Carpooling System

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Abstract

People would rather travel in their cars than take public transportation. Traveling alone increases individual fuel costs, traffic, pollution, and other issues. As a solution to the problem, car sharing is proposed. Users will be able to see if vehicles are available for carpooling in their desired route by using the web application, and they can sign up for it. Traveling with different people is also a consideration because safety is an important factor in all aspects of life. Women, for example, do not feel safe traveling with strangers[3]. As a security measure, the carpooling system will also provide rides for only women, as well as a face recognition feature and a Google Map API that will show the exact time required to arrive at a specific location[1]. Carpooling has evolved into a practical, cost-effective, and stress-free mode of transportation. The server is built with powerful JavaScript, PHP, MySql, CSS, and other technologies. The website is intended to be scalable, extensible, highly available, and fast.

Keywords—Carpooling, ride, administrator, trips, feedback, departure, arrival, tracking, and notifications.

1. INTRODUCTION

According to future population projections, India's population will reach nearly 1.5 billion by 2030. Because of the growing population and their transportation needs, transportation has become a major issue in recent years. Private vehicles are one of the most common modes of road transport, but they are rarely used to their full seating capacity. As a result, carbon emissions, traffic jams, increased parking garage, time waste, higher travel costs, and a variety of other issues have increased substantially. Carpooling is a concept that comes into play to overcome or find an accurate solution for this. Carpooling (also known as ride-sharing in the United States) refers to a group of people traveling in a single-vehicle. This necessitates the identification of groups of people traveling in similar ways at similar times. Carpooling attempts to lower the cost of ordinary passenger transportation, not only saving money but also minimizing the use of our most significant carbon-based resource, gasoline, which is quickly disappearing.

As a result, the website can assist you in seeing individuals and trip schedules and deciding if you want to travel alone or save money by travelling with such a reliable business[3]. Furthermore, carpooling has been shown to have social and environmental benefits, such

as lowering the number of miles driven by a specific vehicle and the amount of gas emitted by the vehicle. This will also reduce the amount of cars on road. Reduced parking requirements result in more efficient land use[4]. As a result, the cost of building and maintaining infrastructure is reduced.

This website includes advanced features to make it more user-friendly.

- Instant notifications to car owners and passengers, such as when a passenger book a trip or when a trip booking is confirmed.
- The ability to provide a different price for different distances. A unique dashboard for car owners and passengers on recent rides.
- Google Map integration for location tracking[1].
- Passengers can provide Car Owners with ratings and reviews[2].
- Password changing
- Generation of a full-fledged route map, including from and to locations, departure and arrival times, and total expected time to reach the destination.
- Complete trip history for car owners and passengers to keep track of their travel.

Car-sharing services Global economic development is growing, and it is altering people's attitudes towards owning a car. By 2026, 68 percent of respondents anticipate ride-sharing will outnumber privately owned cars.

2. LITERATURE REVIEW

Fu-shiung [1] the objective of this research is to identify a good match between the consumer and the driver, based upon their respective trajectories. In this approach, intuitive techniques were used to tackle the carpooling problem; these ways are used for "searching and a matching algorithm" was used to assign passengers to drivers' cars depending upon their paths. It was built using both a mobile platform and a Google API. The system was used to reduce distance using a matching algorithm and a variety of strategies.

“Avila Antao and Venisha Correia"[2] they presented an Android app that lets users interact with one another. They provided a number of filtering options for locating a suitable driver or ride from their database of applicants. This software just offers the most basic ridesharing services, such as trip creation, ridesharing, user reviews, communication, and easy methods to sift through all of the possible trips.

“Swati.R.Tare and Neha B.Khalate”[3] - This article suggests a ridesharing app with a geolocation monitoring function. They used Google Maps for position tracking in their app, which may be used to transmit the current location of the automobile to passengers.
To make other users' security and trustworthiness better, they utilized a remark and rating system. In their article, they designed a client-server architecture with data kept in a centralised database. They also contained a number of female passenger security features.
“Raza Hasan” [4] The author introduced the smart peer carpooling system (SPCPS) in this

study, which employs the linear programming problem to reduce the number of automobiles while improving parking slot areas. It also uses the Dijkstra method to identify the shortest path. The optimal solution is determined using the Dijkstra method in this work. The article proposes the smart peer carpooling system (SPCPS), which is efficient in terms of fuel use and contributes to the improvement of socialism.
The software requirements for the implementation of this project are given in table 1.

