Ridesharing: Web Application for College Students

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***Abstract*- Since information technology has advanced, the approach to web development has undergone a significant transformation. Static information is no longer served by the browser. To deliver dynamic components in the browser, JavaScript is frequently employed. The services of the developer's server transportation are the most popular and widely used way for adaptability, which contributes significantly to the financial turn of events. The browser is evolving into a type of mini operating system that makes use of numerous data sources on the internet. Confidential individuals who similarly use their cars encounter high fuel expenditures, traffic, and other related problems. To enable owners of private automobiles to offer empty seats to different customers, a web-based ridesharing and booking framework is proposed. A system for managing ride booking for two-wheelers has been devised. It is helpful for ride-booking services that are focused on providing rides to clients with locations inside the college network.**

***Keywords*: web application, book a ride, send location, smart journey.**

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1. INTRODUCTION

A virtual ride to manage all online ride-hailing work, a booking management system has been designed. It is helpful for companies who specialize in renting cabs to customers, such as 2-wheeler booking firms. Customers can book a 2-wheeler online very easily using this technology, and 2-wheeler booking agencies can also keep track of their bookings online. Therefore, it is also quite helpful for 2-wheeler rental companies. Customers can examine the available two-wheelers, register them, view their profiles, and make reservations using this online system. For their daily transportation needs, most people call cabs. This project, an online system for reserving two-wheelers, has as its goal and focus on keeping track of user activity. It will make the job easier and need less paper. By offering their two-wheeler for booking through this two-wheeler booking management system, two-wheeler owners may also join forces with two-wheeler booking agencies. A web-based tool called the online 2-wheeler rental management system enables users to make 2-wheeler reservations online. The 2-wheeler rental company or so-called web application may manage all 2-wheeler reservations and client data via this system. Users can reserve 2-wheelers, and the administrator can accept or reject the reservation based on the 2-wheelers and the drivers' availability. We have created this system to establish a web-based system that enables customers to sign up for and reserve a 2-wheeler online and allows the business to run its 2-wheeler hire operation successfully. Currently, all work is done offline by ride-booking agencies. When a customer visits them, they take the booking order and call the 2 Wheeler driver to inquire about availability. If they can secure a 2 Wheeler, they confirm the order; otherwise, they cancel it because they do not have a bike for the booking. This process is time-consuming for both the consumer and the bike booking agency, and it also gives the agency a bad reputation. However, using our system, the biking agency may confirm the order in under a minute by confirming the availability of bikes for booking. To make

it easier for clients to rent, this ride-booking system is useful. The customer and the ride-booking agency both lose a lot of time during this procedure, and the agency gets a negative reputation as a result.

2. LITERATURE SURVEY

The purpose of this research paper is to investigate different types of ridesharing platforms and what impact it had on the market and what lessons we can learn and implement to make an impact on society.

[1] In 2022, Ishorju Agnes Botlero, et al present a research work on investigating the use of Android permissions. This study introduced an Android application (Apps) that requires the user's permission via the "Android permission system" before it can access sensitive user data. The amount of Personally Identifiable Information (PII) that Apps can access and how dangerous they can be dependent on their permissions. However, it is frequently observed that the developers of Android apps frequently capture unrelated data, directly at odds with the apps' primary objective. As a result, people frequently provide permissions and jeopardies their privacy, both voluntarily and unwillingly.

[2] In 2021, Sumaiya Binte Akther, et al present research work on An Interactive Android Application to Share Rides with NSUers. This paper introduces a collaborative Android application that makes use of maps and APIs from Google. This app is for ridesharing. Users who have the same destination can share rides with people who are traveling in the same direction. Their fares will be determined by the application. Records of registered users are kept in a database. The program would be ready for any use because it would run on an Android-based platform. Effective offline and online algorithms have been presented for the applications.

