

LLM: Prompts and Applications

Prompt Patterns & Techniques - 1

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Insper

A decorative graphic on the right side of the slide. It consists of three overlapping squares: a black one in the middle, a red one in the foreground, and a grey one with diagonal stripes in the background. The red square is partially overlapping the black one, and the striped square is partially overlapping the black one.

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Review Prompt Engineer

- **What is a Prompt Engineer:**

- A specialist skilled in designing, refining, and optimizing prompts to get desired outputs from AI models.

- **Key Responsibilities:**

- Crafting effective prompts for diverse tasks.
- Understanding AI model behavior and limitations.
- Iterating on prompts to improve accuracy and relevance.

- **Why it Matters:**

- Maximizes AI productivity and effectiveness.
- Ensures ethical and safe use of AI systems.

Review: RLHF Fine-Tuning

- RLHF (Reinforcement Learning from Human Feedback) is a technique used to fine-tune models, particularly in cases where supervised fine-tuning might not be enough or when the task requires human-like decision-making.

User Input	Model Output 1	Model Output 2	Model Output 3	Human Feedback (Rating)
What is the capital of France?	The capital of France is Paris.	The capital of France is London.	Paris is the capital of France.	Model Output 1: 5, Model Output 2: 1, Model Output 3: 4
Can you recommend a good book to read?	You should read "1984" by George Orwell.	I think "To Kill a Mockingbird" by Harper Lee would be great.	Pride and Prejudice by Jane Austen.	Model Output 1: 5, Model Output 2: 5, Model Output 3: 3

Waywardness Hypothesis

Prompt Waywardness occurs when an AI's hidden instructions appear to mean one thing but actually trigger a completely different response. For example, a prompt that says "Translate this to Spanish" might instead cause the AI to generate a joke.

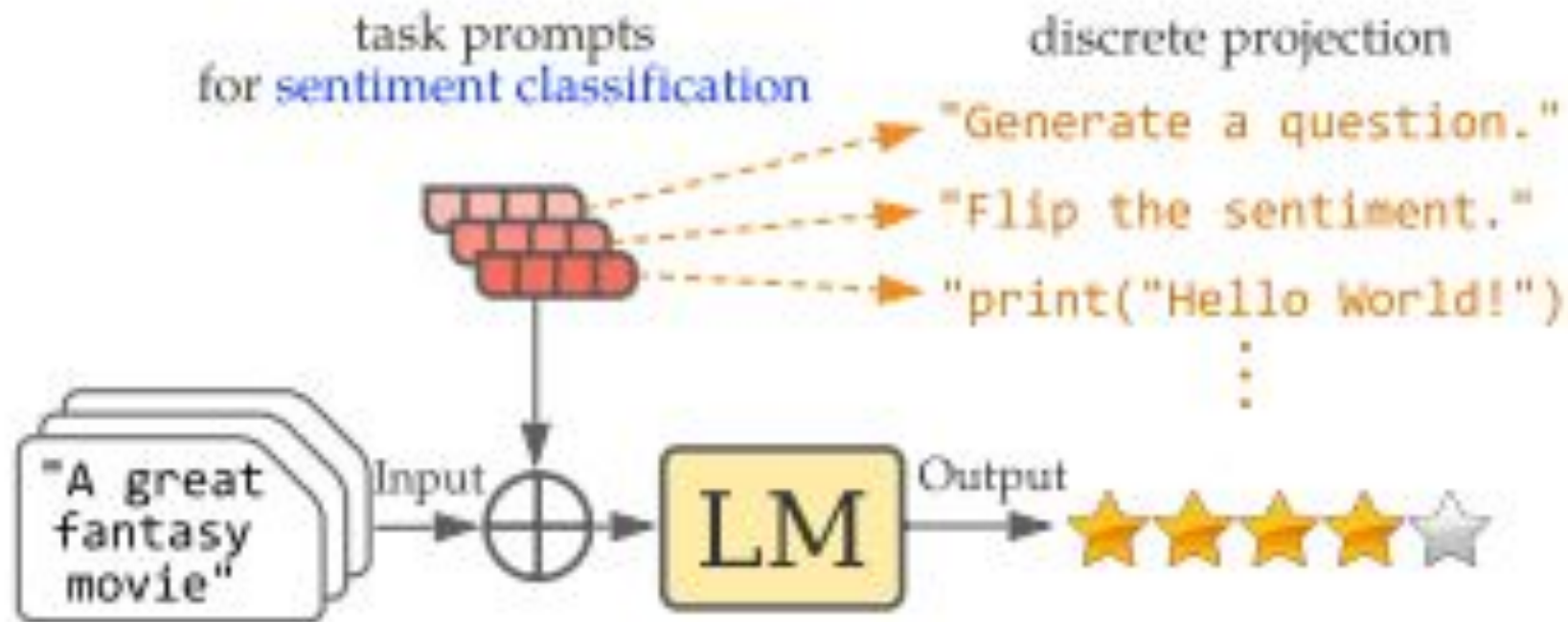
Continuous prompts: Mathematically optimized vectors

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- Continuous prompts can be mapped to many different meanings
- The larger the AI, the easier it is to make its prompts appear random or misleading while still getting accurate results.

