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Car Pooling Android Application

[1] Kapil Kamble [2] Mohd. Irfan [3] Suraj Phalake [4] Sandeep Kamble
[1] [2][3] Student [4] Professor
[1][2][3][4] Department of Computer Engineering,
Vidhyalankar Institute of Technology, Mumbai

***Abstract*— In today's scenario, there are lots of people commuting from place to place. And lot of times, it happens that people travel via car or bike and there is vacant space to take a fellow employee along with him to give a ride. But the problem is there is no easy way to know with how many people a person can share their ride also co-ordination is a huge issue because there is no efforts taken by people to help others by giving them lift, if sharing of ride is done they can save the environment by reducing fuel usage and doing traffic reduction with fewer vehicles etc.**

The Carpooling is an android application which will provide the advanced searching techniques that can give most relevant results for carpooling in the city. This will be helpful in reducing the costs involved in repetitive or long distance driving by sharing cars and the rental charges, or paying the main car owner.

Carpooling is the sharing of car journeys so that more than one person can travel in a car. Carpooling reduces each person's travels costs such as fuel costs, tolls, and can also prove to be an environment friendly measure. By sharing cars passengers travelling in same direction can distribute the fare among themselves. Carpooling is also seen as a more environment friendly and sustainable way to travel as sharing of journeys can help in reducing carbon emissions, traffic congestion on the roads, and the need for parking spaces. The authorities often encourage carpooling, especially during high pollution periods and high fuel prices. We intent to make an ANDROID based application that will enable to let people know if vehicles are available for carpool in their desired path they can create account on app and send request to owner who create the car pool. By using this application people would be getting an option to share expense by sharing hired a cab and making new connections. People having this application on their devices can easily carpool with unacquainted people without worrying about security.

***Keywords*—Car pooling; Android; GPS;**

I. INTRODUCTION

Nowadays, transportation is one of the major issues. One of the most used means of communication in roadways. One of the prime forms of road transport consists of the private cars. These cars are generally used with only a single rider. An overabundance of cars creates various problems which include increased traffic, increase pollution, parking congestion and many more also in recent years, the problems of global warming and the energy crisis have aroused widespread public concern.

A few methods devised to reduce the impact were public transport, non-conventional fuel resources and walking/cycling is used to reach destination. The merits of the above solutions are reduction in the amount of pollution as well as lowering of road congestion. However, public transport is not a well-developed system in India and apart from the inconvenience with respect to time, it has also been usually unreliable. Though non-conventional fuel resources attempt to stem pollution, no proper measure has been devised in a cost effective manner which can harness the automobiles.

Our intended to make a system which aims to remove all of the above discrepancies. We plan to create a carpooling application which gives users the same kind of flexibility that a private car gives which can reduce the number of vehicles being used at the same time. The recommended solution for reducing the harmful effects of the above problems is carpooling. This type of transportation service could make a big difference if they are organized on a large scale by government or big companies, particularly large corporations with many branches or sub companies can favor the most.

Carpooling schemes are designed in such a way that they encourage commuters to share travel expenses and resources with colleagues. Carpooling is the sharing of cars by the driver and one or more passengers, usually for commuting. Carpooling arrangements and schemes involve varying degrees of formality and regularity.

Car sharing aims at solving this problem by targeting all the vacant seats in the private cars [6]. Employees of the same area or the students going to the same school can carpool; this can be done because they know each other and can communicate [6]. But when going on an intercity trip you are not aware if some other person also intends to make the same journey. Thus the applications helps you in seeing people and journey schedules and make an informed decision about do you wish to travel alone or save money and travel with a safe company. Furthermore, carpooling has documented social and environmental benefits that include: It helps in reducing traffic congestion as number of vehicles on the road can be reduced significantly.

- Miles of travel of a particular vehicle and emission ofgases by the vehicles can also be reduced.
- As the system aims at the empty seats it increasevehicle occupancy.

More efficient land use as parking requirement is reduced. Thus also helps in saving cost of building and maintaining infrastructure.

II. PROBLEM DEFINITION

There is an acute problem of traffic on roads these days and the increasing fuel prices add to the misery of daily users of private vehicles. Also use of vehicles causes pollution which has its adverse effects on environment. Car sharing is a solution but few issues like security and trust come into picture.

The purpose of our project is to create an android based application in which users can register as Owner (who create a car pool) and passenger (who request for car pool).

The owner can accept and deny the request from passenger as per their choice. The Car pooling application would enable its user a safe and secure way to share ride. This could include both short daily journeys such as going to workplace or schools within the city and also long inter-city trips.

