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CARBUDDY: RIDE-SHARING PLATFORM

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Abstract - The rapidly increasing number of vehicles and commuters leads to an increase in traffic congestion and the problems associated with it. It requires the study of alternative measures to scale down the number of vehicles travelling daily, especially single-occupant vehicles. Several researches conducted revealed that carpooling can be an efficient solution to relieve the pressure due to traffic. The carpooling is a system by which a person offers his or her private vehicle to one or more commuters who have similar destinations or routes. Carpooling is effective solution to reduce the traffic. It consists of increasing the occupancy of vehicles by occupying empty seats in the vehicle effectively. The current system is not enough as far as small regions are considered and it has scalability issue. Our system will provide a secure interface for connecting drivers and commuters to share the ride wherein we are aiming to provide this service in small regions also so that daily commuters like office-goers and students can also be facilitated and can contribute in reducing traffic thus saving environment. We are using genetic algorithm which will help in coordinating ride matches via the carpool system.

***Key Words*:** Carpool, Genetic Algorithm, Stochastic Time, Partition Merging, Traffic Congestion.

INTRODUCTION

Carpooling is an environment-friendly method where sharing of rides can reduce the number of vehicles on the road which in turn reduces the problems like environmental pollution, traffic congestion and lack of space for parking area. By having more people in a single vehicle, reduces the various costs of the journey. For example, combining three or more people who set off on the same direction in different vehicles, into one, reduces the costs of fuel needed for separate vehicles. Cost reduction by sharing and company of fellow travelers also reduces the stress of the driver. Most of the existing applications related to carpooling like BlaBlaCar, Quick rider, Pool My Car etc. provides sharing of the journey, user rating, feedback, payment, etc. But these applications are only available in metro cities they are not available for local areas. Our system has some added advantages to other models currently in use. Every user has their own profiles and they can have access with given password to the system. Passengers can communicate with the driver via the messaging system and choose their path as desired. After mutual agreement with each other, they provide the journey information to the system. At the end, users can assess each other via a feedback system. Also, the passengers will be able to search for a ride suitable to their location preference.

DRAWBACKS OF THE CURRENT SYSTEM

The current previous Carpooling system having some drawbacks which are as follows:

- Safety is the main issue that should be considered in cities. There are some crimes which happened while carpooling like robbery, kidnapping and missing cases.
- While carpooling, won't have much freedom or flexibility with schedule and activities as different people are travelling with each other. So if you have different plans after work, it will be more difficult to do these since you have a whole bunch of people to consider.
- Any member running late can effectively make all the other members behind time we well, since the carpool has to wait for the participant.
- When carpooling with different mindset people from the same organization, it often results in a lot of gossips and unpleasant experience for most of the people.
- Due to some different behavior of people, it often results in quarrel between driver and passengers.

PROPOSED METHODOLOGY AND IMPLEMENTATION

The mechanism of system is divided into four modules:

A. Registration: The system will have two types of user, which are Driver and Passenger. The driver is one who owns the car and is travelling on a particular route, willing to share the ride and passenger is the one who wants to use the share ride service on a specified route. During registration we are verifying both the types of user, drivers have to provide driving license, vehicle documents and the details of vehicle to be used. Both user will have to provide unique identification number which can be used for Identity authenticity. Here, we are using Django framework which by default, prevents most common security issues such as XSS (crosssite scripting) protection, CSRF (cross site request forgery) protection, SQL injection protection, Clickjacking protection and Safe password hash etc. It is important to note that Django is implemented in Python which has excellent security track record.

B. Share ride: Driver will post the source and destination along with desired route. User(Passenger) will also put source and destination. Now, we will use genetic algorithm to match the ride for driver and passenger according to their preference and will provide the best route for the journey. Depending on this match both users can accept or decline the request. If user is an owner then the details of carpool will be filled and it will be stored in database. A car owner visits the system and uploads his/her car with its starting area and destination specified. He provides the list of checkpoints from where the car will navigate through, so that passengers can get to know from where they can pool the car. When passengers login into their account, they provide travel and location details from where they will use the service. Passenger gets a list of cars with the unique id where passenger can select a car to pool according to their comfort.

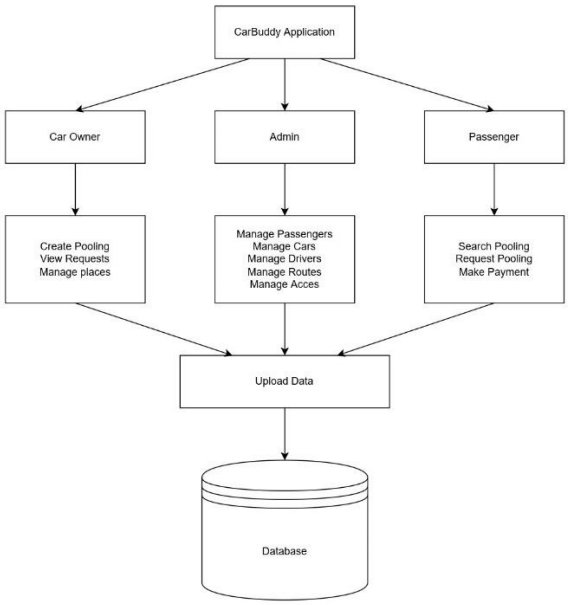

Fig1: System Architecture

C. Payment: After completing the journey user will pay the amount for distance travelled. User can pay via credit/debit card or payment wallets or cash. For online wallet we will redirect user to trusted third party payment portal.

D. Feedback: After completing the journey users can post feedback on various parameters. They can also post issues faced during travelling which need to be solved.

CONCLUSIONS

Car-pooling is an emerging technology which must be provided extensive support by the government and even by the people. Today, as mankind is facing lots of serious environmental issues, even a small effort can provide significant changes. Hence, our project is an ideal solution forcreating such impact. Here, we tried to propose a car-pooling model based upon the genetic algorithm and tried to minimize the routing issues while maximizing the effects of it, to affect and reap out all the benefits. We have used genetic algorithm for optimizing the searching strategy and then we focused on improving the number of person which can be pooled through a single vehicle. We have given maximum priority on security. Using advanced frameworks like Django, we ensured a tightly secured system. We have emphasized on localization and regionalfeel of the system to which people can connect to it while having an ease of access. The current system is not satisfactory as far as small regions and developing countries like India is concerned which have very flexible and diverse geographical, cultural and economic conditions. Besides, security issues are also a matter of concern. Also, flexibility of system for providing solutions in large or small areas is also a problem. As part of future work, inclusion of GPS system, new tracking and monitoring methodology along with various others algorithm for localization, stipulated journey time calculation and driver to user mapping can be performed.

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