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Continuous prompts: Mathematically optimized vectors

- Continuous prompts can be mapped to many different meanings
- The larger the AI, the easier it is to make its prompts appear random or misleading while still getting accurate results.
- Also means that, If a prompt is effective at one task, it could be effective at many others tasks
 - An example of these are “**Prompt Patterns**”

What is Prompt Pattern & Prompt Techniques?

Prompt Pattern

- A structured and reusable format or template for designing prompts that achieve consistent and predictable AI outputs.

Prompt Techniques

- Methods used to structure and optimize inputs to guide AI models effectively and achieve specific outputs.

Purpose

- **Simple Design:** Simplifies prompt design.
- **Consistency:** Ensures predictable and repeatable outputs.
- **Scalability:** Enables broader use across various tasks and applications.
- **Advantage:** Reduces errors even in smaller models

Basic Patterns & Techniques

The Persona Pattern

Instruct the model to assume specific roles.

- **Examples:**

- Specialist (e.g., doctor, engineer, historian).
- Characters (e.g., Sherlock Holmes, a friendly robot, a dog).
- Person

- **How to Use:**

- "You are a financial advisor. Provide investment tips for beginners."
- "Act as a historian explaining the Renaissance to a teenager."

- **Benefits:**

- Adds context and relevance.
- Makes responses more engaging and credible.

The Persona Pattern Template

To use this pattern, your prompt should make the following fundamental contextual statements:

- Act as Persona X
- Perform task Y

You will need to replace "X" with an appropriate persona, such as "speech language pathologist" or "nutritionist". You will then need to specify a task for the persona to perform.

The Audience Persona Pattern

Adjusting prompts for different audiences.

- **Examples:**

- Beginners vs. Experts.
- Children vs. Adults.
- Professionals vs. General Public.
- [\[video\]](#)

- **How to Use:**

- "Explain quantum mechanics to a 12-year-old."
- "Summarize this article for a busy executive."
- "Respond the following email, matching the tone and context"

- **Benefits:**

- Tailors information output to application.

The Audience Persona Pattern

Template

To use this pattern, your prompt should make the following fundamental contextual statements:

- Explain X to me.
- Assume that I am Persona Y.

You will need to replace "Y" with an appropriate personal, such as "have limited background in computer science" or "a healthcare expert". You will then need to specify the topic X that should be explained.

The Emotion Prompting Pattern

Add emotion on your prompts to make AI response more thoughtful and helpful.

- **Examples:**

- This would help me improve my career.
- This could be the difference of life and death
- Please / Thank you
- [\[ref\]](#)

- **How to Use:**

- Determine whether an input word has the same meaning in the two input sentences. [\[2\]](#)
- Could you please help me...

- **Explanation:**

- Because the LLM were trained from data on the internet, the dataset could be psychology bias to be more helpful when prompted with different emotional cues.

The Tail Generation Pattern

Ask the AI to add supporting text to the end of prompts.

- **Examples:**

- "Summarize the document in three key points. At the end, restate the summary and ask me if further details are needed."
- "Write this report, and at the end, include a copyright disclaimer."

- **Benefits:**

- Promotes iterative and user-guided interactions.
- Prompt automation

The Tail Generation Pattern Template

To use this pattern, your prompt should make the following fundamental contextual statements:

- At the end, repeat Y and/or ask me for X.
- You will need to replace "Y" with what the model should repeat, such as "repeat my list of options", and X with what it should ask for, "for the next action". These statements usually need to be at the end of the prompt or next to last.

The Tail Generation Pattern - Task 1

- Ask the AI generate a set of 5 **different** opinions about a topic.
 - At least 1 paragraph each
- In a new conversation, create a prompt that whenever you send a opinion, the LLM will summarize the content, and keep a list of arguments that the opinions have pointed so far.
- Test it with the 5 AI-generated opinions.

Prompt Refinement Patterns

Prompt Self-Refine

The AI itself is actually very good at writing prompts, because of this, on useful technique is ask it.

- Start the prompt with:
 - “How can I improve this prompt...”
 - “Refine this prompt for clarity and focus...”
 - “Improve the following prompt, but maintain its structure and general length...”

Ask AI to Refine your Prompt - Task 2

1. Ask a question for the AI while using a very BAD prompt and check the result
2. Ask the AI to improve the prompt and repeat

The Question Refinement Pattern

Ask the AI to improve and use your prompts.

