



Dare to know

Crafting Prompts

A prompt is the initial text input or query that is clearly communicated to a large language model in order to produce desired responses. Informed by data science and natural language processing (NLP), prompt crafting involves strategically formulating instructions or questions for generative AI models. Sometimes known as prompt engineering, this is crucial for maximizing the potential of AI tools. Writing a prompt requires a combination of creative and technical skills for optimal output. This requires identifying the desired end result, knowing the system's capabilities, and possessing enough expertise to formulate clear questions, communicate intentions, provide relevant background context, construct logical flows, maintain continuity, and alleviate obstructive biases. Users should also know when to create an original prompt, when to rely on a template, and when to combine both approaches.

Prompts can be comprised of natural language sentences or questions, code snippets or commands, or combinations of text and code, depending on the domain and the task. The goal is to engage in natural conversation with the AI model, provide information sufficient to produce a strong and relevant response, and generate creative content on a variety of topics. One should keep in mind that complex nuances, preconceptions, and cultural assumptions in human speech may cause outcomes to be different than anticipated. Effective prompt crafting can overcome those impediments to clear communication and influence the quality and relevance of the generated output. Prompt crafting is an iterative process in which a user continually improves the input while aligning with ethical and responsible practices.

Tasks

Well-structured prompts can be used for a variety of undertakings, including creative tasks, text and/or image generation, translation, answering questions, text summarization, problem-solving, data analysis, and code debugging.

Choosing Generative AI Writing Tools

Since different generative AI systems possess different capabilities, users should choose the available tool that best suits the task. Factors influencing one's choice include the particular large language model (LLM) powering an AI, the training dataset, the forms of input that can be processed, and the types of use cases they are designed to support.

Questions to consider when choosing a generative AI tool:

- Is the training dataset current and relevant to the task at hand?
 - Is the AI's content reasonably accurate and up-to-date?
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- Does the AI tool offer claim detection or fact checking?
- Can the AI writing tool ingest the required formats (e.g., text, image, audio, video, live URLs)?
- What happens to the data included in the prompts?
- Can the AI learn a user's writing style and voice?
- Are there prompt templates that support multiple users and repetitive tasks?

Prompt Creation

The quality of AI-generated outputs is dependent on the quality of prompts. Prompts should be formulated using clear and concise natural language to ensure AI models comprehend context, intentions, and nuances, which will result in more conversational and human-like interactions. An AI prompt can be framed in a variety of formats, including natural language prompts, image prompts, and audio prompts. Additionally, best practice is to have a logical flow that first establishes the topic or context, then requests the next response. A structured process streamlines efforts, fosters shared understanding, and encourages teamwork.

The COUGAR Framework, developed by Barton Community College, encapsulates the six main components of prompt creation: **Chore, Orders, Underpinnings, Groundwork, Assess, and Refining. While these elements are not required for every prompt, a well-crafted prompt will include a mixture that is tailored for the specific task at hand. Each component contributes to guiding a model's output toward responses that align with the desired goal.**

Chore

The chore is the task at hand. When crafting a prompt for a specific action or process, one should use clear language that is free of idioms, slang, or jargon. Prompts should consider the nuances and complexities of the task, and be specific to the ultimate goal. As noted, AI cannot infer meaning, so a well-formulated prompt will fill gaps between its knowledge base and a user's expectations. Users should begin with simple and straightforward questions, requests, and tasks, then include longer and more descriptive details that clearly outline the goal or purpose of the AI-generated output.

Orders

Orders are specific instructions to the AI system to achieve the desired outcome. They may take the form of a simple one-word input or be complex paragraphs. This input provides the model with a clear outline of the user's expectations and guides the task toward its correct and efficient completion. Orders for the AI model include:

- Classifying the task's complexity (e.g., simple, moderate, complex).
 - The type of data that should be analyzed.
 - The specific actions to be taken (e.g., a step-by-step process, rephrasing, searching, summarizing, or synthesizing).
 - The criteria for determining which actions are most effective.
 - The boundaries around the output.
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- The expectations for the desired style, tone, and level of detail.
- Any guidance on vocabulary, grammar, formality, tone, and style.
- Specific terminologies or analogies.
- Levels of language proficiency.
- Ethical framing and constraints.

