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Vehicle Monitoring System - Car Pooling

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ABSTRACT

This paper describes the development of mobile application that tries to overcome the disadvantages of the other available applications, e.g. Bla-Bla Android App. The application is to be generic, which means that it may work for any car-pooler in any country in the world. The main objective of the work presented throughout this report is to develop an enterprise-class server that represents the backbone of the mobile application and ensure its compatibility with platforms including Android. Moreover, an example of a client Android application is developed for the users to access the services of the application from handheld devices and serve as a companion during travelling.Developed application is named as 'CarSawari' and it is successfully implemented. Demonstration of the implemented application is carried out on different mobiles. Our developed application will be very much useful for the passengers and the taxi owners. Presently, it can handle any number of passengers and service providers. Payment option is cash, as well as the alert system is also incorporated through the SMS and CALL. In future, this App can be enhanced to online payment.

Keywords:Global Positioning System, Real Time System,User Friendly Interface,Vehicle Tracking System.

I.INTRODUCTION

With the increase of environmental concerns and the congestion of roads, carpooling has gained a lot of popularity when it comes to environment-friendly and cheap ways oftravelling. Carpooling is when two or more persons share a ride in one of their personal cars. Carpooling reduces pollution since we have fewer cars on the road. It's also economic since the travel expenses are shared among the riders. Travelling alone may be stressful, so having other persons with you on a trip reduces the stress and is also the occasion to socialize and make the trip funnier. Finding people to share a ride with is the challenge of carpooling as it is difficult to find a person going to the same place as you at a given time. Many websites and applications have been developed to help people meet to share rides.This paper describes the development of mobile application that tries to overcome the disadvantages of the other available applications. The application is to be generic, which means that it may work for any car-pooler in any country in the world. 'CarSawari', is the name chosen for this application. It would help the users to upload, view and register for journeys both short distance (daily commute to work) and long intercity trips. The system will be designed taking into consideration the users need about safety. CarSawari is also a real-time application: any person taking part of a trip can check-in the meeting point to let the other persons now he/she has arrived to the meeting point.

II. PROPOSED WORK

2.1 Basic Idea

In the recent years, the problem of global warming and the energy crisis have aroused widespread public concern. One recommended solution for removing the harmful factors leading to such problems is carpooling. This type of transportation service could make a big difference if organised on a large scale or used at a large scale. Carpooling ideas are designed to encourage commuters to share travel expenses and resources with colleagues.The car-sharing is a process to allow individuals to combine resources to access a fleet of vehicles that is larger than what they could access on individual basis. The concept off many people sharing the same fleet of cars was first developed and implemented in Europe and now growing even more popular in North America and India.

2.2 Workflow

Figure 1 represent that when a User A want move from one place to other by carpooling the user will simply login in his registered CarSawari application then he will add his journey details in the application in the form of post and check for available options to move or check for carpooling options. As soon as the user posts his information user's current location retrieved automatically by GPS. After finding the most suitable option he will send a request the User B or Owner for the ride. The further procedure will depend on User B whether he accepts the request or not. If User B accepts the request send by User A, User A Checks User B's current position and decides the time to leave. Else User A needs to find other carpooling option. But if the request gets accepted and time to leave is decided the pickup location is fixed and process get completed.

2.3 Literature survey

This literature is related to carpooling. This analysis focuses on studies that have attempted to provide insight into the following questions: What is the role of technology in the formation of carpools? The literature review outlines Transportation Demand Management (TDM) and explains how carpooling fits into the practice. Traffic congestion and air pollution have become major public issues in Indian metropolitan areas. Faced with inadequate financial resources for major transportation improvements, and often with environmental constraints that preclude major improvements, public decision-makers are increasingly turning toward strategies that attempt to reduce congestion and air pollution by managing" travel demand. Transportation demand management, or TDM, is a derivative of transportation system management, or TSM.

