

Implementation of Dynamic Carpooling System on Android Platform

Yuvraj Nalawade
Dept of Computer Engg.

Vijay Waghmare
Dept of Computer Engg.

Prasmit Waghmare
Dept of Computer Engg.

Abstract— *Carpooling commonly known as car-sharing or ride-sharing. Using carpooling concept people can share cars that are travelling to same destination. Carpooling and Ride sharing applications depend normally on an architecture that includes two multimedia user mobile devices and a server that collects the rides available and the ride requests. The Carpool is an android application which will provide the best way to share rides by creating and browsing or searching rides through this application. With the help of this application number of vehicles on road will be reduced. Thus this application will help to reduce the problems of traffic jams. Fuel combustion also will be reduced. Application also helps to control the pollution and maintains green environment.*

Keywords— *carpooling, Android, browse ride, create ride, Ride seeker, Ride creator*

I. INTRODUCTION

Transportation is a major issue in our world today. Carpooling is a solution to the problems of traffic jams, pollution, and extra use of fuel. Our application is an attempt to make a system which is user friendly and provides an opportunity to share cars. The service will allow users to offer and request ride sharing journeys using their Android enabled phones. The main problem in carpooling is how to find out who travels to the same destination as yours every day or who is interested in carpooling. Carpooling allows a large number of passengers and drivers to be matched with each other automatically and instantly wishing to travel same destination. Using this developed android application car owner can create a ride by giving information like source, destination, starting time of journey, available seats etc. And ride seeker will be able to search and browse the rides by providing inputs like source, destination, and time. The dynamic Carpooling system relies on the information from two users i.e. ride creator or car owner and ride seeker.

II. PROBLEM DEFINITION

As a rapid increase in urbanization, there are huge problems faces in travelling. People are migrating from on city to other in search of jobs. This results in increasing population and thus resulting in insufficient transportation facilities. Due to this people prefer to travel by their own vehicle than using public transportation. This leads to problems like increase in number of vehicles, traffic, fuel combustion, heavy cost on resources, parking problems. Using two different vehicles leads to an increase in personal expenses, stress. To overcome this hurdle, a quite different but realistic solution called Carpooling can be used.

III. PROPOSED SYSTEM

The users will have our developed carpooling android application installed in their android smart phones. The carpool process will be initiated by registering the users. Then users will be able to create and share rides. These ride creation and ride browsing processes involves following activities.

A. Creating Ride

Step 1: Car owner will enter the source, destination, starting time and available seats as input to the android application.

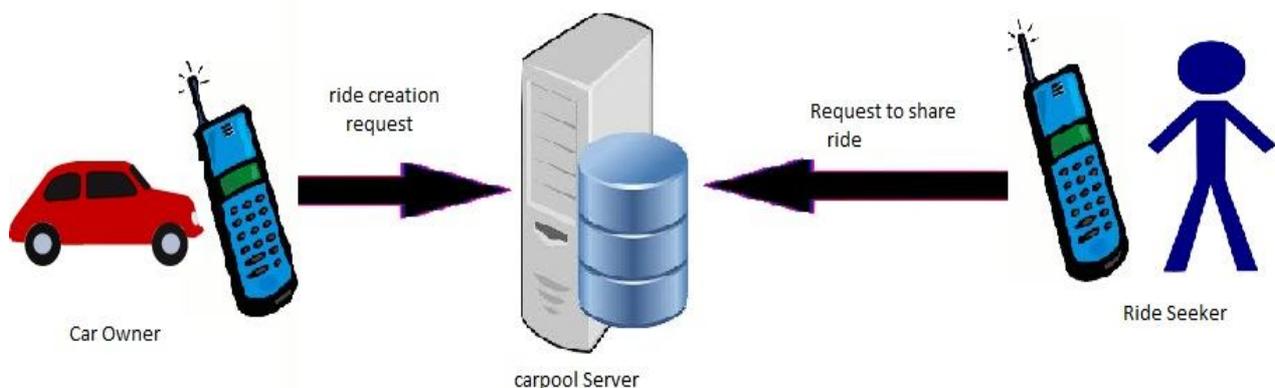


Fig. Initial carpool initiation

Fig. 1 Initial Carpool situation

Step 2: This ride creation request will be transferred to the carpool server.
 Step 3: Now server will check for existence of route between entered source and destination and will validate the other input information.
 Step 4: Now ride is created and ride seeker are able to search and browse this ride.

