

Traffic Management System Using Internet-of-Things (IoT)

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Abstract- Savvy Urban communities organizations ranges from open prosperity and development organization to shrewd street lighting and water treatment. The standard point is to achieve zero disillusionment establishment for the overall population. The World Wellbeing Association's (WHO) give a record of Street Security (2013) states that the surveyed Gross domestic product mishap due to road fender benders is around 3% for India. Inferable from hazardous condition on roads, the pace of disasters in India has been high. As showed by WHO bits of knowledge for 2012, out of around 11.8 lakh road catastrophe disregarding the world, 84,674 passing's were represented from India alone. In the year 2014, the amount of road accident going's in India extended to 92,618. Thinking about the gravity of the conditions, there is accord that intentional measures are crucial for reducing this strange condition of incident going's and wounds through upgraded safety efforts and development organization. The proposed system has been expected to beat the shortcoming in the development organization. The structure gives information about road blockage, ability to control the flood of movement and besides practice emergency exit for emergency vehicle. Interfacing of Web with the authentic existing development instrument extra things the limit of the proposed system to decrease human mediation and augmentation the idea of movement organization

Keywords- Internet of Things, Traffic Management, City, Effectiveness.

I. INTRODUCTION

Traffic clog prompts long and eccentric drive times, ecological contamination and fuel wastage. These negative impacts are progressively intense in creating nations like India, where framework development is moderate in light of cost and bureaucratic issues. Dissatisfaction with the traffic lights brings about an expansion in mishaps from vehicles moving when the traffic light, signals them to stop. Wise traffic the board and better access to traffic data for workers can help ease clog issues partially. The traffic lights guarantee that vehicles from each bearing get an opportunity to continue through the crossing point in a deliberate manner. Typically, we will have the traffic signal lights modified for specific time interims. Yet, in everyday life we see that traffic on one side on a two way street is dominantly more when contrasted with the other. In such a

circumstance programming equivalent interims of time for the two sorts of deals, credits to clog during long periods of overwhelming traffic, making traffic delays. Yet, here we propose a framework that creates the traffic light signals dependent on the vehicle thickness, in spite of the old technique for designating a similar time interims to all streets regardless of their traffic thickness. This kind of traffic light flagging framework is these days utilized in all the metropolitans. Right now screen traffic, the thickness of traffic is estimated by different sensors; these sensors are put on either roadsides. The sensors yield is given to a microcontroller with the goal that it will make a move as needs be. In the previous not many years, auto collisions and clogs have expanded massively. Despite the fact that the vehicle volume has expanded exponentially, the street foundation has not been improved proportionately. This thusly prompts expanded traffic clog and street mishaps. Various innovations are there to recognize traffic clog and to make blockage the executives progressively productive, yet these advancements have a few downsides, for example, establishment issues, intricacy, cost, and so on. While trying to diminish the issues identified with traffic and improve the traffic discipline, progressed mechanical arrangements have been proposed right now. Through this venture we are intending to give a framework, which will constantly screen the vehicles utilizing RFID peruser and RFID handsets and naturally cause punishment for infringement of any of the traffic rules. In the event that a driver abuses any of the traffic administrators, the driver will be charged by the RTO rules.

II. RELATED WORKS

The paper [2] offers knowledge to real usage of the traffic the board regarding equipment. Gives brief clarification of the how ongoing traffic stream is checked and controlled. The paper [1] gives bit of leeway of robotized framework execution utilizing RFID labels for controlling and observing traffic in brilliant urban areas. The paper [4] gives us data on the most proficient method to distinguish a vehicle which needs crisis exit or less time to arrive at its goal. Crisis vehicles need to arrive at their goals at the most punctual. In the event that they invest a great deal of energy in congested driving conditions. With crisis vehicle freedom, the traffic signal goes to green as long as the crisis vehicle is holding up in the rush hour gridlock intersection.