[3] In 2021, Satish V. Ukkusuri, et al present research work on Scalable Clustering Taxi Group Ride Stand from Huge Geolocation Data. In this study, the taxi group ride service (TGRS) is one potentially effective method for bringing traditional services into competition with newly emerging app-based taxi services. TGRS simply groups similar taxi rides without significantly increasing budgets, creating one unique pick-up point and one unique drop-off point, and serving multiple passengers in a single trip. We focus on creating a scalable technique for citywide TGRS stand deployment in this study

[4] In 2020, Xian Yu and Siqian Shen worked on "An Integrated Decomposition and Approximate Dynamic Programming Approach for On-Demand Ride Pooling." Drivers and riders can dynamically enter and exit ride-hailing services using smartphone apps. Ride-sharing is difficult as a result of complicated system dynamics and various stakeholders' conflicting goals. In this study, we only consider ride-sharing between two passenger groups that can travel in the same car. We choose pick-up and drop-off routes while dynamically matching available drivers to randomly arriving passengers.

[5] In 2016, Ye. M. Kuznetsov and V. V. Anikin worked on “Design and implementation of a campus carpooling system for college students”. Directly from the stator current damping curve i 1 (t) recorded from a stationary rotor, it is possible to calculate the electromagnetic characteristics of submersible asynchronous electric motors (SEM) of electric submersible pumps (ESPs). The effectiveness of the software was evaluated since this is important for its implementation by a mobile unit that performs SEM identification in terms of electrical repair shops or on the surface of various good platforms. Software processing error during test transient response must exceed 1.5% The T 3 sub transient time constant has a 5% difference. The maximum inaccuracy in estimating SEM's fundamental electromagnetic characteristics was 6.2%.

[6] In 2016, Stephan Hensel, et al worked on the "Design and development of a college campus ridesharing system using web services”. Cost and time restrictions are the main drivers of engineering projects. Additionally, it is imperative to identify specification, implementation, and conceptual mistakes as early as possible due to the complexity of these projects. Therefore, doing simulation experiments is a tried-and-true strategy. The notion for connecting pre-existing (domain-specific) simulation models are presented in this work, enabling the integration of several models in a co-simulation setting. In this setting, a full system simulation may be performed. As a result, the role of OPC UA, a generic middleware technology that is being heavily explored as an option for Industrie 4.0 scenarios, is examined. By linking several simulations (SIMIT and FMI instances), we can provide a proof of concept using a prototype implementation based on open62541. Additionally, it demonstrates how simply our model can be expanded to include different simulators.

[7] In 2018, Friesen T, and Stewart G worked on “Analysis of a ridesharing platform for college students”. It is still difficult to choose the best course of action in choice situations with scant, delayed rewards. Current deep reinforcement learning techniques need a tonne of data to build controllers that perform at a

human level for these situations. To overcome this issue, we provide a solution in this study that integrates planning and learning. The Iterated-Width (IW) planner, a cutting-edge planner that explicitly uses the state representation to undertake organized exploration, is the key component of the planning stage. IW can handle issues of any magnitude, regardless of the size of the state space. The learning phase estimates a compact policy from the state actions that IW visits and then uses this estimate to direct the planning step.

3. EXISTING SYSTEM

Before we propose the Ridesharing model the existing system had severe implications. To solve these implications, we had to propose a model to get things done. The Existing system contains student A and Student B as an actor where student A walks or takes public transport to reach his/her destination whereas student B rides his bike alone to his/her destination. So there is this gap which needs to be filled which we have proposed in our proposed system diagram.

