

Panther Carpooling & Parking

Improving On-Campus Traffic and Parking



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Goal and Motivation

- Motivation:
 - Limited parking on campus
 - Congested traffic
- Goal:
 - Alleviate parking and traffic problems at Florida Institute of Technology
 - Reduce stress and carbon footprint
 - Get to class on time
 - Save gas
- Develop an app to find and create a carpooling groups based on students preference, schedule, and location.



Approach (Key Features of the System)

1. Customize User Preferences

- Preferences
 - Cleanliness
 - Eating, drinking, smoking.
 - Safety
 - Gender specification
 - Comfort
 - Music
- Saved in the user's profile



2. Receive Recommended Groups Based on User Profile

- Algorithm suggests carpooling groups based on users'...
 - Proximity to other users
 - Similarity in class schedule
 - Vehicle type/capacity
- Considers users preferences for a clean, safe, and comfortable ride



3. Connect to Other FIT Students

- FIT students can connect with other similar students using the app.
- Students can use the app's messaging feature to either...
 - Talk one-on-one with group leaders, using the direct message feature.
 - Talk with the group they joined, using the group chat feature.
- Group leaders can also organize public meeting spots for group pickups.

4. Stay Informed about your trip

- **Efficient Routes:** Drivers can access optimal routes for picking up riders within the group.
- **Real-time Location:** Riders can track the live location of the driver to anticipate arrivals and receive estimated arrival times at Florida Tech.
- **Identification Assurance:** Riders receive a photo of the driver and their vehicle for easy identification and safety.
- **Feedback System:** Both riders and drivers can provide feedback on their carpooling experience, fostering a secure 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

Authentication System

- **Challenge:** Ensuring users have a simple and secure way to access their profile
- **Importance:** Only allow users with a Florida Tech Tracks account access to the application

Matching Algorithm

- **Challenge:** Enhancing user satisfaction through accurate matches.
- **Importance:** Creating carpooling groups that fit user's preferences and schedule is key to the application

Role-Based Access Control

- **Challenge:** Restricting user access based on roles for data security
- **Importance:** Given that user profiles may contain sensitive information, it is essential to implement access controls within the application to safeguard this data

Milestone 1

- Compare and select technical tools for
 - Database and web application
 - Code version control and testing
 - Collaboration on documents/presentations, communication, task calendar
- Provide demo for user profile database
- Resolve technical challenge of how to access Florida Tech tracks account API
- Create Requirement Document
- Create Design Document
- Create Test Plan

Milestone 2

- Develop and test:
 - User interface for profile creation
 - Database integration
 - Routing/map integration

Milestone 3

- Develop and test:
 - Recommendation algorithm
 - Interface for viewing and forming groups
 - Real time tracking and route creation