



AI Prompting Guide for Hackathon

Best practices and techniques

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Introduction to AI Prompting

Welcome to the AI Prompting Guide for the Cloudstaff Hackathon! This guide will equip you with the knowledge and skills to effectively interact with AI models using prompts. AI prompting is the art and science of crafting effective inputs that guide AI models to generate desired outputs. It's a crucial skill for leveraging the power of AI in various applications.

At Cloudstaff, we believe in empowering our staff and hackathon participants to explore the endless possibilities AI offers. This guide is designed to be practical, informative, and easy to follow, regardless of your prior experience with AI.

What is AI Prompting?

Prompting is the craft of creating **clear, concise instructions** for AI. It serves as the input that determines the output you receive from AI/LLM like ChatGPT or Claude. Think of it as having a conversation with a highly knowledgeable assistant —the clearer your request, the better the response.

Understanding AI/LLM Tokens

AI models process information (e.g. prompt, sentence, text, etc.) in units called **tokens**. These **tokens** are the fundamental pieces of information that the LLM understands and generates. They can be

A single word	Part of a word/ Subwords	Punctuation Marks	A space-prefixed word
(apple)	(un, believable)	(. ! ? ; :)	('s)
			(“ the)

Understanding tokens is essential because:

- **Token limits:** AI models have limits on the number of tokens they can process in a single request. Exceeding these limits can lead to errors or truncated outputs.
- **Cost:** Many AI services charge based on token usage. Efficient prompting helps minimize costs.
- **Performance:** The way a prompt is tokenized can influence the model's performance. Experimentation and refinement are often necessary.

Tokenization in Action

Here's a standard method of how a sentence is broken down into individual tokens by an LLM.

The quick brown fox jumps over the lazy dog.



Based on the sample sentence the **tokenized words** then become an array of elements and there are a total of **9 tokens**: [“the”, “quick”, “fox”, “jumps”, “over”, “the”, “lazy”, “dog”, “.”]

This is the AI model's way of **tokenizing** our prompts.

Another example:

I'm enjoying amazing experiences!

What are the tokenized words?

How many tokens?

“ I ” “ ‘m ” “ enjoying ” “ amazing “ experiences “ ! ”

In this example, the **tokenized words** are [“ I ”, “ ‘m ”, “ enjoying ”, “ amazing ”, “experiences”, “ ! ”] and there a total of **6 tokens**.

Input Tokens vs Output Tokens

Input Tokens (Prompt)

- Individual units of text provided to the model as input (such as words, subwords, symbols, etc.).
- These could represent sentences, questions, or any other type of prompt.

Output Tokens (Response)

- The model's generated response or output.
- Each output token is predicted based from the input token. Then the model combines the produced output tokens and provide it as an output in the form of a sentence, text, image, table, etc. depending on the user's prompt.

Input: Explain AI in one sentence.

Output: AI is the simulation of human intelligence by machines.

Tokenized Words	Token #
Explain	1
AI	2
In	3
One	4
Sentence	5
.	6

Tokenized Words	Token #
AI	1
is	2
the	3
simulation	4
of	5
human	6
intelligence	7
by	8
machines	9
.	10

Prompt Structure Framework

A well-structured prompt improves the AI's ability to understand your request and generate a relevant response. Consider using the following framework:

1. **Persona/Role:** Assigns a specific identity or expertise to the AI, guiding its tone and perspective for the task.
2. **Task/Instructions:** Clearly define what you want the AI to do.

3. **Context:** Provide background information to set the stage for the AI. These could be parameters, scenario, and any relevant details.
4. **Output/Format:** Specify the desired format of the output (e.g., paragraph, list, code).
5. **Constraints (Optional):** Set any limitations or guidelines (e.g., length, tone, style).
6. **Examples (Optional):** Provide examples of the desired output to guide the AI further.

Example:

Persona/Role: You are a 4th Year Computer Science Student specialized in Data Science undergoing their thesis.

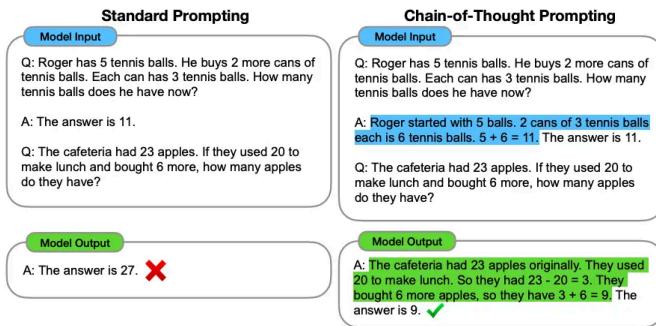
Task/Instructions: Draft a list of topics and outlines.

