

PROJECT REPORT

# **CAR PARKING USING IOT**



BY

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UNDER THE SUPERVISION OF

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## **CANDIDATES' DECLARATION**

This is to certify that this project report entitled “**Car Parking Using IOT**” which is submitted by our group in partial fulfillment of the requirement for the completion of Mini Project for 7<sup>th</sup> semester B.Tech. in Information Technology, is an authentic record of our original work carried out under the guidance of **Dr. Vijay Kumar Chaurasiya** and due acknowledgements have been made in the text of the report to all other materials used. This report work was done in full compliance with the requirements and constraints of the prescribed curriculum.

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## **CERTIFICATE FROM SUPERVISOR**

This is to certify that the above statement made by the candidate is correct to the best of my knowledge.

**Date:**

**Place:**

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Dr. Vijay Kumar Chaurasiya

Project Supervisor

# Acknowledgement

We acknowledge with much appreciation the crucial role of Dr. Vijay Kumar Chaurasia, for his contribution in this endeavour of ours. His efforts, constant support and perseverance has guided us through this project. His engagement through the process of this project has been precious and irreplaceable.

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## **Abstract:**

IOT has a very significant role in this modern world we are living in. It is so important that people have started considering it the third greatest technology after PCs and mobiles. It can be applied almost everywhere in day to day things we do manually that are costly, time consuming and less secured. We can connect our surrounding environmental things to network and access them remotely. For example in public car parking areas people face a lot of problems as they can't see the whole area from their car causing collisions, traffic, pollution, money wastage and other problems due to mismanagement. So, to overcome those problems we propose a design for smart car parking areas which will tell the driver the nearest possible vacant area or parking and will also suggest some security measures to prevent car theft in that parking. This will reduce all those problems significantly. We will be using RFID tags for vehicle detection and IR sensors to detect vacant slots in parking.

## **Problem Statement**

It is very difficult to manage cars in big parking areas. Mismanagement will lead to many problems for example heavy rush in the parking area, unnecessary environment pollution, Honking causing sound pollution, wastage of time, sometimes accidents also. So, all these problems can be reduced by making the parking area itself smart in a way that it can prevent mismanagements and that too in a very cost effective way.

# Literature Survey

**RFID TAG** stands for Radio Frequency Identification. It uses radio waves to store digital data. This is similar to barcoding but have advantages over it. As here in smart car parking we can't place it to exact location and that is the best advantage of RFID over barcode as it can be read outside the line-of-sight, whereas barcodes must be aligned exactly on scanner.

We are using **IR sensor** for detecting the availability of vacant slots in the parking area. It is simply an LED light that is sensitive to Infrared radiations in its surroundings and detects the object placed over it.

From **IOT based smart parking system using RFID** [1] we learned advantages and disadvantages of using camera as a sensor for empty slot detection.

We finally came to conclusion of using IR sensors for detecting empty slots as it has many advantages over camera sensor which includes:

1. It will be more costlier than using IR sensors.
2. It will be more difficult and complex as we have to do image processing in that.
3. IR sensors will do same work very easily.

# **Introduction**

With the rising population in metro cities ,the requirement of transportation also rose specially private vehicles.Resulting frustration for the driver,traffic jams and polluting environment.According to the recent survey,it was found that the drivers spend more time in searching for the space to park.So basically we are trying to decrease the parking problem with the help of smart parking system.

Internet of Things (IoT) is the network of devices which could be connected through internet providing interface to communicate ,collect and exchange data.IOT advances the usage of internet by availing the inter-network of devices that can assemble the data at some specific locations and analyze the data in the services.

IoT has brought a tremendous change in the society as well as in parking system technology.As the search for parking lot has become an essential need of our daily life.Therefore the motive behind this system is to acquire an intelligent parking system in order to ease the problem of looking around for parking spot.

