

**Team 12 - NinerNav**  
**ITSC 3155 Final Project Report**

**Prepared by: Parth Patel**  
**Date: December 4, 2023**

## Table of Contents

1.1 Product Vision	3
1.3 Project Scope and Objectives	3
1.4 Ethical Concerns	3
<b>2 Project Resources</b>	<b>3</b>
2.1 Group Members	3
2.3 Hardware and Software Resources	3
2.3.1 Design	4
2.3.2 Front End	4
2.3.3 Back End	4
2.4 Special Resources	4
<b>3 Plan</b>	<b>4</b>
3.1 Timeline Chart	4
3.2 Task/Milestone Descriptions	5
3.3 2.3 Resource Table	5
<b>4 System Design</b>	<b>6</b>
4.1 User Stories	6
4.2 Feature List	7
4.3 Storyboard	7
<b>5 User Tests</b>	<b>7</b>
5.1 Test Procedure	7
5.2 User Test and Results	7
5.3 Conclusion	8
<b>6 Lessons Learned</b>	<b>8</b>
<b>7 Future work</b>	<b>8</b>
<b>8 Appendices</b>	<b>9</b>
8.1 Team Charter	9
8.2 Sketches	9
8.3 Software Repository	9
8.4 WBS Tool	9
8.4 Meeting notes Example meeting notes here	9

# 1 Introduction

The initial inspiration for our project stemmed from a desire to cater to the specific needs of UNCC college students and provide them with valuable education. Initially contemplating a budgeting tool to assist students in managing their finances during their transition to independent living, our focus evolved during a team meeting. The mention of the popular game Geoguessr sparked a collective realization of an exciting and novel approach. We envisioned a project tailored for new UNCC students, aiming to familiarize them with the campus layout through an engaging and enjoyable experience. The motivation behind the project was fueled by our shared excitement to create something unique, special, and fun for our target audience, making their introduction to campus life a memorable and educational adventure.

## 1.1 Product Vision

NinerNav is **FOR** new and prospective UNCC students **WHO** want to learn more about the layout of and services on campus. NinerNav is an entertainment and educational service **THAT** brings the campus to life by gamifying the process of discovery. NinerNav empowers users to learn about and explore the diverse sites and locations on campus that they might not have visited yet. **UNLIKE** GeoGuesser, **OUR PRODUCT** is specifically designed around the UNCC campus, making it the perfect tool for new UNC Charlotte students who are eager to explore and get acclimated to the campus. NinerNav provides an engaging, immersive, and educational experience that turns acclimation into an adventure.

## 1.2 Customer Description

The customer, a prospective UNCC student, is eager to explore the campus layout and discover the available services through an enjoyable gamified experience.

## 1.3 Project Scope and Objectives

The project's scope is to develop a comprehensive platform known as NinerNav, specifically designed for new and prospective UNCC students. The key objectives include creating an interactive and gamified experience to cater to diverse user needs. The envisioned features encompass User Profiles and Leaderboards, Educational Insights, Gamified Exploration, Optional Difficulty Levels, Campus Discovery, etc. The overarching aim is to offer an engaging, informative tool that facilitates campus exploration, aids acclimation, and supports decision-making for students at different stages of their university journey.

## 1.4 Ethical concerns

1. Privacy and Data Security Concerns
  - a. Collecting and storing user data, like personal information and preferences, raises privacy worries. It's crucial to focus on strong data security measures to keep users' sensitive information safe.
2. Accuracy of Information Concerns
  - a. Providing accurate and reliable information about campus locations is crucial. Misleading or outdated information could have negative consequences for users, impacting their experiences and potentially causing safety concerns.

## 2 Project Resources

### 2.1 Group Members

1. Parth Patel
2. Paul Warner
3. Joshua Higgins
4. Sriya Machunuri
5. Manny Merino

### 2.3 Hardware and Software Resources

#### 2.3.1 Design

1. Diagrams.net and Figma for prototyping.

#### 2.3.2 Front End

1. HTML, CSS, and Bootstrap for web design.
2. A-Frame for rendering 360-degree images.
3. Google Maps API for displaying a map, submitting guesses, and showing the correct location.

#### 2.3.3 Back End

1. Python with Flask for routing and templating.
  - a. Flask-WTF for form validation.
  - b. Flask-SQLAlchemy and pymysql for database operations.
  - c. argon2-cffi for password hashing.
2. MySQL on an AWS RDS instance for database operations.

