# IOT BASED SMART PARKING AND TRAFFIC SYSTEM

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**Abstract:** This project "Smart parking and Traffic System." Nowadays with the increasing population development in urban communities, creation of every one of a kind's vehicles by producers, and the quantity of vehicles on the streets will just keep on rising. Traffic lightssystem is one of the serious tricky issues in the ongoing circumstance. We can solve this traffic management issue by using IoT. In addition to this, parking becomes an extra problem. We can automate the parking system using the Internet of Things (IoT).

We use IoT sensors to detect whether the parking slot is empty or not. It represents whether the slot is empty or not using RGB LEDs. By using IoT sensors we can find whether thetraffic is dense and manage the traffic signals accordingly, which includes allowing the lane withmore traffic. The System contains 4 Switches for each lane. Switch is pressed in case ofemergency i.e., Ambulance. When the Switch is pressed, then that Traffic signal of the switch turns green for a few seconds leaving other lane signals red. This will allow the ambulance to reach its destination as soon as possible.

**Keywords:IOT, traffic, parking, IR sensors, RYG sensors, Arudunio Mega,Switches, Adapter.**

1. **Introduction:** A smart car parking system gives a visual output indicating an available parkingspace rather than driving aimlessly.The driver looks up to the row of LED lights and their colorto detect a result of determining the parking space availability. The two main colors used are green and red stating occupied and free respectively[1].These lights are placed at the ceiling of each parking space and the driver looks up and follows the set of LEDs and searches for an greenone.These lights are controlled automatically with sensors and the feedback is provided through the color of the LED when a vehicle is detected[2].This system not only makes the accessibility easy but also manages the congestion of vehicles avoiding long search and wait times.

With the vast growth of industrialisation and urban population there has been a tremendous increase in the traffic.At this point people have to wait at certain junctions,even if there is no traffic tilll the traffic light remains red.After the traffic light turns green only then can people move from one place to another.As is understandable a lot time gets wasted in  this process.Here,a  more dynamic approach is needed.One effective solution to this problem would be to implement different time delay settings for red,green,yellow at different junctions and locations.The delay for junctions will be high volume of traffic should be set longer than the delay for junctions having low traffic volume.It has been noticed that emergency vehicles such asambulance, fire brigade, etc. get stuck in the traffic jam for hours[3,4]. The emergency vehicles

need to wait for the traffic light to be green. But that also need to be made more dynamic whichis exactly what this project aims to achieve.

## 2. Related work:

In this paper, Disha Issrani proposed , the different perspectives connected with savvy stopping are investigated and checked on. The paper incorporates the framework which directs the client for stopping as well as permits him to save the vehicle[1].

In Senthil Kumar Janah paper he proposed a framework utilizing more quantities of IR sensors, for computerization control microcontroller,with Bluetooth regulator, as well as Android cell phone and at long last PC-server[2]. Any of these sensors encompass an IRtransmitter and beneficiary for setting in the two headings of the street path.

In a paper proposed by Alekhya R ,juhi seth said that [1]The sensors utilized in IoT based savvy stopping system stores and gets to information from distant areas with the assistance of the cloudthese variables give rise to haze of things (Bunk). The hubs could be observed and controlledfrom any area the framework that we propose gives data in regards to the accessibility of the stopping spaces with the assistance of the versatile application the clients from the far off area can book the stopping spaces. [2] A calculation is utilized to expand proficiency of cloud-based stopping framework also, network engineering innovation is utilized. This calculation is utilized to find the most reduced cost parking spot. Considering The quantity of parking spots accessible and furthermore considering the distance of the parking spot from the client.

In Arjun dhat, This paper is coordinated as follows: The following area educates us regarding therelated works. Area III portrays the microcontroller outline. Area IV delineates about the materials utilized.Area V and VI educates us regarding the calculation utilized and the proposed framework[4]. The last segment comprises an end,future works and the references.

## 3. Proposed model :
In the proposed system for the smart parking, we will place an IR sensor inthe parking slot to detect the vehicles and display the parking slot availability using RYG LED.If a vehicle is detected in a particular slot, then the LED of the respective slot will be red, if no vehicle is detected then the LED of the respective slot will be green.

For the traffic system, the timer for the traffic signals will be set depending upon the number of vehicles in that lane. When an emergency vehicle arrives in a particular lane the traffic policewill click the button of the respective lane and allows the vehicles in the particular lane to move and resets the traffic where it has stopped.In this proposed framework relies upon the count of vehicles from the street path IR information we are distributing higher time rate for that sign. This framework utilizes more quantities of IR sensors, for robotization controlmicrocontroller,with Bluetooth regulator, as well as Android cell phone and at long last PC-server. Any of these sensors encompass the IRtransmitter and beneficiary for setting in the two headings of the street path.

