My senior design project focuses on developing a web-based application aimed at enhancing the research process by providing insightful analysis and recommendations from academic papers. Our aim is to create a user-friendly interface that allows users to upload research papers and receive an AI-generated synopsis, relevant tags, and potential applications. Furthermore, a sub-feature of the application tracks the citation timeline to assess how updated the references are. From my academic perspective, this project combines critical areas in computer science such as data analysis, NLP (Natural Language Processing), and software development. My experience in designing intuitive, responsive web applications will ensure a seamless experience for users navigating this tool.

Throughout my time at the University of Cincinnati, my taken courseworks has provided me with the necessary technical foundation to succeed in this project. Key courses such as Data Structure and Algorithm Design provided me with essential knowledge in developing efficient systems to manage large data inputs, which will be necessary for processing research papers. Additionally, I learned about human-centered design in UI/UX (CS 4010), which I will apply to ensure that the interface of this application is intuitive and user-friendly. Last but not least, Software Engineering course gave me enough knowledge about team management software development cycle, which will play an important role in my leadership.

Beyond academics, my co-op experiences further enhanced both my technical and soft skills. During my internship at TMA Solutions as a Software Engineer Intern, I sharpened my skills in web development and data visualization. For example, I developed a stats page with responsive graphs, a key learning I can transfer to designing visual timelines for citations in the project. At College of Engineering and Applied Science Library, where I worked as a Python Instructor, I helped the CEAS Library develop workshops using AI, which will aid me in the intelligent processing and recommendation aspect of the application. Additionally, having experience working with a diverse team improved my communication and collaboration skills, both of which are essential for team-based development of this project.

I am particularly motivated to work on this project because it addresses a real-world problem I’ve encountered in my undergraduated years: efficiently navigating and synthesizing large volumes of research papers. Having been “buried” under a tons of papers but not finding a related or rational source to my paper was one of the worst experience ever. I want to enable the ability of simplifying complex processes through AI technology, data science via a user-friendly User Interface. The idea of helping researchers quickly gain insights and find related work aligns with my passion for problem-solving and creating impactful solutions to future students.

My approach to designing the application involves building a solid backend for data processing first, ensuring the application can efficiently handle large volumes of research papers. Following that, my team focus on the recommendation system, using machine learning models to suggest related works. For me, as a team leader, my main goal is to help keep track with the work flow and ensure everyone communicate to each other. Additionally, as a software developer, I want to design and develop a user-friendly UI to. To evaluate my contribution, I will measure success based on user feedback, ensuring that the application meets the needs of users in both accuracy and usability. Success, to me, will be achieved when users consistently find value in the tool and when it provides reliable outputs in real-world academic scenarios.