JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

Ride Nexus: Redefining Travel through Decentralisation

[1]Rahil Mehta, [2]Harsh Kerkar, [3]Paroj Kini, [4]Vaishnavi Bhoir, [5]Priyanka Patil,

[1]Student, [2]Student, [3]Student, [4]Student, [5]Assistant Professor

[1]Artificial Intelligence and Machine Learning,
[1]Universal College of Engineering, Vasai, Maharashtra, India.

***Abstract*:** This project proposes a blockchain-based framework for ride-sharing services, leveraging smart contracts on the Ethereum Blockchain to create a decentralized application (DAPP). The implementation utilizes Solidity for smart contract development and incorporates a minimum matching algorithm to optimize ride-sharing efficiency. By eliminating intermediaries, smart contracts facilitate secure and automated transactions, enhancing transparency and reducing costs. Benefits include lower operational expenses, increased security, and improved transparency, fostering trust in the sharing economy. This initiative signifies a transformative potential for the transportation industry, aligning with the principles of efficiency, transparency, and accessibility inherent in the evolving landscape of smart cities and the sharing economy.

Introduction

Currently, taxi provider aggregators use a unified device to perform each day operations. Policies, guidelines and legal guidelines, phrases and situations that each the man or woman and the cause pressure have to adhere to vary from one organization to the next. Furthermore, the charge device for cab reservations necessitates the usage of mediators or third-celebration establishments. With extra occasions involved, this will become even extra complicated, mainly whilst there may be a lack of transparency. These drawbacks have caused an intensive exam of the blockchain era and, as a result, diverse pointers for ride-sharing structure primarily based totally at the blockchain. The motive of this look at is to research and compare present approaches. The predominant motive of this text is to shed mild at the diverse methods wherein blockchain's disbursed, clean thoughts wereutilized, in addition to the motivations for doing so. We've additionally highlighted benefits on this project.

We are Developing a **Decentralized Ride Sharing** application. This application can serve as a platform to connect the riders directly with the drivers. This concept maintains transparency between the two peers and also there is no involvement of third-party commission, which is further profitable as the entire ride becomes cheap.

Motivation:

The motivation behind creating a decentralized ride-sharing system lies in addressing the pressing need for accessible, efficient, and affordable transportation solutions. By leveraging blockchain technology and smart contracts, this initiative aims to revolutionize the traditional ride-sharing model, eliminating intermediaries and reducing costs. Furthermore, it seeks to enhance transparency and security within the transportation industry, ultimately fostering trust between users. Through the implementation of a decentralized application (DAPP) based on smart contracts, the project aspires to optimize the ride-sharing experience by employing algorithms that minimize travel distances, thereby benefiting both riders and drivers. By embracing innovation and technology, this endeavor aims to make transportation more accessible and inclusive, catering to the diverse needs of urban populations while promoting sustainability and efficiency.

Problem Statement

The current centralized model of ride-sharing services faces several challenges, including high operational costs, lack of transparency, and dependence on intermediaries. These limitations hinder the accessibility, efficiency, and trustworthiness of transportation solutions, particularly for urban populations. Additionally, traditional ride-sharing platforms may not adequately address the diverse needs of users or optimize resource utilization. Therefore, there is a pressing need to develop a decentralized ride-sharing system that leverages blockchain technology and smart contracts to overcome these challenges. This system should prioritize transparency, security, and efficiency while minimizing costs and promoting inclusivity. By addressing these issues, the proposed solution aims to revolutionize the transportation industry and provide a scalable, sustainable, and user-centric alternative to existing ride-sharing services.

Objective

1. Develop a decentralized riding system utilizing blockchain system and smart contracts.
2. Implementing a user friendly decentralized application (DAPP) interface for seamless interaction between riders anddrivers.
3. Integrate advanced algorithms, such as the minimum matching algorithm, to optimize ride-sharing efficiency andreduce travel distances.
4. Ensure transparency and security through utilization of blockchains distributed ledger and cryptographic protocols.
9. Foster trust among users by providing transparent and a auditable transaction history accessible to all partiesavailable.
10. Contribute to assistive technology advancement by showcasing technology's role in fostering inclusive communication environments.

