



Car Pooling System

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Abstract

Carpooling (also known as car-sharing, ride-sharing and lift sharing), is the sharing of car journeys so that more than one person travels in a car. Carpooling reduces each person's travels costs such as fuel costs, tolls, and the stress of driving. Carpooling is one method that can be easily instituted and can help resolve a variety of problems that continue to plague urban areas, ranging from energy demands and traffic congestion to environmental pollution. Authorities often encourage carpooling, especially during high pollution periods and high fuel prices. We intent on making an WINDOWS based application that will enable to let

people know if vehicles are available for carpool in their desired path they can sign in for it. This will enable people using this application to share expense, not worry about hiring a cab and making new connections. People having this application on their cell phone with advance facilities can easily carpool with unacquainted people without worrying about security. It will also helpful for blind or lack of knowledge of using gadgets such a people they can operate this application using speech recognition technique. It will show the accurate time requires to reach at particular location. It gives a better way for pooling a car with a very efficient environment this is easy to use. This is a web-based collaboration, communications, and content delivery framework.

Keywords:

Pooling, GPS, Windows Apps, SOS.

1. Introduction

Transportation is a major issue these days especially in India. One of the most used means of communication in roadways. One of the major forms of road transport consists of the private passenger car. These cars are generally used with only a single rider. Because of these causes pollution, traffic congestion(Jam), increasing parking space, wastage of time, no new connections & many more. Now a days, there is no. of application are in used but they are working in some bounded area. So, we have to remove the boundary through our application. We are developing the application which is working as like social networking sites. It is touch of everyone those have smart phones. This app is working as social networking site so the security is big issue. We have trace this problem by providing various security advance facilities such as for SOS we develop a technique which used when the passenger or driver in trouble. Our apps will provide a facility for blind person through speech recognition. It will track the location of passenger & driver those who involve in arpool. After all the passengers rich at their desire location it will be disable automatically. All the users involve in this carpooling system are track through

GPS in head office when they made a pool; according to the security point of view it is important. They can watch the SOS notification also & according to that action will takes place.

This can be done as the know each other and can communicate. But when going on an inter city 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 of gases by the vehicles can also be reduced.
- As the system aims at the empty seats it increase vehicle occupancy.
- More efficient land use as parking requirement is reduced. Thus also helps in saving cost of building and maintaining infrastructure.

which is user friendly and provides an opportunity to share cars. We intent on making an application which would be 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.

2. Literature Survey

- **Android-Based Information Systems** Bilawane and Jambhulkar (2017) discuss leveraging Android platforms for information systems, offering insights into technical aspects and potential functionalities.
- **Online Training and Placement Systems** Kajal et al. present an online training and placement system, showcasing the integration of web-based platforms with Android applications for efficient communication between students and employers.
- **Campus Employment Information Network** Zhongxi (2015) highlights the development of a Campus Employment Information Network based on Android, focusing on bridging the gap between job seekers and recruiters within campus environments.

- **Dynamic Campus Recruitment Management** Varshney, Sharma, and Jain (2014) propose a dynamic campus recruitment management platform, emphasizing adaptability and scalability in recruitment systems.
- **Real-Time Ridesharing Applications** Studies by Divyesh et al. (2016) and Arpita (2012) explore real-time ridesharing applications for Android, offering insights into real-time communication, location tracking, and user interaction features.

3. Existing system

All the present available systems have a very attractive and innovative interface which helps the user to understand the system in a easy way. These systems work efficiently and engineered very well by the different sources available. But the problem with available systems is that they do not provide component that builds up trust among the fellow passengers. The reason is all the available sources only concentrate on physical structures of the system.

3.1 Drawbacks:

- No interaction component available.
- Don't know with whom you are travelling with.
- Not helpful for blind people.
- Not Secure.
- Not track the location.
- Not Flexible.

4. Problem statement

There is acute problem of traffic on roads these days and the increasing fuel prices add to the misery of daily users of personal vehicles. Also use of vehicles causes pollution which has its adverse affects. Car sharing is a solution but issues like security and trust come into picture. Can this problem be solved? Solution to this problem is mobile based Carpool system. The Carpool system would enable its user a safe and secure way to share cars. This could include both short daily journeys such as going to workplace within the city and also long inter-city trips.

5. Proposed system

Our proposed system overcomes the drawbacks of the existing system. It has advance facilities to make it more user-friendly. It provides details of the owner and his/her car to maintain transparency between users of the system. It will track the location

of users those who involve in pool through GPS Navigation system. It has SMS Alerts facilities for notification purpose. The High security makes it faithful to use. The security aspects gets more enhance by SOS facilities if the user is in trouble. It is available on Smartphone's so it is more flexible & dynamic to use.

