

Sharer: A Web App For Carpooling

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Abstract - Carpooling provides a hassle-free, viable and cheap way to move around. Carpooling is a form of ride sharing in which more than two people commute together in the same vehicle in order to save on the transportation cost. Carpooling is one technique that can be effortlessly instituted and can help solve a type of issues that preserve to plague urban regions, ranging from power demands, traffic congestion, transportation cost and pollution. We aim on making a web application that will enable the people to recognize if vehicles are accessible for carpool in their favored route.

Our web application "Sharer" is aimed towards a person who's a habitual passenger and is searching out a reasonably priced and pleasant way of travelling. It'll be beneficial for workplace commuters who are headed on a common direction and are prepared to share the transportation cost.

Key Words: Carpooling, transportation cost, ride sharing, pollution, traffic congestion

1. INTRODUCTION

Carpooling is an eco-friendly alternative to single occupancy car travel and can also be a convenient way to save money on gas and car expenses. Carpooling can be arranged informally among friends and co-workers through a formal carpooling service or app. Increase in world population has resulted in increase in requirement of transportation which has influenced the rise in greenhouse gas emissions. In this paper, we are conferring about creating a web application that allows users to connect with other people in their area who are looking to carpool to a common destination, such as work or school. Our web app also includes capabilities that permit users to look for carpool partners, connect with one another and liaise travel details.

Sharer is a web application which acts as a gathering place for carpoolers, both drivers and commuters. Users can explore and discover rides. Sharer gives the option to users to post their journeys or enroll for journeys created by other users. It would benefit driver/car owner by providing them a side income. This web app would provide commuters affordable rides for travelling to their destination. Both rider and driver can register themselves on this web application

for carpooling. Driver can post their trips, cost of journey, route and seat availability. Riders can search for their convenient trips, view the fare and request for the ride.

1.1 Aims and Objectives

The principle aims and objectives behind the formulation of our project are as follows: Reduce peak hour congestion

- Minimize pollution and CO2 emission
- Improve parking in areas which are experiencing parking crowdedness.
- Encouraging alternative modes of travelling.
- Provide social connections within the society.
- Save money on travel fare by sharing the vehicle.
- Lowering single occupancy travel journeys by accomplishing carpooling system.
- Curb peak hour traffic.

1.2 Literature Review

The primary step of our analysis consisted of reviewing various available carpooling application with a view to bring forth the necessities together with the upgrades for building our project.

BlaBlaCar is one of the largest ridesharing organization in the world [4]. BlaBlaCar was conceived in December 2003 by Frédéric Mazzella, and adapted in 2006. It connects passengers and drivers willing to commute together at a common route and split the fare of the trip. Across 19 countries, more than 20 million users are registered to BlaBlaCar. Users must sign up and build an exclusive web profile, containing ratings and reviews by other users, social users show how much exposure they have of the service, implying those with more also known as "ambassadors" – allure more ride shares [5]. One major disadvantage of this application is that it only offers inter-city ridesharing options

which our application aims to correct and add intra-city ride opportunities too [6].

FolksVagn provides a community-based system aiding people to share rides [6]. While the riders get rides at fare much economical than a regular cab service, the vehicle owner gets a share of the tariff. It is only available to corporate customers as it warrants company's email for sign up and has a prepaid account or E-wallet system for payment [5].

There is a system for payment of ride. The prominent taxi-rent application "taxi for sure" for Android was the primary Ridesharing application to facilitate Ride Sharing for "Vacationers." This was for people who are on holiday trips and intend to invest less time travelling in order to preserve their money. They launched it for a few routes solely, such as "Chandigarh-Delhi," "Mysore-Manali," and so on, and they want to bolster this for the common people in future [7].

R. Manzini and A. Pareschi [2] have given a decision support system for the application of carpooling system. This will be used to support passengers to in determining which cars to use. Swati. R. Tare, Neha B. Khalate and Ajita A. Mahapadi [3] have contributed by suggesting ideas on how make this application more user-friendly for passengers and not only for drivers. They especially worked on reliability of Real time System and security of woman travellers.

