For my senior design project, I will be contributing to a relatively small-scale GPT model that will be used to summarize research papers ideas, and implementations for students. It will also recommend students other work based on the paper. This project will be the culmination of my interest and knowledge of artificial intelligence (AI) and teamwork in my undergraduate career. My primary role in the project involves leveraging machine learning algorithms and data analysis to develop a competent GPT model with adequate natural language processing. The project will allow me to apply the skills and knowledge I've gained in AI to enhance the students' experience in achieving higher academic success.  
  
My senior design project has been heavily influenced by the experiences and coursework I have gained throughout my undergraduate degree. Courses like "CS 4033: AI Principles and Applications," "CS 5137: Machine Learning," and "CS4092: Database Design and Development" offered a solid basis for creating machine learning models and implementing data-driven solutions. These classes helped me acquire essential problem-solving abilities, which I'll use when designing machine-learning algorithms for the project. Furthermore, I gained valuable expertise by completing different code assignments and group projects in my other classes, which entailed complex data manipulation and model construction with libraries such as TensorFlow and PyTorch, which I intend to use during the project.  
  
Beyond coursework, my co-op experiences have been equally valuable in preparing me for my senior design project. During my time as a Machine Learning Engineer at Viettel Cyber Security, I oversaw the creation of a machine learning model that distinguished between adults and children using touch data, achieving 97% accuracy. Furthermore, my time as a Machine Learning Researcher at the University of Cincinnati exposed me to real-world research scenarios, where I created speech recognition models and performed complex data analysis. These co-op positions improved both my technical skills (feature extraction, model training, and data visualization) and my non-technical skills (teamwork, leadership, and communication), which will be essential for collaborating with my peers on the project.  
  
The motivation behind my participation in this project comes from my deep interest in the crossing of artificial intelligence and academic research. Besides that, I have always felt that the area of academic research has such a massive barrier of entry and requires new technology to intervene and allow students and aspiring scholars to approach confidently. By creating an application that streamlines the research process using AI-assisted information collecting, I hope to save students and researchers time and effort trawling through many publications, freeing them up to focus on deeper analysis and learning. My basic approach will include developing an NLP/GPT model to create paper synopses and devising an algorithm to propose relevant publications. Furthermore, I and my colleagues will investigate reverse recommendation approaches to match user queries to relevant publications, ensuring that the tool produces accurate and useful results that enable students to study more successfully.

By the end of the capstone project, I expect myself to at least complete the GPT model construction for the team and ensure that we have a stable program that can generate summaries of a research paper. My contribution will be based on how well and robust the model can summarize the paper as well as extracting valuable attributes from research reports. Moreover, I aim to have the model provide a framework for future features to be built on top of its language processing capabilities. My work will be done once a coherent summary of considerable length, roughly measured as having an intro, body, and conclusion of several paragraphs, can be generated from any submitted research paper. How well of a job I have done depends on the model’s generation capabilities and modularity for expansion.