

LANGUAGE MODELS AND STRATEGIES FOR COMMUNICATING WITH ARTIFICIAL INTELLIGENCE

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Анотація

Публікація досліджує різні стратегії спілкування зі штучним інтелектом для отримання відповіді на конкретну задачу. Відбувається порівняння ефективності стратегій спілкування та визначаються найбільш результативні підходи. Також висвітлено вплив ввічливості запиту на відповідь, яку генерує штучний інтелект.

Ключові слова: штучний інтелект, запит, стратегія, генерувати, мовні моделі, машинне навчання, ввічливість.

Abstract

The publication explores various strategies for communicating with artificial intelligence to obtain an answer to a specific task. The effectiveness of communication strategies is compared and the most effective approaches are determined. The influence of the politeness of the request on the response generated by artificial intelligence is also highlighted.

Keywords: artificial intelligence, query, strategy, generate, language models, machine learning, politeness.

Introduction

Language models are complex artificial intelligence (AI) systems designed to understand, generate, and process natural language. They are among the most widely used and powerful technologies in the fields of computational linguistics and machine learning.

Language models, such as GPT, utilize statistical and neural approaches to comprehend and generate text. They are trained on large volumes of text to identify linguistic patterns. However, they do not possess "understanding" in the human sense but instead operate based on the probabilities of words or phrases in a given context. Language models function on the principle of "predicting the next word" [1].

Research results

The method of single or multiple-shot prompting involves providing artificial intelligence with one or several examples of a desired task or result before requesting it to perform a similar task [2]. This helps AI understand the context and format, allowing it to correctly apply this knowledge to new queries. This approach is particularly useful for specialized or rare tasks.

Zero-shot prompting requires artificial intelligence to perform a task without any prior examples—solely based on its pre-trained knowledge. This method is used to assess AI's ability to generalize its skills and knowledge to new tasks. However, the results may be unpredictable or even random, so it is not ideal for everyday use.

Chain-of-thought prompting is designed to help AI follow a logical sequence or reasoning path to achieve a result or solve a problem. The prompt encourages AI to explain each step of its reasoning in detail, which is useful for complex tasks where understanding the process is just as important as obtaining the final answer.

Iterative prompting takes a slightly different approach. In this case, the AI's initial response is refined through subsequent prompts, each aimed at improving or clarifying the answer. This may involve correcting errors, requesting more details, or adjusting the AI's approach. It can be compared to a sculptor continuously refining their work until it reaches its best form.

Let's apply each of these strategies to solve a specific problem and determine which one is the most effective. A suitable example is the traveling salesperson problem (finding the optimal route for delivering goods across multiple locations), which requires analysis, an understanding of algorithms, and the application of advanced problem-solving methods.

The first strategy to test will be single-shot prompting. To implement this, we will create a query that includes a solved example of the problem along with a similar task to be solved. Another

strategies will be tested by applying the same problem to different prompting techniques and comparing the accuracy, completeness, and clarity of the responses generated by the AI.

Analysis of the results

Out of the four examined AI interaction strategies, only three provided a concrete response. The zero-shot prompting strategy proved to be the least effective, as the user did not receive a satisfactory answer to the problem.

Both single-shot and chain-of-thought prompting produced similar answers, but the former was overly concise. This suggests that chain-of-thought and iterative prompting are the most effective strategies when interacting with AI. Additionally, the iterative approach allows users to verify the correctness of the response and better understand the reasoning behind it.

In addition to choosing a prompting strategy, you can consider the role played by the way requests are formulated, in particular, their politeness or rudeness. A rude communication style is often accompanied by vague wording or a lack of details. As a result, the model may "fail to understand" what is required and generate an irrelevant response.

Rude or even neutral queries can lead to inaccurate or unhelpful responses because the model cannot "guess" the user's intent. Politeness is usually associated with better structure and clarity, reducing the risk of ineffective answers.

Conclusion

Among the four examined AI interaction strategies, chain-of-thought prompting and iterative prompting proved to be the most effective. Zero-shot prompting was the least reliable, as it often resulted in unsatisfactory or unpredictable responses. Single-shot prompting provided correct but overly concise answers, making it less effective for complex problem-solving.

Additionally, while politeness in communication is not a decisive factor, it can contribute to a clearer and more structured request, leading to better AI responses. Conversely, rude or vague queries often lack necessary details, increasing the likelihood of inaccurate or unhelpful answers. Therefore, the key to effective interaction with AI is precise and well-structured prompts rather than emotional tone.

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