Abstract:
Our proposed project is KnightRide, a student focused carpooling application that is made to make commuting both to and from campus more convenient, affordable, and sustainable. As many UCF students know, parking is always an issue and along with rising fuel costs and inconsistent shuttles, it is harder than ever to get to campus in a timely manner. This application directly addresses these concerns by developing a platform for students to connect, share rides, and split expenses fairly.

The service essentially allows students to schedule rides with designated pick up and drop off locations, which keeps it efficient and flexible. There is also a built in calculator that lets you automatically estimate gas expenses for a trip and dividing the cost among the riders, this keeps things simple and straight forward. Our goal for the interface is to prioritise simplicity and clarity, which will ensure that students can quickly create or join rides without any issues.

From a user experience perspective, our project emphasizes ease of use and accessibility, with features that include clear route visualization, a simplified booking flow, and transparent cost breakdowns. Our app also promotes community building and collaboration among students while at the same time supporting sustainability by reducing the amount of drivers on the road.

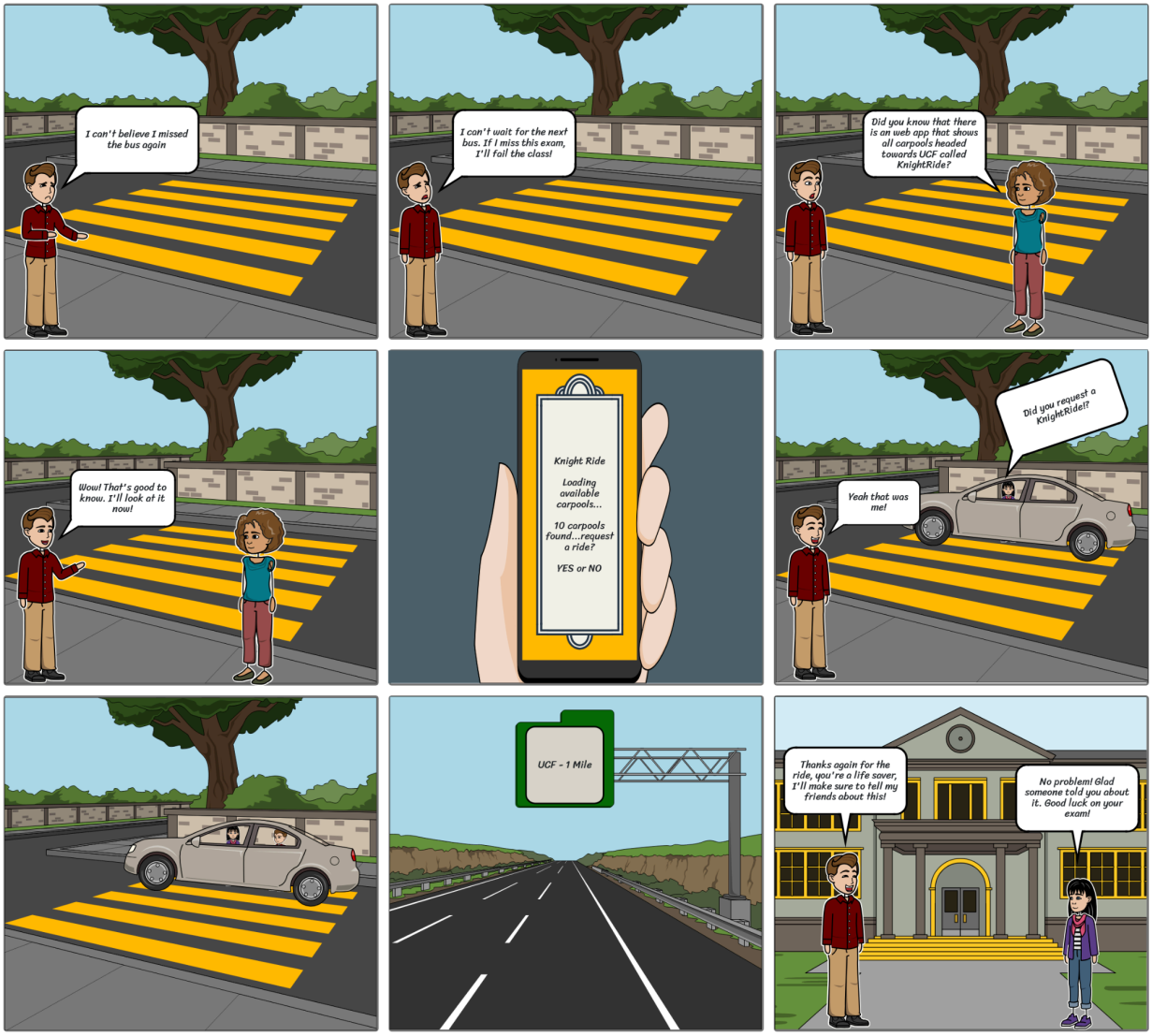
By focusing on user needs and intuitive design, our project aims to give a practical solution for students commuting, while also creating a culture and community of shared responsibility.