**Proposed Model Block Diagram**
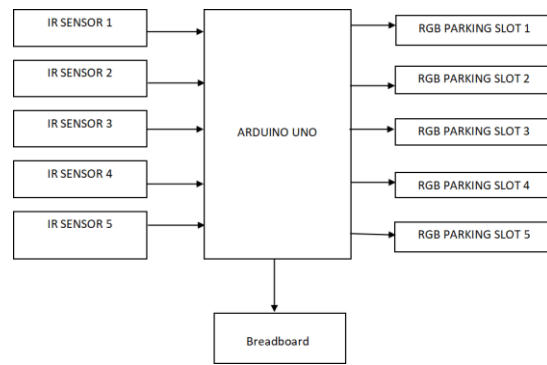


**Smart parking**
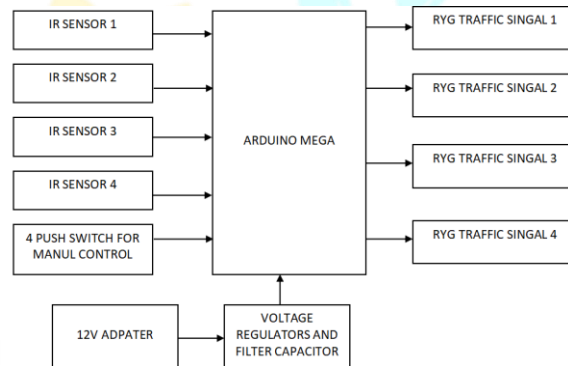


**Smart traffic**

## Implementation:

In traffic the working steps are 1.4 channel Traffic Signal (RED, YELLOW and Green) that workconsequently founded on predefined Clock.User is given 4 Switches that Manual control the 4 Paths of Traffic signal. Assuming client press any switch, than that specific Path Traffic Light gets Green and Other sign become Red for few moments. This will assist emergency vehicles with passing from that Path right away .4 IR sensors are put on 4 Path at specific separation fromtraffic signals. Assuming Individual or vehicle in that path arrives at that IR sensor then that Pathsignal becomes Green and other signs become Red for a few moments, this will assist the vehicles with clearing traffic right away. This framework depends on Vehicle ThicknessbasedProgrammed Traffic Signal.12V Connector based power supply, Voltage Controllers and channel capacitors are utilized to drive this whole systemions of street path.In parking the IR and the led lights are displayed to the main board representing the red and green lights.

Ir sensor detects the vehicles when they are arrived and passes the information to the other sensors as per shown in the digram connect the led lights to the sensor it detects the signal to the board.
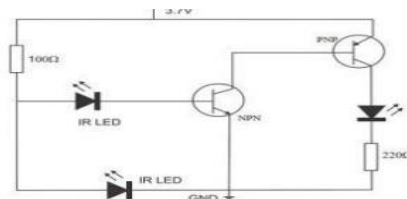


Fig 1: IR Sensor Circuit

Arduino Uno might be utilized to work the clever microcontroller gadget called Arduino Uno.Establishment of different applications rather than Uno isn't needed. First of all, pick "Devices ArduinoBoard, Sheets menu (delivering to the microcontroller on the board). Each IC in the Arduino Board,assigned as ATmega328, incorporates such a loader, so you can move new code without utilizing external PC software engineers.The **Arduino UNO** is the best board to get started with electronics and coding. If this is your first experience tinkering with the platform, the UNO is the most robust board you can start playing with. The UNO is the most used and documented board of the whole Arduino family

**4.   Result and observation:** The result of this is with the help of RYG lights we will get to know the the time changes the light according to the trafficand to detect vehicle Ir sensor is used and in parking we will get to know thespace available or its booked also using by Ir sensor.

**5.   Futurescope:**

In this we have tested real time in a single location during similar times a day.Futher it is to be tested in other circumstances as well to get much more efficient and in parking users can book a parking space from a gps reservation and a license plate scanner can be included

**6.   Conclusion:** In conclusion we have told taht the smart parking and traffic system which is done with the help of IOT,is used to achieve a lot benefitsby helping the citizens for parking their vehicles and also helps to reduce traffic congestion at signals.It is useful and helpful in all aspects to the citizens.

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