

# Chapter 5

## How to Use Prompt Engineering for ChatGPT in Medical Education

### **ABSTRACT**

*In this chapter, the authors present an appropriate use of prompt engineering in ChatGPT in developing a hypothetical case study for students in understanding basic medical science. In artificial intelligence, particularly in natural language processing, the idea of prompt engineering is used. In prompt engineering, the task description that the AI is expected to complete is incorporated into the input, for example, as a question. Students and teachers can develop hypothetical case studies for their learning of the subjects such as pathology, pharmacology, Western medical diagnostic, and internal medicine. The chapter provided the structure of composing the prompt with a hypothetical case study of peptic ulcer disease of a 45 year of women that underwent endoscopy for *H. pylori* detection.*

### **BACKGROUND**

Prompt engineering (PE) is an increasingly important skill set needed to converse effectively with large language models (LLMs) (White et al., 2023). Language models have a history dating back to the 1950s; however, it was not until the emergence of the BERT and GPT models in 2018 that language models truly gained widespread acceptance and became the dominant approach

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in the field (Wang et al., 2023). It is known as prompt engineering, prompt design, or prompt programming.

PE used to design, enhance, and optimizing input prompts in order to effectively convey the user’s purpose to a language model like ChatGPT is known as prompt engineering. To get the model to respond in a way that is accurate, pertinent, and cohesive, this practice is necessary. Proper prompt engineering is now a crucial skill for users who want to fully utilize ChatGPT and obtain the best results in a variety of applications as language models continue to improve.

*Table 1. The iterative process of composing prompts*

Purpose	Prompt
Subject	Subject terms Keywords
Modifier	Question Refinement Alternative Approaches Cognitive Verifier Refusal Breaker
Solidifier	Pattern recognition Error analysis Fine-tuning Citation/Reference
Variation	Alternative terms Synonyms
Weightage	Priority terms Exclusion terms Mixing inclusion and exclusion terms

### **Case Study: A Hypothetical Case Study of Peptic Ulcer Disease of a 45-Year-Old Woman Who Underwent Endoscopy for *H. pylori* Detection**

Conditioning the model on specific keywords: We can provide the model with specific keywords related to peptic ulcer disease, such as “gastric pain,” “stomach discomfort,” and “endoscopy for *H. pylori* detection,” so that it knows what the patient’s symptoms and diagnosis are. Providing example outputs to guide the model’s responses: We can provide the model with sample explanations of peptic ulcer disease and endoscopy that are written in patient-friendly language and that avoid technical jargon. For example: “Peptic ulcer disease is a condition where painful sores develop in the lining

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