prompt eng

prompt engineering is basically a structured way of giving a prompt or instrucation to a llm .
llm or large language model takes your input and fills the missing parts with guess work ... llm is a perdiction machine.
something like this example :-

when you ask it do some line of code , like give me an code for circular linked list .the llm doesnt know which language which level you are right now , how well do you want it written . so it fills the missing gaps with guess work .

rather than asking you too much questions it automatically fills in the gaps based on previous patterns .

this doesnt always come in favour with us and it is highly unlikely that we will the desired results .
so we use some of the keywords or pharases that help us .

1st will be PERSONA
meaning who is actually writing the prompt , like the answer needed for a question may vary from person to person. defination of photosynthesis may vary from perosn to person on how well structured they need it to be . a child may want 1 line photosynthesis defination and a bio major may need breif one to write his paper .
so this varies from person to person .
so when prompting a llm specifying a persona may drastically change the output of the prompt you provided.

PERSONA MANIPULATION

to get specific results too . a cs studnet may ask for a senior software developer level code for his project . specifying a specific persona helps a lot when it is needed to be . as we know llm is just a tool not a companion . llm may help us in our work get the results we wanted but it only does what we tell it to do .

2nd CONTEXT
llms are eager to please us as they want to answer something to the prompt we presented . this is the big guess work part and can change the outcome of the result drastically.
ex:- suppose i am planning a birthday gift for my friend and i prompted the llm to tell me what to get , which one do you think will get the better results.

1] birthday present ideas

or

2] give me birthday present ideas for my big brother who is going to

collage next week and loves to play foot ball on a regular basis .

here we gave the llm less thing to worry about meaning it doesnt have to fill in the missing gaps like it can focus on specific keywords , in the 1st one llm had to get a who set of ideas for birthday present which was tiring for it and didnt actually provide us with desired results .but in the 2nd one the llm only has to go onto specific dept like it will search for gift with context whom do you need the gift for , so the big brother is going to collage and plays foot ball , maybe he needs a gym tank top for practise in collage .

here we saw how specifying a context makes the results much more better , and gives it less thing for guess work.

ABC always be contexting

3rd FORMAT
rather than getting a whole essay , prompt the llm to get the output
ex:- output format
give the answer in 2 line , do not use high level english , write it in easier language as possible
tone it to be proffetional or childish
give clear 1 1 line bullet points

a good format should include tone , length os the output, and format

ADVANCED TECHNIQUES

COT{chain of thought}
it is way you are telling the llm to think , what it should do and in what order .
it is linear and follows steps as given .
it follows the steps in given order , this ensures that no step is missing in the output and builds trust.
IT could be done if you have to tell the llm instructions , maybe a task you would i have to do manually .so you just describe the llm how you want the task to be done .

- The few-shot method provides examples to guide problem-solving
- The zero-shot method encourages the model to think independently through steps
- Chain-of-thought methods enhance decision-making and explainability

TOT(tree of thoughts)
it explores different paths on how to solve the problem , can be used when you have to check which path is best .rather than giving 3 different approaches give all of them at once which will help it analyse the easiest one early.

- The tree-of-thought approach is an advanced prompt engineering technique that enables generative AI models to tackle complex problems.
- It encourages the model to explore different possibilities, evaluate them in parallel, and deliver thoughtful, well-supported conclusions.
- This approach is particularly useful for real-world situations that demand layered decision-making.
- The tree-of-thought approach of prompting comes with some limitations also such as the risk of overgeneration, excessive branching into low-value paths, and the need for careful interpretation by users.

MULTIMODAL prompt

Multimodal prompting refers to the practice of using inputs from different modalities - for example, text and images - in a single prompt to an AI system. Multimodal models, such as OpenAI's GPT-4 (multimodal variant), Google's Gemini, or Meta's ImageBind, are designed to understand and generate responses that consider the interaction between modalities.

Advantages of multimodal prompts

1. **Enhanced contextual understanding:**
Multimodal prompts allow AI to interpret complex situations better. An image alone might be ambiguous, but combined with textual context, it becomes much more meaningful.

2. **Versatility across tasks:**

They enable a single model to perform a wide range of tasks—from image captioning to document summarization and even creative applications like storytelling from visuals.

3. **Improved accuracy:**
By integrating different data sources, models can cross-validate and refine their outputs, leading to more accurate and relevant responses.

