



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJIRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 11, Issue 5, May 2022

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 8.118



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Automatic Car Parking System using IOT

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ABSTRACT: Now days in many multiplex systems there is a severe problem for car parking systems. There are many slots for car parking, so to park a car one has to look for the all lanes. Moreover, there is a lot of men labour involved for this process for which there is lot of investment. So, the need is to develop a system which indicates directly which parking slot is vacant in any lane. The project involves a system including infrared transmitter and receiver in every lane and a. So, the person entering parking area can view using IoT module involved and can decide which slot to enter so as to park the car.

KEYWORDS: Internet of Things (IOT), Automatic Car Parking System, Cloud Computing, IR sensors.

I. INTRODUCTION

Conventionally, car parking systems does not have any intelligent monitoring system. Parking slots are monitored by human beings. All vehicles enter into the parking area and time waste for searching for parking slot. Sometimes it creates blockage. Condition become worse when there are multiple parking lanes and each lane have multiple parking slots. Use of automated system for car parking monitoring will reduce the human efforts.

Here we are using IR sensors to detect the vehicle in that parking slot. So, if it is occupied that information is available in the web and free slots are also shown so that one can book the slot before coming itself using IoT. This is to avoid waiting. We are using Micro as controller and IoT module is interfaced to view the slots using internet. This project uses regulated 5V, 500mA power supply. Unregulated 12V DC is used for relay. 7805 three terminal voltage regulator is used for voltage regulation. Bridge type full wave rectifier is used to rectify the ac output of secondary of 230/12V step down transformer.

II. METHODOLOGY

In many public places, such as institutes, multiplex systems, hospitals, offices, shopping centres, and car parking is indeed a severe issue. One has to look for all the lanes to park a vehicle, which involves a lot of investment and manual labour. Therefore, there is a need to indicates directly the availability of vacant parking slots in any lane right at the entrance to develop an automated parking system. It includes an infrared transmitter pair in each lane and a display outside the car park door. When the parking space allows, the user is well informed about his desire to park his vehicle. Conventional parking systems have no security personnel as well as an intelligent surveillance system to monitor the parking areas. Numerous periods seem to be waste in the search besides vacant parking space and often jams have been formed. Circumstances get to be worse when multiple car parks and multiple parking spaces seem to be visible for each lane. The parking management system has been used to reduce human time and effort with extra comfort.

This program displays a visual representation of the parking and shows vacant as well as inhabited spaces for the entire user to make a decision where to park their automobiles with the help of a display unit. Under RFID reader/tab control with additional automatic billing features, enter information exit recording. Not only will the system save time, but software and hardware will also manage the vehicle check-in and checkouts. This same prime motive behind the advancement of the smart parking system was its significant amount of time people have to park their cars in malls, multiplex systems, hospitals, offices, and supermarkets. Throughout the current system, users have to take more than enough time to find a vacant parking spot, as well as the user, needs a lot of time to complete the transfer of funds using a regular payment method as well. Users have saved a lot of time to automate the payment gateway using RFID and it helps to make parking much more efficient.

