Thesis Project Portfolio

Developing Design Features to Facilitate AI-Assisted User Interactions

(Technical Report)

The Role of Artificial Intelligence in Decision Making: College Admissions

(STS Research Paper)

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Executive Summary

Artificial Intelligence (AI) integrated in the field of data analytics and querying processes aims to provide actionable insights specific to a user's demands. AI assistance in querying processes raises questions about the necessity of human involvement. If AI possesses the knowledge to understand the optimal result of such processes, the role of human actors may become obsolete. By challenging the need for human actors, the STS research paper sought to analyze the capabilities of AI within numerous decision-making processes. The paper was later narrowed down to analyze how AI will play a role in the sociotechnical decision making process of college admissions.

AI assistive technologies are being fielded to facilitate user interactions with systems maintaining large quantities of data. In some respects, their needs in affording user interactions in such contexts are not new. For example, chatbots have long sought to bridge the gaps between a user's question and the system's data structures and relevant responses, even allowing input prompts in natural language. In contrast to chatbots that navigate deterministic, rules-based decision trees, generative AI systems can respond to a user's question in a much more specific and customized fashion. To do so, AI assistive systems rely heavily on the articulation of specific user prompts, which can raise issues when users fail to clearly express their desired intent. The work described in the Capstone project paper explores interaction design to integrate AI assistance in data queries to balance user desires of specific, goal-oriented, customized query responses, while not constraining users by extensive training in prompt engineering. In a case study in the business-to-business domain, key design considerations include: 1. Refinement of search categories, 2. Context-aware prompt recommendations, and 3. Customization of query

input per user technical ability. In this way, the effort seeks a more collaborative AI-user experience.

The decisions made by college admissions officers are pivotal, impacting the futures of prospective students so that they can attend the college of their dreams. The arduous process is one that has been refined over the years to improve efficiency and efficacy in which admissions officers are able to review hundreds of thousands of applications each year. The admissions process, while refined and effective in selecting top talent for each respective university, is subject to human error and bias. With recent shifts in affirmative action policies, ending race-conscious admissions programs, the decision-making process is now more scrutinized than ever. Utilizing the sociotechnical framework developed by french sociologist Bruno Latour, known as the Actor-Network Theory, the STS research paper explores how Artificial Intelligence might be used to mitigate human biases by replacing or supplementing human judgment with algorithmic decision-making. Analyzing the interconnectivity of the elements crucial to the decision-making process through the Actor-Network Theory helps to answer the primary question of the STS research paper: How does Artificial Intelligence play a role in the sociotechnical decision making process of college admissions? The research conducted in the STS research paper aims to enhance understanding of the decision-making capabilities of AI and its potential to supplement human decision-making for achieving optimal results while minimizing human error and bias. Humanity is at a pivotal point in history, where it must determine the parameters of interaction between AI and humans. The research plays a crucial role in navigating and shaping the evolving relationship between AI and humans.

Simultaneous work on both the technical project and the STS research paper allowed for a complete understanding of both the technical elements of designing an interface that

incorporates AI as well as the sociotechnical elements that will always be involved, but can be neglected when focus lies solely on the technical aspects. Given the nature of the technical project, with its focus around user design, the immediate impact of proposed design considerations were tested with prospective users. However, without the research conducted in the STS paper, deeper analysis into the implications of the relationship between humans conducting the querying processes and the AI assisting in those processes would not have been considered to the extent it was. Furthermore, understanding the capabilities of both AI and human actors through the technical work influenced the perspective from which the STS research paper was approached - examining the ways in which the best qualities of each actor can best be leveraged for optimal results.