Software Requirements	
Database	MySQL
Frontend	HTML5,CSS3,JavaScript
Backend	PHP
Apache, XAMP server for MySQL	

Table1: Software Requirements

3. PROPOSED METHOD

The ridesharing system is an innovative system that is based on two primary data sources: route announcements from the driver and path selection and registration from customers. When a user decides to go by car, he or she will provide the origin, destination, and route. He'll go over the vehicle's capabilities as well[2]. The person who discovers the path (passenger). Signing up for the trip is straightforward. A detailed phased registration process for carpooling is included in the technology. To maintain security and confidence, the system would request any recognised identification verification, such as an Aadhaar number or personal account number (PAN card) supplied by the government.

Initially, the user must fill out all needed fields on the registration form. After the user touches the submit button, the username is confirmed. Based on the user's route details, the carpooling system will get relevant information from the database. Our system will collect feedback from customers about their holiday experiences. Women seeking a ride may filter by "Female drivers," which will not only encourage more women to use this system[3]. The registration is complete once all of these verifications have been performed. Enter your username and password to log in to the system, then submit, verify, and grant access. The corporate employee can browse the available carpools after successfully entering into the system. He can join an existing carpool.

The dataset was obtained from github and contains all of the customer's information[8].

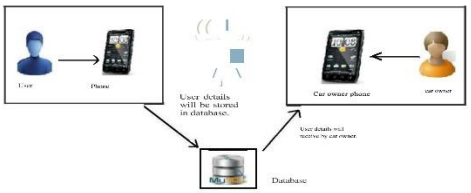

Figure1: System Architecture

System Implementation

Login

It is important that all three users (car owner, customer, and administrator) are properly registered; they may do so by filling out their appropriate credentials in the user logins (user name & password).

Module 1

Car Owner :

A vehicle owner is someone who owns a car and wishes to drive from one location to some other location. He advertises his journey on this website in the hopes of finding passengers to share the ride with.

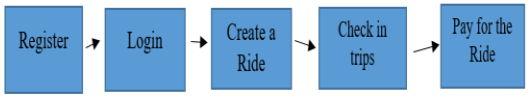

Figure 2: Module 1 block diagram.

a) Scheduling Rides: The website prompts the rider's information, which includes the endpoint, origin, gathering location, arrival date, estimated time of arrival, and travel preferences.

   Once providing this relevant information, the car owner shares it to locate customers.

b) Check-in trip: The car owner or passenger can check-in at the meeting site when he arrives at the agreed-upon time.

c) Payment: The expense of the ride will be paid by the passenger.

Module 2

Passenger:-

A passenger is a someone who does not own a car but wishes to go with a rider. All of the terms and conditions are posted by the traveler, and he/she agrees to them.

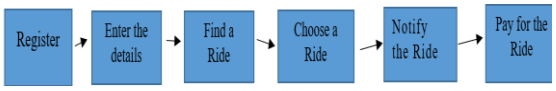

Figure 3: Module 2 block diagram

a) Seek a Ride: If a passenger wants to find a rider for a specific journey, he can use a search feature that asks for the endpoint, startpoint, and travel dates.
b) Choose a ride: Once he has found a suitable excursion, he may quickly make a reservation.

c) Notify the Ride: The application notifies the car owner.

d) Payment for the ride: The expense of the ride will be paid by the passenger.

Module 3

Admin:-

The administrator can keep a record of the journeys that have been scheduled.

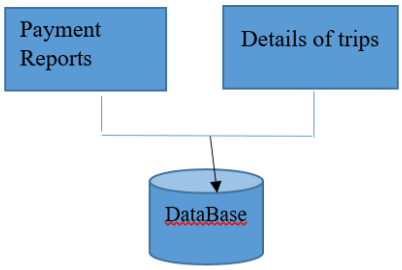

Figure 4: Module 3 block diagram.

a) Payment reports: The administrator will have access to the payment transaction records and will be able to manage them.

b) Details of Trips: The administrator can keep a record of the journeys that have been scheduled.