Privacy and data security concerns are a consideration, so be prudent with the sensitive information provided in prompts. Effective prompt crafting involves asking the right questions in a straightforward manner, and using conversational language, descriptive details, and the active voice to avoid ambiguous language and reduce misinterpretations.

Best practices for crafting orders include:

- **Prompt Chaining:** For long-form content, a chain-of-thought application is best. This strategy involves breaking down complex requests into sequences of incremental prompts that build on each other. Thus, the outputs are kept manageable.
 - One may begin with an outline (either human-written or AI-generated), then use additional prompts to complete each section. This approach will simplify the process, and keep a user organized and focused on developing ideas. Additionally, the editing and fact-checking process will be made easier.
 - Avoid overloading individual prompts with multiple specific requests.
 - AI can produce an entire student paper, blog post, or eBook from a single prompt, but the more content produced at once, the more editing and fact-checking will be required.
- **Summary Prompts:** Queries that instruct the model to summarize or rephrase its responses or key details can provide context and reveal errors.
- **Objective Prompts:** Avoid embedding personal biases or opinions that would sway the AI model toward a subjective response. Instead, prompts should be neutral and open-ended to produce balanced and impartial responses.
- **Blacklist Unwanted Responses:** Identify and explicitly exclude certain keywords or phrases from responses to avoid unhelpful output (e.g., “I do not have enough information.”)
- **Whitelist Safe Content:** Include desired keywords and phrases in the response.

Underpinnings

Underpinnings are the contextual information or situations that support and clarify the inputted task or goal. AI models may possess incredibly powerful technology that excel at pattern recognition, but they still lack objective truth, judgment, or common sense. Providing ample and relevant situational context can enrich the AI’s understanding of the task and the user’s intent, and produce a more accurate and tailored response. This may take the form of defining the roles of both AI and the user in the task, clarifying the purpose of the prompt, framing questions around hypotheticals, explaining requirements, describing the data being used, or stipulating the anticipated results. Specificity will ensure the responses are customized to the desired

requirements.

Groundwork

Laying the groundwork for prompts includes example inputs, which provide reference material to train the model in recognizing and mimicking the desired patterns or formats for its responses. Clear descriptions can provide more accurate responses. Examples may include:

- Writing samples
- Exemplars
- Demonstrations of the expected behavior
- A set of relevant keywords
- Citations
- Quotes
- Arguments and counterarguments
- The abstract of an interested article
- Reference text

Outcome indicators also enhance engagement with an AI model. Using this strategy, the tool is directed to assume a persona or role in the dialogue or align with the desired expertise or perspective, resulting in more targeted and relevant outputs. For example, a user might ask ChatGPT to “act as an expert” and explain a complex concept in a step-by-step process. Other prompts include a request to adopt a specific point of view in order to explore multiple beliefs or opinions.

The system can also be instructed to generate a response for a given style, tone, or scenario. One should clearly specify any formatting requirements such as table format, hashtags, bullet points, graphs, templates, or emoticons.

Assessing

The process of prompt creation often involves a large measure of testing and adapting strategies and prompts, especially as AI tools continue to evolve. The effectiveness of prompt techniques may differ depending on the particular task; the language model; the plugins, extensions, and sources employed; and the user’s prompt crafting experience. Testing different conversation entry points may result in optimal initial prompts for a topic. Users can collect a model’s responses in a type of feedback loop to iteratively improve prompts over a multi-turn dialogue. Additionally, Application Programming Interface (API) tools are able to leverage communication between systems to optimize and analyze prompts. Users might experiment with multiple prompt variations (known as A/B testing) using alternate vocabulary and example responses to determine the best prompt phrasing and level of complexity. Users may also request claim- and fact-checking, and data sources, to verify information and provide correct citations.

Refining

Prompt crafting is an iterative process. The dialogue can be refined by clarifying prompts, forming follow-up orders, and adjusting as necessary. This approach allows the quality and relevance of generated output to be increasingly enhanced.
