International Journal on Science and Technology (IJSAT)
E-ISSN: 2229-7677 ● Website: www.ijsat.org ● Email: editor@ijsat.org

Smart Ride Sharing Platform for Sustainable and Hassle-Free Transportation

Angelin Rosy M[1],Jesha Periyanayagi S[2]

[1]Assistant Professor, II MCA
[1,2]Department of Master of Computer Applications,
[1,2]Er.Perumal Manimekalai College of Engineering, Hosur,
[1]angelinrosym@gmail.com, [2]jeshaperiyanayagis4276@gmail.com

Abstract:
Ride sharing involves sharing a car with someone going in a similar direction, saving costs, cutting traffic and helping the environment. The plan saves space by cutting the number of cars and inspires a greener, more community-focused way to travel. Although there are many good reasons to use such services, problems like long distance delays, surges in fares, not enough available cars and worries for safety are still experienced by passengers and drivers. It overcomes these challenges by launching a secure and practical ride-sharing platform for people who need safe ride-sharing services. Users on the platform can easily look for and reserve a ride, check information about the driver, view ratings and keep track of their journey while it happens. Being open about costs, offering various payment methods and prioritizing safety increase trust and make it easier for users. Apart from being a quick way to travel, the platform is helpful in lowering congestion and carbon pollution, favoring a green and eco-friendly way to get around.

Keywords: Ride Sharing, Smart Transportation, Sustainable Mobility, Deep Reinforcement Learning (DRL), Intelligent Transportation Systems (ITS), Real-Time Ride Matching

1. INTRODUCTION

If people share a ride, it reduces the problems of traffic jams and overloaded parking areas. Ridesharing is good for the environment by reducing car emissions and makes commutes easier and less hard for people. It can be difficult to connect people who are going in the same direction or who have identical work schedules. Mistakes in matching passengers with the correct driver lead to issues in ride sharing. Through reinforcement learning, software and machines are able to use AI to manage all tasks on their own and handle any changes that happen in the environment. In reinforcement learning (RL), learning takes place using rewards and punishments given to the agents. Model-free reinforcement learning (RL) algorithms and model-based RL algorithms are the main types in RL. Q-learning and deep q learning are types of model-free RL techniques.

2. PROPOSED WORK

The proposed system integrates with deep reinforcement learning, real-time data handling and interactive user interfaces, the system becomes efficient as well as simple to use.

Web-based User Interface

Within the system, both drivers and riders can use the web interface to choose their pickup and drop-off points as well as pick their departure times. Using this data, the system will link drivers to riders by predicting how many people are expected to use the service.

Real-Time Matching Algorithm

By using reinforcement learning (RL), the model learns rules to decide which drivers to offer to riders or how to accept or decline ride requests from them. Using a reward system helps route decisions to match travel times, distance and how customers feel about their rides.

Real-Time Visualization:

To help people understand and use the data, the system uses interactive maps with real-time views. Users are able to view drivers and pending ride requests change as they update in real time on the map.

3. MODULES

1.Ride Share Web App

For the Ride Share web app, Python Flask will be used to make the application and MySQL will handle the data.

2.User Interface: Creating the user interface will use HTML, CSS and JavaScript along with the aid of the Bootstrap framework.

3. Ride Search: Through the module, the rider enters where they are going, when they plan to travel and their source location. It then examines the database looking for rides that fit the given criteria.

It takes into account how much time it takes to travel, the total amount you have to pay and the number of seats in the ride.

After the search is done, the module shows the available rides and provides their details like the driver, the cost, where to pick up and drop off at and the expected duration of the ride.

After that, the rider can select the ride they want and book it through the module. The module further gives riders access to their ride history and the ability to track their booked rides.

4.Ride Share Matching: This module uses a reinforcement learning strategy to schedule rides and put passengers in contact with available drivers quickly by looking at travel time and distance.

The module relies on historical information to teach the reinforcement learning algorithm which then matches each rider-driver pair according to what they prefer and their current location.

5.Ride Request and Response Module:

This module works to take new ride requests from riders and to send out ride offers to drivers.

It makes sure that the rider and driver can communicate well, so the ride request is processed smoothly.

6.Ride Share Booking:

After matching the riders, the drivers can be booked by riders through the Ride Share Booking module.

After browsing the available rides, the rider and taps Book and provides the pickup and drop-off locations, the number of passengers and the method they want to pay with.

