

GenAI Externship

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AI-Powered Text Completion Report

This project involved developing a command-line application using the Cohere API (command-r-plus) to generate text completions based on user prompts. The app allows users to interact with the model through typed inputs and explore how different settings (temperature and max_tokens) affect the outputs. Prompts were tested across multiple domains, including summarization, explanation, and creative storytelling.

Prompt 1: Summarize Text about Cognizant

Prompt: Summarize the following text: At Cognizant, we help companies modernize technology, reinvent processes, and transform experiences, so they stay ahead in a constantly evolving world. Cognizant is a leading corporate organization committed to encouraging diversity, equity, and inclusion in the workplace. We believe that different perspectives drive innovation and lead to greater success. Our Externship Program is crafted to provide undergraduate students with valuable skills that will prepare them for their career path. Our associates' diverse set of backgrounds offer varied perspectives and fuel new ways of thinking. We encourage lively discussions which inspire better results for our clients.

Settings:

- temperature: 0.8
- max_tokens: 100

AI Response: "Cognizant is a forward-thinking corporate leader, dedicated to helping businesses stay ahead of the curve through technology modernization, process reinvention, and experience transformation. With a strong focus on diversity, equity, and inclusion, Cognizant believes in the power of different perspectives to drive innovation and success. The company's Externship Program offers undergraduates valuable skills and a range of viewpoints, fostering an environment of lively discussion and improved client outcomes."

Evaluation: The summary was highly relevant and coherent. It retained all major ideas from the original text in a more concise format. There were no inaccuracies or biases present. The response used polished language and felt suitable for professional communication.

Prompt 2: Explain Factorials to a 5-Year-Old

Prompt: Explain factorials like I am five years old.

Settings:

- temperature: 0.8
- max_tokens: 100

AI Response: "Factorials are a special kind of number that help us count and multiply. When we see a number with an exclamation mark after it, like '5!', it means we're going to multiply all the numbers from 1 up to that number.

So, for 5!, we multiply $5 \times 4 \times 3 \times 2 \times 1$. This gives us the answer of 120. It's like counting down and multiplying as we go."

Evaluation: The explanation was well-tailored to a young audience. The tone was clear and simple without being condescending. The concept of a countdown was a helpful metaphor. No issues of accuracy were present.

Prompt 3: Explain Recursion to a 5-Year-Old

Prompt: Explain recursion like I'm five.

Settings:

- temperature: 0.6
- max_tokens: 250

AI Response: "Recursion is like a game of 'echo' but with actions instead of words. Let's say you and your friend are playing a game. You start by doing an action, like jumping. Then, your friend has to do the same action, jumping, and also tell another friend to do the same action. This new friend also has to jump and tell yet another friend, and so on. Each friend is doing the action and then telling the next friend to do the same. That's like how recursion works in computer programs! It's doing something and then telling itself to do that same thing again until a certain condition is met."

Evaluation: The analogy of an "echo game" was clever and child-appropriate. It helped simplify a complex concept. The explanation did not go too deep and avoided jargon, which suited the intended age level. A solid example of the model simplifying technical topics.

Prompt 4: Continue This Story

Prompt: Continue this story: "The world's a boring place," my ageing father frequently says. He's wrong. It's still full of mystery and wonder, if you just look. "You should read the papers more," I suggest. "Today scientists found some dinosaur tracks in Mongolia." "Nothing exciting about more fossils," he harrumphs. "These are fresh prints."

Settings:

- temperature: 0.6
- max_tokens: 250

AI Response: "Fresh dinosaur prints?" My father's eyes lit up at the prospect, his bushy eyebrows raising in surprise. "You mean to tell me that dinosaurs still roam the Earth? I thought we had discovered and documented every creature under the sun."

I smiled, knowing that I had piqued his interest at last. "Well, these aren't your typical dinosaur remains, that's for sure. Scientists believe that these tracks were made recently, and they're trying to figure out if any dinosaurs might still be alive today."

