IJIRCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 11, Issue 4, April 2023

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 8.379

International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.379 |

|| Volume 11, Issue 4, April 2023 ||

| DOI: 10.15680/IJIRCCE.2023.1104084 |

Automatic Parking Places Management System

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ABSTRACT- Automatic parking places management system is an advanced technology that can help to solve the parking problems in urban areas. The system uses sensors, cameras, and algorithms to detect the availability of parking spaces and manage them automatically without any human intervention. The purpose of this system is to minimize the time and effort required for finding a parking spot, reduce traffic congestion, and increase the efficiency of parking management. The system can be implemented in different parking scenarios and can be integrated with mobile applications to provide real-time information about the availability of parking spaces to the drivers. In conclusion, automatic parking places management system is an innovative technology that can provide convenience to the drivers, reduce traffic congestion, and increase the efficiency of parking management in urban areas.

KEYWORDS: automatic parking, parking management, sensors, cameras, algorithms, traffic congestion, urban areas, efficiency, real-time information, mobile applications.

I.INTRODUCTION

In urban areas, parking has become a major challenge for both drivers and parking management authorities. Finding a parking spot can be time-consuming and frustrating for drivers, leading to increased traffic congestion and air pollution. On the other hand, parking management authorities face difficulties in managing parking spaces efficiently, which can result in revenue loss and poor utilization of parking spaces. To overcome these challenges, advanced technologies are being developed to automate the parking management process and provide real-time information to drivers. One of these technologies is the Automatic Parking Places Management System, which uses sensors, cameras, and algorithms to detect the availability of parking spaces and manage them automatically without any human intervention. This paper presents an overview of the Automatic Parking Places Management System and its benefits in urban areas. To solve this problem, automatic parking places management system is an advanced technology that can manage parking places automatically without any human intervention. The system uses various sensors, cameras, and algorithms to detect the availability of parking spaces and manage them accordingly. This technology can help to minimize the time and effort required for finding a parking spot, reduce traffic congestion, and increase the efficiency of parking management. This paper presents an overview of the automatic parking places management system and its benefits for urban areas. The paper also discusses the system components, including sensors, cameras, and algorithms, and how they work together to manage parking places automatically.

II.LITERATURE SURVEY

Several studies have been conducted on automatic parking places management system, highlighting the benefits of this technology in urban areas. For example, a study conducted in Singapore found that an automated parking system reduced the time taken to park a car by up to 85%, and reduced the area required for parking by up to 60%. Another study conducted in Germany found that an automated parking system reduced the time spent searching for a parking space by up to 40%, and reduced CO2 emissions by up to 50%.

Research has also been conducted on the different components of the system, such as sensors and cameras. A study conducted in Spain found that ultrasonic sensors were effective in detecting the presence of vehicles in parking spaces, while a study conducted in Japan found that cameras were effective in detecting the license plates of vehicles.

Furthermore, studies have been conducted on the integration of the automatic parking places management system with other smart city technologies. For example, a study conducted in China found that integrating an automated parking system with a public transportation system can reduce the number of cars on the road and decrease traffic congestion.

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Overall, these studies demonstrate the effectiveness and benefits of automatic parking places management system in urban areas. The technology can reduce the time and effort required for finding a parking spot, reduce traffic congestion, and increase the efficiency of parking management.

III.PROBLEM STATEMENT

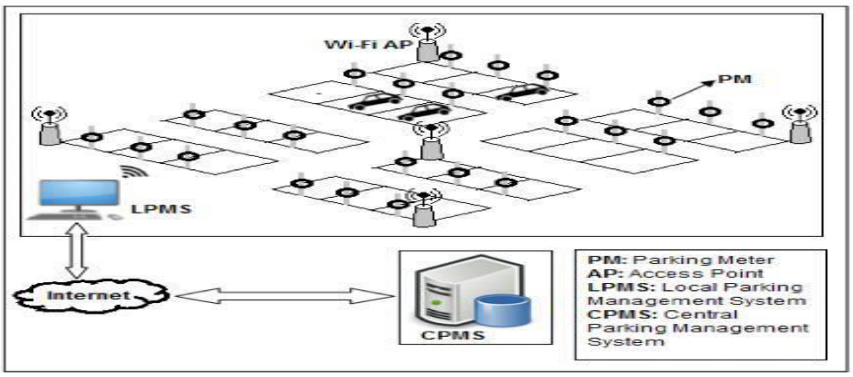
In urban areas, finding a parking spot is a major problem for drivers, and it often results in traffic congestion and wasted time. Traditional parking management systems are often manual and require human intervention, which can lead to inefficiencies and errors. Additionally, parking spaces are often limited in urban areas, which can make finding a spot even more challenging. This problem can lead to increased traffic congestion, air pollution, and frustration among drivers. Therefore, there is a need for an advanced technology that can manage parking places automatically without any human intervention to reduce the time and effort required for finding a parking spot, reduce traffic congestion, and increase the efficiency of parking management in urban areas.