Introduction:
We all know how hard it is to get to the UCF campus and even harder it is to find a parking spot on most days of the week. Many UCF students struggle with delayed or missing buses and limited parking availability on or around campus leading students to miss important lectures, labs, or even exams. As well as the high transportation cost to even commute to school every day. This problem the UCF students have, is important because reliable, affordable, and sustainable transportation directly affects student's success here at UCF. Parking in particular is one of the most frequent frustrations of a student. This occurs even after a student has paid for a parking pass; many just circle parking garages in hopes for a slot to open up. For the individuals that rely on the public transportation or the UCF shuttle system still can find themselves in situations where they can miss their bus, experience delays, unpredictability in shuttle schedules which in turn causes unnecessary stress for the student. Addressing this problem is important because transportation is not just about getting to campus but ensuring that everyone has equal access to their education consistently.

There are already several existing methods of transportation that the student can use but none can provide a complete solution. The most obvious solution that students have is the shuttle system, which offers free rides to campus but only from certain close apartment complexes. While these shuttles are helpful at times, they often are not always on time and their routes only serve a limited population of students. Students who live outside of the covered region do not have access to this commodity. Public transit, such as the Lynx bus extends further access across Orlando, but that also works on various time schedules and routes. The Lynx takes a significantly longer time with traveling through routes and actually getting to the students desired destination. Not to mention that this is not a free service and requires a membership, bus card, or simply paying the fare each time. For students with their own cars have the luxury of traveling to campus whenever they like but at the cost of gas, insurance, and required parking permits. There is always the option of similar car pooling or ride sharing services like Uber or Lyft, but those options are far too expensive for the average college student to be using every day of the week or when they need to get to campus. While all of these options seem viable, they only solve a portion of the problem some students face.

While UCF students do have access to the resources such as shuttles, buses, private transportation, and even taxi services like Uber and Lyft. These are not a full solution to the problem. The gap is more about the absence of a system that will be able to combine flexibility, affordability, and student design in one place. KnightRide is not meant to replace any of these already existing modes of transportation but to help it by filling in the gaps. One key gap that is covered is coverage and flexibility. Shuttles are convenient for students within a close proximity of

campus and those outside that range depend on their own transportation or that of public and ride sharing. Another gap would be of trust and safety for those students who use the public transport method. With KnightRide, it is guaranteed that it is a verified UCF student willing to and from campus if needed. By creating KnightRide, we are filling in all the gaps that a student could possibly face. Students will now have an almost guaranteed method of transportation outside of the traditional methods already emplaced.



