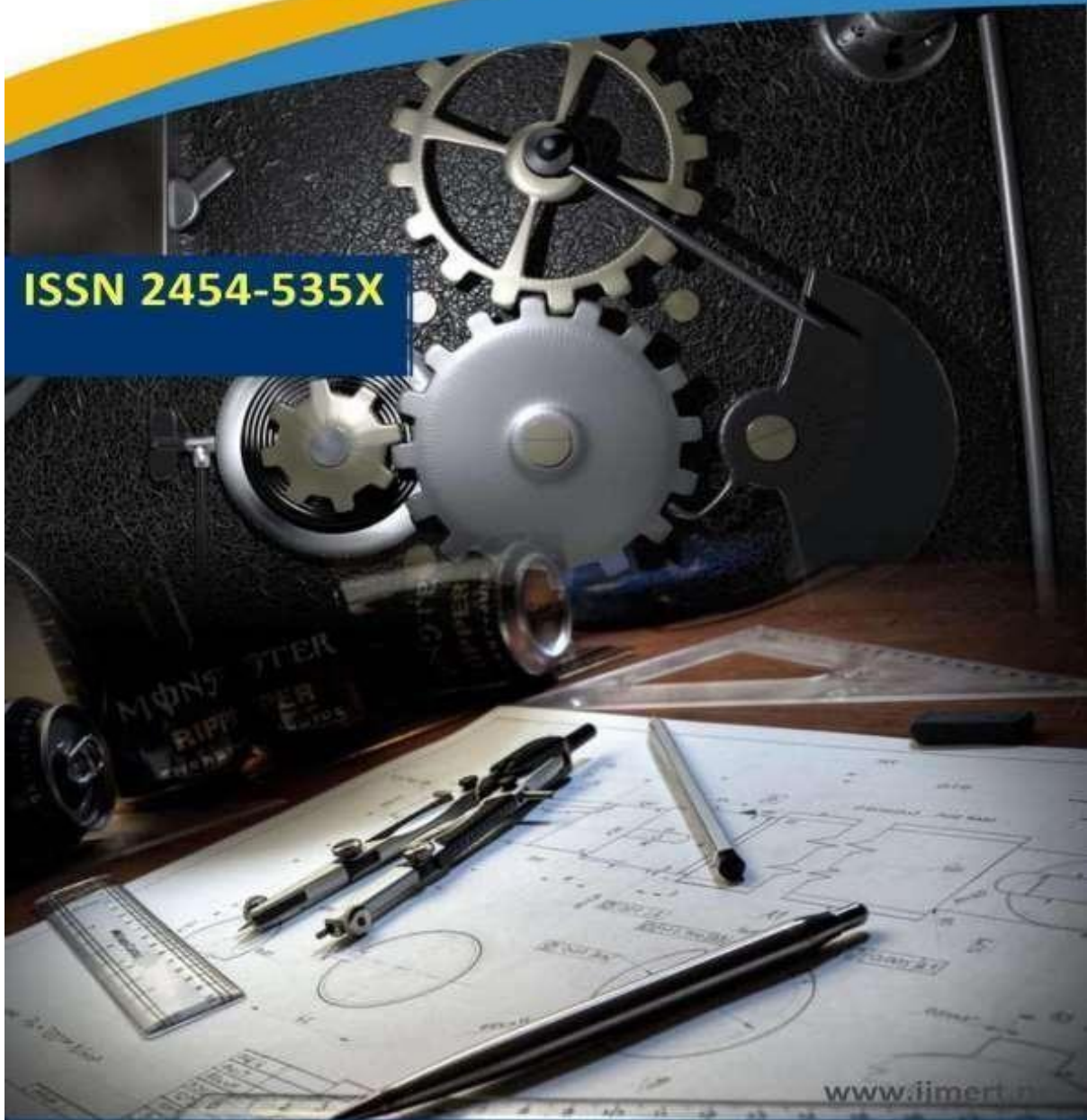




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PARKING SLOT AVAILABILITY CHECK OVER IOT

