

Prompt Engineering

What is Prompt Engineering?

What is Generative AI?

Generative AI refers to a type of artificial intelligence that creates new content, ranging from text to images, based on the input it receives. These AI models, such as GPT (Generative Pre-trained Transformer), are trained on vast datasets comprising diverse forms of human-created content like articles, books, and websites. The AI learns patterns, language structures, and context from this data, allowing it to generate coherent and contextually relevant responses when given a prompt.

How the Models Work:

Generative AI models work by predicting the next word or phrase in a sequence, given an initial input or "prompt." This prediction is based on patterns it learned during training. The model continues generating content by repeating this process, effectively "writing" in real-time. The quality and accuracy of the output depend largely on the prompt given, which is where prompt engineering comes into play.

What is a Prompt?

A prompt is the initial input or instruction you provide to a generative AI model to guide its output. Think of it as a question, command, or sentence starter that tells the AI what kind of

content you want it to generate. The more precise and well-structured your prompt, the more accurate and useful the AI's response will be.

For example, a simple prompt might be, "Write a short story about a dragon." The AI would generate a story based on the patterns it learned during training. However, if you provide a more detailed prompt like, "Write a short story about a young dragon learning to fly in a magical forest," the output will be more tailored to your specific request.

Let's compare two examples:

"What is climate change?"

And

"Write about how climate change influences storm surge along the coasts during a tropical cyclone. Also, provide real world examples of climate change's attribution to storm surge."

In the first example we provided a very broad prompt. We are liable to get a very broad but superficial response back from the model. In our second example, we have provided very specific information and our answer from the model is likely to be of higher quality and provide more descriptive information.

Remember, you can also provide keywords to further enhance your prompt such as:

Certainly! Here's a list with examples to help clarify each point:

1. Contextual Background:

- Historical Context: "During the Great Depression in the 1930s..."
- Cultural or Social Context: "In the context of Japanese society during the Edo period..."
- Economic Context: "In a post-industrial society with rising income inequality..."

2. Audience or Perspective:

- Intended Audience: "For a middle school science class..."
- Point of View: "From the perspective of a healthcare professional..."
- Target Demographic: "Aimed at tech-savvy millennials..."

3. Tone and Style:

- Tone: "Using a formal and professional tone..."
- Style: "In a conversational, easy-to-read style..."
- Format: "Formatted as a step-by-step guide..."

4. Specific Data or Facts:

- Include Specific Data Points: "Incorporate statistics from the 2020 U.S. Census..."
- Reference a Particular Study or Source: "Based on findings from the Harvard Medical School study..."
- Focus on Particular Metrics: "Highlighting the carbon footprint reduction in percentages..."

5. Scenario or Hypothetical Situations:

- What-If Scenarios: "What if the internet never existed?"
- Future Predictions: "Predicting the impact of AI on employment by 2040..."
- Alternate Realities: "In a world where the Roman Empire never fell..."

6. Character or Role:

- Specific Character Traits: "For a character who is introverted but highly intelligent..."
- Professional Role: "From the viewpoint of an aerospace engineer..."
- Fictional or Historical Figures: "Imagine Albert Einstein explaining quantum mechanics..."

7. Temporal Factors:

- Time Frame: "Over the course of 24 hours..."
- Specific Events or Eras: "During the 1969 moon landing..."
- Recurring Trends or Patterns: "Analyzing the cyclical nature of economic recessions..."

8. Geographical Elements:

- Specific Locations or Regions: "In the Amazon rainforest..."
- Environmental Conditions: "In an arid desert environment..."
- Geopolitical Boundaries: "Across the borders of the European Union..."

9. Outcome or Impact:

- Desired Outcome: "Aiming to increase renewable energy adoption by 20%..."
- Measurable Impact: "Resulting in a 15% reduction in greenhouse gas emissions..."

- Potential Risks or Benefits: "Weighing the potential risks of autonomous vehicles on public safety..."

How to Organize Prompts for Accurate Information

Effective prompt engineering involves structuring prompts in a way that maximizes the accuracy and relevance of the AI's output. Here are some tips:

1. **Be Specific:** The more details you include in your prompt, the better the AI can understand what you're asking for. For instance, instead of saying, "Explain climate change," you might say, "Explain the impact of greenhouse gasses on global warming and its effects on polar ice caps."
2. **Use Clear Instructions:** If you want the AI to follow a particular format or style, include that in your prompt. For example, "Summarize the key points of the following article in bullet points."
3. **Break Down Complex Queries:** If your request involves multiple tasks, break it down into simpler parts. For example, "First, describe the causes of climate change. Then, explain its impact on ocean life."
4. **Iterate and Refine:** If the AI's response isn't what you expected, refine your prompt by adding more context or rephrasing your request. This iterative process helps improve the quality of the output.

Instances and Saving New Information in Generative AI

Some advanced generative AI platforms allow you to create "instances" or personalized versions of the AI that can retain and build upon previous interactions. This feature is especially useful for ongoing projects or scenarios where you want the AI to remember specific information.

Saving New Information:

When you save information in an instance, the AI can recall it in future sessions. For example, if you're working on a long-term writing project, you might create an instance that remembers

character names, plot points, or stylistic preferences. This way, the AI can generate content that remains consistent with the details you've provided in previous interactions.

To utilize this feature effectively:

- **Define the Instance Purpose:** Clearly specify the context and goal for the instance so the AI can better tailor its responses.
- **Save Key Information:** Regularly update the instance with new information or adjustments to ensure continuity and accuracy in future outputs.
- **Review and Refine:** Continuously review the AI's responses and refine the stored information as needed to maintain quality and relevance.

Going Forward

One thing to always be conscious of when using generative AI model output is that you are making the results your own. It's pretty clear when an AI model is writing something, as it often sounds forced, robotic, and inorganic. Generative AI also likes to use certain phrases and words such as "in conclusion" or "to summarize" which very few people do in their own writing. Go through the output and modify it to match your own writing style. The benefit is that you have the bones of the document you want to write and you just need to put the finishing touches on it. Spend a small amount of time now making your model output yours instead of getting headaches down the road for taking a very generic output from a model. Final point, ALWAYS! ALWAYS! ALWAYS! Fact check everything that comes out of an AI. Remember, the model is designed to serve you based on information you provide. If you tell it to give you an argument for why cancer is good for mammals with evidence it will likely do so (in fact, I tried it and it told me it was counterintuitive, but still proceeded to talk about evolutionary advancement in mammals and that it's a byproduct of living longer lives which highlights other scientific achievements of humanity - BE CAREFUL).

So... To summarize 😊, prompt engineering is a crucial skill for effectively utilizing generative AI models. By understanding what generative AI is, crafting precise and clear prompts, and leveraging advanced features like instances, you can significantly enhance the accuracy and relevance of the content generated by AI. Whether you're using AI for creative writing, educational purposes, or business applications, mastering prompt engineering will help you get the most out of this powerful technology.