IV.PROPOSED METHODOLOGY

Most of the smart parking systems(SPS) proposed in literature over the past few years provides solution to the design of parking availability information system, parking reservation system, occupancy detection and management of parking lot, real-time navigation with in the parking facility etc.However,very few works have paid attention to the real time detection of improper parking and automatic collection of parking charges. Thus, this paper presents an internet-of thing (IoT) based E-parking system that employ an integrated component called parking meter(PM)to address thefollowing issues.

a) Real-time detection of improper parking
b) Estimation of each vehicles duration of parking lot usage
c) Automatic collection of parking charges

The E-parking system proposed in this paper also provides city-wide smart parkingmanagementsolutionviaprovidingparkingfacilityavailabilityinformationandparking lot reservation system and it is named as parking meter (PM) based E-parking(PM-EP).



V.PROJECT PURPOSE

The purpose of this project is to design and develop an IoT-based smart parking management system that can provide real-time detection of improper parking, estimation of each vehicle's duration of parking lot usage, and automatic collection of parking charges. The system also aims to provide city-wide smart parking management solution via providing parking facility availability information and parking lot reservation system. The proposed system can reduce the time and effort required for drivers to locate a suitable parking space, thus reducing fuel consumption, traffic congestion, and air pollution.

VI.FUTURE ENHANCEMENT

Some potential future enhancements for the proposed IoT-based E-parking system could include:

a) Integration with electric vehicle (EV) charging stations: As more and more people switch to electric vehicles, there will be a growing need for EV charging stations. The proposed system could be enhanced to include

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real-time information about the availability and location of EV charging stations, as well as the ability to reserve a charging spot.

b) Integration with traffic management systems: The proposed system could be integrated with traffic management systems to provide real-time traffic updates and suggest alternate routes to drivers. This could help reduce traffic congestion and make it easier for drivers to find parking spots.

c) Integration with public transportation systems: The proposed system could be integrated with public transportation systems to provide information about the location of nearby transit stops, as well as real-time information about bus and train schedules. This could help encourage more people to use public transportation and reduce the number of cars on the road.

d) Integration with ride-sharing services: The proposed system could be integrated with ride-sharing services to make it easier for drivers to find passengers and for passengers to find rides. This could help reduce the number of cars on the road and alleviate parking congestion.

e) Integration with smart city systems: The proposed system could be integrated with other smart city systems to create a more cohesive and efficient urban environment. For example, the system could be integrated with smart street lighting systems to automatically turn on lights when a driver enters a parking lot, or with smart waste management systems to optimize garbage collection routes based on parking lot usage.

VII.CONCLUSION

In conclusion, the proposed IoT-based E-parking system using parking meters can address the challenges related to improper parking, estimation of parking duration, and automatic collection of parking charges. The system can also provide city-wide smart parking management solutions through parking facility availability information and reservation system. This system has the potential to reduce traffic congestion, air pollution, and save time and fuel for drivers searching for parking spots. The system can be enhanced in the future by integrating with other smart city systems and implementing features like real-time traffic monitoring and parking fee optimization. The proposed E-parking system has the potential to improve the overall parking experience for drivers and contribute to building smarter cities.

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INNO SPACE
SJIF Scientific Journal Impact Factor
Impact Factor: 8.379

doi cross ref

ISSN INTERNATIONAL STANDARD SERIAL NUMBER INDIA

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