

## **Project Description:**

Minnesota State University, Mankato Student Government aims to address wayfinding and navigation enhancement across campus via a successfully developed application that would provide navigation to students, faculty, and guests at MSU Mankato.

Collaborating with MSU Computer Science in the past has enabled us to turn our objective into a functional MVP. Teams in the past have successfully used their research skills to identify a cost-effective solution to wayfinding algorithms using BLE Beacons. These beacons will provide the location of user to the algorithm and guide them as they find their way across campus halls. Developers in the past have been able to successfully employ tools such as React and Unity Models to truly capture the essence of their creativity and technical development skills. We are excited to witness the brilliance you will bring to the project.

The team will initiate comprehensive testing involving a diverse user group, gathering feedback and incorporating relevant suggestions to refine the application. The team's foremost objective is to troubleshoot and address any errors identified during the testing phase. Emphasis is placed in resolution of issues detected within the application's performance on iOS.

Within the project's scope, our primary focus is on completing outstanding tasks and subsequently refining the application. This entails redesigning button layouts, improving the algorithm for tracking user movements in hallways, incorporating additional beacons along pathways to bolster feedback, and addressing any other enhancements identified. Additionally, with 22 new Beacons to play with, the team will conduct research to determine whether to deploy them in existing map locations and enhance the algorithm or use them to expand the map in new areas appropriately.

The client will be MNSU Student Government, along with a faculty co-sponsor, Dr. Kristopher Hollingsworth ("Dr. H") of the Mathematics Department. He has a background in software development. Other interested faculty, staff, and students will participate with the team on the client side as needed.

All of the code developed, the architecture used, and the decisions made in the past are well documented for the team to study and enhance. The team will build on the work of previous project contributors in the development of a fully functional "MVP" of specific campus locations.

Deliverables	Type of work	Activities	Resources	Tech Skills	Priority
Review of existing Requirements Analysis Documentation.	Project state analysis, Requirements analysis and study of existing resources-communication and approval from client of requirements for a working solution.	Developed in coordination with the client, Analyze and interpret the existing data documentation and document in simple and precise manner the application requirements, framework and targeted results. Iterative Cycle of Client review and implementation of requested changes.	Access to Client Leads, existing compiled data on various aspects of project documentations and collaboration with client where applicable.	Word Processing, troubleshooting and debugging, Requirements Analysis and User Experience research	High
Platform Specific Code Debugging	Testing, Debugging, Enhancement	Work closely with the existing codebase framework to troubleshoot and address issues identified during Integration of components. Emphasis on functionality of MVP in iOS platforms.	Tools developed earlier in the project, Online Documentation for required development as selected by team and approved by client.	Debugging, troubleshooting and documentation. Enhance existing code for optimal performance in iOS and Androids.	High
Beacon Placement Plan	Research, Algorithm refinement and testing	Thorough review of the existing wayfinding algorithm, Identify areas where beacon integration can optimize navigation,	Existing Beacon Placement Map, extra beacons from client.	Algorithm refinement, testing, and research	Medium
User Testing and Experience Documentation	User Experience Research, Data Collection, Report Documentation	Conduct user testing and collect data on the user experience. Document the findings in a report.	User testing tools, survey materials, data collection tools	User testing methodologies, data analysis, and report documentation	High
Enhanced Features in Application	Software Development/ Coding	Develop and add additional code features to enhance the application. Review of User Feedbacks to implement features after client consultation.	Development environments, coding tools, access to existing codebase	Software development, coding proficiency	Medium