

Effective use of GenAI in research: tools and techniques

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Outline

- Overview of what's prompt engineering
- Various styles and approaches to prompt engineering
- Tools and techniques for designing prompts to optimise AI research
- Structure of ETF AI Assistant

What is prompt?

A prompt is any input or series of instructions you provide to a generative model to produce a desired output.

How do AI prompts work?



Asking a query

The query is analyzed by natural language understanding (NLU), a subtask of NLP.



Processing the query

The AI model scans the available data to search for relevant information by using sub-tasks such as named entity recognition (NER) and intent recognition.

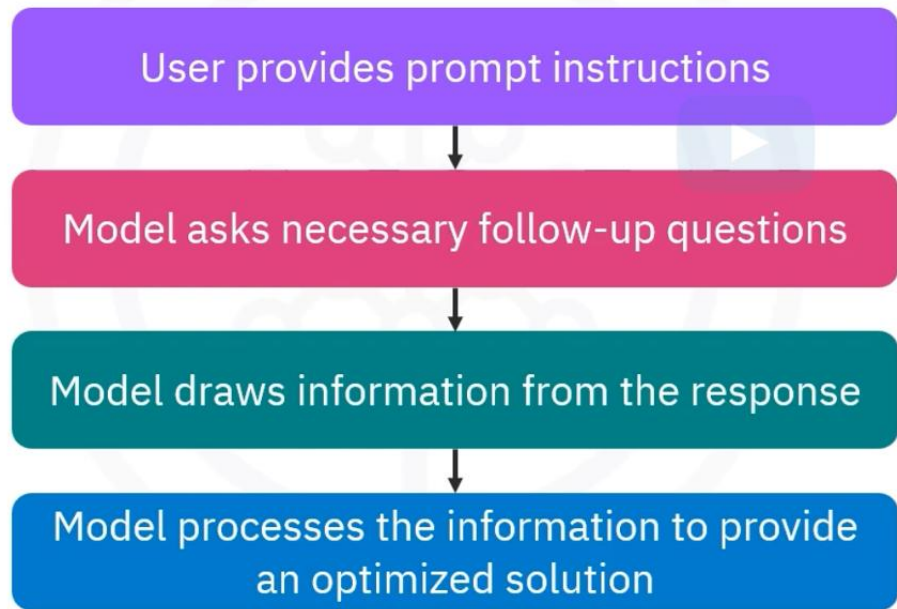


Answering the query

This part uses natural language generation (NLG), where different data points, based on the question string in the prompt, are combined to generate an answer.

Interview Pattern Approach

The interview pattern approach to prompt engineering is a strategy that involves designing prompts by simulating a conversation or interacting with the model in the style of an interview.



Example

Prompt instructions:

“You will act as a seasoned travel expert. Your objective is to engage in a comprehensive trip-planning session with me. Begin by asking a series of detailed questions, one at a time, to gather all the essential information required to craft the most tailored and memorable travel itinerary based on my specific preferences, interests, and budget.”

Chain of Thought Approach

Chain-of-thought is a prompt-based learning approach that involves constructing a series of prompts or questions to guide the model to generate a desired response.

It involves breaking down a complex task into smaller and easier ones through a sequence of more straightforward prompts, with each prompt building upon **the previous one to guide** the models toward the intended outcome.

Feed the model with related questions along with their corresponding solutions.

Prompt includes:

- Related question
- Accurate solution to the question
- Another question based on the same reasoning

Example

Model Input

Q. Mary has 8 radishes. She used 5 radishes to prepare the dinner. The next morning, she bought 10 more radishes. How many radishes does she have now?

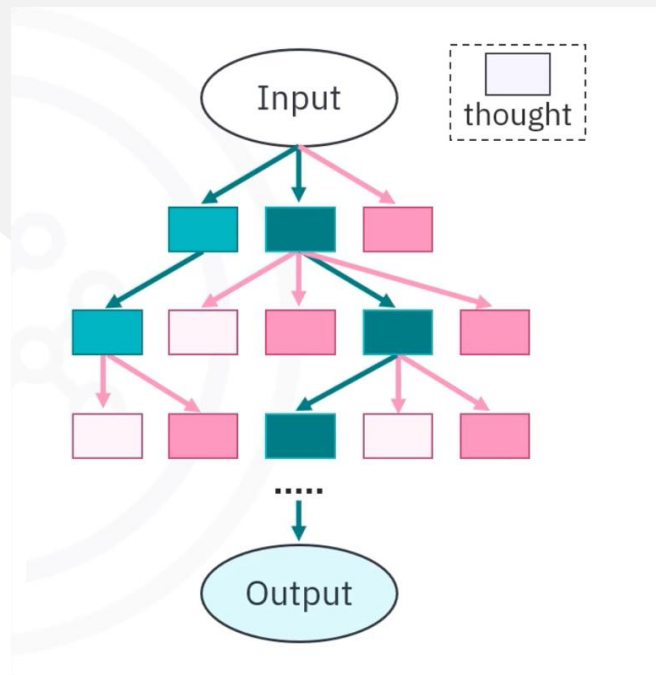
A. Mary had 8 radishes. She cooked dinner using 5 of them. So, she had $8 - 5 = 3$ radishes left with her. The next morning, she bought 10 more. So, she has $3 + 10 = 13$ radishes now.