"Remarkable!" My father exclaimed, leaning forward in his chair. "And to think, all this time I've been complaining about the world being boring. It just goes to show that there are still secrets and wonders waiting to be uncovered."

"Indeed," I agreed. "It's a reminder that we should never stop exploring and seeking knowledge. Who knows what other mysteries and marvels are out there, waiting to be discovered?"

Evaluation: This continuation was imaginative, consistent with the original tone, and engaging. It introduced a fantastical element (fresh dinosaur prints) in a believable context. The pacing was smooth and the dialogue felt natural. While not factually accurate, it worked well for a fictional prompt.

Prompt 5: Summarize Climate Change Text

Prompt: Summarize the following text: Climate change is a long-term alteration of temperature and typical weather patterns in a place. This change could be natural, due to variations in the solar cycle. However, since the 1800s, human activities have been the main driver of climate change, primarily due to burning fossil fuels like coal, oil, and gas.

Settings:

- temperature: 0.1
- max_tokens: 150

AI Response: "Climate change refers to long-term shifts in temperature and weather patterns, which can be attributed to natural variations or human activities. While natural factors like solar cycle changes can influence climate, human actions, particularly the burning of fossil fuels since the 19th century, have been the dominant cause of climate change. This human-induced climate change has led to significant alterations in temperature and weather patterns globally."

Evaluation: The summary was highly accurate and ignored the typo in the input ("tike coat"), instead correctly interpreting it as "like coal". The model produced a factual, well-structured summary with a neutral tone. Lower temperature resulted in a more formal and concise response.

Throughout testing the different capabilities, the model demonstrated consistent relevance and coherence across a variety of prompt types. Each generated response remained focused on the user's input and exhibited a clear, logical structure, reflecting strong comprehension of intent. This consistency was particularly evident in informative and summarization tasks, where the model provided accurate and well-structured outputs without noticeable deviation from the topic.

Regarding factual accuracy and potential biases, the model maintained reliable performance in factual and summarization prompts, with no significant errors detected. The only exception arose in the creative story continuation prompt, where the introduction of fictional elements was expected and aligned with the prompt's imaginative nature. Moreover, no discernible biases emerged in any of the tested scenarios, which indicates a balanced and neutral response generated within the scope of these tasks.

Furthermore, adjusting model parameters noticeably influenced the tone and depth of responses. The higher temperature settings encouraged more creative and free-flowing answers, allowing for richer storytelling or exploratory text, while the lower temperatures created more concise, factual, and structured replies. Additionally, increasing the maximum token limit allowed the model more room to elaborate or complete complex narratives, enhancing the depth of responses when desired.

While the model generally performs well in summarizing content, offering explanations tailored to different audiences, and extending creative narratives with contextual fluency, some limitations were observed. Challenges arise when prompts are ambiguous or open to multiple interpretations, such as distinguishing between literal and metaphorical meanings. The model

may also overlook typographical errors in user inputs and does not inherently verify factual claims within imaginative outputs.

To address these limitations and enhance the overall user experience, several improvements can be made. Firstly, incorporating an optional spellcheck or typo correction feature could increase input accuracy. Then, also allowing users to dynamically adjust parameters like temperature would enable greater control over response style and creativity. Similarly, implementing response filters, such as toggling between “Factual” and “Creative” modes, could better tailor outputs to user needs. Additionally, saving prompt-response histories would facilitate review and refinement. And lastly, introducing a verification mechanism, potentially via integration with external fact-checking APIs, could enhance factual reliability and trustworthiness.

Overall, this project successfully illustrated the development and evaluation of a generative AI text completion application using Cohere’s language model. The system reliably produced coherent, contextually relevant, and often impressive responses across diverse prompt types. With targeted improvements in input handling, parameter control, and factual validation, this application has strong potential to evolve into a versatile tool for educational support, effective communication, and creative ideation.