Our senior design project is centered on creating AI-assisted vision goggles for visually impaired individuals. The system will combine computer vision and RAG to process real-time data and provide meaningful auditory feedback to the user. From my perspective as a computer science student, this project brings together multiple disciplines of software engineering, artificial intelligence, and human-centered design. The primary goal is to help users navigate their environment with greater independence and confidence. I see this project as a chance to apply both theoretical and practical knowledge to a system with real-world impact. It also allows me to merge my expertise with my motivation to make assistive technology more accessible, since there aren’t many such projects on the market.

My coursework at the University of Cincinnati has directly prepared me for this project. Courses like CS2028C Data Structures & Algorithms gave me the ability to design efficient systems for handling large streams of data. CS4071 Machine Learning introduced me to core concepts in model training and evaluation, which are essential for computer vision tasks. CS3022 Database Design and Management taught me how to create structured, scalable databases, which aligns with our project’s need for a customizable retrieval system. Additionally, CS5168 Software Engineering emphasized group collaboration, system design, and documentation practices that mirror professional software projects. Beyond technical content, these classes helped me strengthen analytical thinking, time management, and teamwork, which will all guide how I contribute to the goggles project.

Equally important have been my co-op rotations at Emerson, where I worked as a Software Development Co-op from January 2023 to August 2025. During this time, I developed applications using C# and SQL Server, contributed to the migration of a large AngularJS application into Vue.js, and learned how to practice test-driven development (TDD). These technical experiences taught me how to write reliable, maintainable code and how to integrate multiple technologies into one system. On the non-technical side, I collaborated closely with cross-functional teams, which strengthened my communication and adaptability. I also gained experience in breaking down large tasks into smaller components under semi-lenient deadlines, a skill that translates directly to project milestones. These experiences showed me how to balance quality and efficiency, which I plan to apply as we integrate hardware, software, and AI components into the final, practical design.

I am highly motivated to contribute to this project because of its potential to improve accessibility for people with vision impairments. Many assistive technologies today are either too expensive or lack adaptability for everyday use. By applying my skills to this challenge, I can help create a solution that is more practical, affordable, and effective. On a personal level, I am drawn to projects that make a tangible difference in people’s lives, and this one stands out as both technically engaging and socially meaningful. The opportunity to combine AI, software engineering, and user-centered design makes this an exciting challenge. I look forward to seeing how our prototype evolves into a product that has real-world value for those who need it most.

My preliminary approach will be to focus on building a reliable foundation for the computer vision pipeline. This involves ensuring that object detection is fast, accurate, and optimized for a lightweight embedded system. From there, integration with the RAG framework will allow us to provide contextually meaningful auditory feedback. I expect our accomplishments to include a fully functioning prototype, a smooth integration between hardware and software, and successful usability testing with real users. To evaluate my contributions, I will measure whether my modules meet project specifications, integrate seamlessly with the team’s work, and perform reliably in test environments. I will consider my work successful when I have met all assigned milestones, contributed to team deliverables, and helped create a system that works effectively in real-world scenarios.