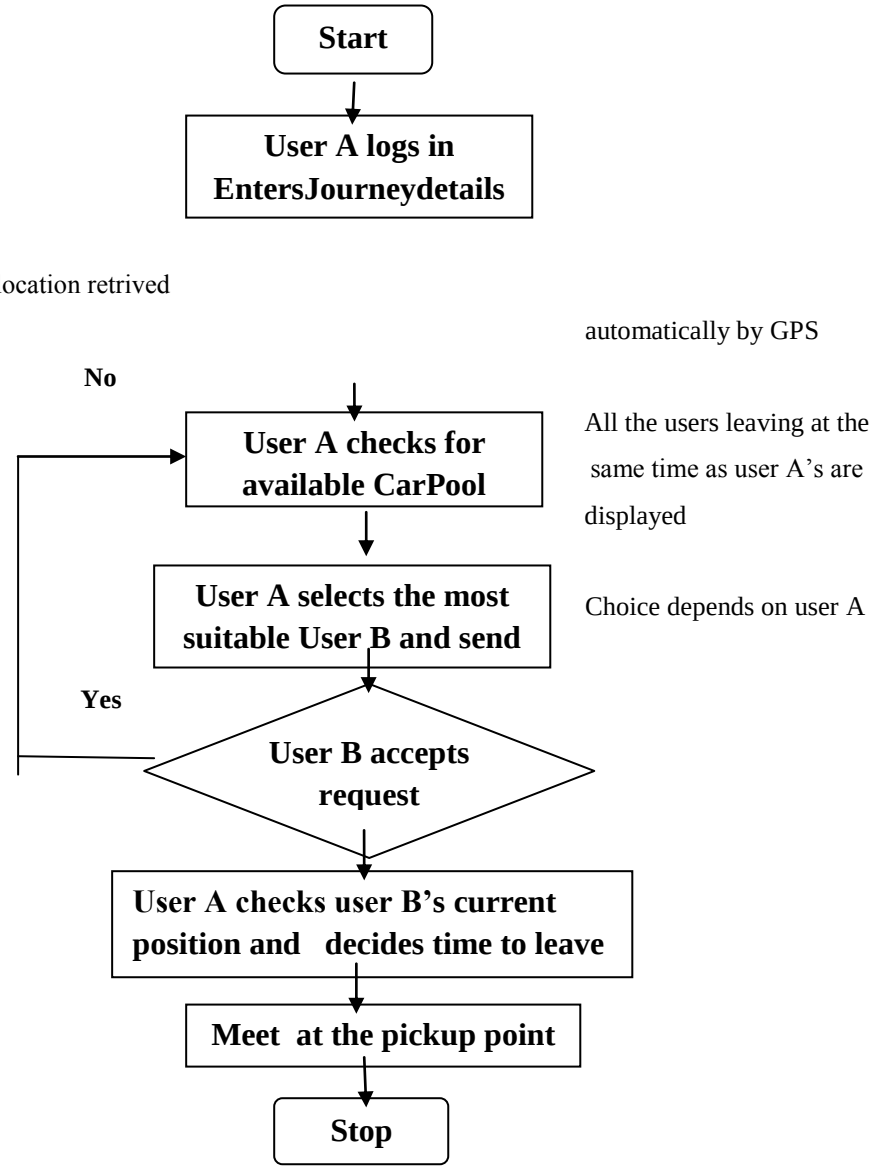

Fig 1: Workflow of CarSawari- "A Carpooling Android App"

3.4 System Plan

The actual system plan of the proposed application consists of four basic modules. All of the modules will be attached to the carpooling database. As we can see from the Figure 2, none of the module is dependant of the other modules.

The four modules of the system are as follows:

