

Fundamental Prompt Engineering Techniques

Meta Prompt (System Prompt)

Definition: This is a foundational instruction given to the system to set context, tone, or define the boundaries of its operation. It establishes the 'personality' or purpose of the AI.

Example: 'You are a friendly assistant specializing in marketing strategies for startups.'

Engineered Prompt (Sequencing)

Definition: A structured sequence of prompts designed to guide the AI step-by-step toward a complex output.

Example: A multi-step prompt that first defines objectives, gathers data, and then refines an answer based on feedback.

Prompt Iteration (Modality Changes)

Definition: Repeatedly tweaking and improving prompts, often switching modalities (e.g., text-to-image or text-to-code) to achieve the desired results.

Example: Asking for an answer in text form, then iterating to request a diagrammatic representation.

Prompt Chaining (Output to Input)

Definition: Using the output of one prompt as the input for the next to build on prior results and create a more complex or refined output.

Example: Generating a list of ideas and then elaborating on each idea in a subsequent prompt.

Prompt Contexting (Data)

Definition: Adding relevant data or context to the prompt to improve specificity and relevance.

Example: 'Using this dataset [insert specific details], calculate the correlation coefficient.'

Negative Prompting (Exclusion)

Definition: Explicitly specifying what the output should not include to refine results and avoid undesired elements.

Example: 'Write a formal report on renewable energy, excluding solar and wind power.'

Promptless Prompts (Generative)

Definition: Allowing the AI to generate creative responses with minimal initial input or instruction.

Example: 'Tell me something interesting.'

Automatic Prompting (Split Test Variations)

Definition: Creating multiple prompt variations automatically to test which produces the best result.

Example: Running split tests to determine which prompt variation generates higher user engagement.

Prompt Finetuning (Refining)

Definition: Gradually refining prompts based on trial-and-error or feedback to improve output precision.

Example: Changing 'Give a summary of...' to 'Provide a concise, bullet-point summary of...'

Markdown vs. XML

Definition: Comparing or choosing formats for structuring and presenting the output in a way that fits the intended use case.

Example: Markdown for simple formatting, XML for hierarchical data representation.

Role-based Prompting

Definition: Assigning a specific role to the AI to guide the tone and approach of its responses.

Example: 'You are a legal expert specializing in intellectual property.'

Conditional Prompting

Definition: Embedding conditional logic within the prompt to guide AI responses based on specific scenarios.

Example: 'If the user is looking for technical details, explain X. Otherwise, provide a high-level summary.'

Multi-agent Prompting

Definition: Using prompts to simulate interactions between multiple personas or roles within the AI.

Example: 'Role-play as a customer and a customer support agent resolving an issue.'

Persona Emulation

Definition: Designing prompts to emulate specific writing styles or personas.

Example: 'Write a blog post in the style of Elon Musk about AI advancements.'

Time-bound Prompting

Definition: Requesting outputs constrained by time to encourage brevity or prioritization.

Example: 'Summarize this article in 30 seconds.'

Embedded Feedback Loops

Definition: Incorporating mechanisms for the AI to evaluate and improve its own responses.

Example: 'Provide a solution and then critique its potential flaws.'

Prompt Cascading (Decision Trees)

Definition: Structuring prompts as decision trees to systematically address complex problems.

Example: 'If the answer involves legal aspects, address X; if it involves technical issues, focus on Y.'

Hybrid Prompting

Definition: Combining multiple types of prompting (e.g., chaining and contexting) into a single workflow.

Example: Contextual data feeding into iterative refinements.

Dynamic Prompting

Definition: Adjusting prompts in real-time based on user interactions or prior outputs.

Example: 'Given your last response, refine the strategy for Q1 to focus on sustainability.'

Instruction-based Prompting

Definition: Providing explicit instructions with detailed steps for the AI to follow.

Example: 'Step 1: Analyze the input text. Step 2: Highlight the main themes. Step 3: Write a 200-word summary.'

Advanced Prompt Engineering Techniques

Chain-of-Thought Prompting (CoT)

Definition: Encourages the AI to explain its reasoning step by step to improve clarity and accuracy.

Example: 'Explain why the Earth orbits the Sun step by step.'

