

MAHENDRA INSTITUTE OF ENGINEERING AND TECHNOLOGY

SMART PARKING

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1.ABSTRACT:

Efficient and smart way to
automate the

management of the parking system that allocates an efficient parking space using internet of things technology. The IoT provides a wireless access to the system and the user can keep a track of the availability of the parking area. With increase in the population of the vehicles in metropolitan cities, road congestion is the major problem that is being faced. The aim of this paper is to resolve this issue. The user usually wastes his 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 minimised. RFID technology is being used to avoid car theft.

2.KEYWORD:

RFID, Arduino, GSM Module, IR Sensor, cloud database

3.INTRODUCTION TO SMART PARKING:

Internet of thing (IoT) has the ability to transfer data through network without involving human interactions. IoT allows user to use affordable wireless technology and also helps the user to transfer the data into the cloud. IoT helps the user to maintain transparency. The idea of IoT started with the identity of things for connecting various devices. These devices can be controlled or monitored through computers over internet. IoT contains two prominent words “Internet” and “Things”, where Internet is a vast network for connecting servers with devices. Internet enables the

information to be sent, receive or even communicate with the devices. The parking problem causes air pollution and traffic congestion. In today's scenario, parking space is hard to search in a day to day life for the people. According to the recent survey, there will be a rapid increase in the vehicle's population of over 1.6 billion around 2035. Around one million barrels of world's oil is being burnt everyday.

Arduino sends the signal to the servo motor along with GSM module which further gives instructions and notification to the user. When the user enters in the parking area, RFID card allotted to the registered user is scanned by the reader module thus ensuring the security of the user identity. This enables the user to get the information of the available parking space as well as SMS notification to the registered user's mobile number. It consists of three parts where

first part is the parking area which include Arduino devices along with IR Sensor. The user interacts with the parking area with the help of these devices. The second section of the paper includes the cloud web services which act as a mediator between the user and the car parking area. The cloud is updated according to the availability of parking area. The cloud service is administered by the admin but it can also be viewed by the user to check the availability. The third section of the paper is the user side. The user gets notified for the availability via SMS through GSM module. The user interacts with the cloud as well as parking area. The user gets the notification when the parking availability is full which saves the time for the user.

4.SMART PARKING SYSTEM USING IOT:

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. The user need not carry any paper ticket since an Rfid card is given to the user. The technology used here is economical. Security features must be improved to protect the user's privacy. The author of smart parking system the survey has divided detector system and vehicle sensors into two math categories as intrusive sensors and non - intrusive sensors. Intrusive sensors are installed in holes on the road surface by tunnelling under the road. Non-intrusive sensors do not affect the surface of the road and it can be easily installed and maintained. Smart parking system helps us to resolve the grounding problems of the traffic congestion and it also reduces the emission from a car.

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. This paper uses a computer vision to detect vehicle number plate in order to enhance the security. The user can pay for the parking space prior to the entry of the car through mobile payment. Thus, insuring the reservation of the parking. The user is notified about the parking location, number of slots available and all other relevant information. The paper uses efficient algorithms and techniques for extracting license plate text. An algorithm operates on the ultrasonic sensor detection of the vehicle entering into the parking slot and calculates the minimum cost for the user.

Smart parking system based on reservation allows the reservation of a vacant space which involves smart parking system based on reservation (SPSR). This consists of host parking

database management which collects and stores data about the driver's identity and parking location. When the parking reservation time is about to expire a notification will be sent to the user through the web service that has been provided to the user by the admin. The main drawback is that some other user can occupy a reserved parking space to avoid this QR scanners are used to identify the user.

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 will be stored in the cloud which finds the shortest path from the user to the parking space , the location of the user is updated regularly in the cloud with the help of GPS.

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 xbeezigbee. The car 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.

