

Generative AI Tools

Generative AI tools are a rapidly evolving branch of artificial intelligence capable of creating entirely new content, including text, images, code, and music. These tools, powered by machine learning, leverage massive datasets to understand the underlying patterns and structures of various content types. This enables them to not only analyze information but also generate novel and unique creations inspired by the training data.

In our research about an empirical study on prompt injection attacks and defenses, we used several gen AI tools to complete our literature review.

[1]OpenAI, “ChatGPT,” chat.openai.com, Nov. 30, 2022. <https://chat.openai.com/>

[2]“Gemini - chat to supercharge your ideas,” gemini.google.com. <https://gemini.google.com/app>
(previously known as Bard)

[3]“ChatPDF - Chat with any PDF!,” www.chatpdf.com. <https://www.chatpdf.com/>

[4]Grammarly, “Write your best with Grammarly.,” Grammarly.com, 2023.
<https://www.grammarly.com>

[5]“Copilot,” Bing. <https://www.bing.com/chat> (previously known as Bing AI)

Discussion

Application of Generative AI Tools

After team members read and summarized the research papers, we used **ChatGPT**, **Copilot** and **Gemini** to get more clarification about the doubts that arose. Simplification of sentences for a better understanding was done through these. They were also used to brainstorm ideas and fill gaps in the literature review when we wrote the paper. **ChatPDF** helped us quickly grasp the central points of a document or find specific details, by uploading the relevant PDF and conducting searches within it. We could ask questions about topics covered within the paper and get the answers. We utilized it to define specific terms, particularly in contrast to the research paper and in a broader context. Then, we compared them to determine whether this information has been updated since then. We used **Grammarly** to improve sentence structure and grammar, especially when defining terms in the research paper. We also used it to write some sentences in a way more suitable for an academic paper. **ChatGPT** was also used for this purpose.

Effectiveness

ChatGPT proved highly effective in generating and refining sentences suitable for inclusion in an academic paper. We used Grammarly to fix grammatical errors but we noted that ChatGPT had done a better job at keeping the meaning of the sentence while fixing those mistakes. We were able to save a lot of time by using these tools to correct any grammatical or phrasing errors in the content we wrote. Additionally, Grammarly helped us to rephrase the sentences to a more academic format. ChatPDF was helpful in summarizing key points covered in the paper, but we noticed that on some occasions it would generate content that was not there in the given paper. As a remedy, we cross checked the generated content with the paper, before using.

Bias and Fairness

We first summarized the research papers and key points taken from these papers were provided as prompts to generate content. Hence noticeable bias was not observed. When getting content from Gemini we used all three output drafts to create the answer. Gemini proved to be more accurate compared to ChatGPT and Copilot when clarifying the doubts we had regarding the research topic. In certain instances, ChatGPT provided wrong answers, so we continuously checked the outputs with Google to ensure that content generated from these tools is accurate and fair.