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# REVIEW PAPER ON SMART PARKING SYSTEM

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## ABSTRACT

A smart parking management system is like a modern tool that helps people find and use parking spaces more easily. It uses technology to monitor and manage parking spots in real time. This system can guide drivers to available parking spaces using our software on their system(devices). It also helps in keeping track of how long a car has been parked and can even let people pay for parking without using cash. Overall, it makes parking simpler, faster, and more organized for everyone. In the contemporary era, efficient management of vehicles has become paramount for streamlined operations and resource optimization. This comprehensive system aims to enhance the overall control and monitoring of vehicular assets, ensuring optimal utilization and minimizing operational complexities.

**Keywords:** Vehicle Parking, Parking Management, Parking Reservation System, Application On Vehicle Parking.

## I. INTRODUCTION

A smart parking management system is a high-tech way to make parking easier and more organized. Imagine a busy parking lot where it's hard to find a spot. It can even show drivers where the empty spots are, helping them find parking faster. Plus, it can handle things like payments so that people can pay for parking without any hassle. It's a modern solution to the age-old problem of finding a parking space. A smart parking management system represents the fusion of technology with everyday urban challenges, addressing the perennial issue of finding parking in congested areas. As a result, drivers can be directed to available parking spots efficiently, reducing the time spent circling lots or streets in search of a space using the vehicle management system.

Cloud-based smart parking not only simplifies the parking process but also brings a multitude of benefits. It reduces the time and frustration associated with parking, mitigates traffic congestion, lowers emissions, and improves overall urban mobility. For parking providers and city authorities, it offers enhanced revenue generation, better resource management, and valuable insights through data analytics.

## II. RELATED WORK

Hardik Tanti [3] has used the computerized system where we can deliver a good service to citizens who want to park and pay for their vehicles in various organizations using the help of the IOT which uses sensors to connect Physical Parking Space infrastructures and Information and communication technology, where we can use the cloud service which are provided.

Mohd Yamini Idna Idris [4] has used to overcome the Obstacle of Payment which are conventional method that causes delay and inconvenience for the sponsors as they have to deal with cash problems.

Dániel Kondor [5] has to capture the overall vehicular mobility demand in certain cities. It provides a precise and comprehensive simulator for urban mobility which maps the details movements of the city corresponding to peoples. Their methodology is used to scale easily and applied to cause and other assumptions to travel demands. They use a methodology based on bipartite matching of cars and other vehicles for parking spaces.

Can Biyik [6] It is used to overcome the challenges of private parking which is used by people daily in large quantities. That's why parking spots in big cities and places are a problem. It is a smart parking system is a smart architectural framework that contains various applications and stakes embedded with the systems. This Reserved Parking lets users request the application layers to request and be processed through a network layer.

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Anusha, Arshitha M S, Anushri [7] The IOT allows objects to get controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into a computer-based system. It provides the efficiency, accuracy, and economic benefits. Everything is uniquely identified at its level and worked across the state of the levels so every part can be interpreted to other levels and states.

Thanh Nam Pham [8] It is used to forego problems and take advantage of the significant development in the various technologies of the Internet Of Things (IoT) which has created a revolution in many states in life as well as in smart parking systems. Our system constructs every car park as an IoT network.

## III. PROPOSED SYSTEM

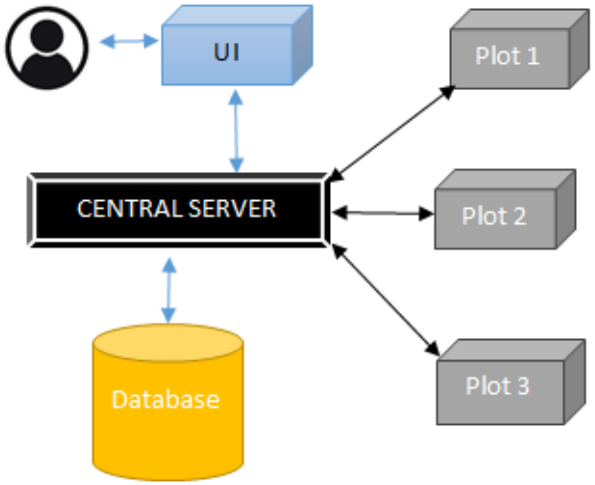
A structured methodology was adopted to evaluate Easy Park to ensure comprehensive coverage and objective analysis. The research began with a systematic literature review to gather foundational knowledge and understand the historical progression of parking systems. This was followed by a qualitative analysis of existing parking solutions, where various automated and IoT-enabled systems were examined in depth.