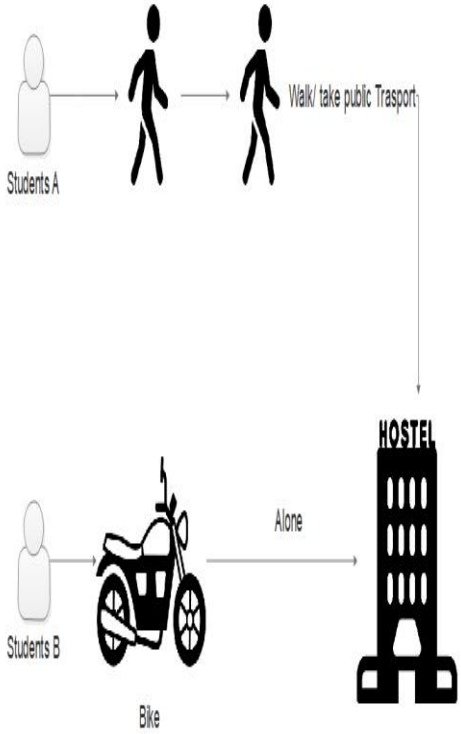


Fig -3.1: Existing System Diagram

4. PROPOSED SYSTEM

The user interface and features that the students utilize are referred to as the client side of the application. Usually, it comprises a mobile application or online pages. User activities including ride searching, ride request creation, and ride booking are handled on the client side, along with user registration and authentication. It uses APIs (Application Programming Interfaces) to exchange data and carry out operations with the server-side components. The server side of the program handles business logic, responds to client-side requests, and communicates with the database. It comprises the following elements.

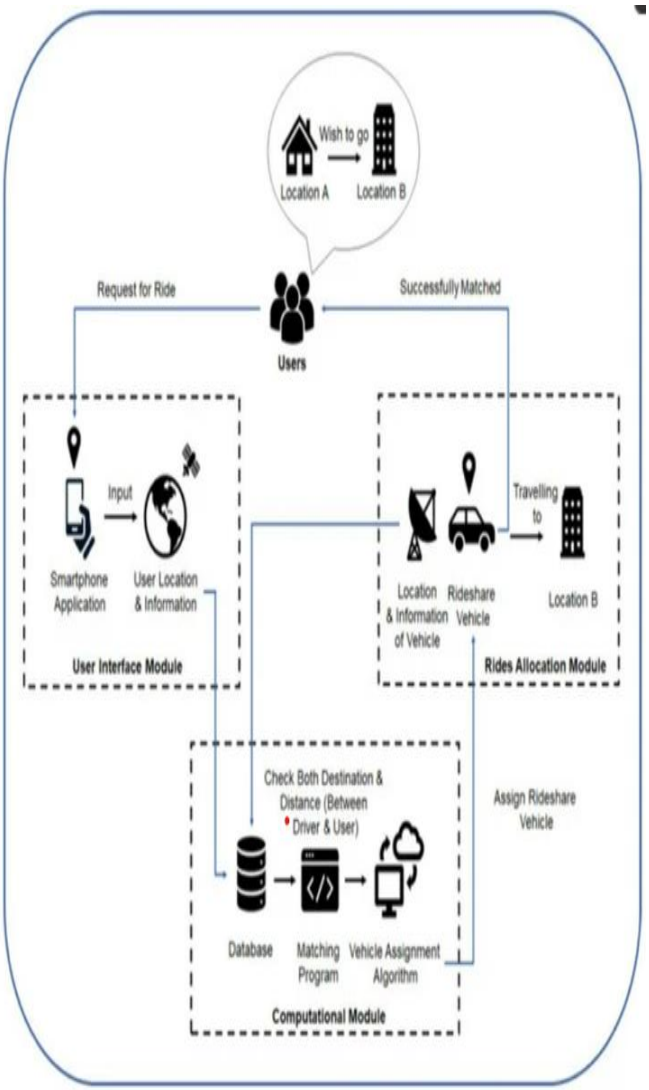


Fig -4.1: Proposed System Architecture

The suggested system design seeks to deliver a ridesharing online application for college students that is scalable, flexible, and effective. It divides issues into many components, enabling simpler maintenance, scalability, and the capacity to later add additional features or services.