Context: Identify possible background of the studies and sop of the studies.

Output/Format: Keep it under 500 words.

Prompting Techniques

Chain-of-Thought: A technique that guides AI through intermediate reasoning steps, mimicking human problem-solving.



Zero-Shot Prompting: A technique that uses AI/LLM's capabilities to attempt new tasks without prior specific training or examples.

Topic Classification

Prompt: "Classify the following text into one of these categories: Technology, Politics, Sports, or Entertainment: [input text]"

Sentiment Analysis

Prompt: "Analyze the sentiment of this tweet as positive, negative, or neutral: [input tweet]"

Intent Classification

Prompt: "Determine the intent of this customer message as Complaint, Inquiry, or Feedback: [input message]"

Few-Shot Prompting: A technique where the AI/LLM is given a few task examples before responding, helping it performs better on similar tasks.

Few Shot Prompting

Model Input

Translate the following French greetings into English.

Example 1: Bonjour → Good morning / Hello

Example 2: Merci beaucoup → Thank you very much

Example 3: Bonne nuit → Good night

Now translate: "Bonsoir?"

Model Output

"Good evening"

Prompt Chaining: A technique where a task is broken into smaller prompts, with each prompt's output feeding into the next.

Prompt Chaining

Model Input

You are an AI assistant using Prompt Chaining. Meaning you complete tasks step-by-step, where each prompt builds on the result of the previous one.

Follow this format:

Step 1: Understand the task and extract what's needed.

Step 2: Gather or create the necessary information.

Step 3: Combine results into a final, clear answer.

Task: Explain what photosynthesis is, then summarize it in one sentence.

Model Output

Step 1: The task asks for an explanation of photosynthesis and then a short summary, so I'll start with a full explanation first.

Step 2: Photosynthesis is the process by which green plants use sunlight, water, and carbon dioxide to produce glucose (sugar) and oxygen. It mainly occurs in the chloroplasts of plant cells and is essential for converting solar energy into chemical energy.

Step 3: Summarizing in one sentence:

Photosynthesis is how plants make food and oxygen using sunlight, water, and carbon dioxide.

Final Model Output: Photosynthesis is how plants make their own food and release oxygen using sunlight, water, and carbon dioxide. 🌱

Effective Prompting

Be Clear, Specific, & Don't Overload the AI

- Precise and explicit instructions give precise AI responses. Break complex tasks into simpler, separate prompts.

Provide Context

- Frame your prompt with relevant background or persona.

Use Natural Language & Keep it Short

- Write prompts like a conversation for better understanding. Keep prompts concise but informative

Iterate & Refine

- Tweak prompts based on AI output to improve results.

Strategy to create Smart Prompting

- One powerful yet often overlooked strategy is to utilize AI itself to construct optimal prompts.

"Generate a prompt that helps me draft my background of the study."

Best Practices

- Be clear and specific:** Avoid ambiguity in your prompts.
- Use keywords effectively:** Include relevant keywords to guide the AI's focus.
- Experiment and iterate:** Try different prompts and refine them based on the results.
- Test thoroughly:** Ensure the AI's output is accurate and meets your requirements.
- Start Simple:** Begin with basic prompts and gradually increase complexity.
- Consider the Temperature:** Adjust the temperature setting to control the randomness of the AI's output. Lower temperatures result in more predictable responses, while higher temperatures lead to more creative but potentially less accurate outputs.

Security Considerations in Prompt Engineering

When working with AI, it's crucial to prioritize security and safety:

PII Exposure

- Attempts to **extract or trick the AI into revealing** Personally Identifiable Information (PII) about individuals, risking privacy breaches.

Exposure of Confidential/Proprietary Data

- When a user **pastes internal, confidential, or proprietary company information** (like financial data or legal notes) into the AI as part of a prompt.

Source/Fact Checking Failure

- Occurs when a user blindly trusts the AI's output without **verifying the facts or the source of** the information.

REMEMBER!

Your **DATA** is **not free**; it is the fundamental resource powering the seemingly free tech and AI services you use daily.

Quick Reference

- **Prompt Framework:** Personal/Role -> Task -> Context -> Output
- **Key Techniques:** Zero-Shot, Few-Shot, Chain-of-Thought, Prompt Chaining
- **Best Practices:** Be clear, experiment, test, start simple.
- **Remember to use Cloudstaff resources responsibly and ethically.**

Next Steps

Now that you've reviewed this guide, we encourage you to start experimenting with AI prompting! Use the techniques and best practices outlined here to explore the possibilities and create innovative solutions during the Cloudstaff Hackathon. Good luck, and have fun!