Literature Review

The literature review explores the challenges and advancements in decentralized ride sharing system, aiming to enhance communication for the Deaf and hard-of-hearing communities. It covers:

1. Technological Advances: Explore the evolution of blockchain technology and its applications beyond cryptocurrencies. Discuss how blockchain's decentralized and immutable nature can be leveraged to create transparent and secure ride- sharing platforms.
2. Smart Contracts in Transportation: Review existing literature on the use of smart contracts in transportation and logistics industries. Highlight how smart contracts can automate transactions, enforce agreements, and streamline processes in ride-sharing services.
3. Decentralized Transportation Models: Examine research and case studies on decentralized transportation models, including peer-to-peer ride-sharing platforms and decentralized autonomous organizations (DAOs). Analyze the feasibility, scalability, and effectiveness of such models.
4. Challenges and Limitations: Identify challenges and limitations associated with implementing decentralized ride-sharing systems. This may include scalability issues, regulatory hurdles, technological constraints, and user adoption barriers.
5. Security and Privacy Concerns: Discuss security and privacy concerns related to blockchain-based ride-sharing platforms. Explore potential vulnerabilities, data protection measures, and privacy-preserving techniques.
6. Economic and Social Impacts: Assess the economic and social impacts of decentralized ride-sharing systems. Explore how these platforms can reduce costs for users and drivers, promote resource sharing, and contribute to sustainable urbanmobility.

1.1 Datasets

The dataset used in this project was collected systematically through a custom process, enabling diverse hand gesture acquisition for system training and evaluation. The methodology involved a Python script interfacing with a webcam for real-time image capture, with each gesture labeled and stored in designated directories. The dataset comprises over 300 images for each gesture category, ensuring comprehensive training data. Preprocessing techniques such as resizing and normalization were applied to enhance model performance. This dataset serves as a foundational resource for training machine learning models, enabling accurate hand gesture recognition for seamless communication with technology interfaces. Overall, the dataset plays a crucial role in developing effective sign language recognition systems with realworld applicability.

1.2 Proposed System

This proposed system includes a brief description of the proposed system and explores the different modules involved along with the various models through which this system is understood and represented.

1. Registration Module

The Registration Module is an essential part of the proposed ride-sharing system. It allows users to register on the platform by filling out a registration form with personal information such as name, email, phone number, and password. The module will verify user details, such as phone number and email, and store them securely in a database. The Registration Module also includes a verification process that validates user details before allowing them to access the system. The verification process may involve sending an email or SMS message to the user's registered email or phone number to confirm their identity. Once the user has successfully registered, the Registration Module will create a user profile that includes their personal details and ride preferences. The user can