1. Registration Module
2. ShareKaar 'CarSawari' Module
3. Ride seeker Module
4. Payment Wallet Module

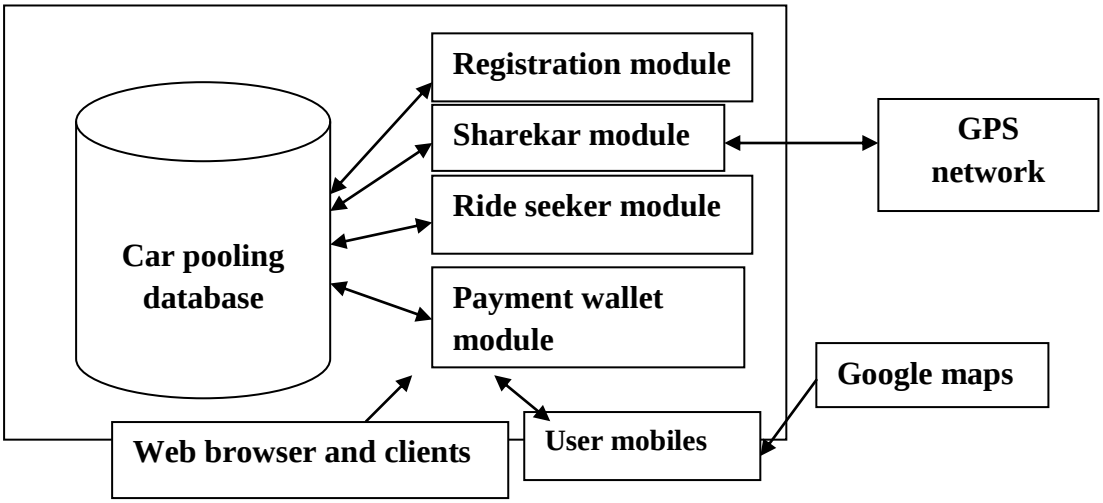

Figure 2: System Modules

Module 1: Registration

The users will register using the developed application. After successful registration, a user can choose from the both i.e. either to offer a ride or to seek a ride. If you are offering a ride that means you are the vehicle owner. In the registration module, you strongly need to specify your age and Aadhar card number. Your identity will be cross verified by the proof that if you are an allowed driver or not. Vehicle owner will give source and destination (including the actual path), number of seats, vehicle no. and starting time as input to application. The intermediate location from source to destination which will be available in the server will be available to vehicle owner for selection. The owner will select one of the paths. Now if you are the ride seeker, then you just need to find for your ride. The server will be configured in PHP. Time is a very important constraint in our paper. All the updates should happen instantly without fail.

Now the other side of application, fellow who want ride will subscribe to the application. During subscription a fellow will enter source and destination. This request will be sent to the server. The server will respond with vehicle available on that route. Vehicle number, owners name, seats available etc. will be visible to the fellow. Now this fellow will send request to the vehicle owner through the server. The vehicle owner on the other side will approve the request. Then we can track the vehicle owner's mobile (using getlat, getlog methods) location and provide it to the fellow. The fellow can see the car location on GMAP.While registering as a genuine user the main things that you need to enter as your information is your age and Aadhar card number.

Module 2: ShareKaar 'CarSawari'

Dynamic carpooling today is limited to a few standardized pickup and drop-off locations, as that is the only mechanism available for route coordination. But that severely limits the geographic areas and the set of people who will find it convenient to ride with others. In the CarSawari module, what you actually need to do is that

you need to offer rides to the seekers. In this module, first of all you need to specify the starting and ending locations of your ride. Once you entered the locations and save it, you cannot change it. After this, you will need to specify the date and time of your ride. If you are coming back by the same route and you wish to share your car on the back journey, there is also an option of such type available. You then need to specify the number of available seats in your vehicle. Again, the most important part of this module is that you need to give the information about your vehicle. This contains the registration number of the vehicle, colour of the vehicle, name of the vehicle etc.After filling all the required information in the module and offering a ride, your status of ride will now be available to the ride seekers. This means that now you don't need to go to a particular place and stand there waiting for the ride seekers to come and share your vehicle. You can offer the future ride on any date. This causes you the convenience as you prefer by your own for offering the ride.

Module 3: Ride seeker

Drivers will need a very convenient interface for specifying their destination and their route options. Riders will need a convenient interface for specifying their starting and ending points, and how much flexibility they have in either (for example, they can walk n blocks from current location in order to be picked up) They will need clear indications of when and where pickups should happen and how to recognize each other. Both drivers and riders will need convenient ways to specify their preferences about what information from their personal profile to reveal to the other party under what conditions.In this module, user will need to enter the locations from where and to where he/she wishes to have journey. As soon as the user enters the locations, and find for a ride he will get all the rides falling on his way. User can then compare in the rides that are visible to him/her to make a perfect ride choice. This may include the things like safety for female passengers, the number of available seats as per the requirements of the ride seeker.

Module 4: Payment

In this module, payment option is provided which will be offline payment only. This is just because to make it easier for the rider to trust the seeker about the ride. Online Payment sometimes are risky, offline payments are easier.So in the payment option, we have designed amount block where the rider will get to know about the amount to reach the destination inside the app itself. This means you don't need to use the third party wallets such as Paytm, Oxigen etc. All you need to do is that you have to pay the required amount of money to the car owner after your ride. Now, as soon as you go for the book ride option, each and every information about the ride will be presented there you will simply need to enter your location, name, and number of seats required.As soon as you book the seats, a confirmation message will be sent to the rider that certain number of seats were booked. Also, the details with name and contact number of the seeker will be sent to the rider.