III. LITERATURE SURVEY

The growth of urbanization is propagating rapidly and hence people are preferred to travel in their own vehicle rather than using a public transport system. Therefore the problems in global warming, traffic congestion, depletion of fuel arises. A social based community for carpooling has been proposed for both the rider and the passenger in order for reduction of fuel costs by sharing among the fellow passengers [5].The implications for environment sustainability are sufficiently high [5]. The system elaborates about the usage of carpooling android application and also discusses about the major advantages of carpooling. The System architecture for carpooling is greatly identifies and major implementation of android application relies on GPS based navigation devices, smart phones, social media for trust and accountability [5]. A proposed system for carpooling has been efficiently discussed by prototype design, route matching algorithms and it also discusses about the advantages and disadvantages of carpooling [5].

The paper which we have referred has mainly discussed about the current scenario of metropolitan cities. It also includes a brief calculation of growth of motor vehicles and cars in the cities and also the distribution of population and vehicles in those cities. It mainly deals with doing a proper data analysis of the total number of cars. Impact of revenue has also been calculated. The paper mainly describes the innovations that have taken place in ridesharing service relying on advanced mobile technologies. This type ofridesharing attempts to provide an added flexibility to ridesharing arrangements by allowing drivers and passengers to arrange occasionally shared rides. It also discusses about the advantages, disadvantages, economic challenges, social/behavioral challenges, Institutional challenges, technological challenges, opportunities and challenges of ridesharing. The Rideshare challenges in a series of economic, behavioral, institutional and technological obstacles.

In general there are a wide range of algorithms for finding the shortest path but Dijkstra's algorithm for finding the shortest path is efficiently which is one major advantage for reducing the fuel content and hence being used. The road networks and congestion of cities has been discussed with the statistics of average number of cars, vehicles that run in Delhi. The system seemingly provides all the advantages using GPS based navigation system and also has some additional SMS based alerts in order to provide transparency with both the rider as well as passengers. This system is user friendly.

IV. PROPOSED SYSTEM

In today's world dynamic carpooling 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 [4].
In case of OLA cabs and Uber the traveler sign in into their respective account and they can easily book a cab by choosing their destination, but the problem here is the remaining or the seats which are vacant would be waste.
Sharing with other people those who want to travel towards the same destination is not possible yet. So, in our system we will try make an application which can be used by everyone, those who are ready to share their vacant seats with people those who are travelling towards the same route. We have also taken into account security of passengers as well as drivers. At the time of registration both the passenger and driver have to upload their id proof in the form of driving license or PAN card, Aadhar card etc. anyone of these.

In near future we have come across many incidents regarding security of lady passenger. Our module will be implemented in such a manner that after all the

seats are filled details of no. of male and female passengers would be sent to all passengers as per that if anyone is feeling discomfort for the journey would easily back off by just cancelling their reservation from journey.
The cost of the journey for particular distance is fixed and if any passenger wish to get down after that fixed point he/she would have to pay as per the algorithm which we would be implementing i.e. Dijkshtra's algorithm, as per this algorithms cost would be specified.

A. Registeration

In this module user can register them by provideing their information like Name, Address,Profile picture,PAN no,Email and password (if having car then car no., car type and car photo).

B. Login

In this application registered users can login into the system as follows:

- *Login as Owner*
- *Login as passenger*

C. Create car pool

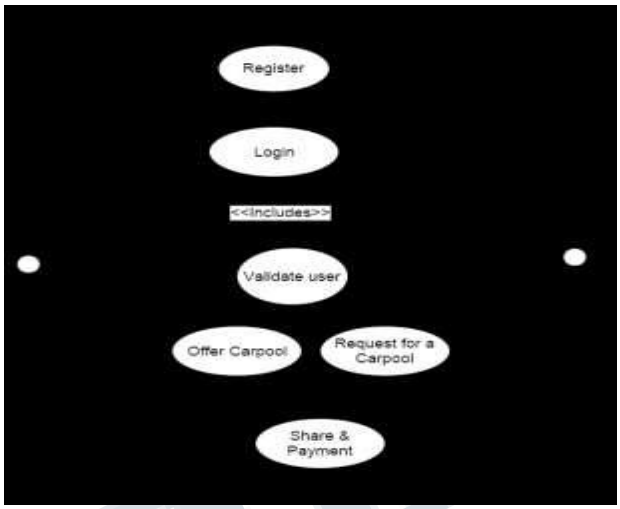
In this owner can create the car pool by providing the details as follows:

- *Starting location*
- *Start time*
- *Destination*
- *Number of available seats The owner can accept or deny the car pool request.*

D. Request for car pool

In this passenger can request for car pool by providing the details as follows:

- *Starting location*
- *Start time*
- *Destination*
- *Number of passengers*



Use case diagram for carpooling system:

V. ACKNOWLEDGMENT

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VI. CONCLUSION

Carpooling android application is very effective means to reduce pollution and the congestion of vehicles in cities. It also enables people to travel in an eco-friendly way to travel. It also provides an opportunity to meet new people. As today most people prefer private vehicle to travel compared to public transport due to the delay caused in public transport system and also luxuries are provided in private vehicles. Preregistration is the part that ensures that only identified people get into the vehicle so that trust can be established.

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