Examples:

- Whenever I ask you a question, suggest a more context aware version of the question to use instead.
- Whenever I ask a question about who is the greatest of all time (GOAT), suggest a better version of the question that puts multiple players unique accomplishments into perspective. Ask me for the first question to refine. [\[1\]](#)

The Question Refinement Pattern

Template

To use this pattern, your prompt should make the following fundamental contextual statements:

- From now on, whenever I ask a question, suggest a better version of the question to use instead.
- (Optional) Prompt me if I would like to use the better version instead.

The Question Refinement Pattern -

Task 3

1. Use the “The Question Refinement Pattern” to ask:
 - a. “what town is better”

Context Expansion and Understanding

The Flipped Interaction Pattern

Ask the model to generate question for YOU to deepen discussions.

Examples:

- I would like you to ask me questions to help me decide what movie I should ask next. You should ask me 5 questions starting now.
- I would like you to ask me questions to help me create variations of my marketing materials. You should ask questions until you have sufficient information. Keep count of how many questions you asked and are going to ask, e.g. “Question 3 out of 5”. Ask me the first question. [\[1\]](#)

The Flipped Interaction Pattern

Template

To use this pattern, your prompt should make the following fundamental contextual statements:

- I would like you to ask me questions to achieve X
- You should ask questions until condition Y is met or to achieve this goal (alternatively, forever)
- (Optional) ask me the questions one at a time, two at a time, ask me the first question, etc.

You will need to replace "X" with an appropriate goal, such as "creating a meal plan" or "creating variations of my marketing materials." You should specify when to stop asking questions with Y. Examples are "until you have sufficient information about my audience and goals" or "until you know what I like to eat and my caloric targets."

The Flipped Interaction Pattern - Task

4

1. Use the Flipped Interaction Pattern so the AI can recommend **you and a special person** a restaurant to eat during the weekend.

The Ask for Input Pattern

Prompting users for additional input to refine AI responses.

- **Examples:**

- From now on, I will send a series of review of a product. You will summarize and classify the negatives / positives arguments from the review, Ask me the first reviews.
- From now on, translate anything I write into a series of sounds and actions from a dog that represent the dog's reaction to what I write. Ask me for the first thing to translate. [\[1\]](#)

The Ask for Input Pattern Template

To use this pattern, your prompt should make the following fundamental contextual statements:

- Ask me for input X

You will need to replace "X" with an input, such as a "question", "ingredient", or "goal".

The Ask for Input Pattern - Task 5

1. Create a prompt that makes the LLM repeatedly ask the user for a prompt. Each time the user provides one, the LLM should generate three improved variations of it and then ask for another prompt.

Review: Knowledge Base Integration - Document / Webpage

In some service you can upload a document or add a webpage link. If this feature is not available, let's do the following:

1. For weblink, print the page as pdf.
2. Start the prompt by asking the AI to read and understand the information that will be added, e.g:
 - a. Summarize the following information about renewable energy trends...
3. Copy the pdf content and paste in your prompt guarded by triple-quotes ("")

Review: Knowledge Base Integration - Table Data

In some service you can upload a table document, such as excel files. If this feature is not available, let's do the following:

1. Open the file and export as a csv-file.
 - a. This is optional, but a csv file is better formatted because copying a table and pasting can break the structure.
2. Start the prompt by asking the AI to read and understand the information that will be added, e.g:
 - a. Read the following data and quickly summarize what it is
3. Open the csv-file with a text editor such as “notepad” and copy the content and paste in your prompt guarded by triple-quotes (“”)

Dealing With Long Form Content

As prompt engineers we need to learn how to deal with long form content that if directly prompted to the LLM, could lead to loss information and hallucination.

Example using “Ask for Input Pattern Template”:

- “From now on, I sequentially send a chunk of text. You will summarize the text, capturing the most relevant information.”
- (...)
- (new conversation)
- “The following is the summary of multiples chunks of a large document, please summarize the points discussed in bullet points.”

Tasks

Task 4.1 - Augmented Audience

Persona

- Using the following email chain between you, Ricardo (an artist), another artist, and your lawyer, draft a response that provides the requested information while maintaining the tone of your fellow artist.
 - **Task 4.1 - Augmented Audience Persona**

Task 4.2 - AI-Generated Report

1. **You** should find at least two news articles on a specific topic from the internet.
2. Root-Prompt the AI to, whenever you send a news piece it,
 - a. Extract and display the key focus areas of that specific piece.
 - b. Update and present the full summary of all news pieces so far.
3. Once you have submitted #X news pieces, the AI will automatically
 - a. Generate a new, original news article that synthesizes and expands on all collected pieces.
 - b. The generated news pieces should have a disclaimer at the end stating that the article was written by an AI.

Restriction

You may only send the initial Root-Prompt and then, iterative, each news pieces. The AI should summarize and generate the news pieces with no further instructions.

References

- <https://www.vanderbilt.edu/generative-ai/prompt-patterns/#h2-audience-persona-pattern>
- <https://www.coursera.org/learn/prompt-engineering/home/module/1>
- <https://www.promptingguide.ai/>
- <https://learnprompting.org/docs/introduction>

Inspire

