

How to collaborate with ChatGPT?

From a “Prompt Engineering” Perspective

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December 19, 2023



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Target

For you

- ① Experience **GPT4**.
- ② Get to know sth about **“Prompt Engineering”**.
- ③ Still keep sth in mind **even after a long time**.

For me

- ① Satisfy my desire to **share**.
- ② Practice my **presentation skills**.

For us

- ① Establish a communication **platform**.
- ② Dog rich and noble, don't forget wang.

Structure

- ① From Zero to One
Necessary Requirements:
VPN + Correct Setup + (A little bit of money)
- ② From One to N
Cost: **Prompt Engineering** + (A little bit of time)
- ③ From N to N+1
Four Realms of thinking + A **tradeoff** way of thinking

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VPN

- VPN Recommendation: <https://ikuuu.me>
 - **Multi-Device** Support.
(Windows, MacOS, iPadOS, iOS, Android, Linux)
 - 300 GB per month.
 - Supports up to 5 devices online simultaneously.
 - **Stable and Cheap** (108 yuan per year).
 - Do not spread, use it discreetly.
- Node Selection: **Japan**
 - Why Japan? Why not HongKong or US?
 - Do not switch nodes randomly!

Five ways to experience LLM (GPT4)

Why “GPT4”?

- So far, the best and the widely used.
- Far ahead in the short term.

Five ways:

- ① New Bing (Any browsers including Google and Safari)
- ② Copilot (Windows, Edge or VS Code Extension)
- ③ **ChatGPT** (<https://chat.openai.com>)
- ④ OpenAI API (<https://platform.openai.com/api-keys>)
(More affordable, with better expandability.)
 - Call API in Python (even in Stata).
 - Translate Plugins such as Bob and Quicker
 - Zotero or GPT Academic
- ⑤ Third-party platform such as Poe.

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Why do we need Prompt Engineering ?

All “prompts” are wrong, but some are useful.

- Key Assumption:
 - ① The model is “always” right and capable.
(Why? Think about Goldbach’s Conjecture.)
 - ② If the results are bad and unsatisfying.
 - ③ You are stupid in writing prompts.
 - ④ Rewrite your prompt!

Why do we need Prompt Engineering ?

- An **optimization** problem with **constraint** conditions.
 - **Target**: Get satisfying outputs.
 - **Constraint**: We don't want wasting too much time.
 - Solution: Analytical or **Local Optimal Solution**?
 - How to solve?
Iteration (Think about the Gradient Descent Method)
 - Key: the **bias-variance tradeoff**.
- A kind of **prior knowledge**.
 - **Limit-focused thinking**.
Question: If $1+1=2$, can you tell me $1+1=?$
Answer: Yes, $1+1=2$.
 - An **example** of librarian and farmer.
There is a guy named Steve, a meek and tidy soul.
Which do you think is more likely, a librarian or a farmer?

Basic Concepts

- Parameters Configuration: **Temperature** (New Bing)
- Prompt Elements (what prompts should contain):
 - **Instruction**: optimization problem
 - **Context**: prior knowledge
 - **Input data**: “X” (user’s question)
 - **Output Formate**: type and format of “y”
- Prompt Classification
 - Zero-shot prompt
 - **Few-shot prompt**
 - **Role prompt**
 - **Instruction prompt**
 - **Chain-of-thought prompt** (Let’s think step by step)
 - Multimodal prompt (not recommended)

Five strategies for getting better results

- 1 **Few-shot prompts** are likely better.
 - Provide additional knowledge.
 - Majority label bias.
 - Recency bias.
 - Common token bias.
- 2 Give your model a certain **role**.
 - A professional researcher in the fields of ...
 - An experienced reviewer for top-tier financial journals
- 3 Let the model think step by step (**COT**).
 - Provide real-time feedback.
 - Use clear step-by-step instructions and line breaks.
- 4 **Clear and specific** prompts.
 - LaTeX or Markdown for math equation.
 - List in points. / Output in a table.
 - ..., otherwise you should print “nothing”.
- 5 Chinese or English? **accuracy-adaptability tradeoff**
(GPT4 is a foreigner proficient in Chinese) (Give tips)

Prompt Tuning

- **Character:** You are a powerful AI prompt engineer. You excel at creating and optimizing AI prompts based on user needs.
- **Skill 1:** Identify the purpose of the original prompt. Understand the functionality or application scenario that users want to achieve through the prompts they provide.
- **Skill 2:** Optimize the prompt
 - ① Follow the user's instructions (if any) to optimize their prompts.
 - ② Based on the user's instructions, take steps such as editing words, adjusting sentence order, adding or reducing details, etc.
 - ③ If the user hasn't provided specific instructions, check for clear directives, complete sentences, etc.

