

Vehicle Pooling and Ride Sharing System for College

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Abstract: Vehicle pooling which is also known as ride-sharing, is a way of sharing vehicle journeys so that more than one person can travel in a vehicle, and also frees them from the need of driving to a location themselves. By having more people using one vehicle, vehicle pooling reduces each person's travel costs such as: fuel costs, tolls, and the stress of driving. Vehicle Pooling reduces air pollution, carbon-emission, traffic congestion on the roads, and the need for parking spaces thus becoming an environmentally friendly and sustainable way to travel and sharing journeys. Ride sharing is a good way to use up the full seating capacity of the car, thus increasing the number of High Occupancy Vehicle (HOV) which could have otherwise resulted in unused seats if it were just the driver using the car.

Keywords: Android application, Ride sharing, Carpooling

I. Introduction

Recent economic development has resulted in an increase in the numbers of vehicles on roadways and thus causing serious traffic congestion problems in cities around the world. Severe traffic congestion can have many detrimental effects, such as time loss, air pollution, and increased fuel consumption. However, each car usually transports just one or two individuals resulting in many empty seats. For example, a vehicle in India is used to transport, on an average 2 people. This represents an underuse of available transportation resources, a problem whose solution will require considerable effort. Our proposed system of Vehicle Pooling helps in reducing above problems. Vehicle pooling is not unknown anymore and the trend is achieving new levels of success every day. More and more people are being introduced to the world of shared rides. The trend is catching up fast among the youth of today and is definitely making a lot more sense to those who travel in a particular direction more often. Some of the needs due to which vehicle pooling is important are:

- 1. Saves Fuel:** While many efforts have been made to overcome the crisis of reducing fuel consumption, vehicle pooling is proving to be one of the most effective of them. While more people share rides when traveling in a common direction, this helps in saving tons of fuel.
- 2. Shared Cost:** Apart from saving fuel, you also end up sharing the cost, resulting in the overall travel cost becoming a lot lighter on the pocket.
- 3. Saves Time:** Lesser the number of cars on the road lesser will be the traffic thus saving a lot of time.

Basic Concept:

In today's economic world people are usually worried about the increasing fuel prices and the increasing amount of traffic which leads to lots of loss of time. By sharing their rides people can reduce the amount of fuel being consumed. If there is less traffic on road the amount of time required to travel is also less helping the people to reach their destination faster

II. Proposed System

Our proposed Vehicle Pooling System tries to match the rider with a vehicle owner travelling through the same route or near to its destination. Vehicle pooling is the way of providing the commuters with cheaper and faster travelling option. The proposed system will use Google Map APIs to show the travelling path of the driver/owner and algorithms for match-making between the owner and the ride-seeker. Our system also proposes a user friendly environment that provides flexibility to the users of choosing their ride and provides freedom to the vehicle owner to reject the ride according to the seekers response and availability. The complete Process of the system can be shown as below:

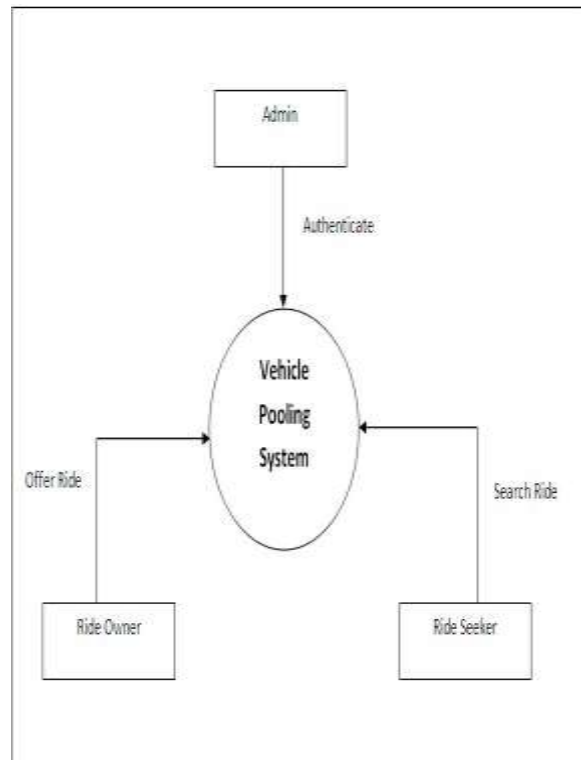


Fig 1. Context Level Diagram

III. Requirement Analysis

Functional Requirements:

Functional requirements contains operations that a system is supposed to accomplish such as calculations, technical details, data manipulation and processing and other specific functionality. Our system first registers the user using the ID card of the college and it will be authenticated. Then the users will login into the system using login ID and password. Then the user will act as ride sharer/ride seeker according to his need. Then system will match correct ride seeker and ride owner depending on the destination using dynamic ride-sharing algorithm and shortest-path algorithm.