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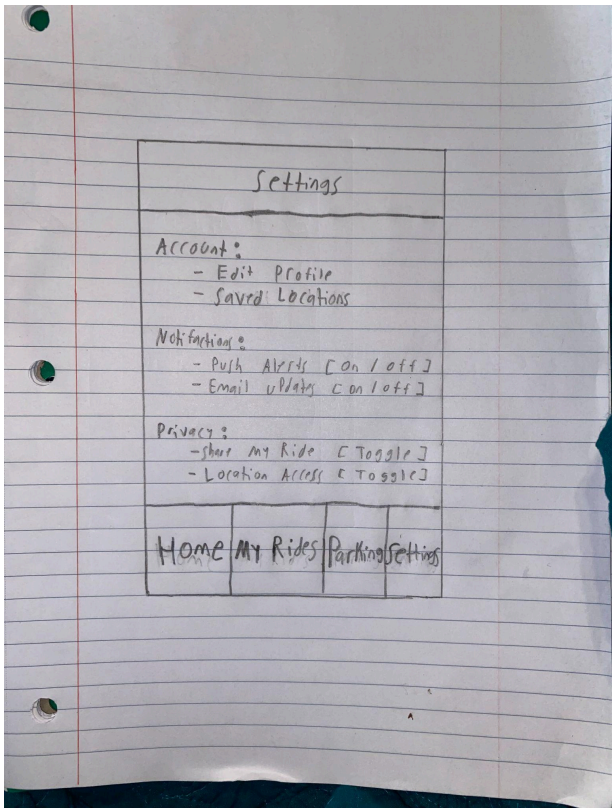
Proposed Idea:

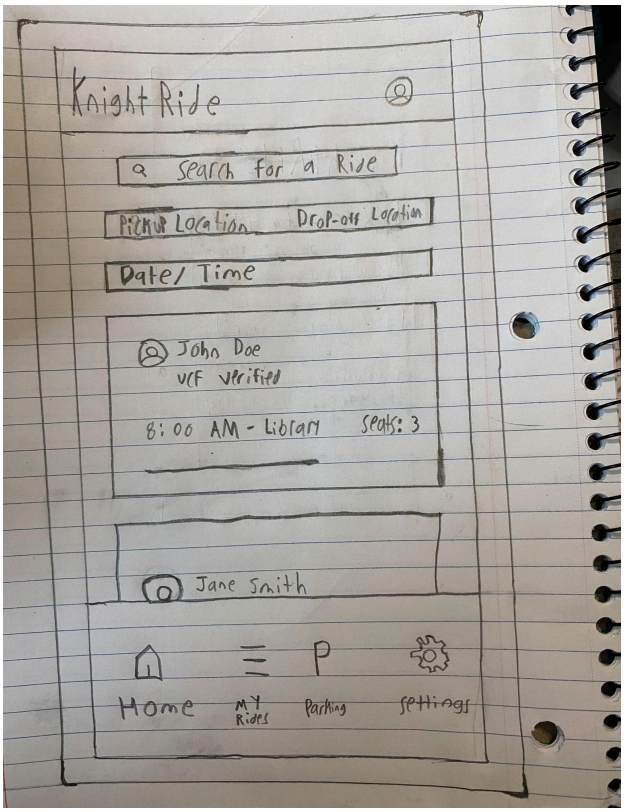
The idea for our student-centered carpool and parking coordination system is a mobile web application. The app will match students based on their location and class schedule, suggesting safe and convenient meeting points to ensure security for all participants. On the application, it will automatically calculate the trip costs to make it easy to split the price for gas and tolls, if needed. To further reduce stress, the app will provide crowdsourced updates on available parking lots, so even if fewer vehicles are brought to campus, students can still more easily find a spot. Students will be required to log in using their UCF login to ensure safety and community trust. The platform is accessible on any browser, so it can be used easily on laptops or phones without installing an app. Even though it is accessible on any platform, it is primarily designed to be accessed on a mobile device.

To create the web-application interface, there will be several components to make it function. When it comes to the front-end HTML, CSS, and JavaScript, with React.js, for a dynamic and user-friendly user interface. For the backend, Node.js with Express will manage route matching, cost calculations, and parking availability. A database will have to be used to store user accounts, ride listings, and user history. Either Firebase or MongoDB could be used for this. For the route calculations, pickup/dropoff locations, and parking lot maps, Google Maps API will have to be used. Since the application handles cost splitting, an online payment handling option, such as PayPal, can be integrated. To host the web application, AWS or Firebase Hosting will be used for scalability and reliability.

