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IOT Car Parking System

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ABSTRACT

Smart parking system overcomes the parking issues that exist in public places such as malls, multiplexes etc., by the user to find the nearest slot in the parking area and provides information about availability of parking slots in that respective parking area. As vehicular traffic increases, the lack of smart parking zones further causes problems like fuel wastage and traffic congestion. The Internet of Things has already been used to provide Smart car parking solutions. However, these solutions have the drawback of not being scalable or accessible at all times. Also, the reservation models that have also been suggested are not always practically implementable.

I. INTRODUCTION

Internet is a thing which is making our lives easier as well as faster. The internet of things allow us to connect the sensors with the internet. Hence using this we can implement many applications. The parking system is one of them. The major problem that people face today is to park their vehicles, whether it is a shopping mall, airport or railway station. If the user don't find the right place for parking. Then it leads to the problems. This type of situations may increase pollution and can waste the valuable time of users.

The IoT based car parking solutions have the drawback of not being scalable or accessible at all times. The reservation models are not always practically implementable. A solution using video sensors are expensive and short messaging services, USSD may not be available in multi store. In the earlier system presence of the person was necessary for the management of the parking lot that is for checking available parking slots and occupied parking lots all these were done manually.

Sometimes this may consume lot of time and customer has to wait for a long time for the allocation of parking lot.

The proposed Smart Parking system consists of an on- site deployment of an IOT module that is used to monitor and recognize and signalize the state of availability of each single parking space. This application also allows an end user to check the availability of parking space and book a parking slot accordingly. The system is designed in such a way that it is applicable for covered parks, open parks and street side parking. The cloud based IOT architecture for smart parking system which contains cloud storage to store information about status of parking slots. In this application we manage the slots of parking online and the money for parking is collected by automatic time calculation. Infrared sensor is one type of LED which emits infrared rays generally called as IR transmitter.

II. EXISTING SYSTEM

Short Messaging Services, USSD is also used which is dependent on signal availability However, mobile network may not also be available in multi storey buildings. Another uses a reservation system. While it may enhance productivity, it also has the drawback that slots must be reserved well in advance. A few solutions using video sensors have been pro- posed, but these are expensive and lack in ease of access or fault tolerance Manual way of identifying slots. Because of this it is hectic to manage the parking in malls and there is no efficient space utilization of parking space. A few solutions using video sensors have been proposed in existing system, but these are expensive. Other solutions lack in ease of access or fault tolerance.

III. PROPOSED SYSTEM

The proposed Smart Parking system consists of an on- site deployment of an IOT module that is used to monitor and recognize and signalize the state of availability of each single parking space.

This application also allows an end user to check the availability of parking space and book a parking slot accordingly. The system is designed in such a way that it is applicable for covered parks, open parks and street side parking. The cloud based IOT architecture for smart parking system which contains cloud storage to store information about status of parking slots. In this application we manage the slots of parking online and the money for parking is collected by automatic time calculation. Infrared sensor is one type of LED which emits infrared rays generally called as IR transmitter. The solution proposed here utilizes the Internet of Things. It may be defined as connecting things present in the physical world with sensors and then connecting them to a network through wired or wireless means Moreover, the code can be recycled for multiple boards making the proposed solution cost effective, scalable and versatile.

IV. LITERATURE SURVEY

[1] Cloud Connected Smart Car Park. IEEE International Conference on I-MAC on 2017.
Shyam Ravishankar, Theetharappan.

This paper proposes a solution which is cost effective, scalable and robust to indicate number of free parking slots in a parking area.

[2] IoT based Vehicle Parking Manager". IEEE International Conference on Cloud Computing Data Science and Engineering 2017.
Jatin Desai, Aditya Bhanje, Sneha Biradar, Dion Ferandes.

This paper proposes a feature that includes unique identification for each vehicle, display of parking slots on mobile application, making reservation and maintenance of a database for management.

[3] IoT based Smart Parking System. IEEE International Conference on IOTA 2016.
Abhirup Khanna, Rishi Anand

This paper describes high level view of system architecture and working of a system in the form of use case.

[4] A Reservation based Smart Parking System".IEEE International Conference Computer Communications 2011.
Hongwei Wang, WenboHe
This paper provides proposed reservation based parking policy that has potential to simplify the operations of parking system as well as traffic congestion caused by parking searching.

V. METHODS AND MATERIAL

The system consist of following
modules: (1)Sensor module

(2)Networking module
(3)Middleware module
(4)Mobile responsive

Application

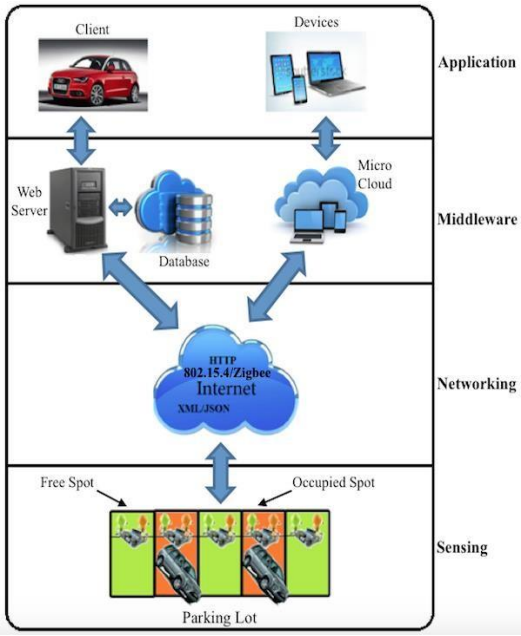


Figure 1. Smart car parking system

Sensor module

Sensors are embedded into a parking slot it will sense the car presence when the car arrives and all these information's are sent to NodeMcu IoT module.