Non-Functional Requirements:

Non-functional requirements are those that do not directly affect the functioning of the system but affect the performances of the system. Non-functional requirements are those requirements, such as, detail constraints, control mechanisms. Response Time required for matching the seeker and ride owner should be minimal. The system should be available 24*7. The system should be reliable.

IV. Methodology of Proposed System

- 1: The user has to register him/her to the application by providing the details asked during the user registration
- 2: After registration the user will be directed to the Login Page where he/she has to decide whether to be a Ride Owner (ride provider) or a Ride Seeker, which can be changed each time the user logins.
- 3: If the user selects Ride Owner then he has to enter his/her Vehicle details and the destination & path he is going to travel, using Google map API's, along with the available seats and cost.
- 4: If the user selects himself as a Ride seeker then he has to enter his Start point (Source) and End-point(Destination) which is also done using Google map API's.
- 5: If a suitable Ride is matched then the ride seeker has to request the Ride which is confirmed once the ride owner accepts it. This continues until a perfect ride is found or else the search is stopped

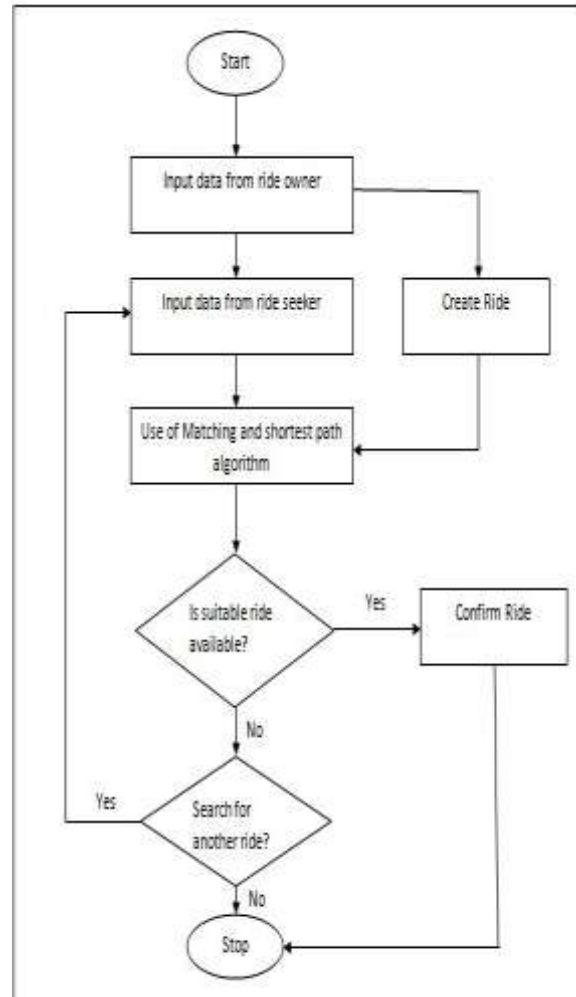


Fig 2. Control Flow Diagram

V. Conclusion

The system effectively outlines the purpose and effectiveness of vehicle pooling and also makes it more appealing by enabling users to share their ride with new people to increase the social interaction. Our proposed system finds a suitable ride for a Ride seeker with a Ride owner travelling towards the same destination and path as that of the ride seekers need. It uses the matching algorithm & shortest path algorithm to match the nearest Ride Seeker to the Ride Owner. This system will help in reducing the number of single occupancy private vehicles, thus reducing congestion on the road. Since, the price of fuel is also increasing constantly; this system may help the user in pocket-friendly travelling. Thus vehicle pooling is one of the most effective solutions to traffic congestion and in reduction of travel cost, energy consumption, and vehicle emissions.

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