# **Methodologies**

System will have 3 parts:

1. Entry
2. Parking Space Management
3. Exit

## **Entry**

### **a. Structure and mechanism of entry section**

1. Car arrives at entrance , RFID(Radio Frequency Identification) Reader sense RFID tag of car.
2. Using RFID of car we get details of the car , from the details we check if car is related to any criminal activities (for example theft ), if so we send this information to police station.

Else, We transfer control to parking Management system



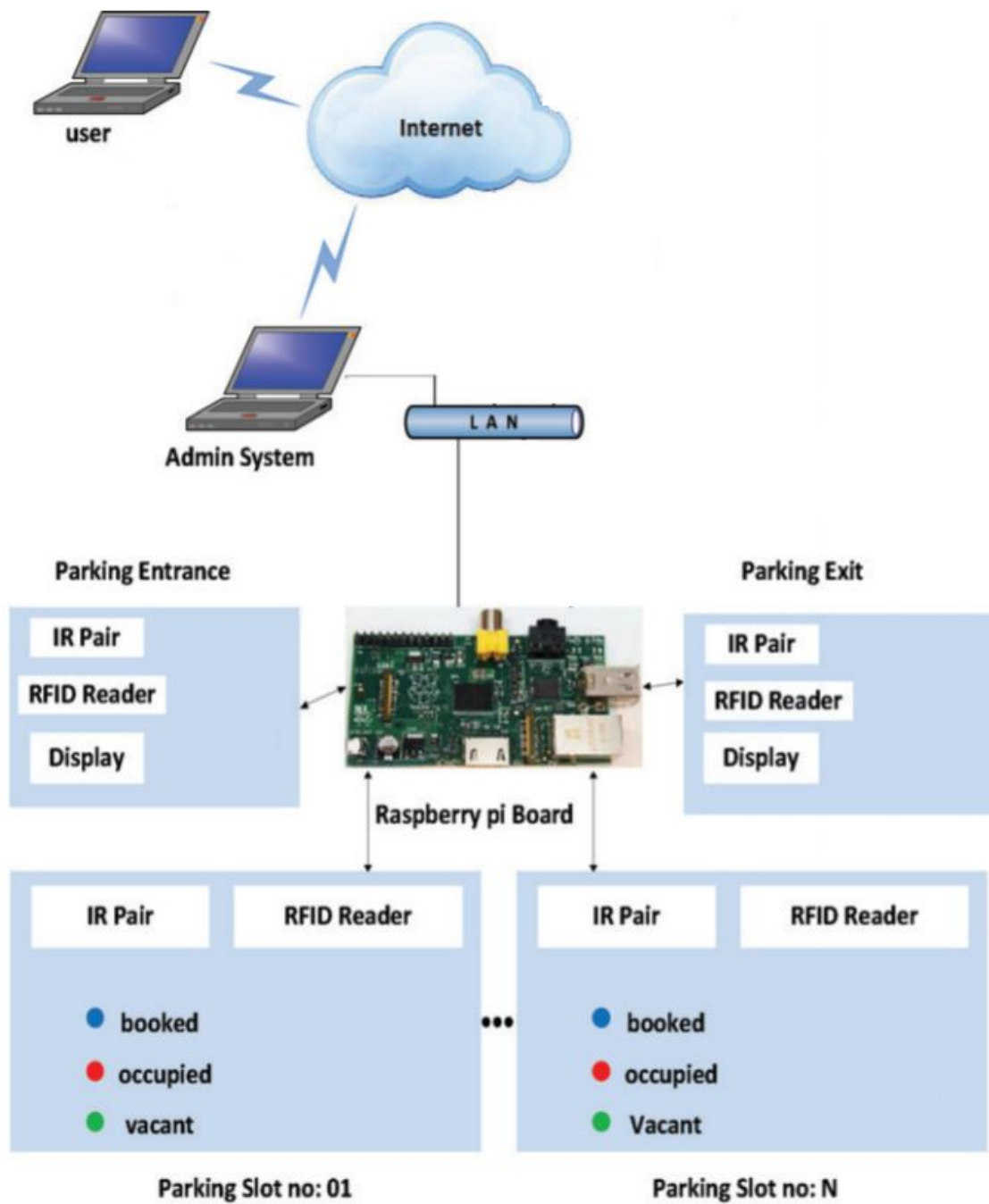


Figure 1: Above Diagram shows the architecture of System <sup>1</sup>

<sup>1</sup>.Indian Journal of Science and Technology, Vol 9(17), DOI: 10.17485/ijst/2016/v9i17/92973, M

