

## International Journal of Innovative Research in Science, Engineering and Technology

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# Development of Smart City Parking System Using Microcontroller

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**ABSTRACT:** The main aim of this project is to reduce the traffic in the parking place. Normally we can see in the multiplexes, cinema halls, large industries, and function halls there is problem they have to go and search which line is empty and which line having place to park the vehicle, for parking then they need workers for parking in correct position it is the money consumed process. So to avoid this problem Car Parking System project is implemented. In this Electronics and communications project we have to use the equipment of microcontroller, Infrared transmitters and infrared receivers for each and every parking slot, IR receivers should be connect to the microcontroller. Here we are using infrared communication because it can support LOS (line of sight communication), and while enter into gate for parking there is the display to get the information regarding which line is empty. This information gives the microcontroller. The microcontroller first give the information to the IR transmitter then it gives to the IR receiver then this information show on the display, so by this process the parking is easy process. So the traffic can be reduced in the parking place of the theatres, multiplex, and in large industries and in commercial places.

**KEYWORDS:** Smart Parking System , IR sensor, Arduino Microcontroller.

### I. INTRODUCTION

In the early times the concept of smart cities have gained great popularity. The proposed Smart Parking system consists of an on - site deployment of an IOT module that is used to monitor and signalize the state of availability of single parking space. This paper introduce an IOT based coordinated framework for efficient and easy way of parking the vehicles by checking the availability of slots. The proposed Smart Parking framework comprises of an IOT module that is utilized to screen and signalize the condition of accessibility of single parking spot. The paper additionally depicts an abnormal state perspective of the framework engineering. Towards the end, the paper examines the working of the framework in type of an utilization case that demonstrates the rightness of the proposed show. The Ultrasonic Range Detection Sensor is utilized with Arduino to indicate the empty slot .By measuring the distance using ultrasonic sensor drivers are able to find the empty slot in parking to park the car and help the driver to find the slot easily and reduce the searching time. As the parking place is found to be empty it is detected using ultrasonic sensors which report it further. We achieved this by programming the sensors and Arduino.

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## II. LITERATURE SURVEY

Mr. Basavaraju S R - 2 015

has proposed An Car Smart Parking System using Internet of Things (IOT)

----- Internet of Things (IOT) plays a vital role in connecting the surrounding environmental things to the network and made easy to access those un- internet things from any remote location. It's inevitable for the people to update with the growing technology. And generally people are facing problems on parking vehicles in parking slots in a city. In this study we design a Smart Parking System (SPS) which

enables the user to find the nearest parking area and gives availability of parking slots in that respective parking area. And it mainly focus on reducing the time in finding the parking lots and also it avoids the unnecessary travelling through filled parking lots in a parking area. Thus it reduces the fuel consumption which in turn reduces carbon footprints in an atmosphere

## III. PROPOSED SYSTEM

First, we must set the model for the vehicle count as well as width calculation. For that we have to fix the two ultrasonic sensors in the road. The ultrasonic sensors must not be placed in same line but that must be placed oppositely.

The distance between the two ultrasonic sensors must be known. The connections are done to SD card module and Arduino Uno. After all the setup, the vehicle must be allowed to pass from the model. When vehicle is passed through the two sensors the distance from vehicle to the sensor is calculated. Consider  $d_1$  is the distance from vehicle to ultrasonic sensor1 and  $d_2$  is the distance from vehicle to the ultrasonic sensor2,  $d$  is the distance from 2 ultrasonic sensors. So the width is given by  $W = d - (d_1 + d_2)$  Based on the width the vehicles are classified, Once the vehicle is classified the counting of vehicle is done and it is saved in SD card.