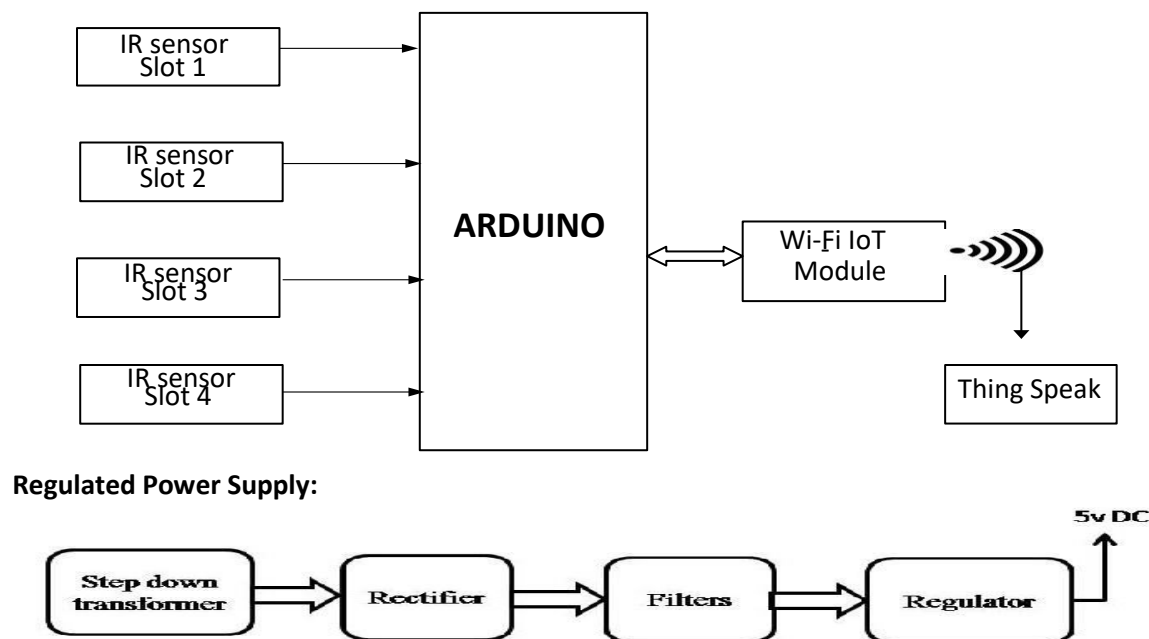


Figure 1:Block Diagram of Automatic Car Parking System

III. SYSTEM IMPLEMENTATION

The proposed system uses ESP12 Node MCU, RFID Vehicle reader, RFID tags/Vehicle, I2C module, and an LCD. ESP12 Node MCU board is acting as a brain for the proposed system. The RFID vehicle consists of various details of the users such as vehicle number of users, name of the owner of the vehicle, registered contact number of the owner of the vehicle, and the balanced amount of the owner. The card reader system extracts the details stored in the card as the Vehicle enters and exits. The LCD will display the output of the proposed model. ESP12 Node MCU has an inbuilt IOT module that can use the internet to interface with the website. IOT module used to tell continuous real-time that is to reflect on to the website. The number of free slots and the occupied slot will be displayed by the LCD.

High level Architecture diagram

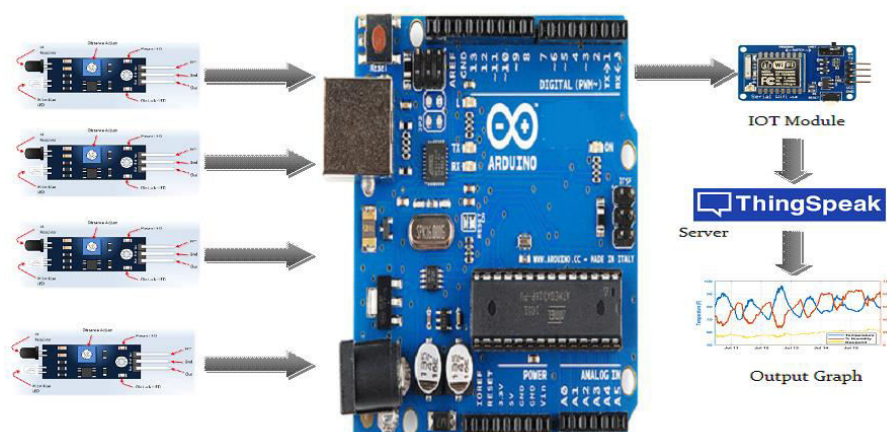


Figure 2: System Architecture

IV. RESULTS AND DISCUSSION

This prototype developed for the parking system with less human interaction, increases flexibility and security.

Thus, it reduces the risk of finding the parking slots in any parking area and also it eliminates unnecessary travelling of vehicles across the filled parking slots in a city.

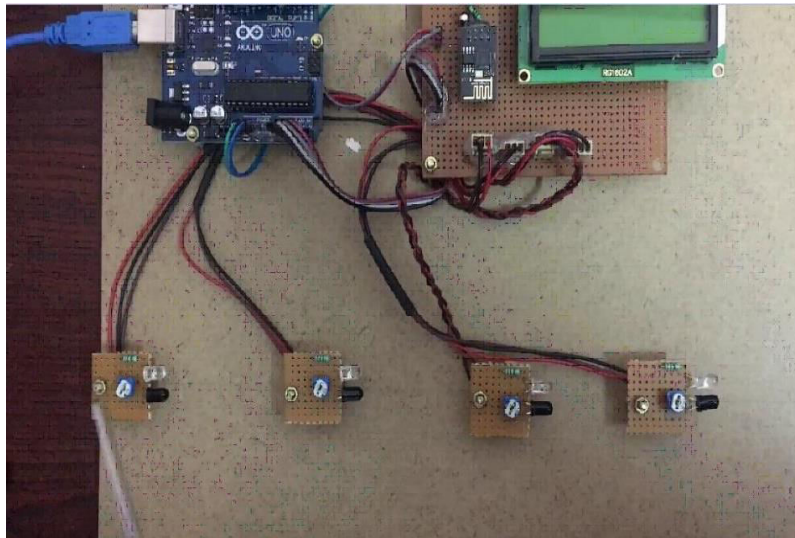


Figure 3:Prototype of Automatic Car Parking System

V. CONCLUSION

Presently for one day, the smart cities have proposed an effective parking system that ensures vehicle traffic. Significant advancements in the Internet of Things and Cloud technology have taken place. Throughout the system model parking issue, the integrated smart parking system based on the IOT cloud could be resolved. Realtime parking communication is done with both the user through the website. Ultimately, it improves the standard of living of consumers.

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Impact Factor: 8.118



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