

Prompt Engineering Notes

1. Introduction to Prompt Engineering

- Definition: Crafting inputs (prompts) to guide AI models to generate desired outputs.
- Goal: Reduce ambiguity, improve relevance, and control tone, format, or style of AI responses.
- Importance: Effective prompts save time, reduce errors, and enhance AI usefulness.

2. Types of Prompts

1. Instructional Prompts

- Directly tell the model what to do.
- Example: "Summarize this text in three bullet points."

2. Few-shot Prompts

- Provide examples in the prompt to teach the model the desired output style.
- Example:
Q: Capital of France?
A: Paris
Q: Capital of Japan?
A: Tokyo

3. Chain-of-Thought Prompts

- Ask the model to reason step by step.
- Example: "Explain your reasoning before giving the final answer."

4. Role-based Prompts

- Assign a persona to the model to influence style and tone.
- Example: "You are a software engineer. Explain recursion to a beginner."

5. Zero-shot Prompts

- No examples provided; relies on model's knowledge.
- Example: "Translate the following sentence into Spanish."

6. Prompt Structure

1. Context / Background

- Give relevant info for the task.
- Example: "You are an AI assistant helping with email drafting."

2. Instruction / Task

- Clearly specify what the model should do.
- Example: "Write a professional email declining a meeting politely."

3. Constraints / Format

- Define length, style, format, or any limitations.
 - Example: "Use fewer than 50 words, and include a greeting and closing."
4. Prompting Techniques
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- Be Specific: Avoid vague terms.
- Limit Scope: Use constraints to prevent irrelevant output.
- Use Examples: Few-shot prompts improve reliability.
- Test Iteratively: Adjust prompts based on output quality.
- Chain-of-Thought: Encourage reasoning for complex tasks.
- Role Play: Assign a persona or context to improve response style.
- Negative Prompts: Specify what the AI should NOT do.

5. Common Pitfalls

- Ambiguous instructions → unclear output.
- Too long/complex prompts → model may miss key points.
- Overloading with examples → may confuse model.
- Assuming AI knows context outside prompt → always provide needed info.

6. Advanced Prompting

- Multi-step Prompts: Break tasks into sequential prompts.
- Self-Reflection Prompts: Ask model to check its own answer.
- Dynamic Prompting: Adjust prompts based on user input or prior responses.

7. Tools & Resources

- OpenAI Playground / ChatGPT.com , Gemini.google.com ,claude.ai for testing prompts