5.1 Our plan and its Advantages:

- Registration for users for security.
- Provides pool details to the user.
- Can create his/her own pool.
- Approval/Disapproval totally depends on driver.
- User-Friendly.
- Blind can also operate it.
- Track the location till the pool is made.
- Carpooling head-office track each & every pool, so
- it helpful to take action if someone is in trouble.

6. System Requirement

- A) Hardware Components
- B) Software Requirement

A) Hardware Components:

Table 1: Hardware Components

System	Pentium IV 2.4 GHz & onwards.
Hard Disk	40 GB
Monitor	15 VGA Colour
Mouse	USB
RAM	256 MB
Smartphone	with Windows 2.0 onwards

B) Software Requirement:

Table 2: Software Requirements

Operating System	Windows 10 & 11.
Language	Nodejs
Data Base	MYSQL 5.5.28
IDE	Net Beans IDE 6.9.1
Browser	Any

6.2 Tomcat Sever 5.5

A Number of servlet containers are available today. The most popular one & the one recognized as the official servlet/JSP container is Tomcat originally designed by Sun Micro Systems Tomcat by itself is a web server this means that you can use Tomcat to service HTTP request for servlets as well as static files(HTML, image files & so on). Tomcat 5.5 uses the Jasper 2 JSP Engine to implement the JavaServer Pages 2.0 specification.

6.3 Database platform – MySQL

The world's most widely used open-source relational database management system (RDBMS) that runs as a server providing multi-user access to a number of databases MySQL is a popular choice choice of database for use in web applications, and is a central component of the widely used. The MY SQL is the open source database.

6.4 Design tool – Star UML Software Modeller

StarUML supports most of the diagram types specified in UML 2.0. It is currently missing object, package, timing and interaction overview diagrams (though the first two can be adequately modeled through the class diagram editor).StarUML supports most of the diagram types specified in UML 2.0. It is currently missing object, package, timing and interaction overview diagrams (though the first two can be adequately modeled through the class diagram editor).

7. Non-Functional Requirements

- There are requirements that are not functional in nature. Specifically, these are the constraints the system must work within.
- The apps must be compatible with both the windows 2.0 and onwards based smartphone's.

7.1 Performance Requirements

- 24*7 availability of services that we usually don't get in traditional system.
- Immediate accessing of services.

7.2 Safety Requirements

- The database should be carefully maintained by the administrator any loss may lead to chaos.
- Prevention of the abusive use of the language in the forums.
- Prevention of fake ids.

7.3 Security Requirements

- The Administrator password must be highly confidential.
- The users id must also be confidential.
- The users should not reveal their id to others as it may lead to wrong usage of account.

8. Basic Concept

Car-pooling is the sharing of rides in a private vehicle among two or more individuals. It involves the use of one person's private or company

vehicle to carry one or more fellow passengers. Carpooling is the easiest and most common ridesharing arrangement. It usually consists two to four persons commuting in a vehicle. Sometimes carpoolers share driving, and other responsibilities. In other cases, one person does all the driving and is reimbursed for mileage by his or her riders. The carpool driver may pick up passengers from their home or the passenger may find a way to get to the driver's home at a specified time or they may meet at a particular location. Car-pooling defined as an effort by drivers of motor cars who agree to take turn to share rides from places of residence to places of employment. As the definition implies, car-pooling therefore refers only to the exercises carried out by the owners and drivers of private motor cars. For example, if two persons A and B would like to car pool, they must first be owners and drivers of cars. They will then organize among themselves as to who is to drive on which day or which route to follow, and so forth. Preferably, A and B would alternate driving on a daily or weekly basis, or on any other basis they prefer.

There will not be any charges or fees involved. Excluded from the definition are those who ride share but do not own a motor car; and those who own motor cars ride share regularly but did not share driving. In these two cases, payments of fees are usually involved. If a car owner drives alone to work every day and spends approx. Rs. 5392 including fuel, maintenance and parking etc. It is assumed that on an average, he travels 40 kilometer per day. If he shares the car with three carpoolers who have their own car and drive to the same workplace. Then each of them can save Rs. 4044 per month of the total spent on commuting to the work place. All the four carpoolers have to bring their own car for a week in a month and drive themselves with other three carpoolers.