Working Model

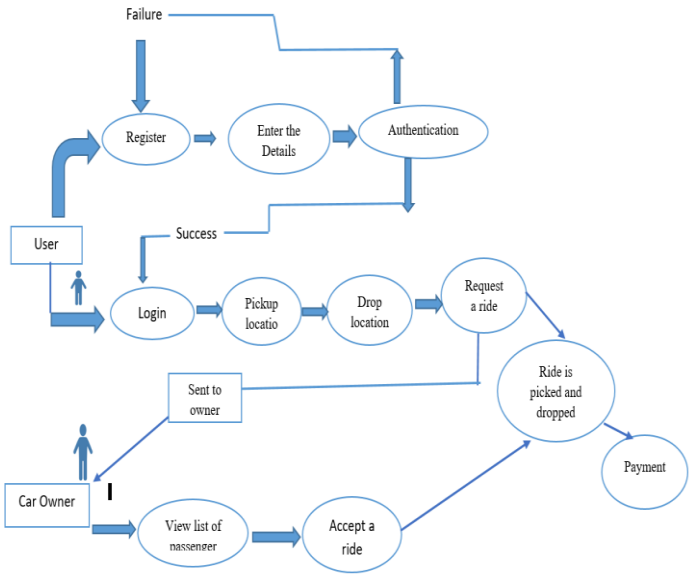

Figure5: Use Case Diagram for Working Model

4. RESULT

Carpooling programmes are intended to encourage ridesharing by matching riders with similar origins and destinations. The software is written in Javascript with CSS as the front end and PHP as the back end in a Windows environment. The software achieves the following goals: instant access, increased productivity. Optimal resource utilization, effective record management; operations are being simplified, less processing time and obtaining required details, user-friendly and portable and adaptable for future development.

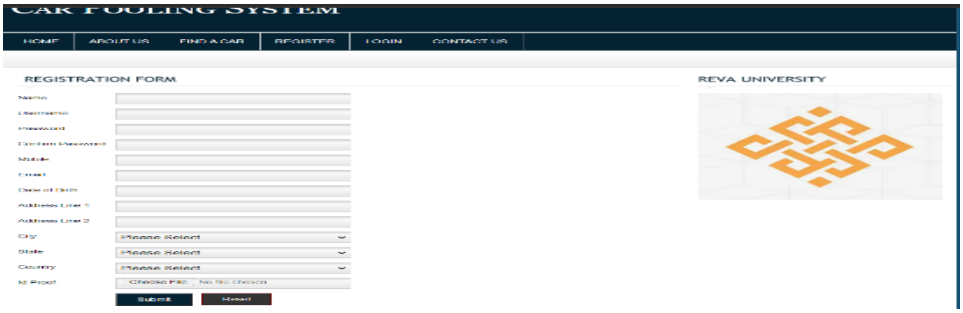

Figure6 : Login Form.

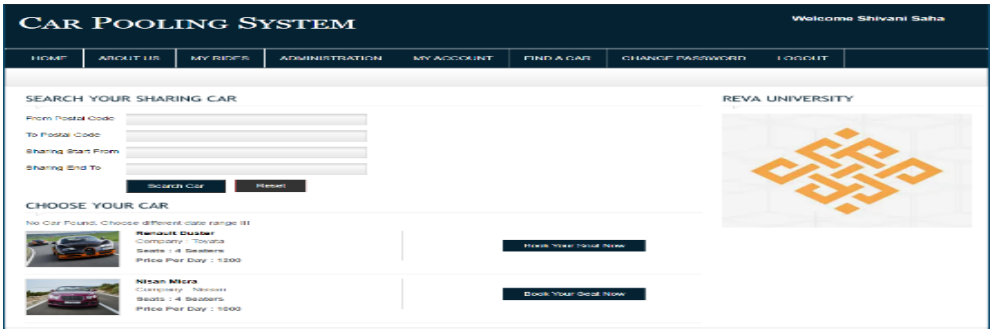

Figure 7: Find a ride section.

5. CONCLUSION

Ridesharing is an extremely effective method of reducing pollution and vehicle congestion in cities. It is also an environmentally friendly mode of transportation. This also gives you the chance to interact new individuals. Because of the delays created by public transit and the pleasures given by private vehicles, most individuals nowadays choose to travel by private vehicle. Pre-registration ensures that only individuals who have been identified enter the vehicle, allowing trust to be established. As a result, the suggested ridesharing system will aid in the reduction of environmental pollution. It will also ensure the safety of citizens. This will provide you with an exact pick-up time.

6. FUTURE ENHANCEMENTS

The system's advantages are numerous, including reducing road congestion, fuel efficiency, and air pollution, among others. A sharing payment system or a redeemable points system might be created in the future to further promote pooling payment systems or redeemable points systems.

The future situation must include the progress of self-propelled cars as well as potential uses that might have a substantial impact on carpooling. Two developing technologies will

revolutionise the transportation market: self-driving vehicles and dynamic congestion charges. The influence of self-driving cars on ridesharing is connected to the fact that, in the absence of a driver, the vehicle must coordinate possible directions and arrange all ridesharing matches on a real-time basis (that is, while the car is already running) and alter its route accordingly. Accepting a ride request when the car is already driving might be unprofessional or dangerous. The self-driving car always has a trustworthy and safe carpool driver, and the charges are immediately charged.

7. REFERENCES

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