### 2.4 Special Resources

1. Samsung Gear 360 camera for capturing 360-degree images.
2. Adobe After Effects for converting the 360-degree images to a different format.

## 3 Plan

This section contains a list of tasks and deliverables associated with the project, a Gantt chart depicting task durations, dependencies and completion dates, and a summary of resource requirements and assignments for each task.

### 3.1 Timeline Chart

Gantt Chart (with dates). [Video on Gantt charts in excel](#)

Consider the following milestones:

- Milestone 0 (11/6-11/10): Product Vision/User Stories/Feature List
- Milestone 1 (11/10-11/17): Low-Fidelity Model/Testing the 360 Camera
- Milestone 2 (11/17-11/24): Setting up our UI/Developing a Database
- Milestone 3 (11/24-12/7): Implementing features to our Site/Testing.

### 3.2 Task/Milestone Descriptions

Milestone 0 - This milestone marked a crucial point in our journey as a team, signifying the finalization of our product concept and purpose. The creation of the product vision, user stories, and feature list brought everyone onto the same page, providing a unified direction for our project.

Milestone 1 - This milestone was pivotal in visualizing our end product. The low-fidelity prototype showcased the design of our site, offering a tangible representation, while the 360 camera provided a preview of key features before their implementation. It laid the foundation for the visual and functional aspects of our project.

Milestone 2 - Consuming the most time, Milestone 2 was a dynamic phase where team members engaged in both back-end coding and front-end design. Some focused on enhancing the site's aesthetics, while others worked on building the database. Despite the intensity, this milestone propelled us forward, marking significant progress and accomplishments.

Milestone 3 - During Milestone 3, all the features our team members worked on came together on our site. Teamwork played a key role, ensuring a seamless integration of different parts. As we conducted tests, the satisfaction and pride in seeing our collective efforts materialize into a functioning whole were truly noteworthy.

### 3.3 2.3 Resource Table

Task	People
Checked out the Fisheye Camera	Paul
Tested the Fisheye Camera	Paul
Converting Fisheye images to Panorama	Paul, Manny
R&D	Paul, Manny

<b>Set Up Sprint Documents</b>	<b>Parth</b>
<b>StoryBoard</b>	<b>Parth</b>
<b>A-frame.io set up</b>	<b>Manny</b>
<b>User Stories</b>	<b>Parth, Joshua, Sriya</b>
<b>Feature List</b>	<b>Parth, Joshua, Sriya</b>
<b>Start Solution Sketches</b>	<b>Parth</b>
<b>Figma Site Navigation</b>	<b>Sriya, Joshua</b>
<b>Create Github Repo</b>	<b>Sriya</b>
<b>User Journey Map</b>	<b>Parth</b>
<b>Low-Fidelity Prototype</b>	<b>Parth</b>
<b>High-Fidelity Figma Site</b>	<b>Joshua</b>
<b>Site Setup</b>	<b>Sriya, Parth</b>
<b>A-frame.io</b>	<b>Manny</b>
<b>Database planning</b>	<b>Paul</b>
<b>Set up RDS database</b>	<b>Paul</b>
<b>Take images on the Fish eye camera</b>	<b>Everyone</b>
<b>Solution Sketches</b>	<b>Parth</b>
<b>Polish fisheye script</b>	<b>Paul</b>
<b>Work on CSS for the Site</b>	<b>Parth</b>
<b>Work on Site CSS</b>	<b>Parth, Sriya</b>
<b>Site Flask Conversion</b>	<b>Paul, Josh</b>
<b>Implement features to the site</b>	<b>Manny, Josh</b>
<b>Combine Flask routes with site</b>	<b>Paul</b>
<b>Finish up A.frame.io</b>	<b>Manny, Josh</b>
<b>Final Report</b>	<b>Parth</b>