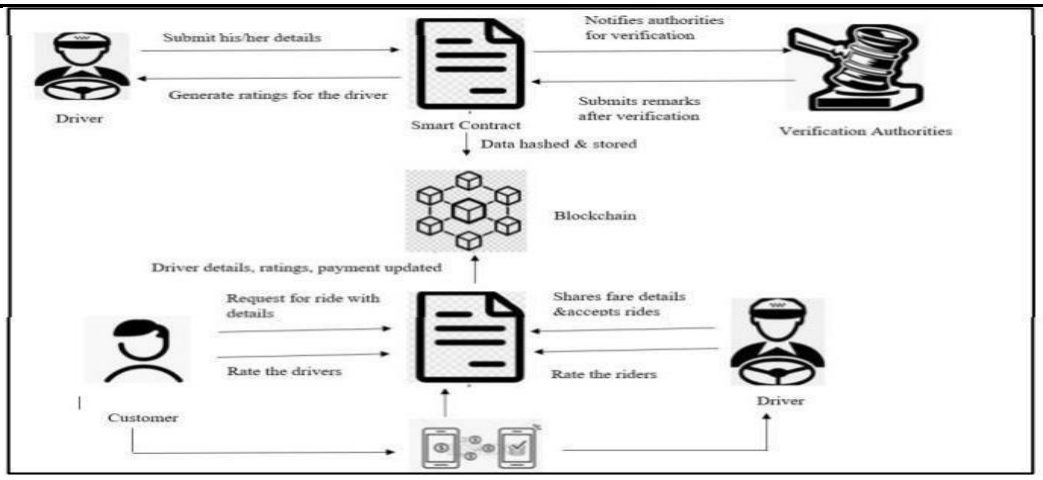
2. Ride Creation Module

The Ride Creation Module is responsible for allowing registered users to create new rides on the platform. This module provides a user-friendly form for users to input ride details such as starting location, destination, date and time of travel, and fare per kilometer. The distance between the starting location and the destination is calculated using the Google Maps API, and the total fare is calculated by multiplying the distance with the fare per kilometer. After submitting the form, a new ride is created and stored in the system database. The user can then view the created ride in the "My Rides" section of the website. This module includes functionality to validate user inputs and ensure that all required fields are filled out correctly. Additionally, it provides a feature for users to cancel a ride they have created, which removes the ride from the system database and informs users who have already requested to join the ride. The Ride Creation Module is critical to the overall functionality of the ridesharing platform as it enables

users to create and offer rides to others.

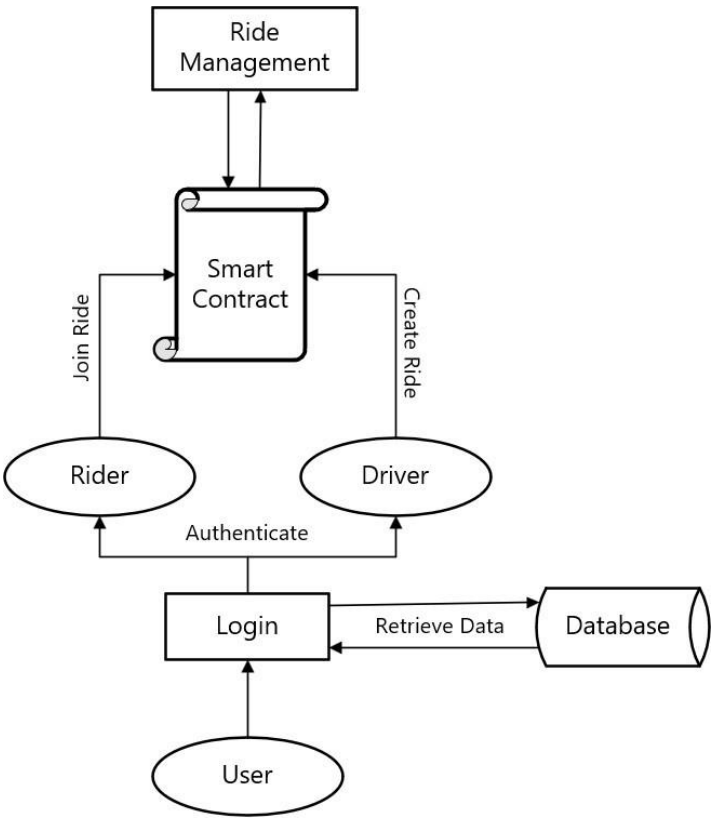
3. Ride Request Module

The Ride Request Module is an essential part of the ride-sharing system as it allows riders to connect with drivers and share rides to their destination. This module provides an easy and seamless way for riders to request a ride and for drivers to accept or reject the request. When a rider sends a ride request, the module stores the request information in the platform's database, including the requested ride's details such as the starting and ending locations, the fare per kilometer, and the pickup time. The driver receives a notification of the ride request and can view the details of the ride in the platform's Requested Rides section. The driver can accept or reject the ride request based on their availability and preference. If the driver accepts the request, the rider will be notified, and the ride status will be updated to "Accepted." The ride details will be shared with the rider, including the driver's name, contact details, and the ride's expected arrival time. If the driver rejects the ride request, the rider will be notified, and the ride status will be updated to "Rejected." The rider can then send a new ride request to other available drivers