Mayur K. Thorat and Rahul M. Lahakare [1] have given an overview of Carpooling system With SMS alerts emphasizing more on overcoming issues encountered before and how to make it more secure. They gave the idea of using it for both inter-city and intracity travels. They tried to expand their user base to blind people also who can use speech recognition technique to precisely know the location at any time.

2. PROPOSED SYSTEM

The proposed system is a web application for the driver who is going to its destination as well as the commuter who wants to travel from pick up to their desired destination.

There are two types of users:

1. **Driver:** A user who is a full-time driver and wishes to share his ride with other people along the same route.
2. **Rider:** Riders are users other than driver who can book seats in real time and share the ride. They can select a driver from the pool of drivers available.

2.1 Modules

- **LOGIN/REGISTER:** There is a registration for first time users to create their account. A user who

already has a registered account can login to use the services of this web application.

- **AUTHORIZATION:** For registering with sharer, all users need to verify their email id as well as their mobile number. Users also have the option to add their social media profiles.
- **PROFILE PHOTO & GOVT ID:** For completion of your sharer profile, it is obligatory for driver to provide their driving license as well as an authentic photo and any govt id.
- **BROADCAST RIDES:** Drivers can broadcast rides to others by entering the start and end location, route as well as fare.
- **SEARCH RIDES:** Users can search for rides having the same destination and route as them.
- **GOOGLE MAP LOCATION:** Destination can be selected on map by users. While using sharer, it is desirable to keep your GPS on, for first-rate experience.
- **PAYMENT:** Riders can settle fare and pay through various payment methods integrated with the app like UPI, debit card, credit card, paytm, etc.
- **REVIEWS AND RATINGS:** To aid forthcoming users register for the ride easily without any hesitation rider can review and rate the carpooling experience with the driver.