## 4 System Design

### 4.1 User Stories

#### 1. User Stories

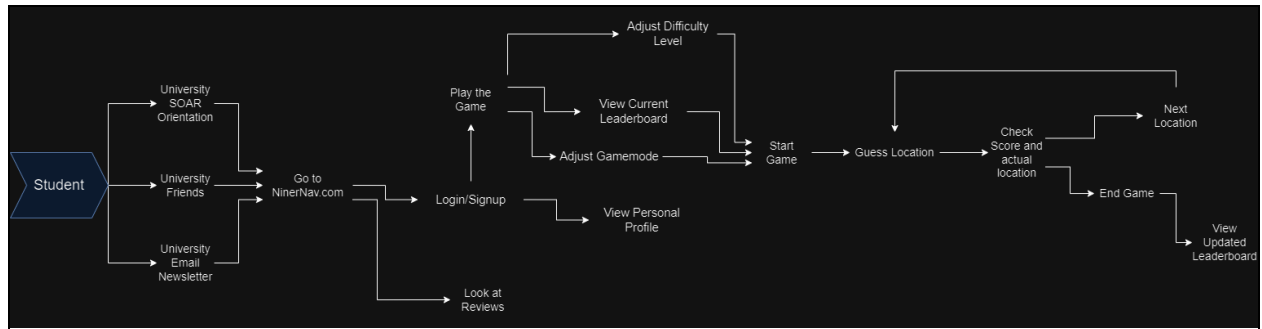
- a. As a new UNC Charlotte student, I want to explore the campus and learn about its various sites and locations in an engaging and educational way, so I can get acclimated quickly.
- b. As a user who enjoys challenges, I want to compete with my friends to see who can correctly identify the campus locations the fastest.
- c. As an international student, I want a tool that not only helps me navigate the campus but also provides historical and cultural insights to enhance my experience.
- d. As a freshman on campus, I would like to know more about the campus and the different locations I can visit
- e. As a Sophomore at UNCC, I would like to find a new study spot.
- f. As a recent high school graduate I'm currently looking into where to pursue my education. I would like a tool to show me views from a campus that I might not get from a virtual tour. I also cannot travel to all campuses that I am interested in. I am looking for more niche locations around campus that wouldn't necessarily be part of a tour.

### 4.2 Feature List

#### 1. Feature List

- a. User Profiles and Leaderboards to track progress and encourage competition and engagement among users.
- b. Educational Insights to include informative descriptions and historical context for each location which will enhance the user experience by sharing interesting facts about the campus.
- c. Gamified Exploration by presenting users with a randomized 360-degree image of a campus location. Challenge users to pinpoint the exact location on an interactive minimap.
- d. Optional Difficulty by organizing each image based on a level of difficulty, we can make a more fun and challenging experience leading to more engagement.

### 4.3 Storyboard



## 5 User Tests

### 5.1 Test procedure

To assess our product's usability, a third party, unaware of its specifics, was tasked with trying the game. We launched the site without instructions, allowing them to navigate independently. A random user story was provided to evaluate specific features. This approach aimed to uncover areas for improvement and ensure NinerNav aligns seamlessly with user expectations. The collected feedback informs iterative refinements for an enhanced user experience.

### 5.2 User Test and Results

The user test yielded positive outcomes, with users successfully completing all assigned user stories. However, a notable issue surfaced regarding the user path, as several participants expressed confusion about navigating from the homepage. Users found it challenging to discern the next steps. In response to this feedback, immediate measures were taken to address the issue and enhance user guidance. Subsequent adjustments were implemented to streamline the user path, making it more intuitive and user-friendly. These refinements aim to ensure a smoother and clearer user experience, aligning with the objective of NinerNav to provide an engaging and hassle-free exploration of the UNCC campus.

### 5.3 Conclusion

In conclusion, the user test for NinerNav demonstrated overall success, with users effectively completing assigned tasks. However, an identified issue related to the user path prompted immediate corrective measures. User feedback was instrumental in refining the platform, leading to adjustments that enhance the overall user experience. These iterative improvements align with NinerNav's goal of providing a seamless and enjoyable exploration of the UNCC campus, reinforcing our commitment to delivering a user-centric and effective educational tool.

## 6 Lessons Learned



1. Always think of the user's perspective because they are not aware of all the backend that you have done, only what they can see and do.
2. Stay in the loop with your team to make sure everyone is on the same page.
3. Consistent standups save time and resources.

