

Faculty of Economics Commerce and Management Sciences

Finance and Accounting Department

Introduction to Artificial Intelligence

Chapter 06

Fundamental Concepts of Prompt Engineering

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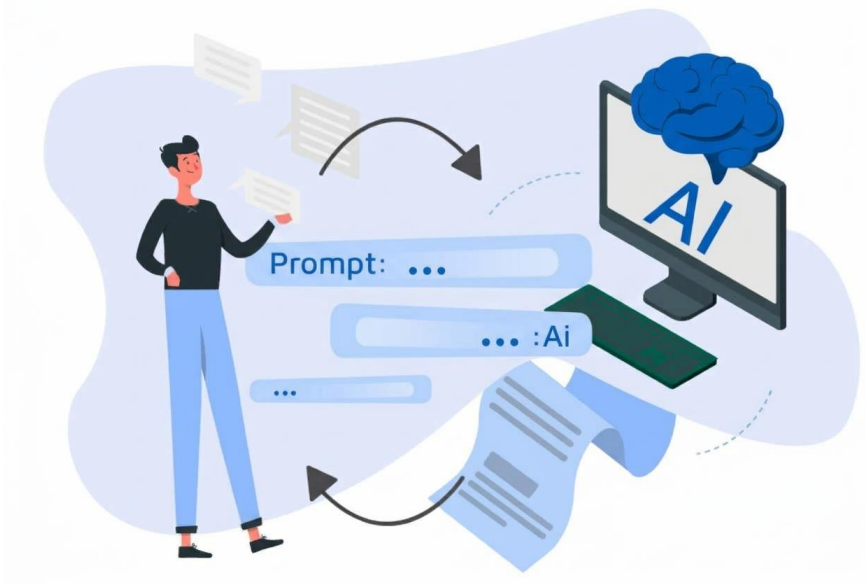
01 – The Definition of Prompt Engineering and its Importance

What is a Prompt in Large Language Models?

In LLMs, a prompt is the input that you provide to a model to get a specific response.

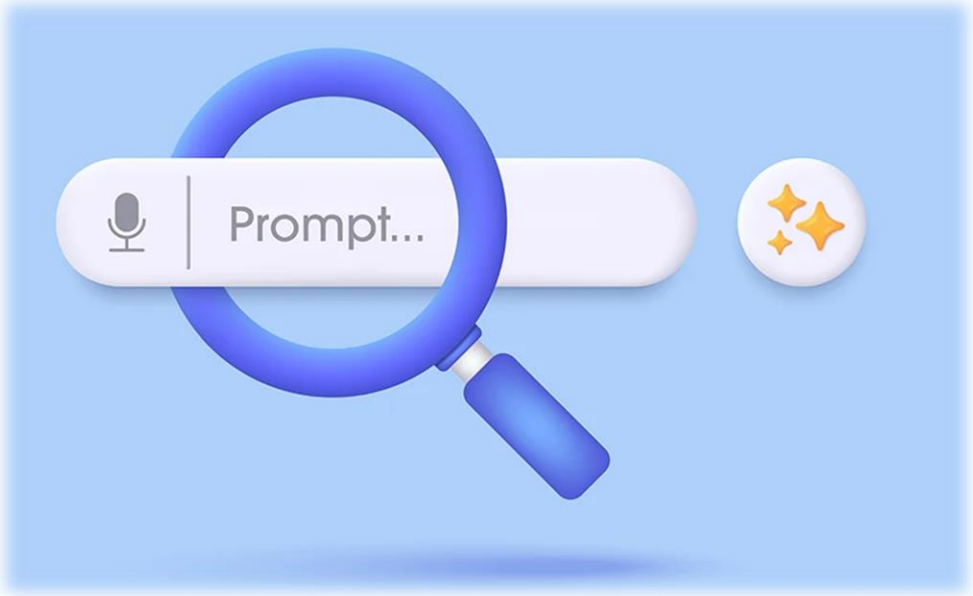
This text input gives instructions to the model on how to generate outputs or responses.

A prompt takes different shapes, starting from simple questions or keywords to complex instructions.



Definition of Prompt Engineering:

Prompt engineering is the art and science of designing and refining prompts to guide LLMs in generating desired responses. By carfully crafting these prompts, you provide the model with the context, instructions, and examples neccessary to understand your objective and respond effectively.

