

Rent Connect: Collaborative Platform for Drivers and Car Owners

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Abstract- The proposed Car Sharing Platform is an revolutionary virtual ecosystem that facilitates long-term partnerships among car owners and drivers through apartment agreements or profit-sharing fashions. Designed for folks that personal underutilized cars and drivers seeking earnings opportunities, the platform operates as a trusted middleman, connecting wonderful client agencies in a collaborative earning surroundings. Ownership stays with man or woman automobile owners, at the same time as drivers advantage access to automobiles for ridesharing, shipping services, or other commercial uses. Both activities advantage financially — owners earn apartment prices at the identical time as drivers generate earnings from their offerings. The device enables prolonged-term leases on a weekly, monthly, or continuous foundation, presenting immoderate flexibility wherein owners can set vehicle availability and drivers can choose favoured cars. The goal market includes drivers with out automobiles aiming to earn cash and owners in search of passive profits streams. The platform plays a matchmaker function, managing strong charge processing, automatic agreement manage, and dispute decision. Key technological competencies include a smart matching set of policies for pairing owners and drivers, virtual agreement generation, actual-time profits monitoring, area-based totally vehicle search, and man or woman profile control. The income version is pushed through rate-primarily based earnings from each proprietors and drivers, ensuring operational sustainability. Differentiated via way of its collaborative financial device model, the platform complements asset utilization, reduces idle automobile time, and fosters inclusive monetary boom with the aid of allowing flexible, shared mobility partnerships.

Keywords— Collaborative Economy ,Vehicle Utilization, Smart Matching, Passive Income, Flexible Rentals.

I. INTRODUCTION

The rise of ride-hailing services like Uber and delivery networks has created a massive demand for vehicles. However, a significant barrier to entry for many potential drivers is the high cost of purchasing and maintaining a car. Conversely, many private car owners find their vehicles sitting idle for the majority of the day, depreciating in value without generating a return.

Traditional car rental agencies focus on short-term, high-cost daily rentals which are not financially viable for gig-workers needing a vehicle for weeks or months at a time. Informal agreements between owners and drivers often fail due to a lack of trust, payment disputes, and the absence of legal contracts.

This project addresses these inefficiencies by building a centralized platform that standardizes the relationship between car owners and drivers. Unlike standard rental apps, this system is optimized for long-term engagement. It allows owners to monetize their idle assets through secure, transparent agreements while providing drivers with the tools they need to earn a living.

By integrating features such as profile verification, automated rent collection, and dispute resolution via an AI chatbot, the platform removes the friction from peer-to-peer sharing. The goal is to create a sustainable "vehicle-as-a-service" model where access is valued over ownership, benefiting the wider community by maximizing the utility of existing vehicles.

II LITERATURE SURVEY

To design a robust system, we analyzed existing solutions in the vehicle rental and sharing space. The following studies provided insights into current methodologies and their limitations:

Mobile-Based Vehicle Rental Systems Research into the "EZGO" vehicle rental app (2024) demonstrated the value of using Agile methodology for rapid app development. Their step-by-step approach allowed for quick feedback loops. However, the study noted a significant limitation in initial area coverage and a lack of vehicle variety, restricting user choice.

Peer-to-Peer Self-Driving Platforms A 2024 study proposed an online platform specifically for self-driving car sharing. While the concept is forward-looking, the primary hurdle identified was the "trust and verification" gap in owner-driver relationships. Without human drivers, the verification of how the car is being treated becomes difficult, a problem our platform addresses through strict user profiling.

Blockchain in Carpooling In 2023, researchers explored a peer-to-peer carpooling app using blockchain for transparency. While the system ensured privacy and fair transactions without intermediaries, the technology proved to be a double-edged sword. The study found that many users found blockchain and crypto-wallets hard to use, and the app suffered from slow interface speeds. This highlights the need for a user-friendly, traditional payment gateway which we have adopted.

Decentralized Car Rentals (Car Chain) A 2021 project titled "Car Chain" used smart contracts to manage rentals directly between owners and customers. Features like digital car identity were innovative. However, the system faced scalability issues; as the number of users and transactions increased, the network experienced delays and higher operational costs.