Mrs. D.DIVYA¹, G. HARI VAMSI², G. DIVYA SREE³, P. NAGENDRA⁴, T. N VAMSI
KRISHNA⁵, P. LOKARTHIK⁶

¹Assistant Professor , Dept.of ECE, PRAGATI ENGINEERING COLLEGE

²³⁴⁵⁶UG Students,Dept.of ECE, PRAGATI ENGINEERING COLLEGE

ABSTRACT

Today, due to the growth of IoT(Internet of Things) the concept of smart cities has gained considerable popularity. To maximize the productivity and reliability of urban infrastructure consistent efforts are being made in the field of IoT. Many problems such as traffic congestion and road safety are being solved by the use of IoT. Today peoples face a common problem in the parking area to find a free parking slot in cities. In this study, we are designing a Smart Parking System, which will enable the user to find Parking slots in a given parking area. It also avoids unnecessary traveling through filled parking lots. Smart parking system with the help of IoT over Wi-Fi. This intelligent parking system consists of an IoT module that helps to track the availability of each single vacant parking space. We used an Arduino Uno, which can be embedded over the Wi-Fi module to establish a connection to the internet. This technology helps to transfer the data live. In this smart parking system, with the help of digital IR sensors, the system gets the status regarding the parking slot status, whether it is occupied or vacant. This sensor sends the collected data to the microcontroller. Later the data are processed, and the status of parking slots is updated in the central database. The IR sensors need to be deployed in the appropriate locations so that the system can cover all the parking slots. Each parking slot is identified with a unique id to identify them on the network.

INTRODUCTION

Recent research in metropolitan cities alongside increase in population there's large scale of vehicles on roads. Hence this results in annoying issue for the drivers to park their vehicles because it is extremely difficult to seek out a parking slot quickly. The drivers usually waste

time and energy for parking their vehicles and eventually finding an area on streets through luck. In worst case, people fail to seek out any parking lot especially during peak hours and festive seasons. And introduces the usage of android application using Smartphone for the interaction between the smart parking system and therefore the user. Moving towards smart city application, smart parking may be an exemplar for a standard citizen of how the Internet-of-Things (IoT) are going to be effectively and efficiently utilized in our daily living environments to supply different services to different users. Any citizen may use his Smartphone and a computer having internet to access the smart city application from anywhere within the world to seek out a free parking spot within the city and obtain to understand the which parking spot remains available. This emphasis on efficient car parking management through remote parking spot localization and fast car retrieval. Currently, Car parking system is predicated on reservation basis, technique features a drawback in terms of your time and space. This system is often used into multi-parking management which may be to manage both outdoor and indoor parking lot and single-parking management which usually targets indoor parking slot.

