First Semester Project Plan

Panther Carpooling & Parking: Improving On-Campus Traffic and Parking

Team Members

Austin Phillips – aphillips2022@my.fit.edu

Jason Smith – jsmith2022@my.fit.edu

Jacqueline Torres - jtorres2020@my.fit.edu

Hunter Smith - hsmith2021@my.fit.edu

Faculty Advisor from CSE

Dr. Phillip Chan –pkc@cs.fit.edu

Client

Name: Dr. Phillip Chan –pkc@cs.fit.edu

Affiliation: Florida Tech

Date(s) of Meeting(s) with the Client

Initial Meeting: 1/15/2023 at 2pm

Scheduled: Fridays Bi-Weekly at 3pm

Goal and Motivation

The goal of this project is to help alleviate parking and traffic problems at Florida Institute of Technology by creating an application for students to use to find and create carpooling groups based on the students location and class schedule. This is one of the biggest concerns among Florida Tech students, as the limited number of parking spots and traffic problems directly impact students' ability to arrive to class on time and the amount of gas they expend while trying to find a parking spot. With this application, we can help reduce the number of vehicles on campus and improve the parking lot issues that exist every day at Florida Tech. By carpooling, students can save on gas money, save time in their mornings, and reduce their carbon footprint.

Approach (Key Features of the System)

- **Customize User Preferences in their Profile:** The application enables users to customize their preferences. Users can specify their cleanliness preferences regarding eating, drinking and smoking in the car. User safety preferences can be set by setting gender-specific preferences on who they'd like in their carpool

groups. Users can set comfort preferences such as music choice. These customizations will be saved in the users profile for easy accessibility.

- **Receive Recommended Groups Based on User Profile:** Using students' profile and preference information, the application will give users carpooling group recommendations. Recommendations will be based on users' proximity to each other to minimize distance driven, similarity in class schedule between users, and their vehicle capacity. In addition, preferences the user sets in their profile are considered to ensure a clean, comfortable, and safe ride.
- **Connect to Other FIT Students**: Florida Tech Students can connect to nearby students with similar schedules and preferences. Users can talk one-on-one with group leaders, and after joining a group users can use the app's group messaging feature to chat with their group. Groups can also organize public meeting spots for carpooling trips.
- **Stay Informed about your Trip:** Drivers can view an efficient route to pick up riders that are part of the group. Riders can view the drivers live location to ensure the riders know when the driver is arriving and an estimate on when they will be arriving at Florida Tech. Riders will be sent a picture of the driver and a picture of the driver's vehicle to ensure they get into the correct car. Riders and drivers can provide feedback on their group to create a safe community for carpooling at Florida Tech.

Novel Features/Functionalities

- Schedule-Based Carpool Matching: Unique algorithm to match users not just based on location but also on their daily/weekly class schedules.
- Integrated Communication System: Enables in-app messaging among users and within carpool groups, enhancing coordination and flexibility.

Technical Challenges

Three technical challenges that standout during the planning phase of our project are to implement an authentication system into a web application, developing an algorithm to match users together based on location and schedule, and to restrict user access to specific web pages in the application based on their role.

Milestone 1

- Compare and select technical tools for database, web application(front end and back end), code testing and version control
- Compare and select technical tools for code version control and testing
- Resolve technical challenge of how to access Florida Tech tracks account API
- Compare and select collaboration tools for documents/presentations, communication, task calendar
- Create Requirement Document
- Create Design Document
- Create Test Plan

Milestone 2

- Develop and test user interface for user profile setup (input schedule, location, other preferences)
- Develop and test database integration into the web application
- Develop and test routing/map integration using assumed groups

Milestone 3

- Develop and test algorithm for carpool group recommendations
- Develop user interface for showing user carpool groups and allow users to create/form groups
- Develop and test real time tracking and route creation

Task Matrix for Milestone 1

Task	Austin	Jason	Jacqueline	Hunter
Compare and select technical tools for database, web application(front end and back end)	25%	25%	25%	25%
Compare and select technical tools for code version control and testing	25%	25%	25%	25%
Resolve technical challenge of how to access Florida Tech tracks account API	55%	15%	15%	15%
Create Requirement Document	15%	55%	15%	15%
Create Design Document	15%	15%	55%	15%
Create Test Plan	15%	15%	15%	55%

Approval from Faculty Advisor

"I have discussed with the team and approved this project plan. I will evaluate the progress and assign a grade for each of the three milestones."

Signature: _____ Date: _____