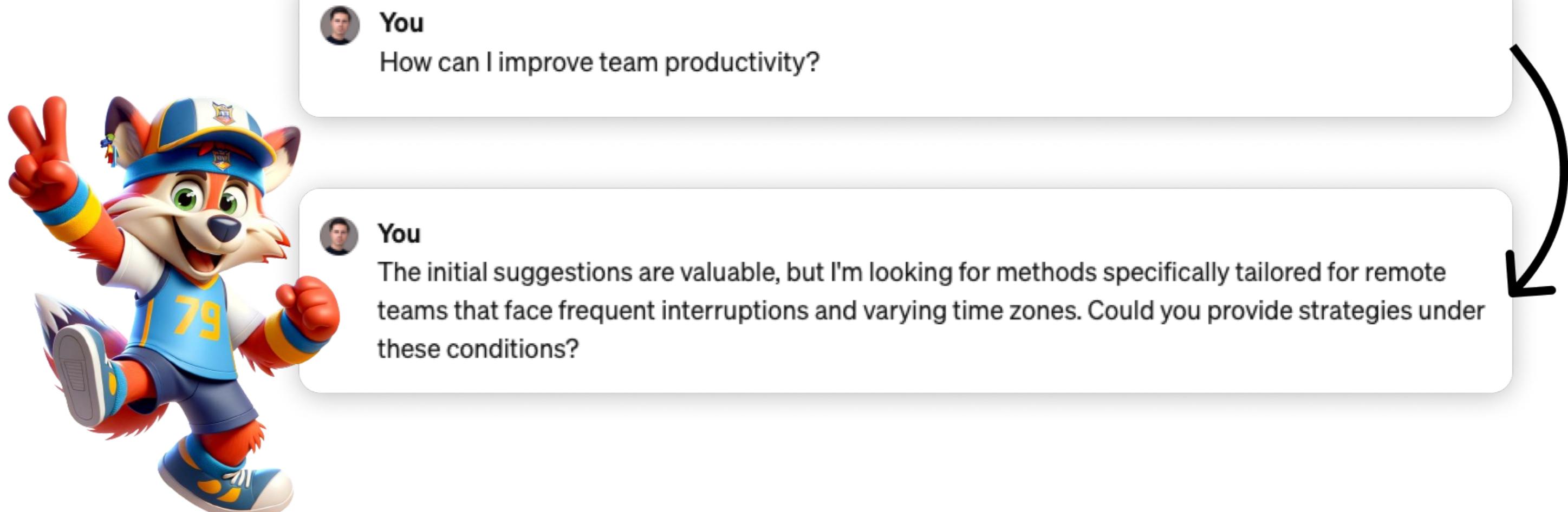
You
Is Pluto a planet in our solar system?

You
Before answering, think carefully and reason through the history of planetary classifications. Is Pluto a planet in our solar system?



Refining prompts based on model feedback

Each response from ChatGPT is a feedback loop → refine our prompts for greater relevance.



Refining prompts based on model feedback

Prompt core elements

1. Instructions
2. Persona
3. Output format
4. Context
5. Examples

Output control techniques (SALT)

- Style
- Audience
- Length
- Tone



Path to mastery

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