4. **Natural human-like interaction:**
Humans communicate multimodally. We speak, point, and show. AI that understands multimodal input can interact more naturally, improving user experience in applications like virtual assistants, tutoring systems, and customer service.

PLAYOFF METHOD

The **Playoff Method** is inspired by the structure of a sports tournament, where multiple candidates (in this case, prompt responses) compete against each other in a series of elimination rounds. By pairing responses and selecting the best option in each round, this method leads to the identification of the most effective prompt or response through systematic comparison.
Playoff Method.

Steps of the Playoff Method:
• **Generate a Set of Responses**: Start by creating a list of potential responses or prompts for a given task.
• **Pair Responses**: Group these responses into pairs (e.g., four responses would be paired into two groups).
• **Evaluate and Select**: In each pair, evaluate the responses based on pre-defined criteria (e.g., clarity, relevance, creativity) and select the better one.
• **Continue the Tournament**: Keep pairing and evaluating the remaining responses in subsequent rounds until one response emerges as the winner.
• **Final Selection**: The last remaining response is chosen as the optimal one.

This method allows for a structured and comparative approach to prompt engineering, ensuring that the final selection is well-suited for the intended task.

Method	Usage	Advantages	Limitations
Playoff Method	Selects the best prompt/response by comparing alternatives in a competitive format.	Structured, systematic comparison; effective for selecting optimal responses.	Time-consuming; relies on human evaluation, which can be subjective.
Interview Method	Uses clarifying questions to refine the response.	Helps gather additional context for accurate responses.	Less efficient for quick tasks; requires more interaction.
Chain of Thought Method	Breaks down reasoning in a step-by-step manner.	Encourages logical thinking; improves transparency and clarity.	Can be redundant for simple tasks; slower for direct responses.
Tree of Thought Method	Explores various pathways or alternatives from a central idea.	Good for brainstorming; generates diverse solutions and ideas.	Can lead to information overload; difficult to manage many branches.

META SKILL

META SKILL can be described as the problem you are getting when you get stuck , and dont really know the answer too . it is not mainly ai's fault or yours . is can be described as what clarity you are lacking in the prompt you provide . before asking the llm get what you want clearly then get to the techniques how you are going to use them

POPULAR PROMPT ENGINEERING TOOLS

1]IBM Watsonx

https://r.search.yahoo.com/_ylt=Awr1Te0LO0RpJgIA76u7HAx.;_ylu=Y29sbwNzZzMEcG9zAzEEdnRpZAMEc2VjA3Ny/RV=2/RE=1767288843/RO=10/RU=https%3a%2f%2fwww.ibm.com%2fproducts%2fwatsonx/RK=2/RS=nOw_39vbc2IxVIwIJDwi54Z2sMc-

used to experiment with prompts

2]SPELL BOOK

https://r.search.yahoo.com/_ylt=Awr1QUQTPURp9QEAb227HAx.;_ylu=Y29sbwNzZzMEcG9zAzEEdnRpZAMEc2VjA3Ny/RV=2/RE=1767289364/RO=10/RU=https%3a%2f%2fscale.com%2fblog%2fcreate-and-deploy-llm-apps/RK=2/RS=gIut0lDzyNL53UQTj1GzuylXZNc-

With spell book we can build a propmpt by which we ca build applications using this tool

3]DUST

https://r.search.yahoo.com/_ylt=AwrPpmW8PkRpAgIAgZS7HAx.;_ylu=Y29sbwNzZzMEcG9zAzEEdnRpZAMEc2VjA3Ny/RV=2/RE=1767289789/RO=10/RU=https%3a%2f%2flearnprompting.org%2fdocs%2ftooling%2fIDEs%2fdust/RK=2/RS=zThJltKz0B4ibicU_JymaRrz64s-

Dust is a prompt engineering tool built for chaining prompts together. They provide a web interface for writing prompts and chaining them together.

4]PROMPT PERFECT

https://r.search.yahoo.com/_ylt=AwrPrswbP0RpJgIAN6C7HAx.;_ylu=Y29sbwNzZzMEcG9zAzEEdnRpZAMEc2VjA3Ny/RV=2/RE=1767289884/RO=10/RU=https%3a%2f%2fpromptperfect.jina.ai%2f/RK=2/RS=ThPzqnrU6E5971Lyk6xJryHxuwc-

5]open ai playgroung

6]playground ai

for images

7]lang chain

is a python liberary that provides funcationality for building and chaining prompts

8]market base:

place to buy and sell prompts

9]ollama 2

you have to use spcific syntax to get the best result.