Prompt Tuning

- **Skill 3:** Return the optimized prompt. After optimizing, the results should be returned to the user. Avoid adding any words or sentences that may make the prompt ambiguous.
- **Constraints**
 - ① Only respond to questions related to Creating or optimizing prompts.
 - ② Avoid using technical terms that might confuse the user. Always strive to create prompts in a language that the user can understand.
 - ③ If the user's original prompt contains inappropriate or incorrect content, it is your responsibility to point it out and offer correct suggestions.
 - ④ The provided prompt words must include character settings, skills and constraints, and must always be in markdown format.

Rules, Tools and Community

- **Rename** your “Chat” and **delete** if not needed.
- Create and share your personal “**GPTs**”.
- ChatGPT **Plugins**.
 - ① Consensus
 - ② Advanced Data Analysis
 - ③ AskYourPdf
 - ④ WebPilot
- Custom Instructions.

Let's construct our own open source GPT Community!

<https://www.wolai.com/suluoya/bUwNxhaPmVaHFPA54Vf2K>

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Let GPT be a research assistant

- ① Paper Helper.
- ② Coding Assistant.
- ③ Data Analysis.
- ④ Translation Expert.
- ⑤ ... (The importance to construct our community.)

Review

- ① **Context:** I am ..., currently doing ...
- ② **Role:** As a team, you simultaneously play the following roles.
- ③ **Instruction:** Answer the following questions in Chinese.
- ④ **Restrict:** I need you to follow a few rules when answer the above questions.

Example: Make a presentation (Context and Role)

- **Context:** I am a PhD student in finance, currently conducting research in areas such as "Asset Pricing", "Factor Investing", "Empirical Analysis" and "Machine Learning". I need to prepare a slide to present a paper I recently read to my supervisor and partners.
- **Role:** You are a professional researcher and an experienced reviewer for top-tier financial journals in the fields of "Asset Pricing", "Factor Investing", "Empirical Analysis" and "Machine Learning". You are good at summarizing academic papers using simple and concise statements and translating English into Chinese authentically and accurately.

Example: Make a presentation (Construction)

- **Construction:** I need your help to read the document (which is an English academic paper) and answer the following questions in Chinese.
 - ① What is the research background and motivation?
 - ② What is the main focus of the literature review?
 - ③ What is the contribution or the highlight?
 - ④ What is the research methodology?
 - ⑤ What are the main results? Please list in points.
 - ⑥ What is the structure? Please list in points. Why did the author structure this way?
 - ⑦ Are there any shortcomings or controversial aspects?
 - ⑧ If we want to continue this research, what should future work focus on? Please list in points.
 - ⑨ As a paper reviewer, do you think the logic, structure, methodology, data, and results of this article are reasonable? Why? Can you give some advice?

Example: Make a presentation (Restrict)

- **Restrict:** In addition, I need you to follow a few rules.
 - ① When translating, pay attention to professional terminology. Some important proper nouns and abbreviations need to be marked in English. If you encounter English names, please keep them in English, too.
 - ② Do not fabricate answers, and please provide a reminder if the information is out of date or not in this paper. Never generate fake information or search through the Internet without telling me.
 - ③ Try to minimize repetitive and redundant output.
 - ④ If the answer containing mathematical formulas and symbols, use Latex to generate them.
 - ⑤ I need you to adjust the output format on your own to make it look neater and more comfortable.
 - ⑥ Please think quietly before answer.

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Four Realms

- ① Unaware of one's own ignorance.
- ② Aware of one's own ignorance.
- ③ Aware of one's own knowledge.
- ④ Unaware of one's own knowledge.

Prompt Engineer? Prompt Artist.

- The bias-variance tradeoff.
- The accuracy-adaptability tradeoff.
- The convenience-efficiency tradeoff.

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Thanks !