1.3 System Architecture

The system architecture proposed design comprises three main modules: car-pooling, Driver Registration, and Rider Registration. Users input their email, name, phone number, and password on the registration page. The system checks for existing email IDs; if found, users are directed to the login page; if not, a new ID is created, and users proceed to the Main page. Riders select their travel destination and view drivers heading the same way, choosing based on driver ratings. Drivers then meet riders at designated pickup locations. Ride details are saved, and costs calculated based on factors like distance and vehicle type. Pseudo-codes will implement smart contracts. Riders pay drivers via their MetaMask accounts, and both parties rate each other post-ride, aiding future ride selections.



Key Components:

1) User Registration: The user creates an account on our platform by providing their personal information, such as name, email, and password.

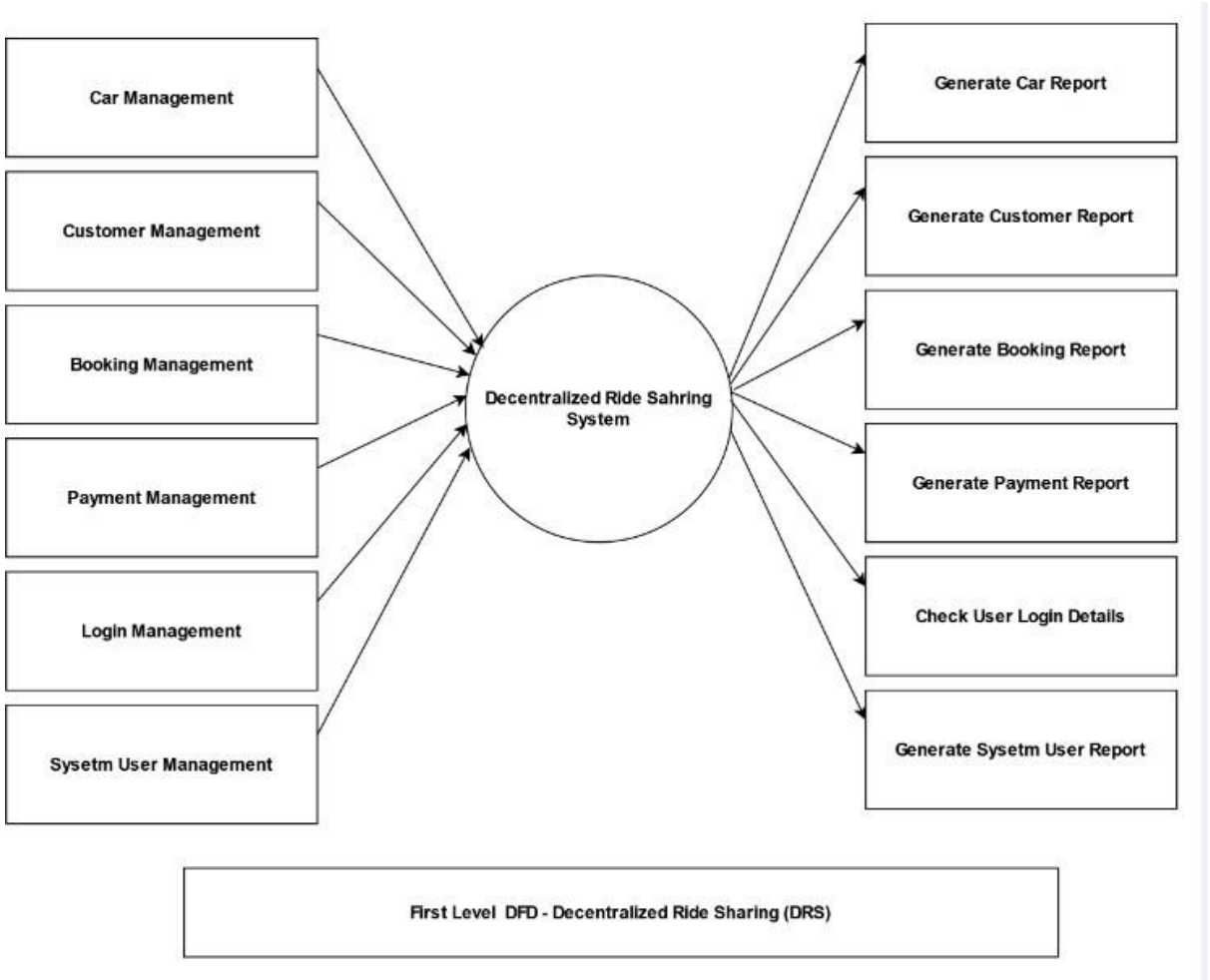
2) Ride Creation: Once registered, the user can create a ride by providing details such as the starting location, ending location, date, time, and fare per kilometer. The distance between the two locations is calculated using Google Maps API, and the fare is calculated by multiplying the distance with the fare per kilometer entered by the user.