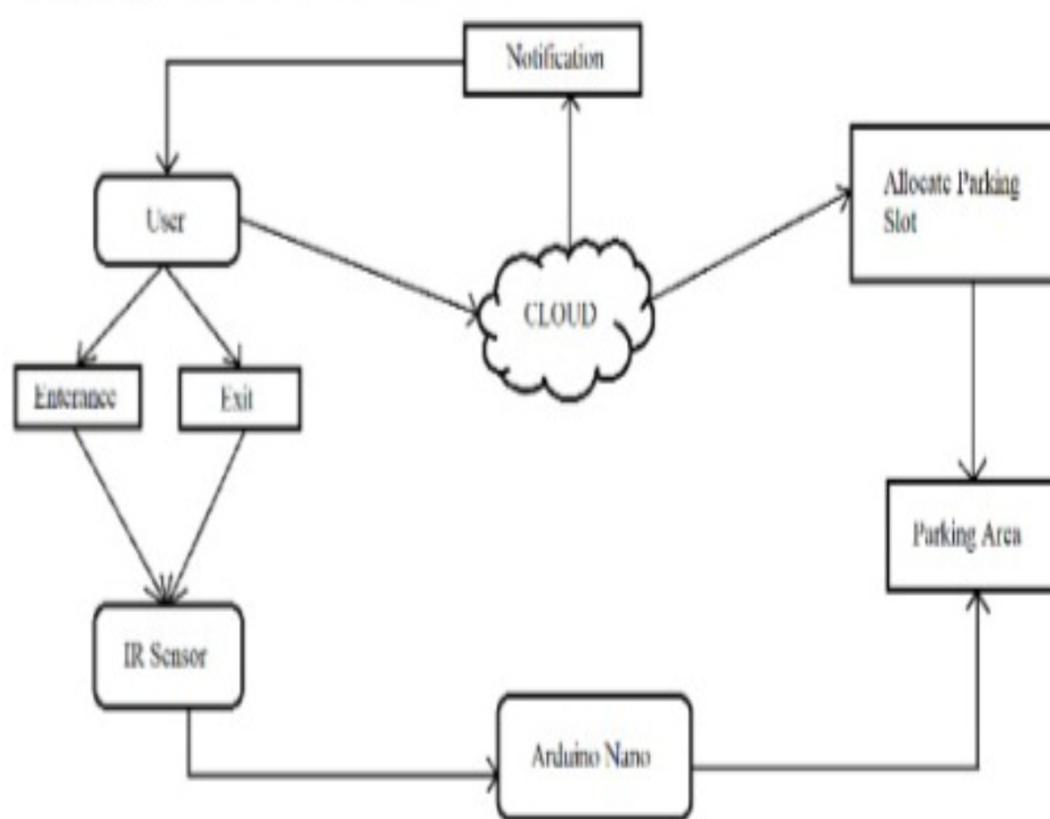
An algorithm is designed to identify the nearest parking according to the size. The mobile application provided to the user is used to reserve and pay-as-you go service.

5.SYSTEM ARCHITECTURE OF SMART PARKING:

A. PROPOSED SYSTEM

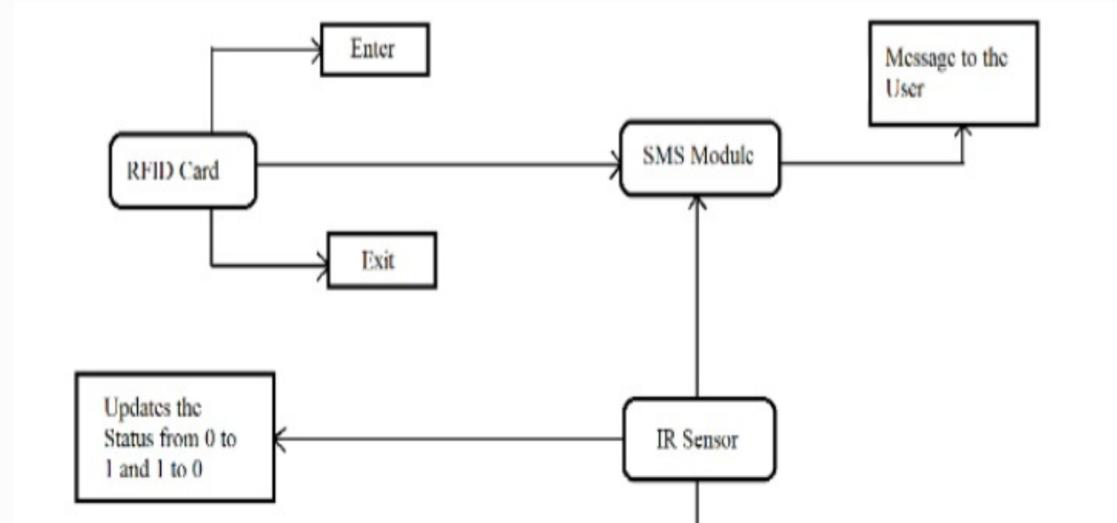
It consists of three sections: first section is the parking area which includes Arduino devices along with IR sensor. The user interacts with the parking area with the help of these devices. The user cannot enter the parking area without the help of