IV.EXPERIMENTAL RESULTS AND DISCUSSION

Following are the activities of:" CarSawari- A Carpooling Android App"

Login Activity

This activity shows the login page for the user which also include the forget password option and the registration button for the new user. It includes all the validations and accepts only email address format in email address textbox and accepts password of minimum 6 characters.

Registration Activity:

In the above screenshot the demonstration about the registration activity has been given and how the user needs to enter his personal information in the given textboxes. This activity also includes all the possible validations in registration of user.

Home Activity:

The above given homepage activity is the most important activity of the given application, in which the user need to enter his journey location to and from. It also fetches your current location as Source and if you want to change it than you can change it. Then you need to select one of the option from the "SEEK RIDE" or "CarSawari".

Add a Location Activity:

The add a location activity screenshot explains about GPRS system which is implemented in the project when a user enter characters in the "From Location" the dropdown list of the related location pops-up same operation will be performed for the "To Location". By using the GPRS the user can be able to enter his exact location.

CarSawari (Offer a Ride) Activity:

This screenshot tells us how a car owner need to enter about his journey details, Seat availability, Round Trip or not, car details and the cost per seat to offer a ride.

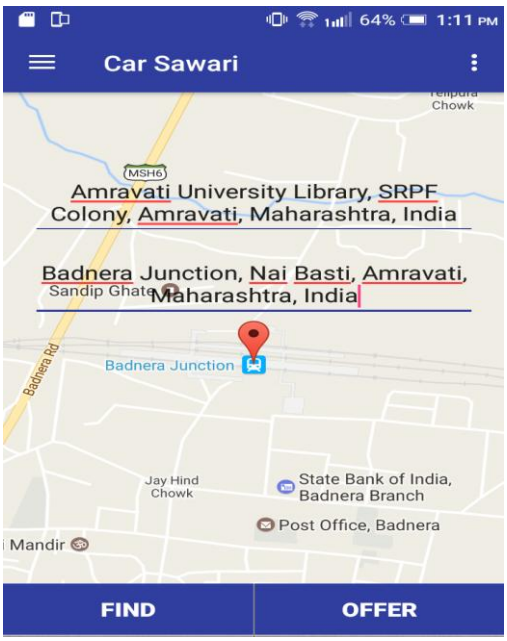

Fig. 3 Location activity

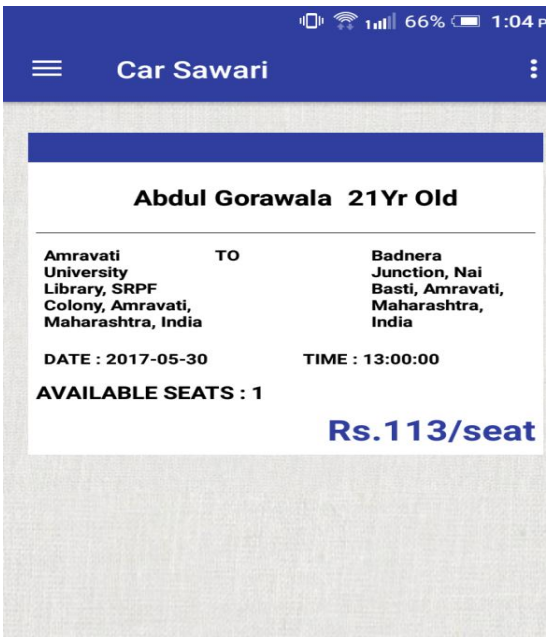

Fig.4 Booking

My Rides Activity:

This screenshot shows the "My Rides" which means the rides which are offered by the user. The rides offered can be edited or they can be deleted with ease by using "My Rides".

Seek Ride Activity:

In the Seek ride activity when user enter them From & To location the finder will be able to see the rides offered and the number of seats.

4.2 Comparison of Developed Mobile App with Bla-Bla Car Android App

- **Bla-Bla Car Android App**

The Bla-Bla App is also a car pooling android application just like the CarSawari android application but the Bla-Bla have some disadvantages too which need to be consider before booking the ride and which can overcome by using the CarSawari android App the comparison can be done by considering the limitation of Bla-Bla App, which are as given below-

1. **Registration Issues**- If you want to get registered in Bla-Bla car application you need have Facebook account which is also a limitation if some user doesn't have a Facebook account he can't be to enrol himself on the application.
2. **Security Issues**: As anyone can be able access the registration application form and no login is required for the user to access rides the security of the user is somewhat get sacrificed. And as mentioned above the fake Facebook can be created and hence security can be cracked.
3. **GPRS Issues**: The Bla-Bla application doesn't consist of the GPRS system hence the need to enter his city name manually and you can't be able to enter a specific location from which the user can be able to picked-up or begin his journey.
4. **Payment Issues**: In the Bla-Bla carpooling app the user need to pay journey options are available by using it the user didn't need to carry the cash for the payment.