3) Ride Matching: The system uses the min matching algorithm to match riders requesting rideshare to save total travel distance. Once a ride is created, it is added to the available rides list, and interested riders can request to join the ride.

4) Ride Request: Interested riders can request to join a ride by selecting the ride from the available rides list and clicking the request button. The requested ride is added to the requested rides section on the driver side.

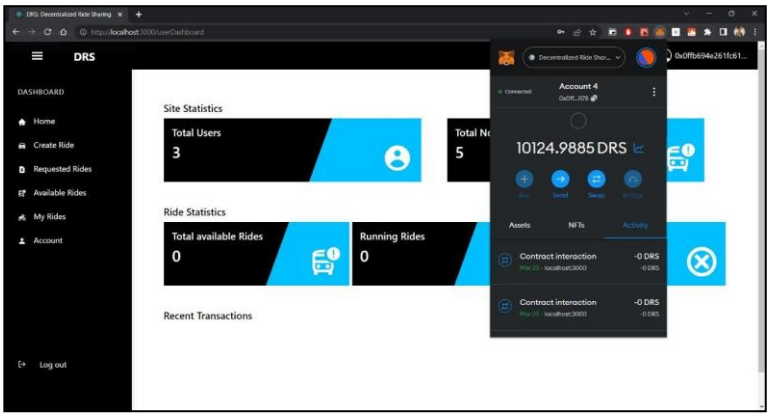
5) Ride Acceptance: The driver can accept or reject the ride request from the requested rides section. If accepted, the ride starts, and the fare is deducted from the rider's account and credited to the smart contract account.

