

# SMART PARKING MANAGEMENT SYSTEM

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**Abstract:** The concept of smart cities has grown in popularity in recent years. The concept of a smart city today appears to be attainable, thanks to the advent of the Internet of Things. In the realm of IoT, consistent efforts are being made to maximise the productivity and dependability of urban infrastructure. IoT is addressing issues such as traffic congestion, limited parking spaces, and road safety. We describe an IoT-based cloud-integrated smart parking system in this research. The suggested Smart Parking system comprises of an on-site deployment of an IoT module that monitors and signals the availability of each individual parking place. A smartphone application is also offered, allowing users to monitor the availability of parking spaces and book a parking slot as needed. In addition, the article provides a high-level overview of the system architecture. The paper concludes with a discussion of the system's operation in the form of a use case that demonstrates the accuracy of the provided model.

**Keywords-**Node MCU, Server, Android App.

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## I INTRODUCTION

Parking in major cities, particularly in congested areas, has a direct impact on traffic flow and people's lives. PARKING is an expensive operation, both financially and in terms of time and effort expended for "free spot chasing." According to current research, an automobile spends 95 percent of its life parked and only 5 percent on the road. Using England as an example, according to the British National Travel Survey, a car was driven for 361 hours a year on average in 2014, producing about 8404 hours in which a car would be stored. Now, where are you going to park your car for the next few hours? Cruising for parking is, of course, the first issue that has arisen as a result of the global growth in auto ownership.

## II LITERATURE SURVEY

Azhar Sohami, Shubham Periwal, Keshu Patel, Pranit Gaikwad. Department computer engineering Vasai India, "Cross Platform Smart Reservation Parking System As already stated Governments nowadays are focusing their efforts on educating and bringing talent forward as a way to make our country better and smarter. On the one hand, the citizens and the government are aiming for the originality of bringing ideas to the physical world with Real Time working and implementation with the notion of smart cities. It is stated that most commuters spend more time looking for parking spots than driving around with the improbable

chance of actually locating parking places for themselves. The goal here is to put in place a Smart Parking Solution. Smart Parking devices will be introduced at various parking locations and will be cloud-connected, providing real-time updates from UHF placed sensors for available parking spaces for the user. The device's goal is to alleviate and remove basic problems such as traffic congestion through more realistic and useful solutions. Certain conditions, such as minimum display width and computing power, must be met. The proposed method is a "Originality" since the idea of creating smart city solutions has yet to be applied in congested areas or locations where finding parking places is challenging.

Ilhan Aydin1, Mehmet Karakose1, Ebru Karakose2\* 1 Computer Engineering Department, Firat University 2 Civil Aviation School, Firat University Elazig, Turkey, "A Navigation and Reservation Based Smart Parking Platform Using Genetic Optimization for Smart Cities"[2]. As present Smart devices are becoming more widespread in everyday life as technology advances. The emergence of gadgets capable of connecting to the Internet and transmitting data has served as a source of inspiration for smart city ideas. The inability to find free parking spaces is a typical issue in our cities. The parking issue generates traffic congestion, and many who go to work are looking for a spot to park. A navigation and reservation-based parking proposal system for smart cities was developed in

this study. The proposed solution entails the creation of small devices that use internet of things (IoT) technology to relay data to the internet. The genetic algorithm finds the closest free parking place to the current location. The proposed method is tested for many scenarios and yields accurate results.

Pampa Sadhukhan School of Mobile Computing Communication Jadavpur University Kolkata, India – 700032.” An IoT-based E-Parking System for Smart Cities”[3].As present The growing number of automobiles on the road, along with poor management of existing parking space, causes parking issues as well as increased traffic congestion in urban areas. As a result, it is critical to design an automated smart parking management system that will assist the driver in swiftly locating a suitable parking place for his/her vehicle. Although there have been several studies on the development of smart parking systems, the most of them have not addressed the issue of real-time detection of improper parking and automatic collection of parking fines. A prototype of an internet-of-things-based E-parking system is proposed in this research. To address the aforementioned challenges and to provide smart parking management throughout the city, the proposed E-parking system employs an integrated component known as a parking metre.

Gayatri N Hainalkar , Mousami S Vanjale Electronics department AISSMS, IoT Pune, India Mousami S Vanjale,” Smart parking system with pre & post reservation ,billing and traffic app “[4].As present Various smart applications such as smart house, smart healthcare, smart irrigation, smart street lighting, smart parking system, smart waste management system, and so on are part of the development of a smart city. A smart parking system is one of these applications, and it is an integral aspect of the so-called smart city. A smart parking system allows you to reserve a parking spot in advance, which saves time hunting for a parking spot, reduces traffic congestion, reduces pollution, reduces driver frustration, and so on. In this study, a smart parking system based on the internet of things is proposed, which not only allows drivers to book a specific parking spot but also aids in automatic cashless billing, hacking notification, and post-trip booking. The suggested system also gives traffic police with updates on each parking location, which aids in the management of urban traffic problems. The suggested system includes all

of the characteristics required to improve an individual's quality of life in a smart city.

### III.OBJECTIVE

The primary goal of this initiative is to lower the risk of locating parking spaces in any parking location. It reduces the need for automobiles to go across city parking lots that are already full.

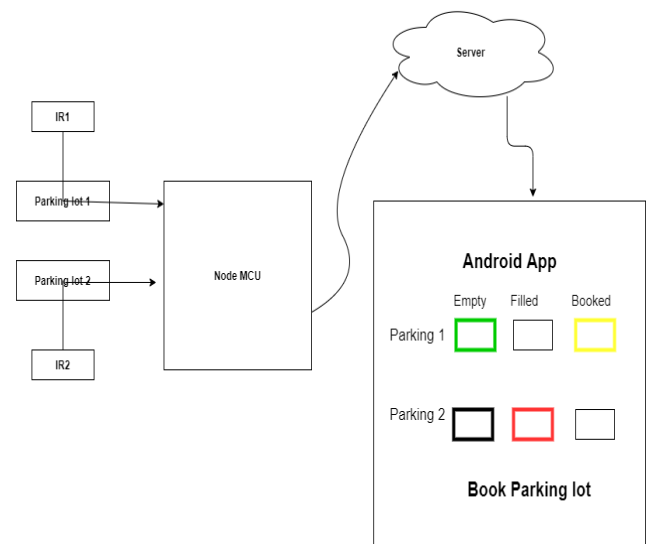
### IV.PROBLEM STATEMENT

With a rise in population, the number of vehicles increases, and unmanaged parking causes many problems, such as a lack of parking space and a high cost for parking reservations. To minimize this problem, we designed a system that maximizes parking resource utilisation while cutting costs, and the parking place is also within walking distance.

### V. PROPOSED SYSTEM

To optimize the parking system for both parking managers and drivers, we introduce a new smart parking system with static resource scheduling, dynamic resource allocation, and pricing models. Our work has made the following contributions: 1) increased parking resource utilisation, 2) increased parking revenue, and 3) improved driver parking experience by cutting cost, parking place finding, and walking times. Our work differs from the one that proposed a dynamic resource allocation model.

### VI.SYSTEM ARCHITECTURE



*Fig1 System Architecture*

## VII.CONCLUSION

The implementation of a smart vehicle parking system controlled by an Android application is discussed in this study. The component used to construct the parking system provides an efficient output at various stages of implementation. This interface is established between many components and it provides the user with the easiest manner to park the car. In the future, various changes can be made based on the needs of the system, and it can be expanded to multilevel and numerous parking places by making prospective changes in the hardware configuration, making it the most effective and secure parking system.

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