Guidelines for using Generative Artificial Intelligence in STEM Projects

Adapted with thanks from a document developed by the Calgary Youth Science Fair Committee

The difference between generative artificial intelligence (GAI) and traditional artificial intelligence (AI) is described here: https://www.upgrad.com/blog/generative-ai-vs-traditional-ai/

ChatGPT is a specific example of a technology that uses GAI.

If you are using GAI in your project, please follow these guidelines:

- **Clearly Define the Purpose:** Clearly outline the purpose of using GAI in your project. Explain how it enhances or supports your work on your research question or topic.
- **Acknowledge the Tool:** Clearly state that you used GAI as a tool and acknowledge its role in your project. Make it clear that the responses generated are based on the training data and model capabilities.
- **Ethical Considerations:** Address ethical considerations associated with using AI, such as privacy, bias, and potential misuse. Discuss how you mitigated these concerns in your project.
- **Explain Limitations:** Highlight the limitations of GAI. Discuss areas where it may not provide accurate or reliable information.
- **Demonstrate Understanding:** Show your understanding of the technology. Explain how you selected and processed the input prompts and how you interpreted and applied the model's responses.
- **Comparison and Validation:** If possible, compare GAI-generated responses with information from other reliable sources. Discuss how you validated the accuracy of the information obtained from GAI.
- **Educate the Audience:** Briefly explain how GAI works, its underlying technology, and the data it was trained on. Help the audience understand the context and limitations of the tool.
- **Interactive Demo (if applicable):** If your project involves an interactive demo with GAI, ensure it is well-prepared and user-friendly. Allow judges or visitors to interact with the system and observe its responses.
- **Address Questions and Concerns:** Be prepared to answer questions about your project's ethical considerations, limitations, and validation methods. This demonstrates your awareness of potential issues.
- **Stay within Project Scope:** Ensure that the use of GAI aligns with the scope and objectives of your project. It should complement your research rather than overshadow it.
- **Cite the use of GAI in your project**: For example, where a section of text has been generated by a GAI:

  "AI or Large Language Model-generated text in the body of your project" (OpenAI, 2023)

  References [later, in your references section]

OpenAI. (2023). ChatGPT (Mar 14 version) [Large language model]. https://chat.openai.com/chat