- **CarSawari Android App**

As compared to the Bla-Bla car application the many disadvantages are covered and they are now considered as advantages in the application. The outcome of the compare is as given below-

1. **Registration Issue**: The registration can be solved by considering the common interface for all the user without any compulsory use of Facebook because of which any user can be able to register themselves without having any particular social media account. And because the user need to enter his Aadhar card number the security during the registration get enhanced.
2. **Security Issues**: The security issues can be solved by making the Aadhar Card verification compulsory for the user the security of the system can enhanced and before the journey the owner
3. **GPRS Issue**: In the CarSawari app the GPRS issue is solved by using the Google Maps. By using the Google Map the user can able to tell his exact location. By using which the user can tell his pickup location.

4. **Payment Issue**: In the Bla-Bla application the user need to do online payment but this issue is solved in the CarSawari app by using the cash payment.

V.CONCLUSION AND FUTURE SCOPE

5.1 Conclusion

In this paper,we have successfully demonstrated a mobile based "Car Pooling" application. We have studied various technologies,algorithms and methods for monitoring system.This application would help in the process of creation of "instant car pool" events. Thus, we successfully reduced the long conversations needed for normal car pool events. In future, more functionality can be added to make this application more robust and more feature rich. With the advent of smart phones, this application, when developed to its fullest, would be able for all to use and make their journeys much more enjoyable and comfortable.

5.2 Future Scope

Currently, the initiator sends carpooling invitation to users. Their location is forwarded back to him when they accept the invitation. This helps in the creation of the Google Map for the event initiator. In the future, we could have a web service that handles all this location information. This would also solve some privacy related issues like the publishing of recipient location etc. At the moment, the routes are decided on the "First Come First Serve" basis. This means, the route is decided on the order in which the recipients accept the carpooling invitation. But the path obtained from this may not always be the shortest path. Thus we could have use algorithms like the "Dijkstra's" algorithm or Algorithmic concepts like "Dynamic Programming" to calculate the shortest path between source, destination and all the recipients.

REFERENCES

[1] Luk Knapena, Daniel Keren, Ansar-Ul-Haque Yasar, Sungjin Cho, Tom Bellemans, Davy Janssens, Geert Wets: "Estimating scalability issues while finding an optimal assignment for carpooling.", Procedia Computer Science 19 (2013) 372 – 379 Sciverse Science Direct.

[2] Mario Collotta, Giovanni Pau, Valerio Mario Salerno, Gianfranco Scat`a Kore University of Enna – Italy: "A Novel Trust based Algorithm for Carpooling Transportation" 2nd IEEE ENERGYCON Conference & Exhibition, 2012.

[3] Britton E. (1999), "Carsharing 2000 – Hammer for sustainable development", Journal of world transport policy & practice, Vol. 5, No. 3.

[4] Brook D. (2003), "Carsharing – Start Up Issues and New Operational Models", Submitted to Transportation Research Board, Committee A1E14, August 1.

[5] Real-Time Carpooling System for Android Platform, Dec 2012 [Online]. Available at http://www.ijeit.com/vol%202/Issue%206/IJEIT1412201212_76.pdf [Accessed Mar 16, 2016].

[6] Car Pooling System with SMS alerts, Dec 2012 [Online].

Available at
http://www.ijert.org/view-pdf/6167/car-pooling-system-with-sms-alerts [Accessed Mar 10, 2016].

[7] Carpooling Application: KwiGo, April 2015 [Online].
Available at
http://www.aui.ma/sse-capstone-repository/pdf/CARPOOLING-APPLICATIONKwiGo.pdf
[Accessed Mar 20, 2016].

[8] Instant Car-Pooling on the Android Platform, [Online].
Available at
http://www.cc.gatech.edu/projects/disl/courses/cs8803/projectReportSpring2009/team2/Project-Documentations/CS%208803%20AIAD%20-%20Project%20Report.pdf