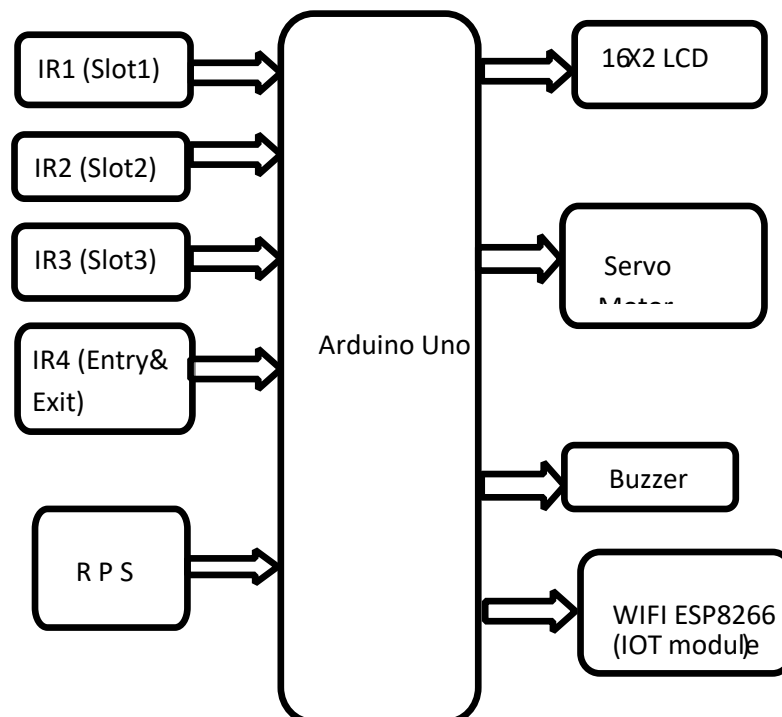


Figure.1 Block Diagram

LITERATURE SURVEY

1.A Smart Parking System using Deep extreme learning and the IOT

Tekouabou focused on a smart parking system using Deep extreme learning and the Internet of Things. In order to locate unoccupied parking spaces, they have employed the neural network technique, which is similar to performing random distortion among the crucial computation delays the tool utilization. Three layers were employed in the model, with the data collecting layer serving as the initial input layer.

2. CPF Parking System Based on IOT

A Car Parking Framework (CPF) based on IoT has been proposed. The framework combines an automatic car parking management system with the integration of networked sensors and actuators along with Radio Frequency Identification (RFID). The CPF provides vehicle guidance, payment facilities, parking lot retrieval, and security. The system uses a hybrid communication method instead of regular nodal communication. Due to that, the system has a low energy consumption rate with low implementation costs.

3. GSM a Secured Parking Reservation System

Using Global System for Mobile(GSM), Rahayu and Mustapa proposed a secured parking reservation system. The system is comprised of a security reservation module and a parking space monitoring module. The security reservation module handles the reservation of specific parking lot. The user needs to send a Short Message Service (SMS) with provides specific instructions to reserve the parking lot. The parking Global System for Mobile lot monitoring module provides the user with a layout animation of parking space occupancy status, enabling the user to choose a parking lot for reservation. The system generates a password, which is required during enter and exit points.

4. A WSN based Smart Parking System

Orrie et al proposed a (WSN) Wireless Sensor Networks based Smart Parking System. The system utilizes a hybrid self-organization algorithm for WSN technology. The system has been designed to be more energy efficient during wireless communication. As a result, it enhances the life expectancy of WSN nodes and overall WSN. This sort of SPS aids the users by guiding them to the nearest parking lot and the facility to reserve it. The system utilizes both web and smartphone applications to provide SPS facilities to the users.

5. SPS based on image processing to detect unoccupied parking spaces

Al-Kharusi presented an SPS based on image processing to detect unoccupied parking spaces. The system uses cameras as sensors to detect parking lot occupancy. The system uses (RF) Radio frequency communication to send the camera's data to the system's central processing unit. In RF communication with a range of around 1000 feet (300 m) has been achieved using a high gain omnidirectional antenna of 12 dB.

PROPOSED SYSTEM

Here three IR sensors placed at parking slots to identify vehicle parked or not. One more IR sensor placed for entry path and exit path. When car enters from entry side Arduino checks for vehicle parking status. If anyone slot empty then entry gate will be open. If no slot empty then entry gate will not open. While Leaving from slot gate will be open by triggering exit IR sensor. Slots parking status will be displayed on LCD continuously. WIFI (ESP8266/IOT) module sends parking information to IOT server. User can see data in IOT server from anywhere. Here we use Bylnk IOT to know the Slots information and bylnk also used for code process.

