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SMART PARKING SYSTEM USING QR CODE

Priyanka Khairnar[1], Anjali Khairnar[2], Bhavesh Mahajan[3], Nachiket Shinde[4]

Department of computer

Guru Govind Singh College of engineering and research center Nashik

In this paper we propose a smart parking system detecting and finding the parked location of consumer's vehicle. The increasing number of vehicles on the road along with the mismanagement of available parking space leads to the parking space leads to the parking related problems as well as increased traffic congestion in urban areas. Smart parking system is solution to the problem. We are developing mobile application for users. User can check our parking slot using the mobile application. The LCD display is used to monitor the parking space and display the details of the parking space by using the IR sensor. Arduino Uno as the microcontroller unit to which the servo motors, LCD display and IR sensors. This system improves the overall efficiency, reliability, and convenience and reduces the precious resources in searching for parking spaces and pollution.

Keywords: Arduino UNO, Smart Parking System, Android Application, IR Sensors, QR code.

I. INTRODUCTION

The most basic definition of the internet of things (IoT) encapsulates anything that can be connected and controlled or monitored over the internet. IoT includes a network of sensors, smart devices, actuators which makes our day-to-day work more manageable. Activities and processes can be remotely tracked, monitored, and controlled over the internet. IoT extends the use of the internet by creating a network of 'Things' that can interact. It provides a vision where things become intellectual; with the help of cloud computing, IoT becomes highly scalable and smart. Any number of nodes can be added or removed from the network; data

can also be fetched, analyzed, and monitored in real-time, reducing human intervention and efforts. A significant problem that citizens worldwide face today is finding a nearby parking lot.

[1] This paper discusses problems faced with traditional parking lots. It also lists the impact and inconvenience caused because of inefficiency in traditional parking spaces. In this paper, the authors have suggested and designed a Smart Parking System using IOT Technology, which will allow the users to find a vacant parking slot in a given area. It also avoids needless traveling through already filled parking lots. In this paper, the authors present a novel parking system with IOT over Wi-Fi and RFID. [2] In this paper we are discussing Radio-frequency identification (RFID) is the wireless non-contact use of Radio Frequency Electromagnetic Fields to transfer data. It is basically used for the purposes of automatically identifying and tracking tags attached to objects. RFID technology uses RFID tags, RFID readers and RFID antenna. The application can be used for managing and controlling various reports and operations of parking system. [3] Although ample amount of research works on the development of smart parking system exist in literature, but most of them have not addressed the problem of real-time detection of improper parking and automatic collection of parking charges. In this paper, a prototype of internet-of-thing based E-parking system is proposed.

II. OBJECTIVES

The basic objective of a smart parking solution is to identify a vehicle's presence or absence in a particular parking space. The system is efficient to check their parking slots on application. When driver knows exactly where they need to go it reduces the unnecessary driving. It is available to identify the occupied and unoccupied parking space. It is safe to provide time efficient and safe parking. Smart parking system is improves the parking management. Many cities around the world have already started the implementations of smart parking making life easier. It is helps driver to efficient and effective search for parking spaces.

III. PURPOSE

One goal of smart parking is to reduce the time taken and the hassle factor of locating an available parking space. Being able to accurately direct a driver to an available space has many environmental benefits; it reduces co2 emission, noise and other pollutants.

It can be frustrating, especially at peak times, driving around town looking for available spaces. The inability for someone to locate a parking space may result in lost custom or influence them to shop at alternative locations. The ability for a shopper or visitor to quickly identify a space reduces the friction and improves the overall experience. The convenience factor is of particular importance for spaces reserved for disabled drivers, public service or emergency vehicles.