4.1 Modules

4.1.1 User Management Module:

This module handles user registration, login, and profile management functionalities. It allows students to create accounts, update their personal information, and manage their preferences within the ridesharing system.

4.1.2 Ride Posting Module:

The ride posting module enables students to create ride requests by providing details such as the starting location, destination, date, time, and any additional preferences. It allows students to post their ride requirements and communicate them to potential drivers.

4.1.3 Ride Search and Matching Module:

Based on the interests, locations, and timetables of the students, the ride search and matching module locates acceptable transportation for them. It uses an algorithm to connect drivers and passengers, taking into account things like how close the routes are to one another and the preferred departure times.

4.1.4 Communication Module:

Drivers and passengers may communicate in real time thanks to this module. Users may plan meeting locations, talk about the details of the journey, and exchange updates about the ride using phone numbers.

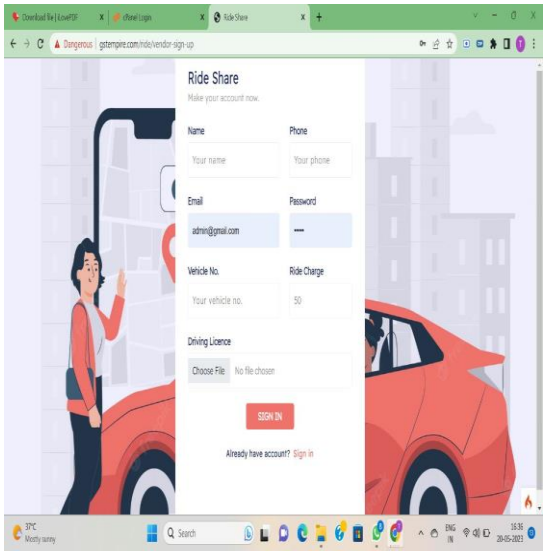
4.1.5 Ride Booking and Confirmation Module:
Students can reserve available seats in a ride given by a driver using the ride booking and confirmation module. It manages the booking procedure, including notifying drivers of requests, handling acceptances or denials, and finally confirming the ride once all the specifics have been agreed upon.
4.1.6 Payment Module:
A safe and practical payment method is offered by the payment module within the ridesharing application. Through linked payment gateways or other payment mechanisms, it enables users to pay drivers for shared journeys.