2.2 UML Diagrams

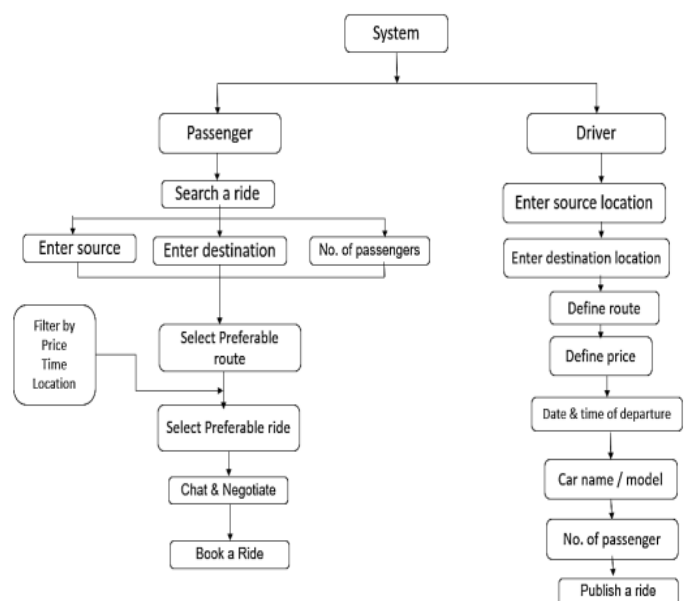


Fig-1: Sequence Diagram

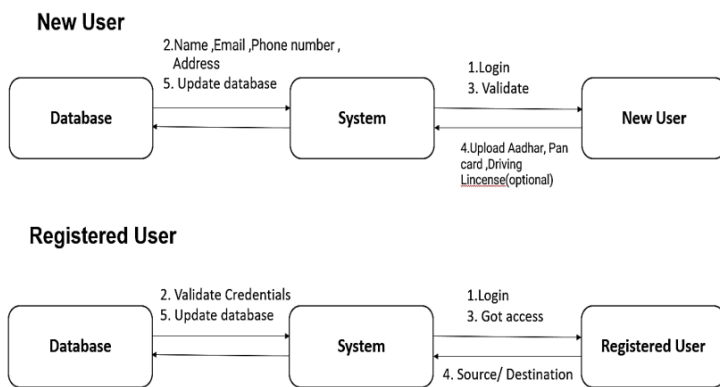


Fig-2: Collaboration Diagram

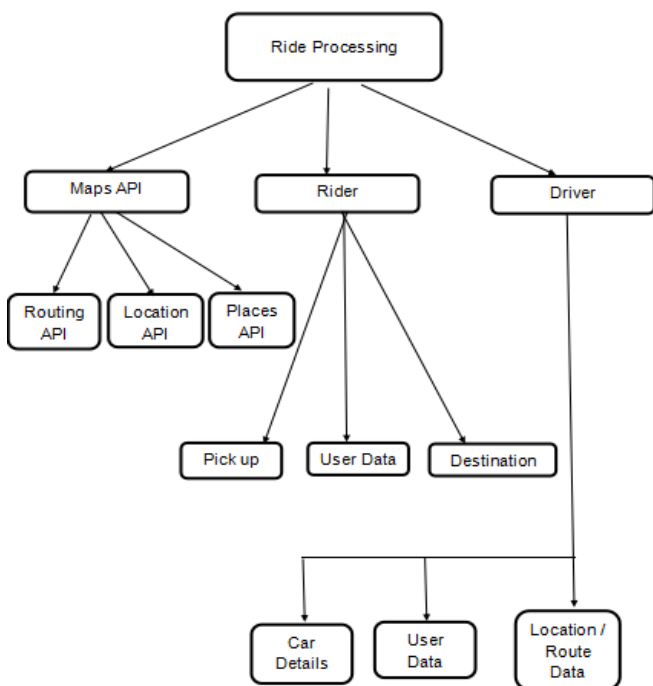


Fig-3: Ride Processing Data Flow Diagram

3. METHODOLOGY USED

TECH STACK:

- HTML / CSS
- PYTHON
- BOOTSTRAP
- DJANGO
- SQLite

➤ **Django Framework:** Django is a Python-based free and open-source web framework, which follows the model-template-view architectural pattern [9].

➤ Google API's Used:

- **Directions API** - It is used to display route between two points. Route similarity is inferred based on this to broadcast ride request to specific drivers [10].
- **Distance Matrix API** - It is used to get distance between two points. This is used to decide fare of ride [10].
- **Geocoding API** - It is used to convert a place name(For e.g.: Central Park, New York) to its corresponding coordinates(latitude and longitude) [10].
- **Maps JavaScript API** - The API is used to make calls to different APIs using JavaScript [10].
- **Places API** - The API is used to get suggestions of places when user types a string [10].

➤ **jQuery:** jQuery is a JavaScript library designed to simplify HTML DOM tree traversal and manipulation, as well as event handling, CSS animation, and Ajax [11].

➤ **JavaScript:** JavaScript, often abbreviated as JS, is a programming language that conforms to the ECMAScript specification. JavaScript is high-level, often just-in-time compiled, and multi-paradigm. It has curly-bracket syntax, dynamic typing, prototype-based object-orientation, and first-class functions [12].

➤ **Bootstrap:** Bootstrap is a free and open-source CSS framework directed at responsive, mobile- first front-end web development. It contains CSS- and JavaScript-based design templates for typography, forms, buttons, navigation, and other interface components [13].

➤ **Python:** Python is an interpreted, high-level, general-purpose programming language [14].

➤ **Python Google Maps API:** The API is used to make calls to different APIs using Python [15].

4. CONCLUSIONS

Carpooling system is a very potent way of curbing pollution and traffic of vehicle on roads. It additionally proffers an environment friendly way to travel and provides an avenue for meeting new people. Due to delay caused in public transport system and because of the luxuries provided by private vehicle, most of the people still prefer private vehicles for travelling. Authentic sign up guarantees that

only authorized people enter the vehicle, establishing trust. Therefore, the proposed web application for carpooling will be efficient in controlling air pollution.

Sharer follows enterprise level application principles and is built to be highly available, scalable, performing and expansible. It provides privacy and secure access to user's data. Sharer can be upgraded in several ways to provide more flexibility and performance.

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