IV. THEORETICAL BACKGROUND

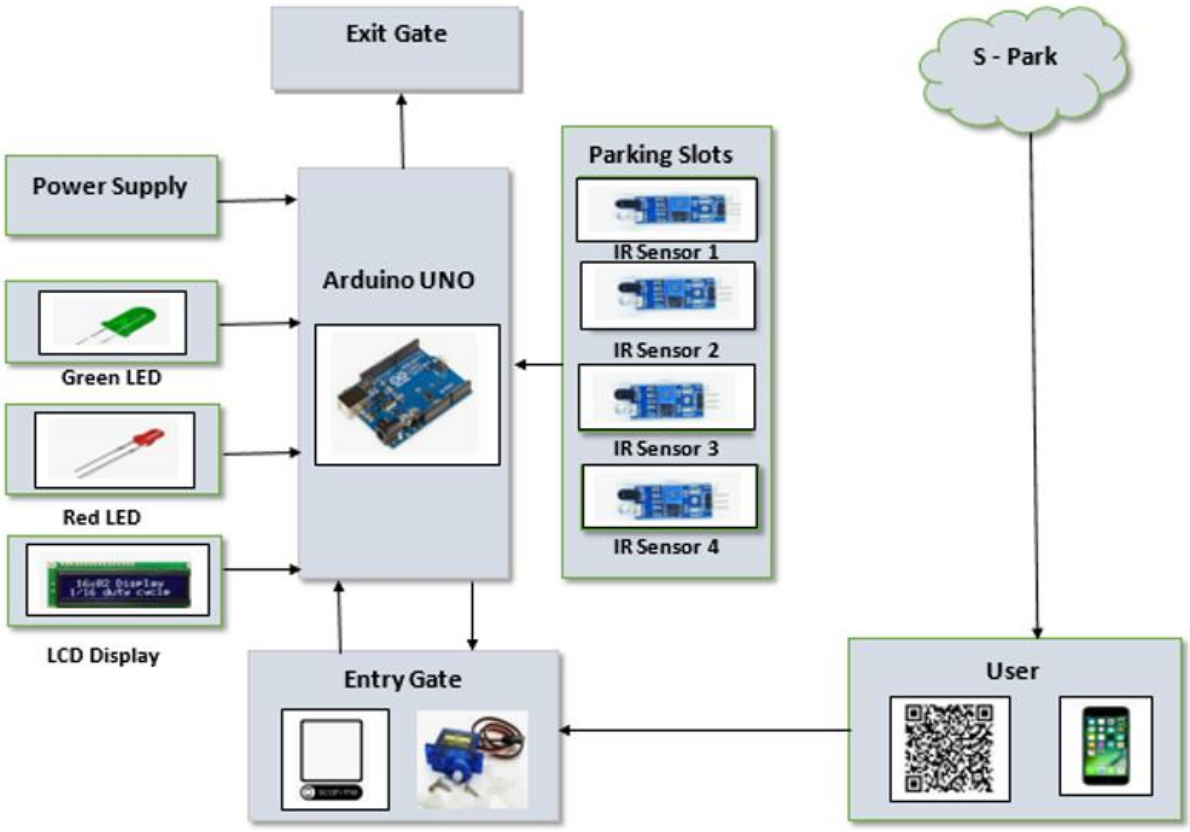
The peoples are facing problem now a days is parking vehicle at secure place. Smart parking system is solution to the problem. Smart parking system using QR code is a system developed with the help of QR code and using Arduino UNO and IR sensors.

Important meeting might be ignored due to the fact unavailability of free parking space or a few different unauthorized character parked his automobile in wrong region. Lot of time and money were wasted to remedy it however until now didn't get the pleasant solution. So, the superior parking gadget is an very essential and crucial method to this problem. This solves many troubles like, it can reduce congest in of automobile on roads which in return helps fast shifting traffic, reduces time waste on traffic, less burning of fuel which once more results in god pleasant of air, disabled and antique humans can locate parking vicinity without difficulty.

This aims to provide customers with user friendly online platform to book nearest parking slot for their vehicle. It will be give a users to continuous updating parking information of parking slots available with the use of application.

V. DESIGN OF SYSTEM

In the system architecture you can see an application named as s-park on which you can check the number of slots available and then go to book after clicking on book the QR code is generated for user. Then user should visit the parking area and Scan the QR code through the scanner available at parking area then the system allocate slot for user and then user enter in the parking lot and park the vehicle at the parking slots where IR sensors available to detect the parking and removal of the vehicle. All the sensors, LED's, LCD Display are connected to Arduino UNO.



- MODULE

Arduino UNO

Arduino is a microcontroller used for the power supply to the IR Sensors , LED ,
Servo motor.

IR Sensor

An infrared sensor is basically an electronic device which is used to detect the presence of objects. Infrared light has emitted by this device. If this device does not detect any IR light reflected back that means there is no object present. If the light is detected by the sensor there is an object present

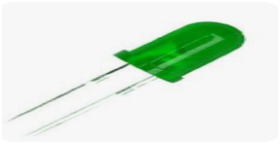
Servo Motor

It is a rotator device that allows the control of angular as well as linear motion. A Servo Motor has used for the opening and closing of the gate. Servo drive transmits electrical signals to the Servo Motor for producing motion.

LCD Display

The LCD display is used to monitor the parking space and display the details of the parking space by using the IR sensor.

LED's:

The system is provided with the LEDs for indication of Empty or full parking space. When there will be no car parked in the slot, the LED will glow GREEN that is the parking slot is available for booking. When the car has parked or the slot is already booked.  

VI. IMPLEMENTAION METHOD

- Method For Application:

Step 1:- Start
Step 2:- Open application
Step 3:- if already registered then
Sign in
else
Sign up
Step 4:- Enter details in profile
Step 5:- if slot is available then
Book
else
Display No slot available
Step 6:- Generate QR code
Step 7:- Scan QR code

Step 8:- Park vehicle

Step 9:- Stop

- Implementation Method For Parking area :

Step 1:- Start

Step 2:- Allocate slot

Step 3:- If detect Vehicle is entering then count =+1

else

Stop

Step 4:- If detect Vehicle is leaving then Count=-1

else

Stop

Step 5:- Update Database

Step 6:- Stop

VII. CONCLUSION

By our Study we have came to a Conclusion that for our project we are expected to develop an application for the user from that application user can able to check whether the parking slot for park his/her vehicle is available or not. And if available book the slot for vehicle according to the type of vehicle. Slot booking system expected to be QR code based that mean QR code is generated for user and scan QR code at the parking system and confirm your slot. After that IR sensor are used to detect the vehicle and update to the database accordingly.

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