III. METHODOLOGY

Secure User Onboarding and Role Management

The system begins with a detailed registration process. Users must upload government-issued IDs, such as a driver's license or ID card, which are stored safely. A unique feature of the system is the "Role Selection" module. Users can switch between being an "Owner," who lists cars, or a "Driver," who rents cars. This flexibility allows one user to rent out a spare car while also renting another vehicle when needed.

Smart Matching Algorithm

To support long-term partnerships, the platform uses matching logic that considers more than just location. It filters based on:

- **Duration Preferences:** Matching owners who want monthly leases with drivers seeking long-term rentals.
- **Vehicle Type:** Sorting cars for specific needs, like fuel-efficient vehicles for food delivery or sedans for Uber.
- **Profit Sharing vs. Flat Rent:** Linking users based on their payment method preferences.

Digital Contract and Agreement System

When a driver selects a car, the system generates a digital rental agreement. This document outlines the terms of the rental, duration, and usage limits. Both parties must agree to these terms digitally before the rental begins. This removes the need for verbal agreements, which often lack security in the informal market.

AI Chatbot Support

To reduce administrative tasks, an AI chatbot is included in the dashboard. This bot handles Level 1 support questions, such as "How do I update my license?" or "When is my rent due?" It allows human admins to concentrate on more complex disputes..

IV. SYSTEM ARCHITECTURE

The operational workflow serves as a central system where the database is the main source of truth for availability and transactions.

User Interaction Layer

The flow begins with the Car Owner and Driver interacting with the "Registration/Login" module.

- **Owners:** They go on to "Add Car Details" (Make, Model, Photos) and "Set Rent Terms" (Daily or Weekly price).
- **Drivers:** They enter the "Driver Flow," where they can "View Available Cars" and "Send Request to Rent."

The Verification Loop

A crucial security step in this design is the "Upload License + ID" block. Before a driver can send a request, their credentials must be checked. Once a request is sent, the Owner receives a notification to "Accept or Reject Requests." This gives the owner complete control over who drives their vehicle.

Transaction and Usage Layer

After approval, the workflow moves to the operational phase:

- **Track Rental Duration:** The system logs the start and end time.
- **Make Payment:** Drivers can pay through integrated gateways. The system allows splitting payments for profit-sharing models.
- **Database:** It centralizes all data, including user profiles, car status, and earning history ("View Earnings").

Feedback Loop

The cycle concludes with the "Return & Review Owner" module. Both parties rate each other, creating a reputation score that helps future users make better choices.



Figure 1 : System Architecture

V. RESULT ANALYSIS

The platform is designed to deliver the following performance outcomes based on its architecture and feature set:

- **The rate of asset use** By focusing on long-term drivers (gig workers), we expect a vehicle utilization rate of 70–80%, which is much higher than the industry average for personal vehicles (which is often less than 5%). The "View Available Cars" module makes sure that people can see cars in real time, which cuts down on the time a car sits empty between contracts.
- **Stable income** The platform gives owners a structured "View Earnings" dashboard. Weekly and monthly agreements, on the other hand, provide steady passive income, unlike daily rentals that happen every now and then. For drivers, the "Use Car for Ola/Uber" feature means that the cost of renting a car is an investment that pays off right away.
- **Metrics for Trust and Safety** The "Upload License + ID" step that everyone has to do, along with the "Accept/Reject" protocol, makes sure that the users are real. We think that there will be

fewer disputes than in open peer-to-peer marketplaces because the digital agreement that is signed before the rental makes the terms clear.

VI. CONCLUSION

The proposed Car Sharing Platform is a significant step forward in the sharing economy. Previous solutions mainly focused on short trips or complicated, decentralized technologies. This project emphasizes stability and long-term economic partnerships. By establishing a dependable connection between car owners and drivers, we use idle vehicles and provide job tools for drivers. The mix of smart matching, secure digital contracts, and AI-driven support fosters an environment that can expand. It transforms a depreciating asset, like a car, into a source of income, encouraging a community where both asset owners and service providers thrive.

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