Carleton University

**Honours Project Proposal – Taxi Sharing App**

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COMP 4905

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January 18th, 2018

Introduction

For my honours project, I intend to create a taxi sharing app similar to UberPOOL and Lyft Line. For reference, taxi sharing is a method of transportation that is a cross between a taxi and a bus. Meaning a taxi will pick up multiple people, either at the same or multiple locations along the way, and then drop them off at their desired location so long as they are on the same route. Each patron pays less if the ride is shared and the cab driver makes more money when carrying more patrons. The project will be mainly research and design based to find the best method of implementation for an android device. There will be minimal attention paid to the back end for this project.

Motivation

The motivation behind this project is to develop a taxi sharing app that will form the base of a future project. This app will be further expanded to become an autonomous vehicle sharing app. Furthermore, motivation for this project stems from a desire to expand my knowledge of app development and design. To build a solid foundation of app development that I can use to further my career as a software developer.

Objectives

My main objective for this project is to create a working taxi sharing app using android as the app development platform. The taxi sharing application has three main components: the passenger app, the driver app, and a backend component to communicate between both apps. My portion will be to focus on the passenger side of the application. The main goals of this project include: UI design and testing, client-server system for communication between the front end and back end, as well as keeping data usage to a minimum. When it comes to UI design my goals are to get the app working on multiple android devices, and to create a layout that is both functional and appealing to the eye. Furthermore, I would like to make the state transitions in the app as seamless as possible. What I mean by state transitions is the different screens that a user would see when using the app, be it before matching with a car, during a ride, and post a ride. There will be research put into the design as well as testing to determine which layout is the most functional. With regards to the client-server system, the goal is to achieve smooth communication between the front end and the back end, as well as to have a basic matching algorithm put in place between the driver and passengers. By basic I mean that the app can match the driver to the passengers and can give them all one location where they can meet for pick up. Finally, since this will be an android application a main goal is to keep data usage to a minimum, to avoid data overages for users.

Stretch Goals

There are a small number of stretch goals that will be attempted if time allows for it. I would like to implement a form of encryption for user’s information, create a more complicated matching algorithm that is capable of grouping passengers that each start at different locations, and I would also like to be able to do some usability testing if there is time once the app is near completion, to see just how well it functions on multiple devices.

Equipment

The equipment needed for this project is an android emulator, Java and JavaScript, a database manager, android 6.0 or below, android studio, as well as multiple different android devices.

Schedule

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| Start | End | Due |
| January 7th | January 22nd | * Research: android devices, taxi sharing, and user information. * Research application development, layout design, and algorithm design. * Design UI for the application, make some basic sketches before development begins * Meet with other student to discuss our plan for development. |
| January 23rd | February 6th | * Begin software development, get a base app working on a device, with minimal to no features. * Begin back end algorithm development. * Meet with other student to discuss our progress * Schedule a meeting with supervisor to discuss research |
| February 7th | February 21st | * Get states working for the application, be able to swap between three different screens. * Create user profile and be able to populate with information. * Meet with other student to discuss our progress * Schedule a meeting with supervisor to discuss progress |
| February 22nd | March 8th | * Populate the states (as defined in the objectives) with their necessary information, achieve basic matching * Connect with back end, develop the server architecture. * Working prototype by end date. * Meet with other student to discuss our progress |
| March 9th | March 23rd | * Testing prototype and information gathering. Fine tune application based on testing * Finish server architecture and communication system between driver, passenger and back end. * Meet with other student to discuss our progress * Schedule a meeting with supervisor to discuss progress * Begin report draft/outline |
| March 24th | April 7th | * Finalize application; front end, back end, and communication. Deliverable finished by end point. * App testing and statistics gathering * Write report draft/outline * Meet with other student to discuss our progress |
| April 8th | April 22th | * Finalize testing * Finalize report draft/outline * Write final project report. * Meet with supervisor to discuss report before submission. * Submit by April 22nd deadline. |