RFID card. The second section contains the cloud-based web services which acts a mediator between the user and parking area. The cloud is updated depending upon the availability of the parking area. The admin administers the cloud services and it can also be viewed by the user for checking the availability. The third section is the user side. The user gets notification on the basis of the availability via SMS through GSM module.



B. HARDWARE:

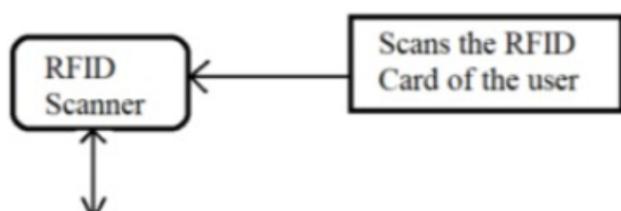
The three main hardware components used are GMS module, RFID card, IR sensors. A user is allowed inside a parking space only if the user has a RFID card. RFID card contains the information of the registered user. As the car enters the parking slot, reader module scans the registered user's RFID tag. The data is sent to the arduunio for checking the availability of the car parking and simultaneously, the user is notified through SMS about the status of the parking area. The GSM module sends the message according to the availability. IR sensor sends the signals according to the presence of the vehicle

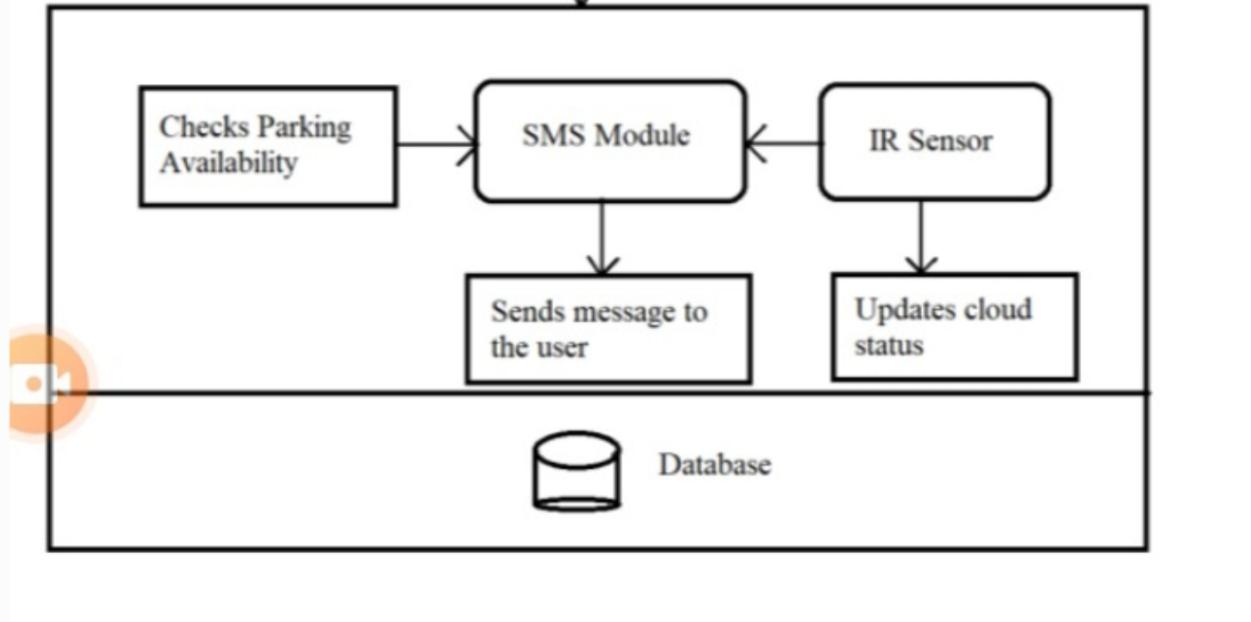


Detects the car

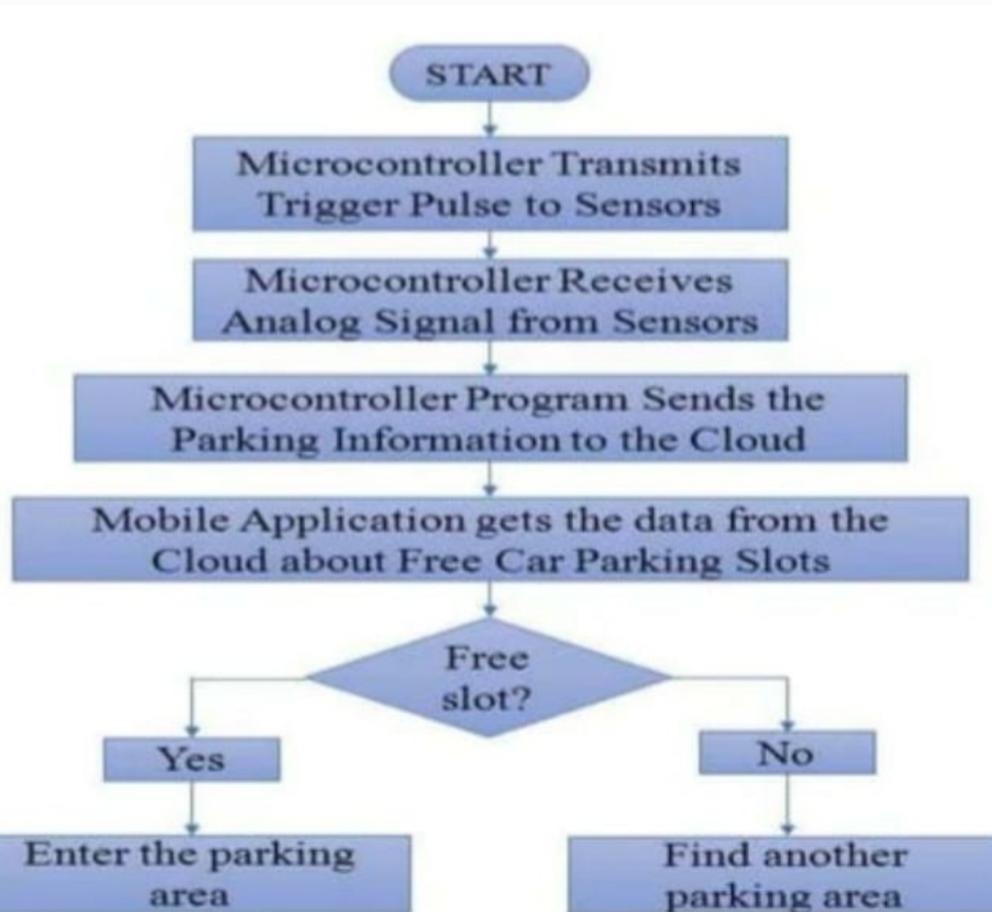
C. SOFTWARE:

The cloud server acts as a mediator between the modules. The cloud server is connected to the Wi-Fi module. The user receives messages through the SMS module while the car enters and exits the parking area using RFID card. The messages sent by the SMS module are managed by the cloud. As soon as the IR sensor detects the car, the status of the cloud will be updated from 0 to 1 and when the car leaves the parking area the status of the car will be updated from 0 to 1.





6.FLOWCHART:



7.APPLICATION :

The smart car parking system

Can be implemented in

- Shopping malls
- Restaurant
- Theatres



8.ADVANTAGES:

- Use Smart Parking Protection Easily.
- Monitor Your Parking Lots.

- Manage Parking Lot Using Real-time Data.
- Minimize Carbon Footprint.
- Maximize Revenue.
- Save Time, Gas, And Money.
- Integrate Them Into Any Smart City System.

9.DISADVANTAGES:

- Expensive Construction & Installation.
A parking management system can cost a lot of money.
- Requires Regular Maintenance. The parking systems are usually automated, but they require regular maintenance to ensure everything is working smoothly.
- System Breakdown.

10.REFERENCE :

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11.CONCLUSION :

- 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 dream to reality.
- The advancement of 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.

THANK YOU !!!