Networking module:

In networking module, we use NodeMcu Iot module, which are connected to the sensors module. Node Mcu is a IoT platform. It includes firmware, which runs on the ESP8266 Wi-Fi module from Espressif Systems, and a hardware, which is based on ESP-12. It transfers all the data's in the form of Boolean values to web services.

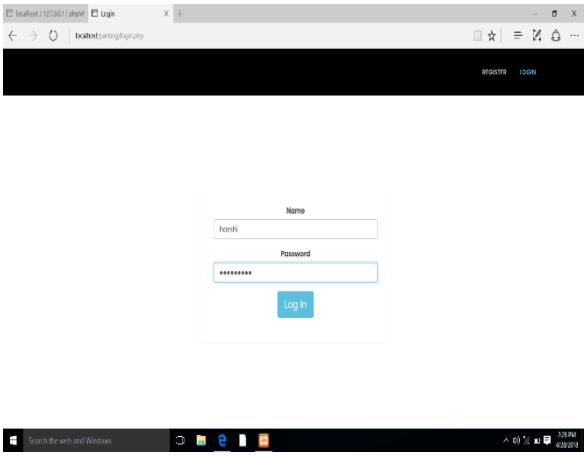
Middleware module:

In middleware module, we have web services that interacts with the IoT module and centralized server that maintains a database to store information about the parking slots. WCF web service is used to create service-oriented applications for user.

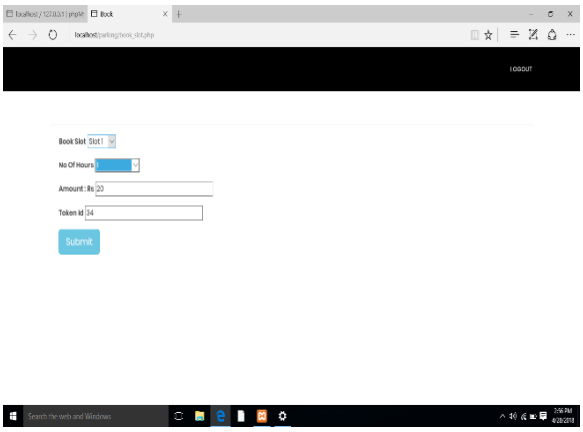
Mobile responsive application:

A monitor or a Tab is used to display the information about admin side interface. Admin is responsible for updating the parking slots details. User can access all these information and can connect with smart parking system with their smart phones or with some brows

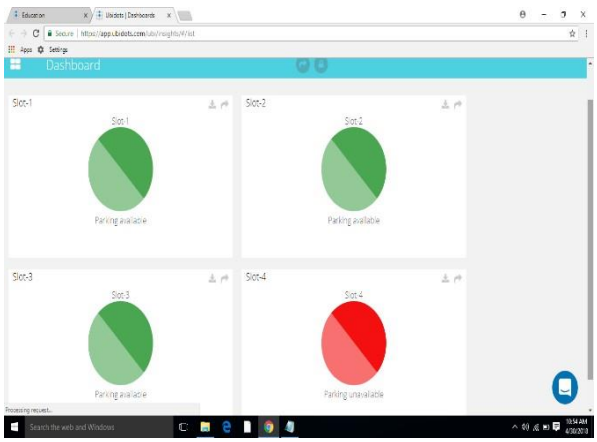
VI. RESULTS AND DISCUSSION



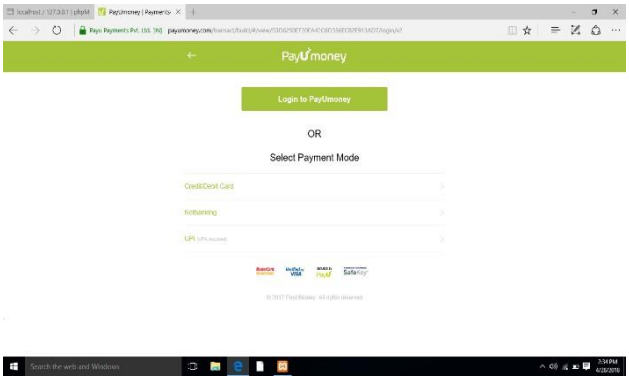
Snapshot 1. Login Page



Snapshot 2. Booking slot.



Snapshot 4. Availability and unavailability of parking slots.



Snapshot 5. Payment mode.

Snapshot 3. Parking the car in booked slot.

VII. CONCLUSION

The concept of smart parking system is designed to overcome the problems of finding parking slots for vehicles and to provide assistance to both customer as well as the management of the parking system and also to view the current status information using mobile application which is more efficient and less time consuming.

VIII. REFERENCES

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