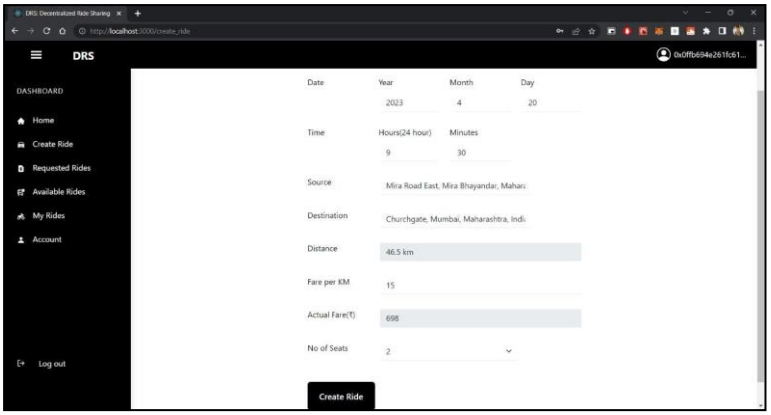
1.4 Data Flow

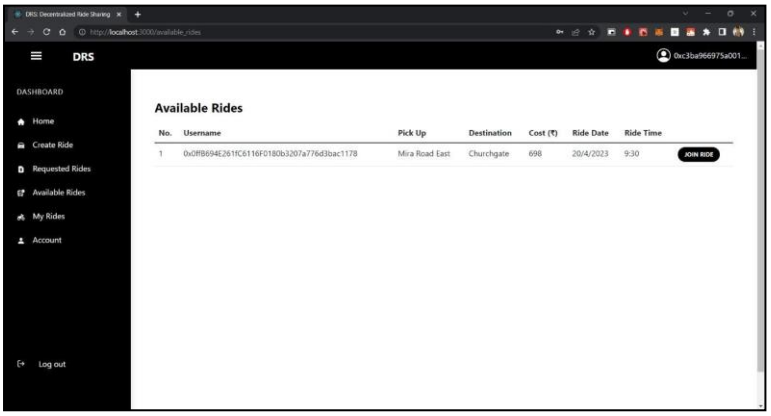


First Level DFD - Decentralized Ride Sharing (DRS)

Results


DRS
DASHBOARD
Home
Create Ride
Requested Rides
Available Rides
My Rides
Account
Log out
Site Statistics
Total Users
3
Total No
5
Ride Statistics
Total available Rides
0
Running Rides
0
Recent Transactions
Account 4
10124.9885 DRS
Assets
NFTs
Activity
Contract interaction
-0 DRS
Contract interaction
-0 DRS


DRS
DASHBOARD
Home
Create Ride
Requested Rides
Available Rides
My Rides
Account
Log out
Date
Year
Month
Day
2023
4
20
Time
Hours(24 hour)
Minutes
9
30
Source
Destination
Distance
46.5 km
Fare per KM
15
Actual Fare(₹)
698
No of Seats
2
Create Ride


DRS
DASHBOARD
Home
Create Ride
Requested Rides
Available Rides
My Rides
Account
Log out
Available Rides
No.
Username
Pick Up
Destination
Cost (₹)
Ride Date
Ride Time
1
Mira Road East
Churchgate
698
20/4/2023
9:30
JOIN RIDE

Future Scope:

Cost Efficiency: Without intermediaries, transaction costs may be lower, allowing drivers to retain a larger share of their earnings andriders to pay less for rides.

Transparency and Trust: Blockchain's inherent transparency could increase trust among users. Smart contracts ensure that rules are enforced without bias or manipulation.

Resilience and Censorship Resistance: A decentralized system is less prone to service interruptions due to technical issues or external pressures. It can continue to operate even if specific nodes fail.

Global Reach: Decentralized systems could potentially operate across borders without complex regulatory hurdles, making them attractive for global users.

Incentivization and Tokenomics: Decentralized systems might introduce tokens or other incentive mechanisms to encourage user participation, creating a sense of ownership among drivers and riders.

Acknowledgment : We would like to express our deepest gratitude to Mrs. Priyanka Patil for her invaluable mentorship and guidance throughout this project. Her insights, expertise, and encouragement have been instrumental in shaping our work and pushing us to achieve our best.Mrs. Patil's dedication to her role as a mentor has been evident in her willingness to always provide thoughtful feedback and her patience in answering our questions. Her deep knowledge of the subject matter and her ability to inspire us have greatly contributed to the success of this project. We are truly grateful for her support and consider ourselves fortunate to have had the opportunity to learn from her. We look forward to applying the lessons we've learned from her mentorship in our future endeavors. Thank you, Mrs. Priyanka Patil, for being an exceptional mentor and for guiding us every step of the way.