The rider can monitor the driver's location and estimate of the arrival time at any moment.

7.Payment:

This module manages all the payment transactions that happen between drivers and the riders.

The payment gateway is included which helps users make safe online payments with their chosen payment choice.

Before booking a ride, the module will let riders check the approximate fare and it confirms the total at the end before final payment.

8.Notification:

It is the Notification Module that sends updates to the app users such as riders and drivers.

It helps keep the users aware of their ride, including if their ride is confirmed, canceled, who the driver is and other basic information.
The Notification Module sends notifications to the users by sending email, SMS or showing in-app messages.

9.Track History:

Track History gives both riders and drivers the ability to see their previous ride records.

Every ride's date, starting and ending location, fare and additional details are recorded in this module.
10.Reviews or Feedback:

The Review or Feedback module enables both drivers and riders to comment on using the platform.

The main idea of this module is to find what needs improvement while giving users a way to describe the best parts of the service.

With feedback, users can assess their ride in terms of the driver's driving style, how clean the car was and their general satisfaction.

People can give feedback or opinions to make the service better.

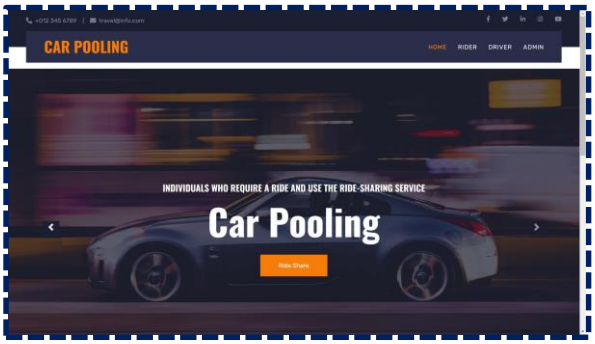
11.Reports:

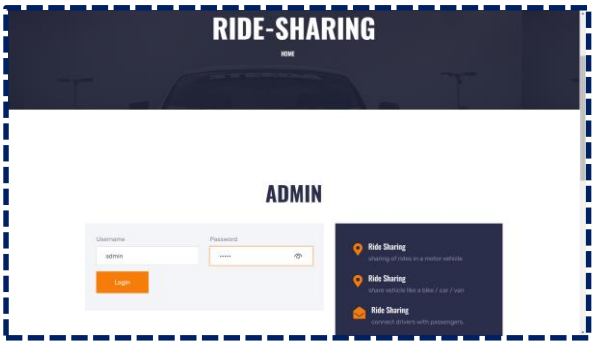
The Reports module offers information and numbers about the ride-sharing service.

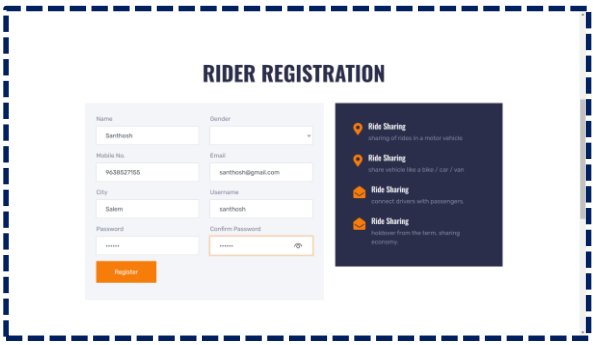
The file gives access to several reports showing how many rides were taken, how many were canceled, the people working, the money generated and so on.

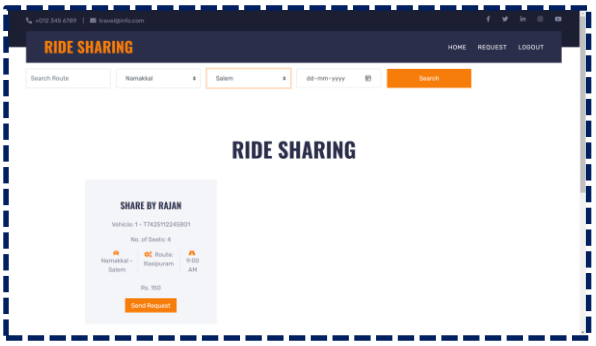
The web admin needs this knowledge to learn how people use the application and to decide how to improve it.

