



# **Road Traffic Reduction via Implementation of Android Based Carpooling Application**

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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. By having more one vehicle, carpooling reduces each person's travels costs such as fuel costs, tolls, and the stress of driving. Carpooling is also seen as a more environmentally friendly and sustainable way to travel as sharing journeys reduces carbon emissions, traffic congestion on the roads, and the need for parking spaces. Authorities often encourage carpooling, especially during high pollution periods and high fuel prices. We intent on making an ANDROID 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 can easily carpool with unacquainted people without worrying about security.

**KEYWORDS:** "Carpooling, Car Sharing, Car riding, Smart Transportation Towards Green world."

## **I. INTRODUCTION**

Transportation is a major issue these days. 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. An over abundance of cars creates various problems which includes increased traffic, increase pollution, parking congestion and many more. Car sharing aims at solving this problem by targeting the empty seats in the private cars. Employees of the same area or the students going to the same school can carpool. 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.[3]

## **II.PROBLEM DEFINATION**

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. Carpooling system is a dynamic system which relies on two underlying sources of information: which includes route announcement by the up loader and route selection and registration by passengers. The user (up loader) 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. Our system will take feedback about users experience in trip.

In prototype a passenger submits a request for a ride or a driver offers a ride. If a member has the flexibility to be either a passenger or a driver, then option will be provided to select both. The unregistered users at the first can see the statistics of using the system which has different charts.



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## 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.[3]

These may include:

- 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.

## III. RELATED WORK

Our application is an attempt to make a system 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.

### 1)Reduced Parking Demand:

--Parking demand will be reduced by car-pooling

### 2)Reduce Travel Demand:

--The idea behind travel demand reduction is to reduce congestion by decreasing the number of vehicle trips on the existing road network, as opposed to expanding road network. Travel demand reduction focuses on maximizing the movement of people, not vehicles, within the transportation system. This can be done by increasing the number of persons in a vehicle, or by influencing the time of travel.

### 3)Reduced Pollution:

Decreasing the volume of vehicle trips is far less costly than providing new transportation facilities and the decrease in the number of trips will reduce vehicle-generated air pollution.