## IV. ARCHITECTURAL MODEL

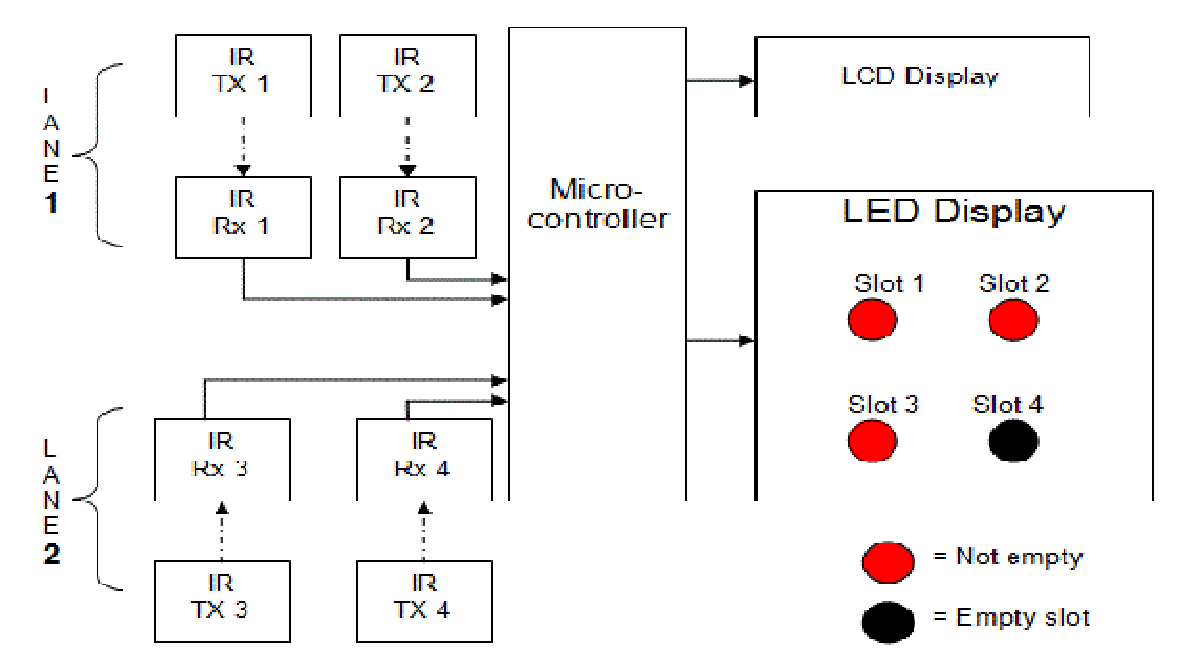


Fig: Architectural Of Parking System

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## V. SCOPE OF THE PROJECT

- 1) Drivers find accessible parking spots close to them.
- 2) Less number of drivers seeking to stop, in this way decreases the movement clog.
- 3) Avoids air contamination and a dangerous atmospheric deviation.
- 4) Scalable, hearty and solid.
- 5) Reduces the driver stretch and enhances the urban range.
- 6) Provides devices to streamline the parking spot administration accurately discover the vehicle inhabitanancies progressively

## VI. CONCLUSION

Our project detects the empty slots and helps the drivers to find parking space in unfamiliar city. The average waiting time of users for parking their vehicles is effectively reduced in this system. The optimal solution is provided by the proposed system, where most of the vehicles find a free parking space successfully. Our preliminary test results show that the performance of the Arduino UNO based system can effectively satisfy the needs and requirements of existing car parking hassles thereby minimizing the time consumed to find vacant parking lot and real time information rendering.

## REFERENCES

- [1] Sanders McDonald, Shannon. "Car Parking and Sustainability", The Transportation Research Forum.
- [2] Hamelin, Ir. Leon J. (2011), "The Mechanical Parking Guide 2011", ISBN 1-466-43786-3.
- [3] Beebe, Richard S, "Automated Parking: Status in the United States", 2011.
- [4] Monahan, Don, "Man vs. Machine: Is Robotic Parking Right for Your Project?" International Parking Institute, September 2012.
- [5] Staff, GreenandSave, "Automated Parking and Garage Lights Take "Green" Garages to New Levels", 2012.
- [6] International Journal of Research in Engineering & Applied Sciences. [http:// www.euroasiapub.org](http://www.euroasiapub.org)
- [7] V.Sumathi "ENERGY EFFICIENT AUTOMATED CAR PARKING SYSTEM", TN 632014 India, and Volume 5 No 3 Jun-Jul 2013.
- [8] [https://en.wikipedia.org/wiki/Car\\_parking\\_system](https://en.wikipedia.org/wiki/Car_parking_system)
- [9] <https://www.projectsof8051.com/automatic-car-parking-indicator-system/>
- [10] [http://www.geeetech.com/wiki/index.php/Arduino\\_Uno](http://www.geeetech.com/wiki/index.php/Arduino_Uno)
- [11] <https://theconstructor.org/building/multi-storey-car-parking...project-report/7258/>
- [12] <https://circuitdigest.com/electronic-circuits/ir-transmitter-and-receiver-circuit>