Q. Mathew has 6 eggs. He buys 2 more trays of eggs. Each tray has 12 eggs. How many eggs does he have now?

Tree-of-Thought Approach

Chain-of-thought is a prompt-based learning approach that involves constructing a series of prompts or questions to guide the model to generate a desired response.

It involves breaking down a complex task into smaller and easier ones through a sequence of more straightforward prompts, with each prompt building upon **the previous one to guide** the models toward the intended outcome.



Example

Prompt instructions:

Imagine three different experts answering this question. All experts will write down 1 step of their thinking, and then share it with the group. Then all experts will go on to the next step, etc. If any expert realizes they're wrong at any point, then they leave.

Prompt:

Act as a human resource specialist, design a recruitment and retention strategy for an e-commerce business, focusing on attracting and retaining skilled remote employees.

Best Practices for Prompt creation

Clarity

- Use clear and concise language
- Avoid jargon and complex terms
- Provide explicit instructions

Context

- Establish the context
- Include relevant information

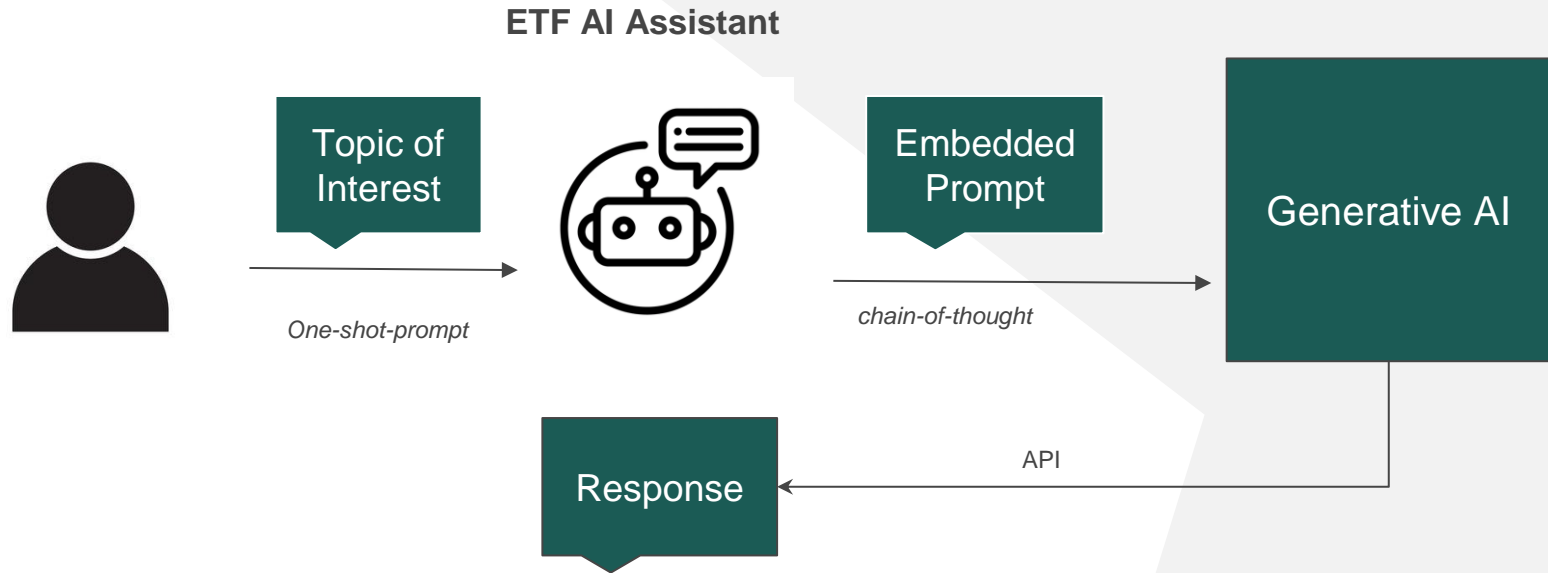
Precision

- Be specific
- Use examples

Role-play/Persona pattern

- Assume a persona
- Provide context for role-play

Structure of ETF AI Assistant



How to write prompts for ETF AI assistant

Impact of AI on the labour market

General overview to start the research process, giving the vast array of research papers as results

An in-depth analysis of the impact of artificial intelligence on job creation, automation risks, and workforce reskilling across industries

More focused set of output and focalized on specific area of interest

Q\A

Thank you!