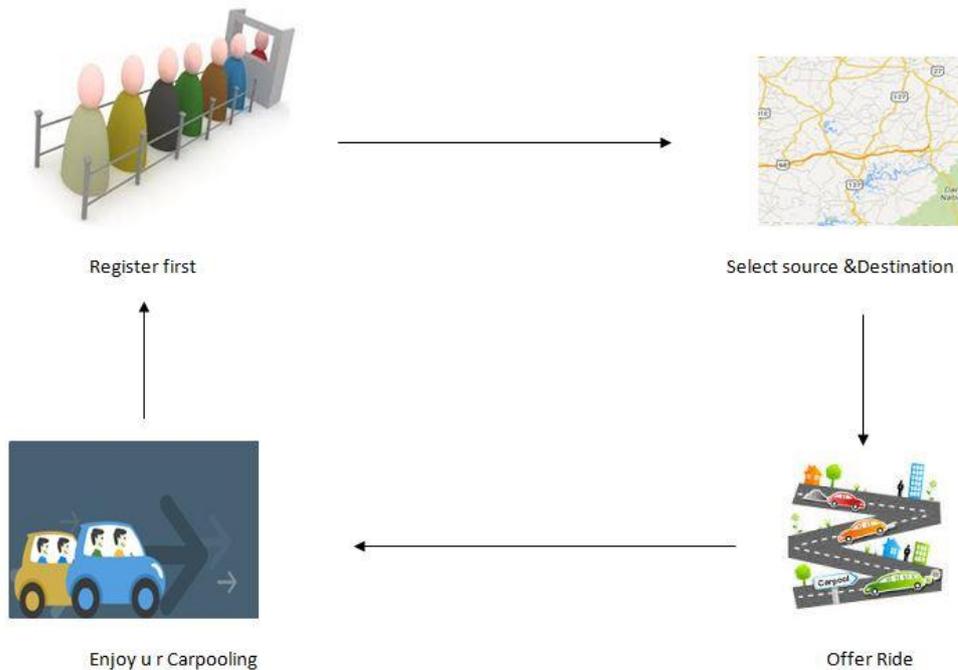
## IV. PROPOSED SYSTEM

Carpooling system is a dynamic system which relies on two underlying sources of information: which includes route announcement by the up loader and route selection and registration by passengers. The user (up loader) 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. Our system will take feedback about users experience in trip. For displaying routes and users position we use digital maps. Additional thing we are using flexible drop off points. The systems graphical user interface will be user-friendly and standard.

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Fig(1) System Architecture

Above Fig(1) shows how Smart Transportation System Works to be carried out.

## IV. PSEUDO CODE

Following are some Steps to access System

- 1) In the application, User will First Register as Car Owner if he have own Vehicle neither Register as Traveler.
- 2) after successful registration User will be able to use the carpool application.
- 3) User can book ride from his own account "Offer a Ride" or "Need a Ride" request to start carpooling.
- 4) Based on the Trip request, application does the dynamic search for best carpool matches.
- 5) Car Pool application server provides carpool matches based on the unique algorithm and the associated trip cost.
- 6) User will select the preferred co-riders.
- 7) User will send the invitation to the selected co-riders.
- 8) Based on the acceptance from Co-riders Car pool is getting completed.
- 9) CARPOOL will be a free application to download.
- 10) User will pay point from his account base on fair charges.

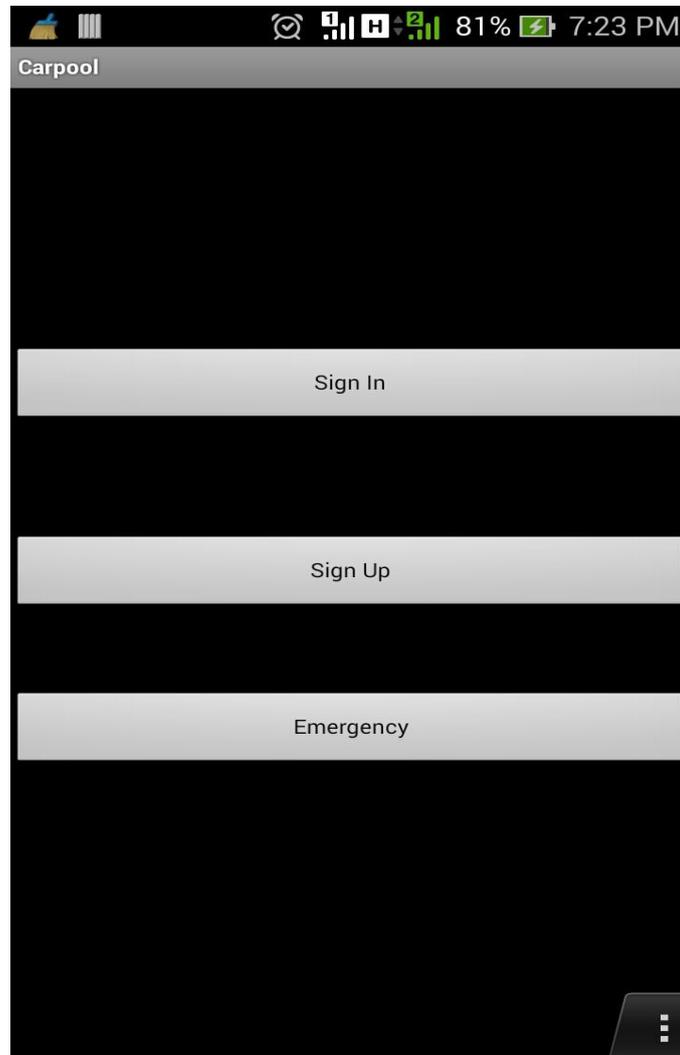
following figure-2 show how our system Accessed via Android Intent application. there are two Sign in and Sign up Button For user which connected with our web application. and third button is an Emergency for sending user GPS location to her/ his friend in any Emergency/Disaster situation happened there .



