

CONTROLLING AND MONITORING OF ADVANCE PARKING SYSTEM VIA IOT

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Abstract

The aim of this paper is to resolve the parking issue. The user usually wastes their time and efforts in search of the availability of the free space in a specified parking area. The parking information is sent to the user via notification. Thus, the waiting time for the user in search of parking space is minimized. RFID technology is being used to avoid car theft. Effective and clever way of automating the management of a parking system that uses the Internet of Things technology to allocate an efficient parking room. The IoT provides the device with wireless connectivity, and the user can keep track of the parking area's availability. With the rise in the population of automobiles in metropolitan cities, the major problem faced is road congestion.

Keywords: *Arduino, Automobile, IoT, Parking, RFID.*

I. INTRODUCTION

The Internet of Things (IoT) has the ability to transfer data through networks without involving human interactions. IoT allows users to use affordable wireless technology and also helps the user to transfer the data into the cloud. IoT helps the user to maintain transparency. IoT's concept began with the identity of items for linking different devices. It is possible to control or track these devices through computers over the Internet. "Internet" and "Things" are two prominent terms in IoT, where the Internet is a large network for connecting servers to computers[1]. The Internet makes it possible to send, receive or even share information with computers. Air pollution and traffic congestion are exacerbated by the parking epidemic. In today's situation, it is difficult for people to look for parking space in their everyday life. According to the latest report, there will be a rapid rise in the population of more than 1.6 billion vehicles around 2035[2].

Approximately one million barrels of world oil are burned every day. The smart parking system is therefore the main solution for reducing the waste step of the petrol. A response to the questions that are being posed. Smart parking can be a solution for minimizing the time and reliability of the commuter and the total cost of the fuel consumed in search of a parking space. In this, the data is collected from the sensor and the output is obtained by analyzing and

processing. This information is transmitted to the devices that collect the relevant information and send it to the Arduino system, which simultaneously gives the command instructions for the data to the specific devices[3]. Together with the GSM module, Arduino sends the signal to the servo motor, which further gives the user instructions and notification. When the user reaches the parking area, the reader module scans the RFID card issued to the registered user, thereby ensuring the protection of the user's identity. This helps the user to receive information about the parking space available, as well as an SMS message to the mobile number of the registered user.

It consists of three parts, the first part of which is the parking area with Arduino devices and IR sensors. With the aid of these machines, the user communicates with the parking area. The cloud web services that serve as a mediator between the user and the car parking area are included in the second section of the paper. The cloud is updated according to parking area availability. The administrator administers the cloud service, but the user may also access it to verify its availability. The consumer side is the third segment of the paper. The user is informed via SMS via the GSM module for accessibility. The user connects with both the cloud and the parking area. The user gets the notification when the parking availability is full which saves the time for the user[4].

The sensors used in IoT based smart parking systems store and access data from remote locations with the help of the cloud these factors give rise to cloud of things (COT). With the support of the mobile application the users from the remote location can book the parking slots, the nodes can be monitored and managed from any location by the device that we propose provides information about the availability of the parking slots. To boost the performance of a cloud-based parking system, an algorithm is used and network engineering technology is used. This algorithm is used to locate a parking space at the lowest cost. Considering the amount of available parking space and even considering the user's distance from the parking space. The user is able to access the cloud-based server directly and find the parking space details. The user is able to access the cloud-based server directly and find the parking space details. In order to access this information, users can also install an application on their mobile phones. With the assistance of this algorithm, it is possible to minimize the user's waiting time to find a parking space. In this article, security considerations are not included. A sensor node is used to locate the parking space along with the smart phone application. The device has high accuracy and reliability because wireless technology is used here. Onboard units are used in this scheme to connect with other vehicles. A mechanical lift raises the vehicle out of each of the many ways available for the user to park his vehicle[5].

A ticket key and id are given to the user and it is only known to the user which is used to retrieve the vehicle. As an RFID card is issued to the user, the user does not need to bring any paper tickets. The equipment used is economical here. To protect the privacy of the user, security features must be strengthened. The author of the survey's smart parking system has split detector system and vehicle sensors into two types of mathematics as intrusive and non-intrusive sensors. By tunneling below the lane, intrusive sensors are mounted in holes on the road surface. The surface of the road is not compromised by non-intrusive sensors and can be easily mounted and maintained. The intelligent parking system helps us overcome the grounding problems of traffic congestion and reduces the pollution from a vehicle as well. In

the real-time situation, a paper suggests a successful way of unfolding the problem of parking availability and reducing time consumption. In this, the data is transmitted locally to devices that filter the information. For the method and for assessment using machine learning algorithms, this signal is transmitted over the cloud. This paper uses a cell phone application that connects the user via Google API to the real-time traffic status. Hence, traffic congestion is avoided. A reservation facility for car parking is not included in this article[6].

Smart parking using IoT technology helps to designs and develops a real smart parking system which provides information for vacant spaces and also helps the user to locate the nearest availability. In order to improve protection, this paper uses a computer vision to identify the vehicle number plate. Before the car enters, the user can pay for the parking space via mobile payment. Insuring the parking reservation, therefore. The user is informed of the location of the parking lot, the number of open slots and all other relevant information. Efficient algorithms and techniques for extracting license plate text are used in the paper. An algorithm works on the detection of the vehicle entering the parking slot by the ultrasonic sensor and determines the minimum cost for the user. Smart reservation-based parking system facilitates the reservation of a vacant space that requires a reservation-based smart parking system (SPSR). This consists of the management of the host parking database that gathers and stores data about the identity of the driver and the place of parking. A notification will be sent to the user via the web service given to the user by the administrator when the parking reservation period is about to expire. The only downside is that any other users will occupy a reserved parking space to prevent the user from being detected by these QR scanners[7].

It helps us to propose a way in which the user can reserve his parking space by mentioning the destination and the vehicle type with the help of mobile applications. The booking details are stored in the cloud, which uses GPS to find the shortest route from the user to the parking room, and the user's location is periodically updated in the cloud. The RFID is scanned as the user enters the car parking area and the user is allowed into the parking room. The cloud server handles the billing. The primary downside is that the car parking space must be registered for the driver to use it in the smart parking scheme[3].

This paper describes the implementation of wireless sensor networks (WSN) used in a car parking system with the help of a server which is using xbee zigbee. The vehicle's parking system can detect the car which is parked in the parking slot. The aim of this project is to make it cost effective and user friendly. Car parking system helps the user to sustain the data with 90% of accuracy. The Smart Car Parking System offers a detailed parking solution for both the driver and the parking area administrator. It provides a reserved parking slot feature and recognizes reserved users. Depending on the size of the car, drivers are able to navigate to the nearest parking spot. Based on an hourly, regular, weekly or monthly basis, the user can reserve parking slots. The algorithm is designed to calculate the size of the nearest parking space. For booking and pay-as-you go service, the mobile application supplied to the customer is used.

II. CONCLUSION & DISCUSSION

The concepts of smart cities have always been a dream. There have been advancements made from the past couple of years to make smart city dreams come reality. The advancement of the internet of things and cloud technologies has given rise to the new possibilities in terms of

smart cities. Smart parking facilities have always been the core of constructing smart cities. The system provides a real time process and information of the parking slots. This paper enhances the performance of saving users time to locate an appropriate parking space. It helps to resolve the growing problem of traffic congestion. As for the future work the users can book a parking space from a remote location. GPS, reservation facilities and license plate scanner can be included in the future.

III. REFERENCES

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