The Carpooling System

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Abstract: With the enormous increase in number of vehicles on road, people around the country especially in metro cities have started facing problem now due to increase in traffic which added an hour or so to their daily travelling time. Out of few, one of the methods to reduce this misery of travellers is to make them share cars. We intent to make an ANDROID application, carpooling,which is an application of car-sharing (also called lift-sharing or ride-sharing) in which drivers (alone-riders) who are traveling to work alone can ask for fellow passengers through our application. For those who use public-transport system to go to work daily can use this application to find drivers who are travelling to the same destination and willing to share ride. This will not only get rid of the extra journey time of passengers but will also help environment by reducing pollution and traffic on roads. This social networking application is also called fare-sharing and time sharing as you are you are sharing both with fellow travellers. This paper will also cover security issues with woman travellers in mind.

Keywords: *Carpooling, car-sharing, fare-sharing, time-sharing.*

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1. INTRODUCTION

The Carpooling is not a new concept in the field of car-sharing. Decades ago during oil crises in Europe, people were encouraged to share their vehicles. Carpooling tries to reduce the cost of journey for travellers who commute to work daily which not only will save their pocket but will also reduce the usage of most important non-renewable resource we have i.e. fuel, which is declining at rapid pace.

Our application will have two kinds users, Firstly, the travellers (drivers) who use their own vehicle (car only for now) to commute to work daily and need some fellow passengers to share cost of fuel and other expenses. Some might just want someone to accompany themfor the whole journey. These drivers can use our application to create their profiles as driver under "offer a ride" section and mention their route to work, fare they are expecting from passengers, car they have (hatchback, sedan, SUV), number of fellow passengers they need and details of their time when leave from home for work as well as when they leave from office. This will help other category of users to analyse their requirements and choose drivers accordingly. Most importantly, Drivers will be asked to mention their license number mandatorily for safety reasons.

Secondly, the travellers (passengers) who also travel to work daily but they either use public transport or use others modes of transportation which takes more time than usual to reach their destination because of which they feel exhausted and frizzled at the end of the day. These passengers can use this application to find drivers who has source and destination same as theirs and allow them to connect to drivers and decide fares, meeting points and other necessary details. Passengers will be asked to create their profile as well so that our application will be able to filter the drivers according to their specified expected fare and of course, source and destination, our application will also provide passengers the user's review and filter accordingly i.e. higher to lower ratings, that way passengers are susceptible to use our application and we will also be able to perform upto their expectations.

Our project is just an effort to make these two ends meet, drivers and passengers and build a bond of trust for their own sake and do a bit of favour to the environment being an educated and responsible citizen.

2. RELATED WORK

Mayur K Thorat and Rahul M Lahakare [1] have given an overview of Carpooling system

With SMS alerts emphasizing more on overcoming issues encountered before and how to make it more secure. They gave the idea of using it for both inter-city and intra-city travels. They tried to expand their user base to blind people also who can use speech recognition technique to precisely know the location at any time.

R. Manzini and A. Pareschi [2] have given a decision support system for the application of carpooling system. This will be used to support passengers to in determining which cars to use.

Swati. R. Tare, Neha B. Khalate and Ajita A. Mahapadi [3] have contributed by suggesting ideas on how make this application more user-friendly for passengers and not only for drivers. They especially worked on reliability of Real-time System and security of woman travellers.

Deepak B. Nagare, Kishor L. More,Nitin S. Tanwar, S.S.Kulkarni and Kalyan C. Gunda [4] have tossed the term HOV(high-occupancy Vehicle) Lanes to draw attention of

the concerned people towards environment and encourages car-sharing

The famous taxi-hire application "taxiforsure" [5]on android platform is the first car sharing application who took the initiative and introduced Carpooling for "Vacationers" .i.e. for those who are on vacations and want to spend less on travelling to save their pocket. They started it for some particular routes only like "Chandigarh-Delhi","Mysore-Manali" etc. and they are looking forward to reach out the masses in coming future.

Another famous French company "blablacars" [6] have started their venture in India this year i.e. 2015 and took this to another level by making tremendous carpooling application but their lack of experience in countries like India was noticiable as they lack security features and cannot be considered safe for woman.

Indian startup Company "Tripda.com" [7] are trying to do what blablacars couldn't by providing security features and assurance to woman passengers. Their efforts to make present static carpooling system,dynamic, is appreciable.

3. PROPOSED SYSTEM

In the previous section we highlighted some of the recent solution ideas in carpooling. In this section we propose our design studying the previous solution, understanding the drawbacks of previous solution and proposing some issues & feature which would help to build amore user-friendly and secure carpooling solution. The main features of our application listed below

3.1 Real-time Design

In addition to the planned or scheduled carpooling system we are also going to provide feature for users who are more interested in picking random passengers and not bind himself with few passengers.