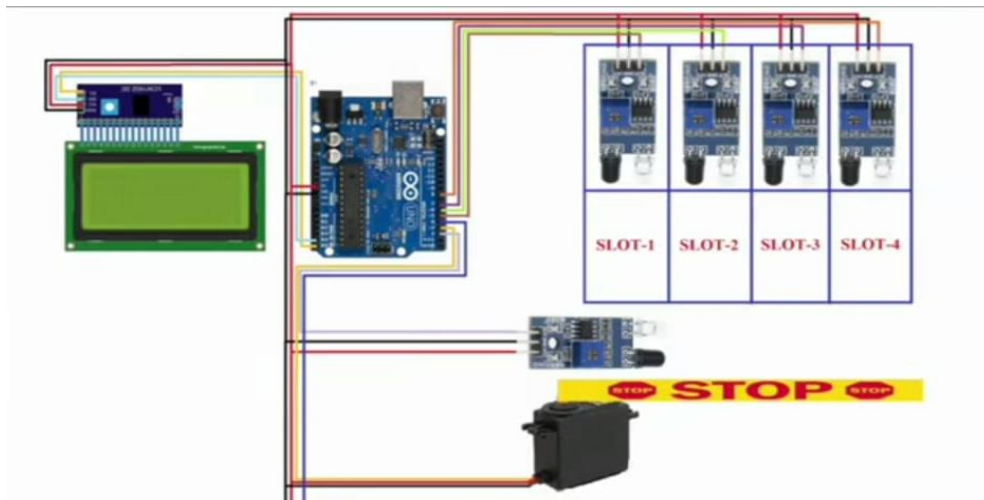


Figure.2 Schematic Diagram

RESULTS

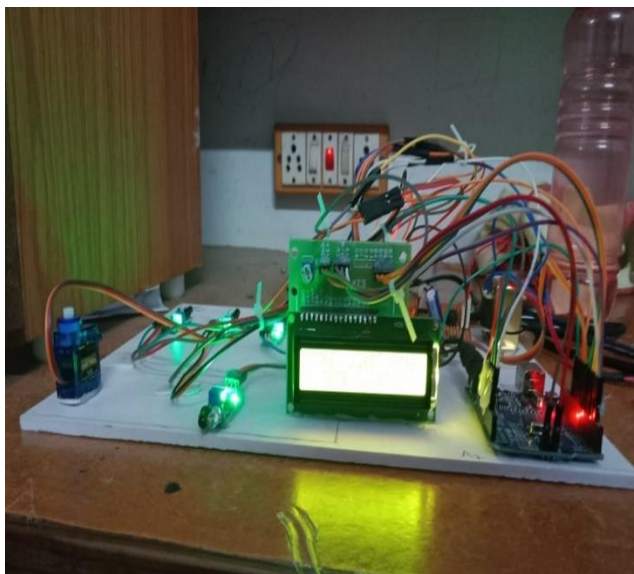


Figure.3 Circuit Design of Parking Slot

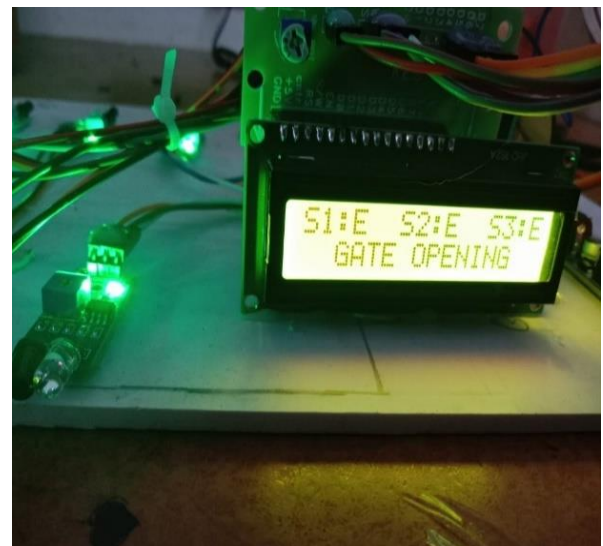


Figure.4 Slots are empty

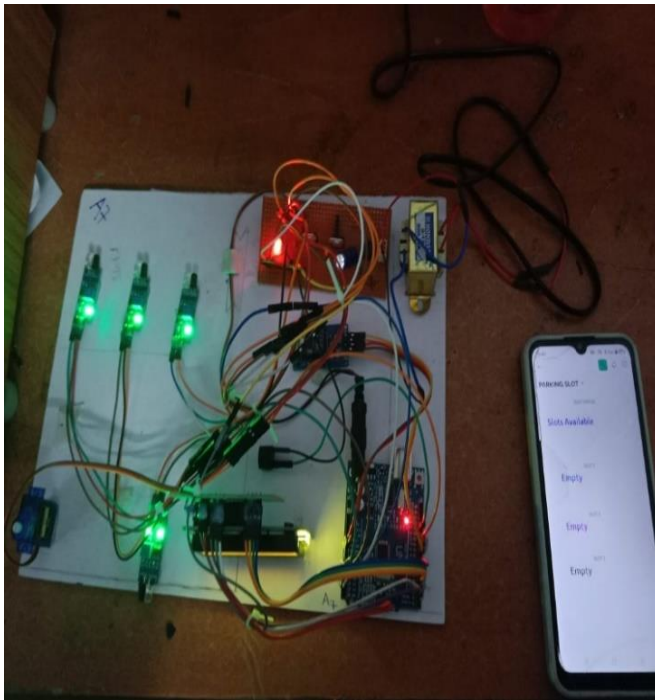


Figure.5 checking with Blynk app

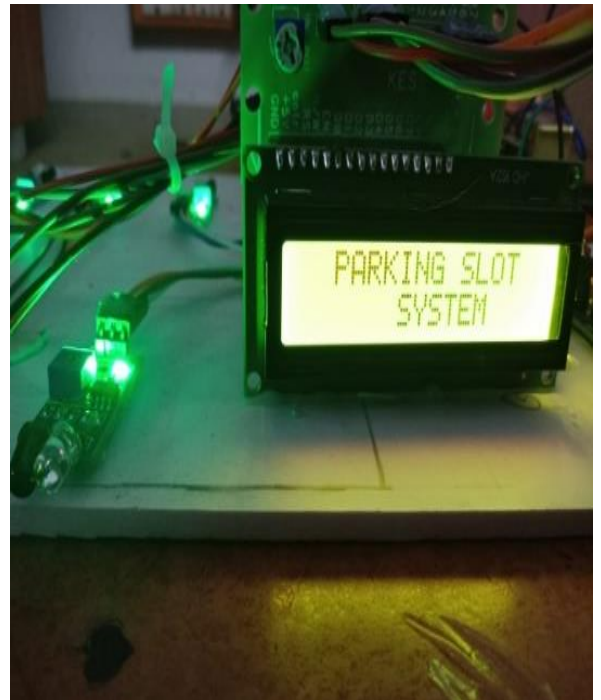


Figure.6 Parking Slot System

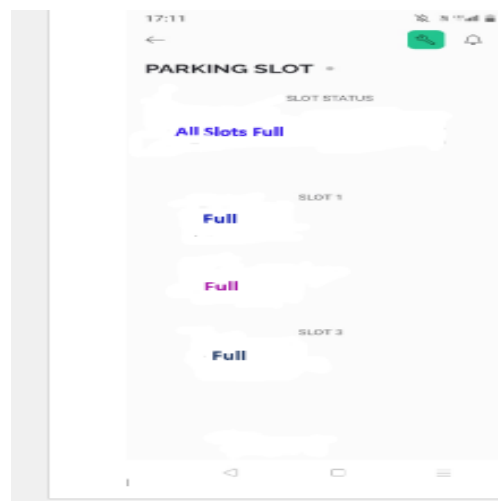
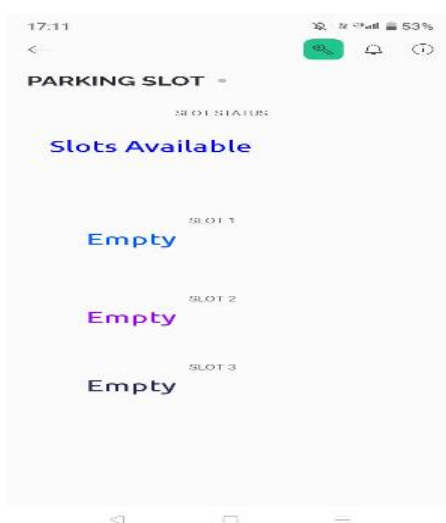


Figure.7 Blynk output

CONCLUSION

In short, parking management systems give smart and easy solutions for today's car park challenges. Using tech, they make parking smoother and better, helping with convenience and safety and looking after the environment. Making parking methods better saves time and money for everyone.

There are many good things about parking management systems for car park owners and those who use them. Owners get things done more efficiently, while people parking find it simple and stress-free. These ways of working lead the way in making parking less of a headache, cutting down on pollution, and making our city spaces last longer.

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