Section 2 highlighted issues such as unreliable shuttle schedules, expensive commuting options, parking shortages, and much more. Our web application addresses these issues by offering a reliable and flexible alternative to a fixed shuttle/bus route. It reduced the overall student costs by not only splitting gas and toll costs, but also parking fees among several riders. The application allows those students without cars to have a safe, affordable option to campus. Since there will ideally be fewer cars on campus, it will ease parking stress through shared rides and also provide real-time updates on available parking spots. Overall, the application fills the gap left by current transportation services by combining affordability, accessibility, and reliability into one easy-to-use application.

What sets this idea apart is that it is student-exclusive. Restricting access to UCF logins ensures both safety and affordability, unlike third-party services such as Uber or Lyft. Automatic price splitting eliminates awkward negotiations and encourages students to share rides. Most importantly, the app addresses multiple problems at once: commuting to campus, finding parking, reducing traffic congestion, and lowering emissions. By encouraging students to connect and share resources, the application strengthens the UCF community while solving real transportation issues.





Intended Users:

Our primary intended users are UCF students who regularly commute to campus for class, extracurricular activities, or even work. These users could be students without personal vehicles, students with cars who want to save on gas

or parking costs, or even students with irregular schedules for whom shuttle schedules or bus routes are not practical. In a demographic sense, our users are primarily college-age students, but this system can support graduate or non-traditional students who also face issues with commuting. To access these users for research, we plan on doing surveys through UCF communication channels, class discords, Reddit, or other UCF forums. Posting flyers throughout UCF to promote carpooling. And even pilot testing with a small volunteer group of students to gain feedback before expanding.

Team Resources/Skills:

Aryan - I have strong experience in frontend design with additional knowledge in some levels of backend development. I'm also highly proficient in C, Java, and Python, and have working experience with HTML, JavaScript, and TypeScript.

Trey - The majority of my experience for my projects has been front-end focused, or in machine learning based projects. I have a lot of experience in React.js, JavaScript, CSS, HTML, Node.js, PyTorch, Git, Librosa, Scikit-learn, Flask, and OpenCV.

Peter - I have strong experience in working with a team on projects. Also, I have strong knowledge in React.js, JavaScript, CSS, HTML, Python, Node js, etc. I have both experience in frontend and backend development.

Elizabeth - When it comes to coding the larger part of my experience is in Python, with a machine learning focus. I have worked with and am proficient in Python, Java, JavaScript, C, and other frontend focused languages like HTML. Using my machine learning experience I am able to bring my knowledge with a dynamic interface to the table.

Gian Marco - I am experienced in Java, C, HTML, and CSS. I am also well experienced with working with others on similar projects in the past and have knowledge in the use of popular website builders.

Collesha- I am skilled in design and aesthetics, with experience in Java, Python and C. I also have experience in project management and building websites using Google slides and Wix.

Envisioned Timeline:

TASK ID	TASK	% DONE	ASSIGNED TO	START DATE	END DATE	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9
1	User Research													
1.1	Surveys	0%												
1.2	Interviews	0%												
1.3	Analyze Findings	0%												
2	Requirement Definition													
2.1	Define personas	0%												
2.2	Establish Requirements	0%												
2.3	Document guidelines	0%												
3	Design													
3.1	Brainstorming	0%												
3.2	Storyboards & journey maps	0%												
3.2.1	Sketches	0%												
4	Prototype													
4.1	Wireframes	0%												
4.2	Clickable Mockups	0%												
4.3	Initial Design Flow	0%												
5	Evaluation													
	Conduct Usability Tests	0%												

	Evaluate learnability, efficiency, and errors	0%												
	Gather Student Feedback	0%												
6	Iteration													
6.1	Refine design	0%												
6.2	Improve flows & interactions	0%												
7	Final Prototype & Presentation													
	Deliver Final Prototype & Presentation	0%												

Team member contributions:

Every member contributed equally to this deliverable.