

Generative Artificial Intelligence in Education: Feedback and Processing Enhancement for Students

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Abstract—Current Large Language Models are being utilized by students to further their academic goals, often using it as a tutor to study more efficiently. These models are being researched through higher-level prompt engineering and data stories’ outputs to optimize how prompts are processed and answered. One feasible solution for efficient outputs is combining Explainable AI techniques with LLMs so students can learn the *why* behind the feedback they receive. Research can be conducted to optimize responses by taking in data stories from students, applying XAI to the responses, then tested by students.

Keywords—XAI, Explainable Artificial Intelligence, Generative Artificial Intelligence, Large Language Models, Data Stories

I. INTRODUCTION

Existing Large Language Models like ChatGPT and Gemini have specific Study Modes to assist students seeking an Artificial Intelligence assistant to study. These models are currently optimized to give feedback to students in their queries to further their education. While these models can be used by students successfully, they often lack transparency and complete control over exactly *how* they receive this feedback. Utilizing XAI and prompt engineering techniques, this problem can be resolved. The necessary steps to achieve this solution would be to research how LLMs process prompts, intercept the process to redirect the AI model’s response to give stronger and more accurate feedback that matches a student’s needs, then this new model can be tested using real feedback and queries from current students.

II. EXISTING RESEARCH TECHNIQUES

Recent work on LLMs’ potential for assisting students is emerging such as *Show and Tell: Exploring Large Language Model’s Potential in Formative Educational Assessment of Data Stories* where “LLM was tested in zero-shot, one-shot, and two-shot scenarios, generating narratives and self-evaluating their depth” [1]. Other researchers are also experimenting with LLMs’ potential to enhance “Explainable AI (XAI) by transforming complex machine learning outputs” [2].

III. RESEARCH PLAN

This research project has the objective to develop a system that both shows and takes in transparent and detailed feedback processing to students, enhancing the existing processing system. This approach has the following steps to (1) research how existing AI analyzes and responds to requested feedback, (2) research how this processing can be intercepted and adapted according to the query and student, (3) design prompts for LLMs to process data and client-side requirements to generate efficient feedback, (4) apply XAI methods to the influenced outputs, and (5) test the project with students’ queries and feedback.

REFERENCES

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