5. RESULT ANALYSIS AND DISCUSSION

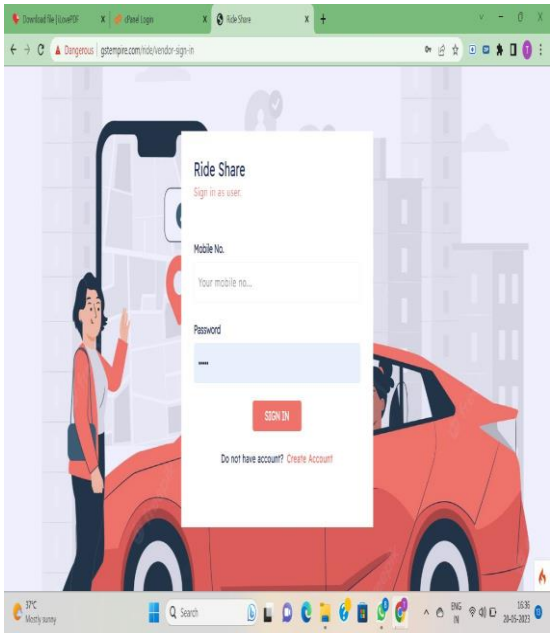
A ride-sharing web program developed and put into use exclusively for college students has produced several interesting results. This section discusses the findings from user feedback, performance assessment, and the application's overall effect on college transportation.
5.1 User Adoption and Engagement:
Talk about how much college students are using and engaging with the ridesharing online application in this section. Give numerical information on the number of users who have signed up, the number of active users, and the frequency of ride requests and bookings. Talk about any trends or patterns you have seen, such as more usage during particular times of the day or preferred routes among students.
5.2 User Feedback and Satisfaction:
Provide qualitative information or survey findings about user opinions and satisfaction with the ridesharing website. Include comments about the usability, functionality, user interface, and overall experience. Discuss any recurring problems or ideas for enhancement gleaned from user comments.
5.3 Ride Matching and Availability:
Analyze the ride-matching algorithm's performance in the online application. Give statistics on how many matches between drivers and passengers were successful. Discuss the typical wait periods for obtaining a suitable ride as well as any variables, such as peak hours or locations, that may have affected the availability of rides.
5.4 Safety and Security Measures:
Analyze the ridesharing website's users' perceptions of security and safety. Discuss any safety precautions that have been put in place, such as ride tracking, user authentication, and emergency contact features. Describe user comments or survey findings about the success of these measures and any recommendations for improving safety.
5.5 Impact on Transportation and Sustainability:
Talk about the possible effects of the ride-sharing website on sustainability and transportation. Analyze the impact of fewer people driving alone on traffic congestion and carbon emissions. Any information or comments relating to the perceived environmental advantages of ridesharing among college students should be presented.
5.6 Limitations and Future Directions:
Recognize the online application for ridesharing and the research study's limitations. Discuss any difficulties encountered during data collecting, as well as any restrictions on the sample size or user demographics. Based on the knowledge collected from the study, suggest topics for more research and changes to the ridesharing system.
5.7 Payment System:
Analyze the web application's integrated payment mechanism. Discuss the level of user acceptance of electronic payments as well as any difficulties or problems that may have arisen. Give users' opinions on the payment system's usability, dependability, and security.

Following are a few images of the website which is to be implemented:

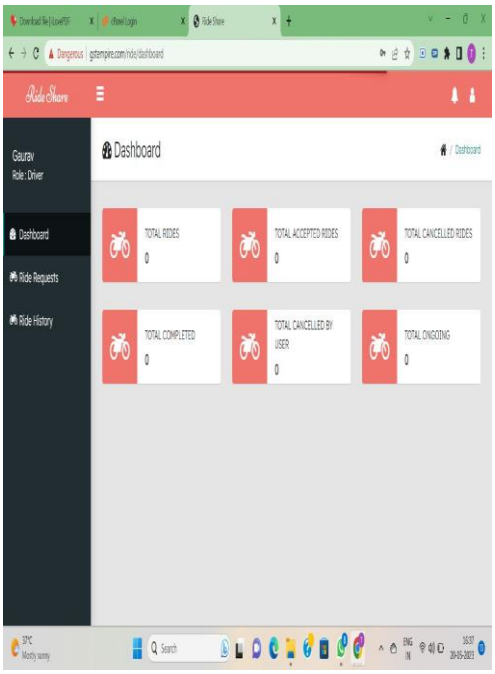
1. Sign Up:



2. Sign In:



3. Dashboard:



6. CONCLUSION

There is a lot of promise for addressing mobility issues and fostering a more sustainable and effective travel culture on college campuses through the creation and implementation of a ride-sharing web application designed exclusively for college students. This study article examined several topics, including a review of the literature, a diagram of the current system, a discussion of the findings, and discussions of the hurdles that are posed by the economy, business, technology, and behavior.

The ride-sharing web application offers many advantages by giving college students a platform to connect and exchange rides. It encourages affordable transportation options, lessens reliance on private vehicles, reduces traffic congestion, minimizes carbon emissions, and improves students' overall mobility. The application's ease, cost, and advantageous environmental impact are highlighted by the good user response.

In conclusion, a ride-sharing online application for college students has the power to completely change campus transportation by improving convenience, accessibility, and sustainability. The ridesharing online application can develop to fit the needs and preferences of college students by resolving economic, business, technological, and behavioral constraints, utilizing user feedback, and ultimately changing how people commute and contributing to a more sustainable future.

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