## 7 Future work

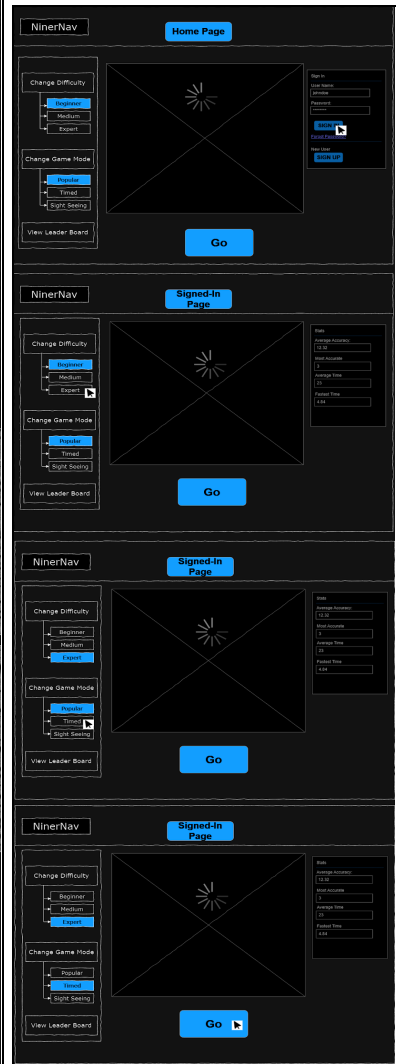
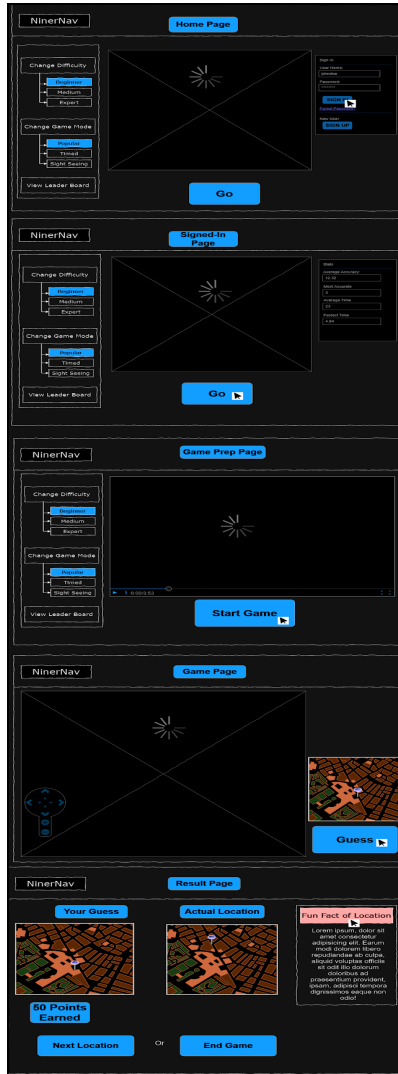
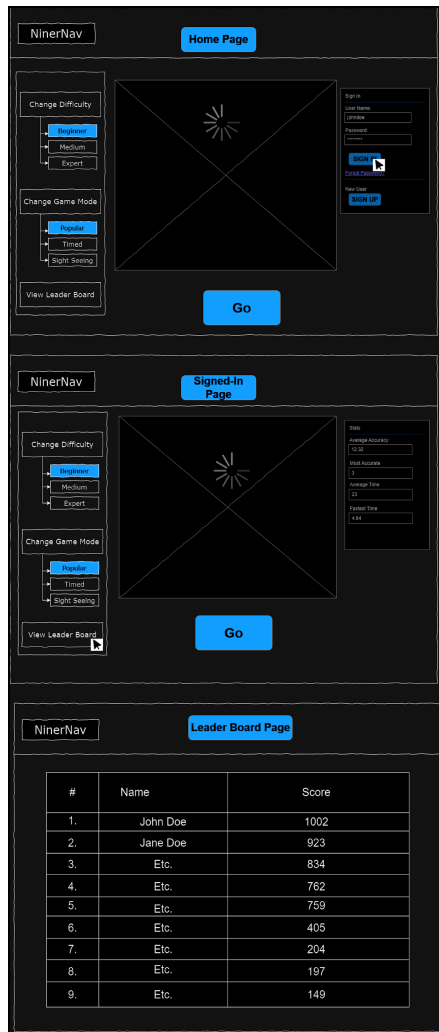
Our future endeavors for NinerNav include deploying the platform to an official site for wider accessibility among UNCC students. We aspire to present the project to UNCC higher-ups and integrate it into university resources, with a particular focus on collaboration with SOAR for incorporation into student orientation. To achieve these goals, we plan to refine the platform based on user feedback, implement a strategic marketing approach, and establish NinerNav as a key tool for incoming students. The ultimate vision is to make NinerNav an integral part of the UNCC experience, facilitating a smooth and engaging onboarding process for future students.

## 8 Appendices

### 8.1 Team Charter

[Link to Team Charter](#)

### 8.2 Sketches



[Link to Sketches and Low-Fidelity Model in Higher Quality](#)

### 8.3 Software Repository

[Link to GitHub Repository](#)

### 8.4 WBS Tool

[Link to Trello](#)

### 8.4 Meeting notes

[Link to Meeting Notes](#)

