EV RENTAL SERVICES FOR SUSTAINABLE URBAN MOBILITY

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DOI : https://www.doi.org/10.56726/IRJMETS52148

ABSTRACT

Our platform offers a user-friendly rental service for electric vehicles (EVs) using PHP, JavaScript, HTML, CSS, Bootstrap, and MySQL. Users can easily locate EV rentals by district or local area, aided by Google Maps. Embracing technology's power, our platform streamlines EV rental processes, accommodating both vehicle owners and renters. Additionally, the platform extends beyond EV rentals, enabling property transactions. Users can list available electric vehicles for rent or search for rental EVs, enhancing convenience for vehicle owners and renters alike in the e-vehicle service. By integrating innovative technologies and addressing diverse user needs, our platform promotes sustainable urban mobility while embracing the evolving landscape of transportation.

Keywords: Electric Vehicles, Rental Services, Sustainable Mobility, Technology, Property Transactions.

I.   INTRODUCTION

Empowering the Future : EV Rental Services

In today's fast-paced world, convenience and flexibility are key when it comes transportation. Whether you're a frequent traveler, a busy professional, or someone who simply values the freedom to go where you want when you want, EV rental services have revolutionized the way we access and enjoy personal transportation. Need for Vehicle's Rental System As the world races toward a more sustainable and eco-friendly future, electric vehicles (EVs) have emerged as a pivotal solution to reduce carbon emissions and combat climate change. In this era of environmental consciousness, Rental services for electric vehicles have taken the concept of shared mobility to new heights, offering a clean, convenient, and innovative way to travel.

The system provides a platform for EV owners to list and update their rental offerings, subject to admin approval. Tenants can access comprehensive details of available EVs, shortlist their preferred options, and register for site visits. Additionally, features such as member registration forms and inquiry submission enable seamless communication between users and administrators for marketing purposes. Registered members gain access to personalized accounts, enabling them to book site visits, review recently viewed EVs, and manage their rental agreements. Property owners benefit from tools to manage their EV listings, agreements, and tenant allocations, with reminders for agreement expiration and due dates.

Technologies such as HTML, CSS, Bootstrap, and JavaScript are utilized in the front end to ensure a responsive website interface, accessible across various devices. PHP and MySQL are employed in the back end to create dynamic forms for data collection and storage, facilitating efficient management of rental EVs. By leveraging these technologies, the Online Electric Vehicle Rental Management System offers a user-friendly platform to promote sustainable urban mobility while addressing the evolving needs of both EV renters and owners.

In this introduction, we will explore the world of EV Rental Services, where your journey begins with a simple payment and ends with the exhilaration of hitting the open road. Discover the convenience, flexibility, and freedom that these services offer as we delve into the many advantages and exciting opportunities that await you. Whether you're planning a weekend getaway, a business trip, or an extended vacation, EV Rental Services are here to transform your rental EV's experience into a seamless, enjoyable, and hassle-free adventure.

Background: As students studying far away from home often struggle to secure suitable accommodation, especially when dormitories are unavailable, the need for nearby rental electric vehicles (EVs) becomes apparent. Rental EVs located near universities are often the preferred choice for students due to their

convenience and accessibility. However, locating available rental EVs in proximity to the university can be challenging, as owners typically rely on word-of-mouth advertising rather than formal listings.

To address this issue, a system is proposed to assist students in easily finding rental EVs. This system will provide students with a platform to view available rental EVs nearby and facilitate comparisons to aid in decision-making. By streamlining the search process, students can save valuable time and effort in finding suitable transportation options.

The primary goal of this system is to enhance the accessibility of rental EVs for students, enabling them to quickly identify and secure transportation that meets their needs. By providing a centralized platform for rental EV listings and comparison tools, the system aims to alleviate the challenges associated with finding reliable transportation options for students living away from home.

II.   METHODOLOGY

The methodology for the rental EVs system comprises two main components:

1. Baseline Study Methodology:

Service providers of EV vehicles will upload information about their available EVs, including details such as location, vehicle type, and rental rates. Tenants can then browse the available EVs based on their preferences and requirements. The data will be collected and stored in databases using Structured Query Language (SQL) and PHP scripting.

2. Software Design Methodology:

The software/website for the rental EVs system will be designed to cater to common users, employing web design languages such as HTML, CSS, Bootstrap, etc. The system will consist of three main parts:

a. Client: Users (both service providers and tenants) will access the system through web browsers on their devices. They will be able to browse available rental EVs, view detailed information, and perform actions such as booking or listing EVs for rent.

b. Web Server: The web server will host the rental EVs system and handle client requests. It will be responsible for processing user inputs, retrieving data from the database, and delivering responses to users.

c. Database Server: The database server will store all relevant data related to rental EVs, including listings, user information, and rental agreements. It will utilize SQL to manage and query the database efficiently.

By following this methodology, the rental EVs system will be developed to provide a user-friendly interface for both service providers and tenants, facilitating the seamless rental process of electric vehicles.

III.   MODELING AND ANALYSIS

Requirement Analysis:- Understand the needs of stakeholders involved in the electric vehicle (EV) rental services, including service providers, users (renters), administrators, and regulatory agencies. Identify key requirements such as user registration, EV listing management, booking and payment processing, and administrative functionalities.

System Design:- Develop use cases, class diagrams, and sequence diagrams to illustrate the interactions between different system components and stakeholders. Outline the system's functionality, including user registration, EV listing management, booking process, payment processing, and administrative functionalities such as reporting and analytics.

Database Design:- Design a database schema to securely store information such as user profiles, EV listings, booking records, payment transactions, and administrative data. Implement data integrity and security measures to protect sensitive information and ensure data reliability.

User Interface Design:- Create intuitive and user-friendly interfaces for different user roles, including EV renters, service providers, and administrators. Design interfaces to facilitate tasks such as browsing available EVs, submitting booking requests, managing EV listings, and generating reports.

Security Measures:- Implement robust security measures to protect user data, payment information, and system integrity. Utilize encryption techniques, access control mechanisms, and secure communication protocols to prevent unauthorized access and data breaches.

Testing and Deployment:- Conduct comprehensive testing to ensure the functionality, usability, and security of the EV rental platform. Test the system for various scenarios, including user interactions, payment processing, and administrative tasks. Deploy the system for public use after thorough testing and validation, ensuring a smooth and reliable experience for users and stakeholders.

IV. RESULT AND DISCUSSION

The results of the EV rental platform include metrics like usage data, response times, completion rates, and user feedback.

These indicate the platform's effectiveness and popularity among users.

The discussion assesses if the platform met its objectives, improved access to rental EVs, and streamlined processes.

Challenges like technical issues and user adoption barriers are addressed, along with proposed solutions. Opportunities for future enhancements, such as expanding the EV fleet and improving user interfaces, are identified to optimize the platform's performance and ensure its success in the EV rental market.

V. CONCLUSION

In conclusion, the EV rental platform has successfully addressed the need for convenient and sustainable transportation solutions. By providing easy access to rental EVs and streamlining the booking process, the platform has met its objectives. Despite challenges, the platform's resilience and adaptability pave the way for future enhancements and expansion. Overall, the EV rental platform plays a crucial role in promoting sustainable urban mobility and meeting the evolving needs of users.

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