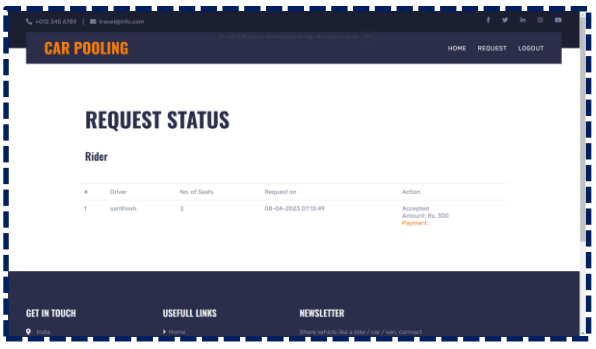
4. RESULTS

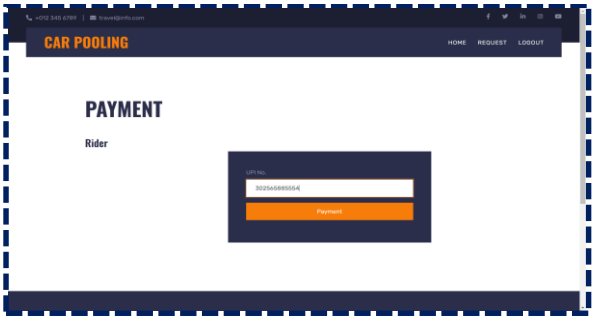



RIDE-SHARING
ADMIN
Login
Ride Sharing
Ride Sharing
Ride Sharing


RIDER REGISTRATION
Register
Ride Sharing
Ride Sharing
Ride Sharing
Ride Sharing


RIDE SHARING
HOME
REQUEST
LOGOUT
RIDE SHARING
SHARE BY RAJAN
Send Request


CAR POOLING
HOME
REQUEST
LOGOUT
REQUEST STATUS
Rider
GET IN TOUCH
USEFULL LINKS
NEWSLETTER


CAR POOLING
HOME
REQUEST
LOGOUT
PAYMENT
Rider
Payment

5. CONCLUSION

The Smart Ride Sharing Platform meets today's transportation needs, mixing technology, care for the environment and user-friendliness. Thanks to instant updates, computer matching and green vehicles, the platform can both fix problems for travelers and help decrease pollution by lowering emissions. Its added features cover ride sharing, electric cars and a smooth user platform, allowing people to pick a better alternative to regular cars, helping the city improve its transportation.

6. ACKNOWLEDGMENT

The authors confirm that there are no acknowledgments or external contributions to declare for this study.

REFERENCES

1. "Ride Sharing: History, Opportunities, and Challenges" by Susan Shaheen and Adam Cohen, in Transport Reviews, vol. 35, no. 3, pp. 283-302, May 2015.
2. "Ride Sharing and the Future of Transportation" by Justin Fox, in Harvard Business Review, November 2016.
3. "Shared Mobility and the Transformation of Public Transit" by Todd Litman, in Transport Reviews, vol. 38, no. 2, pp. 248-266, March 2018.
4. "The Potential of Shared Mobility for Urban Sustainability" by Susan Shaheen and Adam Cohen, in Environmental Science & Technology, vol. 51, no. 14, pp. 7599-7601, June 2017.
5. "Ride Sharing and Ride Sourcing: Opportunities and Challenges for Public Transit" by Robert Cervero, in Transport Reviews, vol. 37, no. 6, pp. 730-746, October 2017.
6. Shaheen, S. A., & Cohen, A. P. (2015). Shared mobility: The potential of ride sharing and car sharing for reducing greenhouse gas emissions. Annual Review of Environment and Resources, 40, 219-242.
7. Cramer, J., & Krueger, R. A. (2017). Understanding and promoting ride-sharing: A survey of regular ride-sharers. Journal of Public Transportation, 20(2), 1-17.
8. Noland, R. B., & Weiner, M. D. (2019). The Impact of Ride-hailing on Vehicle Miles Traveled. Transportation Research Part A: Policy and Practice, 124, 348-361. doi:10.1016/j.tra.2019.04.019
9. Hong, Y., Huang, J., Wang, Y., Peng, Q., & Wang, J. (2018). Intelligent transportation system based on Internet of things: A review. IEEE Internet of Things Journal, 5(5), 3753-3770.
10. Zipf, A., Mobasheri, A., Rousell, A., Hahmann, S., & Hitzler, P. (2017). Crowdsourcing for individual needs–the case of routing and navigation for mobility-impaired persons. In LBS 2017: 14th International Conference on Location-Based Services (pp. 157-170).