



Colorado Science and Engineering Fair

2024 Individual Project Abstract Form

Please print 2 copies of the completed form. Sign both copies, keep 1 for your notebook and submit 1 copy to your Regional Fair Director with your other paperwork.

Title of Project: MisinformAtlon: How AI can create realistic misinformation that humans read as fact

Finalist's Name: Ellery Kallal

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Sponsor's Name: Lauren Liedtke

Category: Mathematics & Computer Sciences (MACS)

Division: Junior (6th - 8th grades)

Abstract (250 words or less):

Artificial Intelligence's (A.I.'s) importance in modern society is growing exponentially. As a result, many are wondering how trustworthy A.I. is, especially regarding the consumer-based technology commonly known as Chatbots or Chatterbots. These chatbots are Large Language Models (LLMs) and have an observable tendency to hallucinate (misinterpret) or even fabricate entirely false responses. This led to the question of just how reliable contemporary LLMs are, alongside the question of whether there was a chatbot that was less susceptible to misinformation than others.

To answer this question, a set of 50 questions with non-subjective singular answers was created. Each question was asked to a group of four LLMs: ChatGPT, Bing AI, Google Bard, and LLama2 7b Chat. The answers these LLMs produced were then recorded into a data table and subsequently marked into 3 different categories: Correct, Misinformation, or Didn't Answer.

The total number of answers given amounts to 200, with each LLM providing 50 responses. Out of these 200, 41 were classified as misinformation/hallucinations, and another 9 were unanswered in the chatbots' replies. Of the tested LLMs, ChatGPT was found to be the most reliable, however it still had a misinformation rate of over 10%. While this was better than the overall rate of misinformation across all chatbots (21%), it still demonstrates that misinformation is pervasive in LLMs. The conclusion from this outcome is that chatbots are unreliable sources for information, and using them for research and other related fields is currently not advised.

I hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. I also attest that the above properly reflects my own work.

Finalist's Signature:

Date:

2/28/24

In addition, all students must complete the ISEF Student Checklist (1A), Research Plan, Approval Form (1B), and Checklist for Adult Sponsor (1), and any other ISEF forms required for this type of project. See the International Rules and Guidelines for form requirements. Return COPIES of all of these forms to your Regional Fair Director with you Finalist Verification/Permission Form. A signed copy of this form must be included in your notebook.