B. Browsing ride

Step 1: Ride seeker will enter the source, destination, starting time as input to the android application to search and browse for rides.
 Step 2: This ride browse information will be transferred to carpool server.
 Step 3: Now server will validate all inputs specified by the user.
 Step 4: After validation the server will show available rides to the ride seeker. Ride seeker can send a request to anyone of these ride creators.

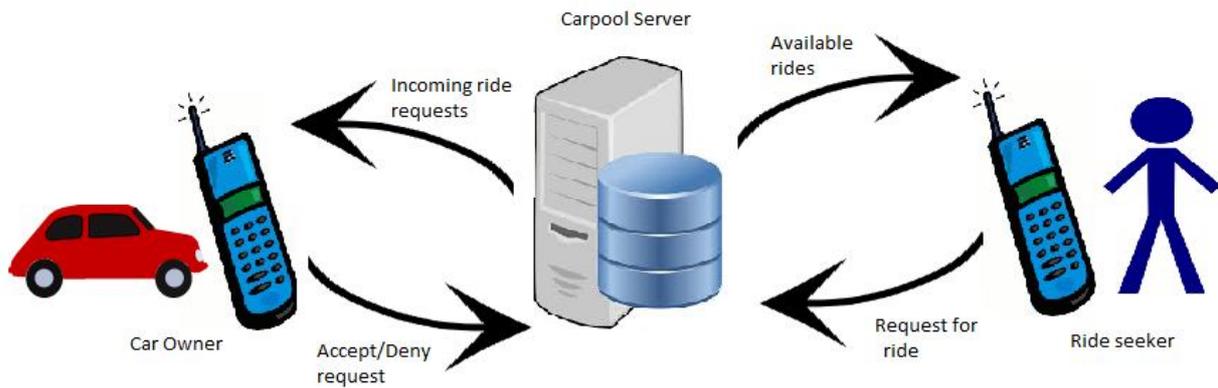


Fig: Carpool requests

Fig. 2 Carpool process overview

IV. MATHEMATICAL MODEL

The functionality of the system is represented using following 5-tuple format of Finite State Machine.

$$(\Sigma, S, s_0, \delta, F)$$

- a. Σ is the set of input alphabets (a finite, non-empty set of symbols).
- b. S is a finite, non-empty set of states.
- c. s_0 is an initial state, an element of S .
- d. δ is the state-transition function.
- e. F is the set of final states, is a subset of S .
- f. $\Sigma =$ username, password, login-ID, source, destination, available seats.

V. INPUTS AND EXPECTED OUTPUT

TABLE I INPUTS AND EXPECTED OUTPUTS

On Page	Input	Expected Output
Login page	<ul style="list-style-type: none"> • User ID • Password 	Redirect to main page
Ride Creation page	<ul style="list-style-type: none"> • Source • Destination • Start Time • Available Seats 	Ride should be validated and created by carpool server
Browse Ride Page	<ul style="list-style-type: none"> • Source • Destination • Start time 	Carpool server should show the corresponding rides on same route to ride seeker
Notification Page	<ul style="list-style-type: none"> • Accept or deny ride 	Corresponding ride seeker should be notified with the result through server

VI. CONCLUSION

Carpooling system is very effective means to reduce pollution and the congestion of vehicles in cities. It provides an eco-friendly way to travel as well as an opportunity to meet new people. Nowadays most people prefer personal 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.

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