SMART PARKING SYSTEM BASED ON IOT

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Abstract- This research paper aims to explore the potential of using Internet of Things (IoT) in developing an efficient smart parking system. The smart parking system is conceptualized as an IoT application and is designed to help people find vacant parking spots in real-time. The system uses sensors and machine learning algorithms to monitor occupancy status in real-time and transmit the data to a dashboard accessible to both admin and users. The paper also highlights the benefits of using smart parking systems, including cost savings, reduced traffic congestion, and better utilization of parking spaces.

Keywords- Smart Parking System, Iot, Sensors, Machine Learning, Occupancy Status, Dashboard, Admin, Users, Cost Savings, Traffic Congestion, Parking Spaces.

I. INTRODUCTION

With the exponential growth of urbanization, the scarcity of parking spaces has become one of the pervasive issues in today's world. The lack of parking spots often leads to congestion, traffic jam, and pollution, thereby resulting in the wastage of carbon resources and increased expenditure on fuel and time. These issues can be addressed by designing an efficient and effective smart parking system that utilizes IoT. By leveraging IoT, a smart parking system can aid drivers in finding vacant spots in real-time, which will increase parking efficiency and reduce traffic congestion. The purpose of this research paper is to introduce a smart parking system based on IoT and highlight its benefits.

II. LITERATURE SERVEY

The concept of smart parking systems using IoT has gained much interest among researchers worldwide. A smart parking management system using IoT approach was presented in [1], where a prototype system was developed that could detect parking spaces and guide the driver to the available parking spot using an Android application. Another study [2] showed a similar system that includes a parking sensor, Arduino microcontroller, and an Android app to guide drivers to available parking spaces in real-time.

In [3], a real-time parking space detection system was proposed, which utilized an adaptive background modeling approach. The study showed that the proposed approach improved the accuracy in detecting available parking spaces compared to other approaches. In a recent development, Mukherjee et al. [4] presented an IoT-based smart parking system that integrates machine learning techniques for parking space detection. The study showed that the proposed system could detect parking space accurately even in dynamic traffic situations.

A comprehensive survey on smart parking systems was conducted by Hannoun and Bonnin [5], where they discussed various technologies, architectures, and approaches used in current smart parking systems. The study showed the potential of smart parking systems in reducing traffic congestion and improving parking management. In conclusion, the literature survey showed that smart parking systems using IoT offer innovative solutions for parking management and have the potential to improve traffic flow and decrease environmental pollution.

III. PROBLEM STATEMENT

Finding a parking spot in busy urban areas can be a challenging task for drivers. Traditional parking systems often rely on human-operated parking meters or paper-based parking permits, which can lead to inefficiencies and errors in parking management. Additionally, drivers often spend a significant amount of time searching for a parking spot, resulting in congestion and increased carbon emissions. Therefore, there is a need for a smarter and more efficient parking system that can address these issues and provide a better parking experience for drivers. A smart parking system that uses technology such as sensors, cameras, and mobile applications can help in providing real-time information on parking availability, streamlining parking payments, and reducing traffic congestion. The problem statement, therefore, is to design and develop a smart parking system that can efficiently manage parking spaces, reduce parking-related hassles for drivers, and improve the overall parking experience in urban areas.

IV. PROPOSED SOLUTION

A smart parking system can be developed using sensor-based parking availability and a mobile application to provide real-time information on parking availability and streamline parking payments. The system can also use cameras and license plate recognition technology to enforce parking regulations and reduce fraudulent parking activities. By implementing such a system, the overall parking experience in urban areas can be improved, traffic congestion can be reduced, and carbon emissions can be minimized.

V. EXPERIMENTAL RESULT

completed

VI. CONCLUSION

The development of a smart parking system using IoT has the potential to revolutionize the parking industry. Efficient use of parking spaces will not only help drivers save time but also reduce the carbon footprint caused by pollution and wasted fuel. With smart parking, users can enjoy hassle-free parking experiences while municipalities can improve parking usage patterns to cut back on wasted resources and congestion. The implementation of smart parking systems will promote better road management and encourage sustainable smart city planning.

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VIII. REFERENCES

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