Prompting Alchemy: A guide to turn your AI use into gold
Practical Applications of Prompt Engineering in Polytechnic Education
An Ongoing Series

The Teaching and Learning Commons Guide to Prompt Engineering

As a great poet once said, "Generative AI is a thing!" Indeed, it is, but really what is it?

Well, at its most basic, there is a large data set comprised of most of the available information on the internet. A program breaks down all this data into "tokens" of information. These tokens contain roughly four characters or one punctuation mark. The programs analyze the patterns of each token occurring next to another token. A generative AI access interface makes predictions of the likelihood of one token appearing next to another token in response to the prompt of a user. A prompt is a question or direction a user provides to a generative AI to initiate an interaction.

So generative AI does not "create" anything, but it is very capable of predicting token patterns and responding to prompts with very natural sounding language. Some of the responses seem very complex and comprehensive. Given the ease with which previously unfathomable outputs are achieved, some people tend to view their prompts as one and done. This may work for very discrete needs, like Boggle results, creating a bedtime story for your children, or coming up with a name for this blog series, however it does not work for all output needs.

Some folks are not able to have AI to achieve their desired outputs, so they label this a failure of the technology and write it off as ineffective.

The issue is the user has one tool at their disposal the prompt, and if they do not know how to use the prompt effectively…well, garbage in, garbage out. This is where this blog series comes in. This series will explore prompting as a concept, explore basic prompting templates and more complex prompting patterns. This series will also explore using a variety of strategies to achieve your desired results.

New context will be added to this blog regularly, so be sure to hit the bell icon and smash the subscribe button… Kidding. This is not TikTok. Feel free to check in every couple of weeks for new techniques.

TL;DR

One Prompt

As many prompts as are required to achieve the desired outcome.

Generative AI

Prompt Engineering - Overview

A prompt is simply a word or series of words that initiate a response from an AI. Anything input by the user is considered a prompt.

Prompts play a pivotal role in the functionality of generative AI, acting as the fundamental channel of communication between the user and the AI. At their most basic, prompts are designed to direct the AI's generation of specific outputs or execution of tasks.

Any prompt will elicit a response, however, to elicit an effective response, the user must provide specific details required by the AI relevant to the request. A poor prompt, that is, a generic request that fails to provide the required information, will still yield a response, however the quality of the response will be much worse than the response generated by a comprehensive and well thought out prompt.

To develop a well thought out and comprehensive prompt the user needs to be cognizant of:
1) The needs of the AI
2) A granular understanding of the task being requested.

To guide the user in understanding the requirements of the AI, we have adapted three prompting templates. These templates will guide the user in providing the minimum amount of detail for the AI to provide an effective response. These templates include:

1) TOCD – an acronym of Task, Output, Context, and Data
2) RTAO – an acronym of Role, Task, Audience, Output
3) Comprehensive – the user explicitly states all the possible detail. Think of this as the Maximum Effort approach.

When users are comfortable with prompting using these templates, or if they are looking for more comprehensive answers to more complex questions, they may move on to different prompting strategies. These strategies are less about understanding the needs of the AI and are more about deconstructing the user task so more comprehensive prompts and higher quality responses may be generated. There are four categories of strategies. These are:

1) Task Strategies – Focus on the user task and exploring it in detail which will then be provided to the AI.
2) Interactive Strategies – Using AI as an interactive guide to support the exploration of the identified task.
3) Iterative strategies – Unique strategies that are designed to be combined with others to provide a very comprehensive view of the user task so the detail may be passed on to the AI.
4) Risk Mitigation Strategies – Prompting strategies designed to reduce some of the challenges inherent in working with AI.

Each category will have multiple strategies progressing from basic approaches through intermediate and on to advanced approaches.