Bilkent University

Department of Computer Engineering

Senior Design Project

CarBuds: A Car Sharing App For Students

Project Specifications Report

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Progress Report

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1. Introduction

In Universities, students create networks in order to solve their problems collectively. The problems can vary in terms of buying used/old books from other students or exchange stuff and most of the time sharing a ride. Most of these networks established in internet environment which not mean to use for a specific problem of students. Thus, Student can have a hard time to find help or another student fast and precise. Finding a ride or sharing your car with another person rises several issues, the most important one is the security. Inside the university campus most of the drivers can be sure that the hitchhiker most probably another student of the same school. However, outside the campus no one can assure that the hitchhiker even a student. To solve this problem students reach each other through un-specified networks and this arises another issue, time.

CarBuds is a mobile application that any university student can register to reach hitchhikers or can be hitchhiker to find a ride to a specific location. The application offers to find a car or a hitchhiker very quickly while assuring the validity of the other person's whether he or she a student of the proposed university. Therefore, with the help of the Carbuds students can reach each other for sharing a ride in a fast and secure way.

1.1. Description

Carbuds will be a mobile application that will help students to finding secure car sharing opportunity. Any university student can register to application with using his/her university mail address. This will be provided as a closed network in students. University students will be able to choose their destination and application will provide proper choices according to location, destination and preferences of user. If there are suitable car owner or hitchhiker, students will approve or decline options like dating applications. When a match occurred, students will be able to use application to communicate each other. Students will be able to review each other after car sharing ended.

1.2. Constraints

The constraints are specified in this section.

1.2.1. Implementation Constraints

- The application will be a mobile application.
- Github will be used for version control.
- The application will be implemented on both android and iOS.
- For android application Java will be used and for iOS swift will be used for implementation.

1.2.2. Economic Constraints

- The application will not charge users for its service
- Users will not charge each other for sharing a ride.
- The application need a server for both database solutions and logic solutions.
- The application show ads to users in some pages for expenses.

1.2.3. Ethical Constraints

- None of the personal data of the users will be used or shared with third parties.
- The matching algorithm should not be affected with the users' race, ethnicity and/or social status.
- The statistics that extracted from the application will not be sold or shared with third parties.

1.2.4. Time Constraints

- The project should be completed before December 2018.

1.3. Professional and Ethical Issues

The application relies on the users' preferences in order to match them for a shared ride. However, system should be aware in order to prevent any actions related the race, ethnicity, social status and gender discrimination but we offer our users to choose their matched user's gender in order to increase satisfaction due to social culture in Turkey [1].

2. Requirements

The functional and non-functional requirements are specified in this section.

2.1. Functional Requirements

- The system should hold the users data(schedule, personal details, ratings) .
- The system should be defining the hubs, or sub networks where users should be grouped up with the other users sharing the similar paths, according to users wishes.
- The system should request an authentication process before initiating with users account.
- The system should provide a further authentication service to sign in before the users use the system, if they log off.
- The system should provide search and matching tools to search from the all users using the system.
- The system should allow users to rate and give a written feedback to other users.
- The system matches a driver with a hitchhiker and give both appropriate notifications.
- Matched users can talk to each other via using built-in messaging system.
- Both hitchhikers and drivers can specify their preferences for the trip in order to increase the satisfaction of both parties.
- Users will be choose their location and destination point using Google Maps API.
- The system offers each user a set of drivers/hitchhikers that generated according to their preferences, by swiping right or left users can show their willingness or not.
- All users will be authenticated with their school email addresses in order to ensure all users are university students.
- The system will give brief information about the traffic rules inside the university's campus in order to assure that driver is aware of the restrictions in the respective university.

2.2. Non-Functional Requirements

2.2.1. Usability

- The interface should be user-friendly, simple and straightforward.
- The user interface should be intractable.
- Internet connection is required for using the application.

2.2.2. Efficiency

- The matching algorithm should be fast and efficient in order to give responses to multiple users.
- The route finder algorithm should be fast for calculating routes for users.

2.2.3. Extensibility

- The system should allow addition of future feature developments and should be up to date for each new Android and iOS version .

2.2.4. Reliability

- The matching of the users should be precise with their preferences.

2.2.5. Compatibility

- The mobile application must be compatible with the most of the android phones in the market and iOS devices.

3. References

[1] "Can computers be racist? Big data, inequality, and discrimination ", *Fordfoundation.org*, 2017. [Online]. Available: https://www.fordfoundation.org/ideas/equals-change-blog/posts/can-computers-be-racist-big-data-inequality-and-discrimination/. [Accessed: 17-Feb- 2018].