A Genetic-Algorithm Based Approach to Solve Carpool Service Problem Using Android App

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Abstract— as a rapid increase in urbanization around the world there are huge problems related to the travelling. Due to insufficient transportation facilities people prefer their own vehicle to travel than using public transportation such as bus. This rise up problems like increase in number of vehicles, heavy cost on resources, fuel combustion, traffic parking problems. Carpooling is one of the most effective solutions to scale down this problem. Carpool is concept of sharing of car so that more than one person travels in a car. Carpool also known as car sharing, ride sharing or lift sharing. To make carpool more user friendly we will create android based application using genetic algorithm.

Keywords- Carpooling, Android, Genetic Algorithm

I. INTRODUCTION

Current economic development has resulted in urban and industrial growth, leading to rapid increases in the huge amount of vehicles on roadways and thus, serious traffic congestion problems in large cities around the world. Severe traffic congestion can have many destructive effects, such as time loss, air pollution, and increased fuel consumption. Consequently increasing population, causes the metropolitan cities are facing problem of traffic congestion. Severe traffic congestion can have many destructive effects such as fuel costs, tolls and the stress of driving. Public transit systems have the capacity to reduce traffic congestion but offer less flexibility, comfort, and freedom than private vehicles, so private vehicles are by far the most popular way to commute. However, each car usually transit just one or two individuals, resulting in many empty seats Drivers share their cars with one or more people who have similar transit routes. By decreasing the number of empty seats in these vehicles, occupancy rates are significantly increased. Consequently, small number of vehicles would be required to transport the same quantity of commuters to their respective destinations. For help in coordinating the ride matches, apply the genetic algorithm to propose the genetic-based carpool route and matching algorithm (GCRMA) [1].

II. LITERATURE SURVEY

Carpooling sites are not adaptable and does not give Carpooling websites are not flexible and does not give an assurance amid the installment matters. The Carpooling application for android phone was also not that much flexible because of driver can continue following the traveller and the traveler does not know the exact location of driver and also there were issues related to security. The android application not flexible in countries like India, where people have operating system like android, Symbian. So we added to an application on android as it is more flexible and easily available. Limitations of Existing Systems: Carpool application is not as much effective because it was not able to fulfill the requirement which are listed below:-

- User/Passenger cannot track the driver
- More Expensive
- Security issues
- Online Payment

1. “An exact method for the carpooling taking into account Lagrangean section era” In Existing method uses the application of integer programming to take care of the carpool issue in a work environment, by which to facilitate the sharing of employee vehicles. In any case, number programming, which has a place with the family of exact optimization, is a deterministic technique that dependably gets the same rough arrangements in various runs. All things considered, it is not producing satisfactory solutions for a large number of carpool users [4].

2. “Application of Genetic Algorithms to Solve the Multidepot Vehicles Routing Problem”. A fuzzy controller is built to act on the vehicles longitudinal control-throttle and brake pedals following the references set by a decision algorithm. Information from different vehicles is obtained utilizing remote Vehicle- To-Infrastructure (V2I) communication. Framework introduced in the base that is prepared to do assessing road traffic conditions in real time is responsible for transmitting the information of the vehicles in the encompassing area. Uses the genetic algorithm in which the design of recombination is essentially actualized by means of a solitary point hybrid operator and vehicles routing problem with multiple customers and multiple product has been studied [2].

3. “Genetic And Insertion heuristic algorithm to for solving the dynamic ride matching algorithm time windows” A genetic algorithm is a search technique used in computing to find true or in exact answers for enhancement and inquiry issues. In these systems five operators are used to solve the ride matching problem:-
   i) A push backward operator;
   ii) A push forward operator;
   iii) A remove insert operator to randomly select an inception destination pair for expulsion from the route,
   iv) A transfer operator to pick an origin destination pair from the course for insertion into different courses; and
   v) A swap mutation operator to swap a random point and a neighbor point route. Unfortunately, these operators are neither effective nor productive because all perform in a random way that does not have an issue particular introduction important to tailoring to the characteristics of the carpool problem.

### III. PROPOSED SYSTEM
The users will install carpool application on their smart phones. User of this application either passenger or driver. When the user launches this application, the user will enter their personal details in registration form and submit that information in the database. Then login into carpool system and select one of the operation from different operations, such as the user can create a new car pool event, view the events that he has created earlier or view invitations for auto pool occasion from other users. When the client decides to create a new event, he is given a form which has fields such as destination of the carpool, time of the car pool, vacancies in the car, destination address of the passengers and a catch to browse the rundown of his contacts. The client enters the values in the fields and then clicks on the contact list. The contact rundown is shown from which the client chooses the contacts he wants to send the invitation of the carpool to Driver will be sent an SMS alert massage or Facebook notification to passenger with the details of the carpool event.
When the passenger accepts an invitation, the carpool application on his phone will respond back to the driver with the current GPS location of the passenger. Now when the initiator views the event generated, he can see all the individuals who all have reacted to the event. A Google guide is created with the locations of all those who have responded to the event. We have used the Google Map API here for generation of the route map based on the location. Once the vacancies are full, the other passengers who try to accept the invite later are displayed a message which says that the car is full. A user who owns a vehicle can create a car pool and passenger can select the appropriate driver for his/her travel. A user who wishes to share a ride can enter his source and final destination along with time and select a particular car pool to join.

CONCLUSION

Carpooling is an android based application which helps passengers and driver to make their journey convenient and flexible. The destination of Carpool Service Problems is also addressed for the application of practical system. Such a problem is successfully solved by proposed GCRMA, which is based on genetic algorithm. Intelligent carpool system provides an environment in which drivers and passengers can easily find carpool matches at any time and in any place. Carpooling application generate a Google map that shows the location of car.

REFERENCES


