

# Survey on CAR Parking System

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## ABSTRACT

Car parking, a major problem being faced in metropolitan cities, dealing with issue of car parking space choice in parking lot of any mall or public space is need of the time. Authorization of driver or user is the basic rule used to park a vehicle in a parking place. Authorization card will be given to each user, which carries the vehicle number or other details. This paper focus on the survey of car parking system established by different authors. Here we discuss the different work done for the smart car parking system.

**Keywords:** Relay; smart parking, mobile notification, Transformer; Authorization card.

## I. INTRODUCTION

In recent years due to economic growth, almost every household on average at least one car, but to find parking spaces, is not so easy one thing. There is a common situation is to drive to the parking lot, obviously there are remaining parking spaces, but still need to spend a lot of time to find, this situation is not only a waste of time and fuel consumption and environmental protection. If the parking lot can provide a way to inform the driver of the remaining vacancies and guide to the empty parking spaces, not only can shorten the driver to find parking spaces time, fuel-efficient and environmentally friendly, but also effectively control the use of parking spaces[1][2].

Almost every cosmopolitan city in the world suffers from traffic congestion, which causes drivers frustration especially when searching for a parking space. Therefore, interest in this domain has become timely for scientists and researchers. Solving such a problem or even trying to alleviate it will certainly offer several benefits, such as reducing drivers' frustration and stress by saving time and fuel, and reducing gas emissions, which in turn, will affect levels of pollution. Current systems have created an

environment in which most of the modern statistics indicate shocking findings regarding the waste of fuel during the search for parking places. Most of the popular parking systems in the world use coins and tokens. However, despite the widespread use of these systems, they cannot be counted as smart parking, as they do not give precise information regarding booking a specific parking space. Usually, such a system relies on counting how many cars have entered the parking area and calculating the difference between this figure and the maximum number of parking spaces to estimate the number of spaces available[8].

These types of system usually need a person in charge of the location in case something goes wrong due to variations in the number of parking spaces, for example, due to badly parked cars or drivers parking in booked spaces. The field of smart parking service systems is part of intelligent transportation systems (ITS). The paper begins by considering the most general aspects of the topic and gradually focuses on the main purpose of this paper as mentioned in the abstract[10].

Building an advanced parking system is essential in a developing country like India where population and

automobiles are increasing rapidly. Usage of the automobiles is increasing very rapidly, but, the efficient parking slots are not available to park an automobile, which force the driver to park a vehicle on the roads, which is the reason for heavy congestion on the roads and slow movement of traffic. Although, lot of time is wasted in searching for parking slot and while searching unintentionally it effects environment by the emission of harmful and dreadful gases from automobiles. This emission adulterates the air by CO<sub>2</sub> and other gases by combustion of fuel. Also, while searching parking slots, movement of traffic becomes slow. To overcome all the problems mentioned above, we need an efficient parking system which would help to reduce traffic congestion and improve air quality at important locations where traffic rush is more.

In metropolitan areas, during peak hours when people going for offices and school, finding free parking slot becomes impossible that may lead to miss classes and important office meetings. This problem continues in densely polluted area, person wastes time and fuel in search of parking space. Higher increasing pollution and automobiles exigency an implementation of advanced parking system which will be tracked and monitored easily. Arduino based car parking will provide automatic management of parking lots without any error. This problem cannot be solved by adding parking spaces or by making multistory parking spaces. Instead we need to enhance our available parking system to advanced monitoring parking system.

“Arduino Based Car Parking” is an exigency because the most serious problem of any developing country is traffic (Congestion) on a road and pollution. In addition to this, this project will help to ensure the security of a vehicle, reduce corruption, man power and makes the whole parking as an automated system which will be error free and can reduce time of users in parking their vehicle. Because of, not properly maintained parking spaces, peoples are forced to park

their vehicle on the roads which result in heavy congestion as well as road blockage. Our automated parking provides the user-friendly environment to park a vehicle in a safe place because only an authorized person can park their vehicle. As congestion on a road reduces, it will automatically reduce pollution generated by vehicle in traffic. As the whole system is automated, there are no chances of any bribe to park a vehicle or anything. Hence, all the money will go to government account and better facilities can be provided.

## II. RELATED WORK

To alleviate the parking problems, smart parking systems must be implemented. In this paper, the background on parking problems is introduced and relevant algorithms, systems, and techniques behind the smart parking are reviewed and discussed. This paper provides a good insight into the guidance, monitoring and reservations components of the smart car parking and directions to the future development[1].

This paper purpose the architecture and design of Arduino based car parking system. Authorization of driver or user is the basic rule used to park a vehicle in a parking place. Authorized card will be given to each user, which carries the vehicle number or other details. If the user is authorized and space is available in the parking, then the parking gate will open and the user is allowed to park the vehicle in parking palce else the user is not allowed even the user is authorized person. If car is allowed to park, then mobile notification will be send to user about parking[2].

In this paper they purpose, a navigation and reservation based parking proposal system was developed for smart cities. The proposed method involves the development of small devices that send data to the internet using the internet of things (IoT) technology. The free parking space closest to the

current location is found by genetic algorithm. The proposed method is tested for different scenarios and accurate results are obtained[3].

This technique consists of sensor nodes which can detect the occupancy of parking space; relay nodes to communicate between sensor nodes and the server; server application to get data from the relay nodes and send data to mobile application; and a mobile application to display the parking areas and the occupancy of the parking areas on a map. The vehicle detection sensor node was developed with low cost and low power sensors and components. The vehicle detection sensor node was designed with magnetic sensor and a distance sensor. The magnetic sensor detects the presence of the vehicle and the distance sensor clarifies it[4].

They present an IoT based cloud integrated smart parking system. The proposed Smart Parking system consists of an on-site deployment of an IoT module that is used to monitor and signalize the state of availability of each single parking space. A mobile application is also provided that allows an end user to check the availability of parking space and book a parking slot accordingly. The paper also describes a high-level view of the system architecture. Towards the end, the paper discusses the working of the system in form of a use case that proves the correctness of the proposed model[5].

Parking is also an extra headache to the vehicle owners. With the help of Internet of things they have proposed a remedy to all these problems and to make the vision of a Smart City true. They have proposed an algorithm to control traffic congestion and the smart parking system. They have also discussed smart toll tax collection using Internet of things. The implementation of their proposed method is inexpensive[6].

### III. RESEARCH OVERVIEW

Proposed the system for car parking, in which initially system read the RFID tag, each time when the car user request for the parking. Basically it check the code in the data base, if the code matched in the database then it allocate the space for parking, After successfully reading the RFID code by using the RFID code reader, parking space is allocated to the car and all the details is update in the database. As in the existing system, every time there is need to check the user authentication and after that check the space in the parking, it may take time for allocation the parking space. Therefore in this system, frequent pattern rules are generated by using the apriori algorithm for the regular user. If the user is regularly park the car, then system automatically allocate the space for the car. One more feature is considered at the time of allocating parking space, system considered the car model, because each and every car required different space for parking. Therefore the car with highest model have the more priority to park.

### IV. CONCLUSION

In this paper shows the different techniques implemented for the car parking system. This paper shows the number of techniques and their details system for car parking. But this systems are failed to give the appropriate result for smart parking. Therefore in future we planned to proposed the system for smart car parking by using the RFID chip which use for scanning the car and automatically allocate the space for car.

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