Chapter 3
Unleashing Creativity in Natural Language: An Overview of Prompting Techniques Used in Large Language Models

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ABSTRACT

In today's cybernetic world, Generative AI (Gen AI) and Natural Language Processing (NLP) made a vibrant change in the technology. Intertwine between Generative AI and NLP creates a different angle that comes to light. NLP algorithms enhanced by Generative AI not only understands the language but also generates human-like responses, opening doors to more nuanced and context-aware interactions. This chapter focuses on two specific dimensions such as language generation and multilingual capability. Large Language Models (LLMs) are considered as a foundational element or backbone for generating texts. Thereby, prompting LLM is a crucial element for generating the desired text. The main aim of this chapter is to explore importance of prompting LLM, various prompting techniques used for interacting with LLM and the frameworks available for accessing the LLM, and issues involved in prompting LLM and their challenges and future directions will also be discussed.

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1. INTRODUCTION

Generative AI and Natural Language Processing are the mesmerizing fields within the broader empire of Artificial Intelligence (AI). Generative AI is a subfield of AI systems that can create novel, creative content such as text, images, music, etc. based on the training given to them. These systems can generate realistic and creative outputs, sometimes indistinguishable from human-created content. Likewise, NLP is a subfield of artificial intelligence that deals with the communication between machines(computers) and human (natural) language. NLP enables computers to understand, interpret, and generate text in a meaningful and useful way. Figure 1 shows the role of Generative AI in NLP. It has various dimensions such as language generation, conversational agents, data augmentation, multilingual capabilities, creative content generation.

Figure 1. Role of generative AI in NLP (Drawn up by the Author)

Among all these dimensions, this chapter focuses on a prominent domain named language generation. Generative AI tools for text primarily rely on the large language model (LLM). Large Language Models (LLMs) are considered as a foundational element or backbone for generating text with astonishing accuracy and creativity. It acts as a digital wizard that generates human like texts summoned by the user's command. One of the key techniques for harnessing the full potential of LLMs is effective prompting, known as prompt engineering.