9. Literature Survey

Carpooling system is used in many countries like China 77% had heard of carpooling and 16% was used. After this survey they did attitudinal questions towards carpooling, then survey was interested in carpooling were 62% and 38% were not interested. They used many means to come in contact with people like Newspapers, Internet, Friends, Colleagues, and Radios. These all means were used for people to get carpooling information. After using carpooling system the statistic suggests the saving and expenses would be as follow;

Table 3. After using carpooling system the statistics suggests the saving expenses

Carpooling Disadvantage	Time Coordination &	Cost Sharing Difficulty	Less Privacy
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	Difficulty		
Driver	53%	29%	37%
Non-Driver	75%	72%	27%
Carpooling Disadvantage	Potential Dispute	Inconvenience	In security
Driver	68%	76%	37%
Non-Driver	70%	20%	36%

Did you know that here in Maharashtra State, petroleum used for transportation is the number one source of air toxins and greenhouse gas emissions, a major contributor to global warming? Each of us can reduce our impact on the environment. Think about it – every time two people share a ride, they're helping to reduce emissions from cars by half! Reducing vehicle emissions helps combat global warming, improves air quality and has positive effects on public health. And who hasn't been stuck in traffic recently? The World watch Institute found that the average Maharashtra adult now spends 72 minutes per day behind the wheel, often alone. Carpooling cuts down on congestion, which cuts travel time. Through your school's carpooling campaign, you can make a measurable difference in fossil fuel use and in the greenhouse gas and toxin emissions released into Washington's atmosphere. And you'll be cutting down on traffic congestion. The Green Team Carpool Project is easy to implement, with step-by-step instructions for helping participants better understand how their actions affect the environment. These project guidelines will support your environmental club or class through the entire process, from determining the scope of the project through implementation and results presentation.

10. Objectives

The objectives of the Car Pooling System can be stated as follows:

1. Enable users to create events that would specify the following information-
 - The total vacancy in the car.
 - The time at which the event is going to take place.
 - The Final destination.
2. Development of the logic that would enable-
 - Poll in the location information of all the intended recipients.
 - Take decision based on the context on the location
 - Send SMS to all the selected recipients and handle the accepted or rejected messages received from the recipients.
3. Generate a Google Map that shows the initiator the map between his location, all the recipients that agreed to his car pooling event and the final destination.

11. Motivation

The application under consideration, the Car Pooling application, is a novel idea which has never been implemented before. This became our source of motivation for going ahead with this project. All the current car pooling methods are

- Time consuming
- Require a lot of before-hand planning.
- Require several rounds of communications in the form of series of e-mails or a series of telephonic conversations.

A different source of motivation behind the development of this application is that of the IOK College, pune. Teachers & Student of this college suffering one problem that they have to do struggle for lift so we offered a Car Pool for some relief. We thought; why not develop a mobile-based instant Car Pooling application as our gift to the students & teachers of the IOK-COE? This really gave us the passion to go after the completion of this project. The initiator of the event could select intended recipients from the contact list. The application then checks for the relative context of the location of all the selected recipients and forwards the event to only those recipients that satisfy the context.

12. Carpooling Strategies

Carpooling is car-sharing; it helps save money and also is a way to minimize pollution. Carpooling is well established and used on daily basis in China and the US. We need to set up some strategies to encourage carpooling in India. These may include:

- Legislate for carpooling to ensure the legal status of carpooling and protect the legal rights and interests of carpoolers.
- Establish special carpooling agency by government to lead the carpooling propaganda, organization and service works. Encourage public carpooling institutions to promote the carpooling development.
- Implement carpooling incentive programs to improve the carpooling share in daily commuting modes.
- Carry out carpooling pilot projects to examine the effect and efficiency of carpooling programs.
- Carry accurate pick up time by considering all the aspects for particular route.

13. System Implementation

Carpooling system is a dynamic system which relies on two underlying sources of information: which includes route announcement by the uploader and route selection and registration by passengers. The user (uploader) who is going to travel by his/her vehicle will mention source, destination along with the route selected. He will also mention the capacity of vehicle. The user (passenger) who finds the path

convenient can register for the trip. Carpooling system has a detailed phased registration system. For security and ensuring trust the system will check for any valid identity proof such as UID, pan card number provided by government, police character certificate. Our system will take feedback about users experience in trip. For displaying routes and users position we use digital maps. Even the uploader is blind/lack of knowledge of have to use gadget that can use this system easily.

14. Conclusion

- Carpooling system is very effective means to reduce pollution and the congestion of vehicles in cities. It also provides an eco-friendly way to travel. It also provides an opportunity to meet new people. As today most people prefer private vehicle to travel due to delay caused in public transport system and luxuries provided by private vehicles. Pre-registration ensures that only identified people get into the vehicle so that trust can be established. The people registered are allotted specific days on which they should take their private vehicle, so that no inconvenience is caused to its registered passengers for daily commute. Thus the proposed carpooling system will be effective in reducing environment pollution.
- It will also provide a security to citizens.
- It will give the accurate pick-up time.

15. Future Enhancement

- It will be user-friendly for blind & lack of knowledge people.
- Bike can also be used in future for pooling.
- Pooling system can be for transportation goods in sharing manner (Truck Pooling).

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