

LING3401 Linguistics and Information Technology

Tutorial: Prompting large language models

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What is prompt engineering?



- The process of designing inputs to guide a language model's output
- Similar to giving instructions: the way you ask affects the response



- LLMs are sensitive to how we phrase prompts
- Small changes in wording can lead to different outputs
- Helps control style, tone, and information retrieval
- Useful for tasks like summarization, translation, and text generation



- *Explain the meaning of “syntax”.*
- *Explain “syntax” to a 5-year-old.*
- *Explain “syntax” using a cooking analogy.*
- *Explain “syntax” using topology.*
- The way we phrase our request changes the response!



- Zero-shot prompting: Asking a question without providing examples.
- Few-shot prompting: Giving a few examples before asking the model to continue.
- Chain-of-thought prompting: Encouraging step-by-step reasoning.



- System prompt (pre-set instructions)
 - Controls the model's behavior globally.
 - Example: *"You are a helpful assistant that answers concisely."*
- User prompt (dynamic input)
 - Direct request from the user.
 - Example: *"Summarize this article in one sentence."*



- The maximum amount of text an LLM can consider at once
- Older parts of the conversation may be forgotten if too long



- ① Be specific and clear
 - Vague: *Explain phonetics.*
 - Better: *Explain phonetics with examples of English sounds.*
- ② Use explicit instructions
 - Instead of *Summarize this*, try *Summarize this article in 3 bullet points.*
- ③ Guide the output format
 - Example: *List the pros and cons of LLMs in a table.*
- ④ Use step-by-step reasoning
 - Example: *Explain the process of word formation step by step.*



- I have built a web interface using my MS Azure OpenAI API key.
- This will grant you access to GPT-4o during the tutorial.
- This access is only for our tutorial session. I will shut it down right after class.
- If you want to practice outside of class, you should obtain access to an LLM yourself.
- Please do not overuse it, as excessive usage costs me money.
- Please do not misuse it (e.g., by asking NSFW questions), as this could get my account blocked by Microsoft.
- **Do not share this access with others.**



- Translate an English text into both colloquial Cantonese and Classical Chinese.
- If you do not read Chinese, feel free to try this out in some other languages that you know!
- Your task is:
 - Translate into:
 - Colloquial Cantonese
 - Classical Chinese
 - Ensure both translations maintain meaning and fit their respective styles.
 - Moreover, try translating the text in a way as if a specific figure is uttering the speech:
 - A Hong Kong taxi driver talking to his/her passenger
 - An ancient Chinese scholar/poet (e.g., Qu Yuan)
 - If you only know English, how about William Shakespeare?



- Summarize an academic paper while adapting the summary for different fields.
- Your task is:
 - Generate a concise, accurate summary of the given paper.
 - Adapt the summary for different academic audiences, such as linguistics majors, psychology majors, English majors, mathematics majors, computer science majors, etc.
 - Think about this: are the audiences undergraduate or postgraduate?
 - Ensure each summary aligns with the audience's background knowledge.
- Also, try to determine the best way for LLMs to present the summary: in a paragraph, in slides, or presentation style?



- Given an LLM-generated response, reconstruct the most likely prompt!
- Challenge:
 - You will receive a response from the model.
 - Your task is to infer the prompt that likely generated it.
 - Then, modify the prompt to:
 - Produce a more detailed response.
 - Change the response style (e.g., more formal, more concise).
- Discussion:
 - How do slight changes in wording affect the response?



- **No class next week (reading week)**
- **Midterm: March 12, in class**
- Please do not hesitate to ask questions
- We enjoy feedback from you, so please let us know if you feel there's anything we could have done better
- It would be great if you'd bring your laptop to the class every week