

# Project Plan

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

### Team Members

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### Faculty Advisor from CSE

Dr. Phillip Chan – [pkc@cs.fit.edu](mailto:pkc@cs.fit.edu)

### Client

Name: Dr. Phillip Chan – [pkc@cs.fit.edu](mailto: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. 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.

### Approach (Key Features of the System)

- **User Authentication:** The application will integrate with the Florida Tech Tracks account system for secure sign-in by users. Due to the nature of the app, privacy and safety of the users has to be a priority. By using Tracks, similar to how students sign into Canvas, we can ensure that users are current students at Florida Tech. In order to sign-in/sign-up and view any information on the carpooling app, users will need a valid Tracks ID number and password.

- **Profile Management:** Users can create and manage their profile, specifying details like general location (zip code), their schedules, vehicle type and capacity, and preferences for other group members. The users' profile information will be used as the basis for the group recommendation algorithm. To help ensure users feel comfortable within the groups they are recommended and form, profile preferences will include gender preference, distance users are willing to drive, variance in the time users want to arrive before class, and car rules, such as allowing smoking, eating, or drinking. Profiles will also display a rating out of 5 stars given to them from other riders/users, which will be used in recommending and forming groups as well.
- **Carpooling Functionality:** Features for creating, managing, and joining carpooling groups, with a focus on matching users based on location and schedule.

### **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 stand out 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

### 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				

### 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: \_\_\_\_\_