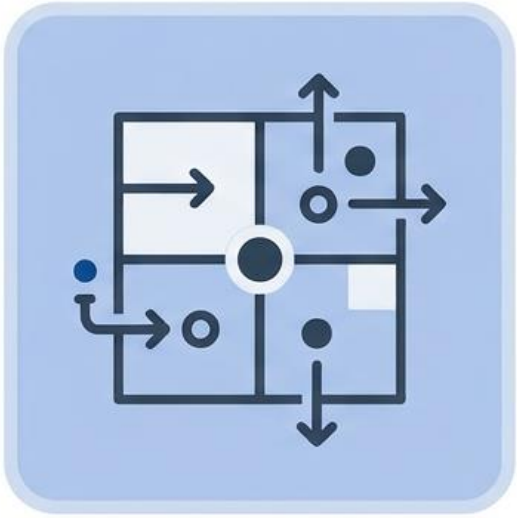


02 – The Components of a Good Prompt (Context, Goal, Explanation)

A good pormpt has three main components: Context, Goal, and Explanation.

- **Context:**

The more relevent details you include, the better outcome. Providing background information helps the model develop a more comprehensive understanding of what you're looking for. This information, known as context, is crucial for crafting excellent prompts.



It consists of the background information, and environmental details added to the user's specific goal or request, which include:

- Persona: Specifying a persona instructs an AI tool to draw its expertise from a particular field—filtering out irrelevant information, like "You are a data analyst".
- Target Audiance: Direct the response to a specific audiance (helps adjusting the vocabulary and level of detail) like "the response is for people with no computer science background".
- Examples and Data: Which includes examples that explain the situation and guide the model, or data like images, audio that sharpen your input.

- **Goal:**

It defines the concrete task, and desired end state.
The task is the foundation of any prompt. It is what you are asking the GenAI tool to do for you, like “Write a list”, “Draft a speech”.

The goal answers: What exactly the model should produce?, it combines between the task and the wanted outcome.



Explanation:

It includes everything that explain how to do the task well: the rules to follow, and the shape of a good answer.

It includes:

- Constraints: Explicit limits, rules, or conditions that shape how a model complete a task.
- Output Format: Table, Bullet points, sections, like “Return the answer in bullet points”.
- Tone: Like “Formal”, “Consice”, “Academic”, “Friendly”.



03 – The Role of Prompt Engineering in Improving the Results of Language Models.

Large language models do not possess human intuition, they just guess words based on patterns. When given a prompt, they predict the most likely text to appear based on data they have been trained on.

If the prompt is general and not well thought or refined, LLM will provide a general answer that may not accuratly meet the user's expectations.

If the prompt is clearly formulated and includes sufficient context, LLM's response is likely to be more coherent and of higher quality.

Prompt engineering plays an important role in improving the results of language models, by:

- Ensuring consistent and predictable responses that align with desired outcomes.
- By controlling inputs and directing the focus of artificial intelligence, prompt engineering helps mitigate bias and reduce the risk of generating inappropriate or abusive content.
- Well-crafted prompts lead to more accurate, useful, and relevent outputs, as they provide clear instructions and context.
- GenAI outputs may need long and expensive review, and with crafting precised prompts, we can ensure that the output aligns with intended goals, thereby reducing the need for extensive revisions.

04 – Examples of Effective and Ineffective Prompts

Ineffective Prompt

“Give me a medical advice for a shortness of breath.”

- The prompt is vague, undirected, and superficial, there is no context to explain the specific situation or environment. Furthermore, due to the lack of clarification and constraints, the result is likely to be generic.

Effective Prompt

Context **Goal** **Explanation**

“You are a cardiologist with medical experience. A 55-year-old patient, with a history of high blood pressure and high cholesterol, complains of shortness of breath with minimal exertion. Develop a diagnostic plan and suggest key lifestyle modifications to manage the patient’s condition. Ensure that the focus is on non-invasive tests first. The suggested modifications are in bullet points.”

Ineffective Prompt

"Write an article about social media."

- The prompt is superficial, there is no context to explain the specific situation or environment. Furthermore, due to the lack of clarification and constraints, the result is likely to be generic.

Effective Prompt

Context **Goal** **Explanation**

"Write a 500-word article about the impact of social media on the mental health of teenagers. Use a conversational style, offer three practical tips for parents, and list the tips as bullet points."

Ineffective Prompt

"Analyze sales data of the file attached."

- The prompt is superficial and indirect, there is no context to explain the specific situation or environment. Furthermore, due to the lack of clarification and constraints, the result is likely to be generic.

Effective Prompt

Context **Goal** **Explanation**

"You are a sales analyst, using the attached Q1 2026 sales report, present the following:

1- The top 3 profitability factors: the factors that generate profits.

2- The top 3 problems: warning signs, unexpected declines.

Present the analysis in bullet points, and use a general, non-mathematical style for managers who prefer not to use math.

References:

- Google Cloud. Command Engineering: An Overview and Guide.