

AI PROMPT WEBINAR

PROMPT SUPPORT DOCUMENT

The following resource was developed by David Dempsey from the University of Canterbury to accompany the December 2024 webinar, AI Prompt Engineering brought to you by the Engineering New Zealand Engineering and AI programme.

Getting started

Go to <https://chatgpt.com/>, create an account (free is fine), and log in.

Settings > Data controls > Improve the model for everyone = Off

Slides and Prompts

Prompt Exercise 1

The letter following 'A' is...

Language Models

Language can be both syntactically and semantically correct.

<https://artefact2.github.io/llm-sampling/index.xhtml>

Context (prompt + completion) is where a collection of individual words is connected by meaning into ideas.

Next-token-prediction

AI creates output one word¹ at a time. Each new word depends on your prompt *and* on previous words it has generated.

So, don't ask the AI to be concise. Its output is where it is 'thinking/analysing'.

Give me one engineering opportunity in Christchurch that is likely to be attractive, three-word answer.

Chain-of-Thought prompting

Give me one engineering opportunity in Christchurch that is likely to be attractive. Think the problem through step by step and then answer

¹ Actually, one token. 100 tokens ≈ 75 words.

Parallels with brains

As animal brains get larger, they are capable of more sophisticated tasks. As brains are exposed to more learning, they become smarter. The same is true for large language models.

As Gen AI scales larger, new unplanned capabilities have spontaneously emerged.

The letter following 'B' is 'A'. The letter following 'C' is 'B'. The letter following 'D' is...

An example is few-shot learning: an ability to follow templates supplied in the prompt. See Few-Shot prompting exercise in the appendix of this document.

Always-Be-Specific & Iterating: e.g., persona prompt, objective, audience, contextual details, boundaries.

In future, bottlenecks may limit scaling-related improvements to AI.

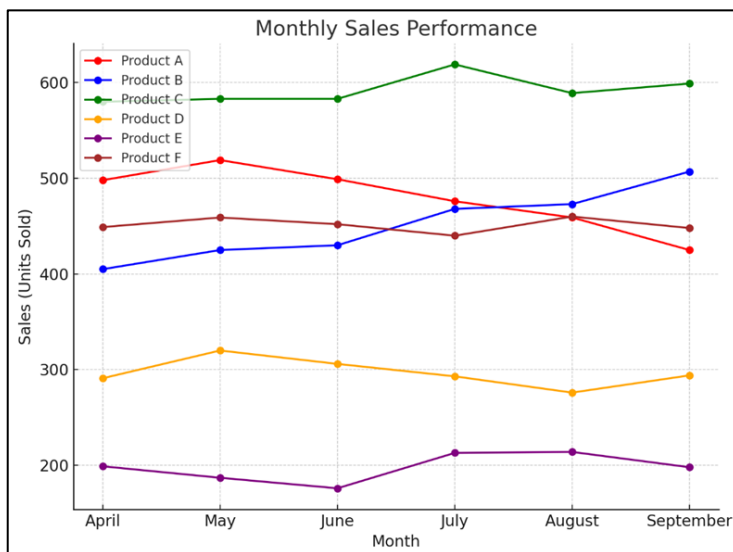
Tips for Better Prompting

Always-Be-Specific & Iterating: e.g., persona prompt, objective, audience, contextual details, boundaries.

I have a difficult employee, what should I do?

Multi-modal prompting – text + images/documents

Take a look at this graph and give me your high-level take-aways.



- Meta-prompting – have the AI write its own prompts for you to customize

Help me write an AI prompt to design a client retention program. Leave placeholders where you need specific details from me.

- Ensembling – improve AI reliability through a consensus
- Self-criticism – AI reflects on its own response

Critically evaluate this prompt and response. Suggest improvements and implement them

Current and future use cases

Learn about a new subject. Get peer review. Rewrite text. Query a document. Do quantitative analysis. Brainstorm for suggestions.

What next?

Adopt an experimental mindset. Try one or two easy, low-risk things each day. Persist with a prompt for three iterations before giving up.

Be sceptical and verify outputs. There are FOUR kinds of misinformation to look for.

Active and focused events. A work hackathon? A training workshop?

I'm happy to hear about what you're doing with AI: david.dempsey@canterbury.ac.nz

Appendix: Few-shot prompting

Goal: To create a few-shot template style prompt.

Task: A procurement exercise. We are evaluating products based on their manufacturing descriptions. We want to extract information about carbon intensity.

Steps:

Read through two product descriptions. Identify the major material. Evaluate how much embodied carbon it represents. *(Comment: We could ask the GenAI to do this step for us, but the purpose of Few-shot prompting is that we are showing it how to do the analysis. For quality control reasons, it is better to do this step ourselves.)*

Write a few-shot prompt that (a) introduces the goal, e.g., “you are helping me to evaluate XX”, (b) tells it this is a few-shot task, e.g., “I will provide you with some examples of YY”, (c) instructs it what to do, e.g., “you will then evaluate a new product ZZ”

Try it out and see how it works!

Below: I have provided you with four product descriptions of water tanks. To speed things up, I have already done Step 1 for you, that is evaluating the PD and appending carbon intensity notes under “Comments on materials” and “Comments on carbon intensity”. I have *only* done this for the first two products, which will be our two “shots”. We will be getting the GenAI to do the evaluation on the second two products.

Now: Build the prompt, according to Step 2 and see how it works.