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Fig(2)

## IV.SURVEY AND RESULTS

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.[1]

### Benefits of Carpooling

#### 1) For Individuals

- Reduced traveling expenses and the need for second car
- Improved travel time through use of transit lanes



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2)for the community

- Reductions in vehicle emissions
- Reduction in traffic volumes and congestion
- Provides an alternative, cost effective choice
- Improving the environment

3) for companies that arrange car pooling

- Maximizing use of employee parking
- Encouraging sociability between employees
- Reducing stress on driving to work
- Providing staff with a further benefit
- Improving company image

4) Natural resource conservation:

The resource impacts of automobile production will decline. Cars are environmentally Expensive to produce even before they are driven one mile. Car-sharing recognizes this fact by making more use out of fewer vehicles.

5)Social justice:

Transportation access for poor people and wealthy people will become more equal. Poor people will be able to make car trips without becoming car owners.

**Analysis** -Following Figure shows how the application will help in reducing the pollution and traffic problem. The application will cut-down personal expenses and cost. Thus increasing the income. The diagram shows the total benefit of application. The graph shows the parameters like reduction in fuel, usability ,cost ,and reliability[4]

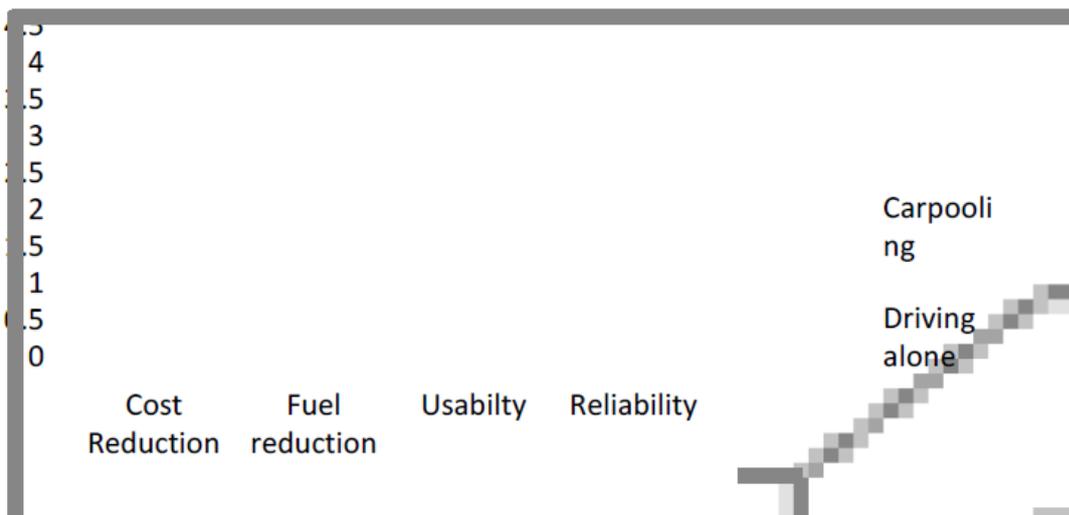


Fig.4 Showing how carpooling will be beneficial from driving alone

## V. CONCLUSION AND FUTURE WORK

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-



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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.

## Future Scope[2]

Future implementations may include-

- **Notifications From Company** -The software can be further expanded in scope to include this additional facility. Notifications to the company employees can be sent using the application instantly.
- **Messages to employees** - Messages which are specific to an employee can be sent using this application. These messages may be in any context which would require confidentiality.
- **Advertisement** - The application can also be used for the advertising purpose.

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