# Parking Management System

## a. Structure of System

Each parking slot consists of 2 IR sensors , 1 Red Light, 1 Green Light. IR sensors are used to detect availability of slot. IR sensors are deployed under ground in the each parking slot. Here , 2 sensors are used because user may not park his car properly, when car is parked both of the sensors should detect it,

if car is not properly parked it will be detected by only one sensor and red light will glow, otherwise green light will glow.

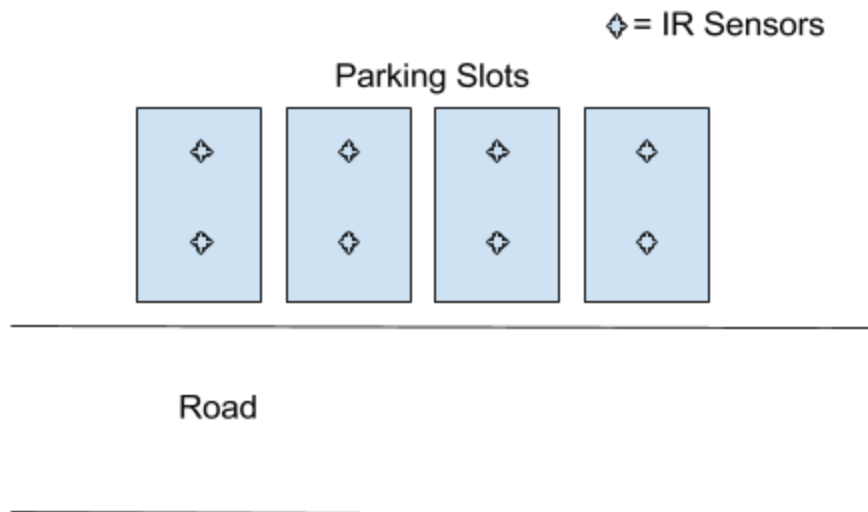


Figure 2: Above diagram shows Positions of 2 IR sensors in parking slot

## b. Central Unit

All the slots are connected to the central unit, available slots can be determined according to reading from Slots sensors, Central unit hence provides list of available slots. It also has Database which keep record of rfid of car, time of entry, allocated

slot.when control is at parking management system ,central unit allocate the slot from available slots,and user drives his car to that numbered slot and park it properly.

## **Exit**

1. Exit section has same structure as entry section.
2. At the exit section RFID is noted once again and time of leaving and other information is stored in database
3. Central processing unit updates the list of available slots.

## **Plan of Work**

WORK	DURATION	STATUS
Literature Survey	1 week	Done
Methodology	2 weeks	Done
Model Design	2 weeks	To be done POST MIDSEM
Hardware Assembling	2 weeks	To be done POST MIDSEM
Error Detection and Correction	1 week	To be done POST MIDSEM
Deployment	1-2 week	To be done POST MIDSEM

## **References**

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2. Automatic Smart Parking System using Internet of Things by Dr. Y Raghavender Rao published on May 2017 in Volume 4, Issue 5 with ISSN 2394–3386 in International Journal of Engineering Technology Science and Research.
3. A Prototype for IoT based Car Parking Management System for Smart Cities by Baratam. M Kumar Gandhi and M. Kameswara Rao with ISSN 0974-5645 in Indian Journal of Science and Technology, Vol 9(17),May 2016