Tree-of-Thought (ToT)

Definition: Involves exploring multiple reasoning paths in parallel or sequentially, like branching options.

Example: 'List three ways to improve team collaboration and evaluate their pros and cons.'

Auto-Regressive Thinking (AoT)

Definition: Breaks the problem into smaller steps where each step uses the previous output to guide the next.

Example: 'Draft the outline of a story, then write the introduction based on the outline.'

Scratchpad Reasoning

Definition: Encourages the AI to show intermediate calculations or workings before providing the final answer.

Example: 'Solve this equation and show all your steps: $5x + 3 = 18$.'

ReAct (Reasoning + Acting)

Definition: Combines reasoning and action within the same prompt, allowing the AI to evaluate before acting.

Example: 'Evaluate the cost-effectiveness of marketing strategies and recommend one.'

Role-based Prompting

Definition: Assigns a role or persona to the AI for context and consistency in responses.

Example: 'You are a professor in quantum mechanics. Explain black holes in simple terms.'

Self-Reflection Prompting

Definition: Encourages the AI to critique its own response and provide improvements.

Example: 'Here's your answer. Reflect on it and improve clarity.'

Iterative Refinement

Definition: Guides the AI to improve responses through successive iterations of feedback and re-prompting.

Example: 'Refine this email to make it more persuasive.'

Meta-Prompting

Definition: Embeds instructions for how the AI should interpret or structure its response.

Example: 'Before answering, think about the potential challenges and provide solutions.'

Contrastive Prompting

Definition: Asks the AI to explore opposing perspectives or ideas.

Example: 'Argue both for and against remote work, then provide a balanced conclusion.'

Explain and Solve

Definition: Instructs the AI to explain a concept and then solve a related problem.

Example: 'Explain the Pythagorean theorem and use it to calculate the hypotenuse of a triangle with sides 3 and 4.'

Multi-agent Simulation

Definition: Simulates interactions between multiple personas or entities to explore dynamics or solutions.

Example: 'Role-play as a CEO and an employee discussing workplace flexibility.'

Counterfactual Reasoning

Definition: Explores hypothetical scenarios or 'what if' situations.

Example: 'What if electricity had never been discovered? How would society look today?'

Nested Prompting

Definition: Embeds one prompt within another for layered reasoning.

Example: 'First define creativity. Then explain how AI can enhance creativity in marketing.'

Scaffolded Prompting

Definition: Provides a structured framework for the AI to fill in step-by-step.

Example: 'Step 1: Define the problem. Step 2: Identify challenges. Step 3: Propose solutions.'

Few-shot Prompting

Definition: Includes a few examples in the prompt to guide the AI in understanding the format or context.

Example: 'Translate the following: Hello = Hola, Thank you = Gracias, Goodbye = ?'

Multi-modal Prompting

Definition: Combines text, image, or data inputs to guide a richer response.

Example: 'Analyze this image and explain its significance in historical context.'

Error Induction and Correction

Definition: Deliberately introduces an error or ambiguity for the AI to identify and correct.

Example: 'If $2+2=5$, explain what's wrong with this statement.'

Dynamic Prompt Adjustment

Definition: Uses outputs from earlier prompts to dynamically adjust or refine later prompts.

Example: 'Summarize this text. Now rewrite the summary for a younger audience.'

Split-testing Prompts

Definition: Runs variations of prompts to compare outputs and optimize effectiveness.

Example: 'Testing "How can I improve team morale?" versus "What are effective strategies to boost team morale?"'

Area of Thought (AoT)

Definition: Explores multiple dimensions or domains of a problem to generate holistic solutions. Encourages analyzing problems from various perspectives for well-rounded insights.

Example: 'Analyze a multi-channel marketing strategy by evaluating effectiveness, ROI, and audience engagement for each channel.'

Algorithm of Thought (AoT) Prompting

Definition: Directs the AI to follow structured algorithms or predefined processes to solve problems. This technique enforces logical rigor and systematic reasoning, ensuring repeatability, transparency, and accuracy in results.

Example: 'Use the following algorithm to optimize delivery routes: 1. Identify all locations. 2. Calculate shortest paths. 3. Account for traffic patterns.'