Furthermore, comparative analyses were performed to benchmark the capabilities and limitations of different parking management approaches. To stay abreast of emerging trends and technologies, continuous monitoring of industry developments and pilot projects was undertaken. The methodology ensured a holistic evaluation of Easy Park, encompassing technological advancements, user perspectives, and environmental considerations.

Parking management system for managing the records of the incoming and outgoing vehicles in a parking house it's easy for the admin to retrieve the data if the vehicle has arrived for a certain slot, so he can get the allotted parking. This record helps with the authorization for using Easy Park.

Overall, this comprehensive methodology thoroughly examines the landscape of Vehicle Parking Management Systems, offering valuable insights into the state-of-the-art technologies, their effectiveness, and the challenges that need to be addressed for the continued advancement of parking solutions in urban environments.

## IV. SYSTEM ARCHITECTURE




The cloud-based parking system is designed with a multi-layered architecture to deliver a seamless and efficient parking experience. At the user interface layer, web and mobile applications provide intuitive platforms for users to find available parking spaces, make reservations, and process payments. The application layer encompasses the parking management application, responsible for user authentication, reservation handling, and payment processing. Notifications services ensure timely communication with users regarding reservation confirmations, reminders, and payment receipts. The business logic layer comprises systems for reservation and allocation, payment processing, and user authentication.

## V. ADVANTAGES

- Optimized Space Utilization: Easy Park efficiently allocates parking spaces based on real-time availability, reducing congestion and maximizing the utilization of parking facilities.
- Enhanced User Experience: Integration with mobile applications and digital platforms offers users a seamless experience, including features like reservations and cashless transactions.

- Environmental Sustainability: By promoting the use of electric vehicle (EV) charging stations and prioritizing parking for low-emission vehicles, Easy Park contributes to reducing carbon emissions and aligns with sustainable urban development goals.
- Enhanced Security: Advanced surveillance and monitoring capabilities within Easy Park contribute to improved security and safety within parking facilities.
- Scalability and Flexibility: Easy Park solutions are designed to be scalable and adaptable, accommodating the evolving needs of urban environments and supporting future growth

## VI. APPLICATION

The Easy Park has found diverse applications across various sectors, showcasing its adaptability and significance in modern urban environments. In urban settings, Easy Park plays a pivotal role in managing both on-street and off-street parking facilities, optimizing space utilization, and alleviating traffic congestion. Commercial establishments, including shopping malls, airports, and office complexes, leverage Easy Park to provide seamless and organized parking experiences for visitors, enhancing customer satisfaction and operational efficiency.

Furthermore, Easy Park serves as an integral component in the development of smart cities, facilitating integration with other urban systems to optimize transportation networks, reduce environmental impact, and enhance overall city management. Additionally, during large-scale events such as concerts or festivals, Easy Park assists in efficiently managing vehicular traffic and maximizing the utilization of available parking space.

## VII. CONCLUSION

This survey has provided a detailed and complete analysis of the Smart Parking System using various techniques. The study of Different Review Papers presents advanced strategies that represent significant strides toward addressing the ever-growing challenges associated with urban parking. Through the Integration of advanced technologies such as Integrated networks, real-time data processing, and user-friendly mobile applications, our project aims to revolutionize the conventional parking experience. By providing users with real-time information about available parking spaces, reducing congestion, and minimizing environmental impact, the Smart Parking System not only enhances convenience but also contributes to the overall efficiency and sustainability of urban transportation. We Expect the widespread adoption of the Smart Parking System in urban landscapes, leading to a more streamlined and efficient parking ecosystem.

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