Whenever a user who leaves from his home or workplace, he can leave a notification for the passengers on his route (which will be taken from GPS) and if anyone wants to join him, they can just send their location to them and can get picked.

3.2 Security Features

As we will be providing extra filtering facility for woman passengers, our application is going to be more secure for female travellers. Not only that, a driver will not be able to create pool without giving his license number and aadhar number. Ratings will also play a major role in this.This feature will be able to give a bit of assurance to the users of our application

3.3 Filtering Options

The user will be able to filter in accordance with his destination and middle point (if there are two different routes to reach some destination middle point will help us to filter it precisely). Not only that, we will also provide filtering on gender basis i.e. Woman who wants to travel with females drivers only will be shown available vehicles according to the gender.

Another filtering option will be according to services. The user will be according to reviews or ratings. The user will only type his source and destination and the one with the best ratings from follow passenger will come first. If there are no reviews nothing will be shown and user will be asked to choose another filtering option.

4. SYSTEM ARCHITECTURE

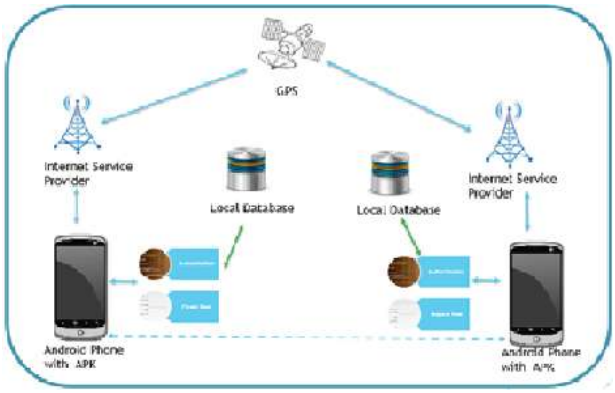

Fig 1. System Architecture of a Carpooling System

4.1 DESCRIPTION OF A SYSTEM

Carpooling system basically depends on two things, the driver who is going to make his vehicle available to get pooled as well his route information and passengers who are willing to get a ride from the available cars.

The Carpooling system the user has to be logged in to use the services provided by us. The user can either create pool or can get a ride or both according to his needs. The driver has to create pool first and give out all the necessary details asked by the application. The passenger also has to fill information asked by the tool like his route information. Every details these users will mention will be stored in our database.The user will use GUI provided by the system to fill in all the detailswhich is connected to our SQLite database. All the entries will be saved in particular columns

Now, after getting details from both the users, whenever a user (passenger) will click on get a ride option, the user will be diverted to the Activity page of the application where user will be shown drivers according to his source and

destination details.The system will use ListView to show suggestions of drivers**.**Carpooling system will retrieve relevant information from database according to the user's route details.

One of the features of our application is **filtering** which works here. Drivers will always be shown to the user according to the users rating for that driver on that particular route which will help passenger to choose from the most dependent drivers. Woman who are willing to get a ride can choose "**Female drivers"** as filtering options which will not only drive more woman to use this system but also making it a more secure and reliable system for females.

Now that the passengers have seen all the drivers using that route as per their requirement, passenger can send a"Request" to the preferred driver for the ride. The driver on the other hand can accept or decline request if he sense something wrong and can only start communication with passenger if he accepts request with the help of either email-id we have taken or phone number. Only these three details, Name, Phone number and email-id will be shown to the passenger before he can send request but will only be able to communicate with driver if he accepts request.

After all this necessary and important steps, both driver and passenger can decide on common meeting points and time to meet to start their journey together.

Another feature which we are going to provide is location based services using Google Maps api via google_play_services_libfrom Google where passenger will be able to track the driver so that he can reduce waiting time at their meeting spot and will be safe too.

This is how Carpooling system will work

5. CONCLUSION & FUTURE SCOPE

Carpooling system is an effort to reduce consumption of fuel, our most important non-renewable resource and traffic congestion on roads by encouraging people to use car-sharing. So it is an environment-friendly social application and also helps people to reduce their journey time. Future scope would include

5.1 Chat Option:-In future we are also going to implement chatting functionality for the convenience of our users and which will also be more user-friendly.

5.2 Inter-personal Issues:-

5.2.1Smoking issues:- Users (drivers) can mention if they are comfortable with passengers who smoke. It is difficult to adjust with smokers if other passengers are non-smokers.

5.2.2 Punctuality:- Passengers should directly come to their meeting point after office as other fellow passengers will be waiting for them.

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