The sign goes to red, simply after the crisis vehicle goes through. Right now we find out about how various punishments are actualized for damaging any of the guidelines. At the traffic signals there will be RFID peruser connected to the AVR Microcontroller at the sign post. RFID peruser will recognize the RFID TAG of the vehicle which has gone across the street when the sign is red. The RFID TAG is joined at the base of every vehicle, with each TAG having its own distinctive personality. Cautioning will be given to the driver by sending message to the vehicle unit and punishment will be charged to that specific driver's savvy card as it were. At as far as possible zone and no stopping zone additionally there are RF handsets. As far as possible is spared in AVR microcontroller at as far as possible zone which will be constantly transmitted by the RF module connected to the microcontroller. On the off chance that the speed of the vehicle is progressively, at that point punishment will get charged. Again in the no leaving zone likewise there is one RF module, on the off chance that it gets the RF waves multiple times, at that point it is viewed as that the vehicle is left and punishment will be charged to that vehicle. Right now we get a brief look at the impacts of air contamination and how to decrease it by controlling traffic. In the savvy city every vehicle having RFID tag and at the Traffic Signal peruser would be increasingly open in nature for trading their messages. Based on information for Vehicle thickness and air quality, there could be forecast for future utilizing Different Predication Calculation. In the paper conversation about the radiated gases and its variety is talked about. Carbon Monoxide (CO) incited by traffic contamination is exceptionally unique and non-direct. Bi-scale versatile examining calculation is a viable vitality sparing system for social event great quality measurements in rush hour gridlock contamination observing, which has information that display multiscale attributes.

III. PROPOSED ARCHITECTURE

A. System overview

The total framework is separated into four primary modules. The Fig. 1 gives the subtleties of the interface of the whole module. Right now, are utilizing Ultrasonic sensor, CO2 sensor for estimating the traffic thickness. By methods for Ultrasonic Sensors, we will get Vehicle tally. We are likewise utilizing MQ Arrangement Gas Sensors which screens air quality and gives the convergence of various gases. We are likewise utilizing signal conditioner for enhancing signal and evacuating clamor. Small scale controller helps in conspiring Traffic Signal Lights, checking vehicle's and furthermore utilized for moving sensor information towards the imparting gadget by means of Bluetooth.

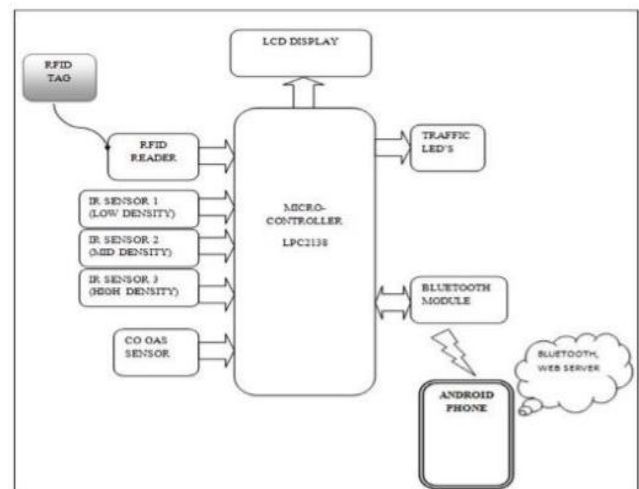


Fig. 1: System Architecture.

B. Working of System

a. Traffic Density Management

Here we are utilizing IR sensors for making an ordinary traffic control frassmework, a keen traffic control framework for example the traffic thickness is estimated with the assistance of IR sensors set on either side of street. The traffic thickness is recognized in three zones – Low, Medium and High traffic thickness zone respectively. IR sensor contains IR transmitter IR beneficiary in itself. These IR transmitter and IR recipient will be mounted on either roadsides at a specific separation. As the vehicle goes through these IR sensors, the IR sensor will identify the vehicle and will send the data to the microcontroller. The microcontroller will check the quantity of vehicles, and give the sparkling time to Traffic Drove by the thickness of vehicles. On the off chance that the thickness is higher, Green Drove will shine for higher time than normal or the other way around and as needs be for separate thickness zone traffic Drove gleaming timings are balanced.

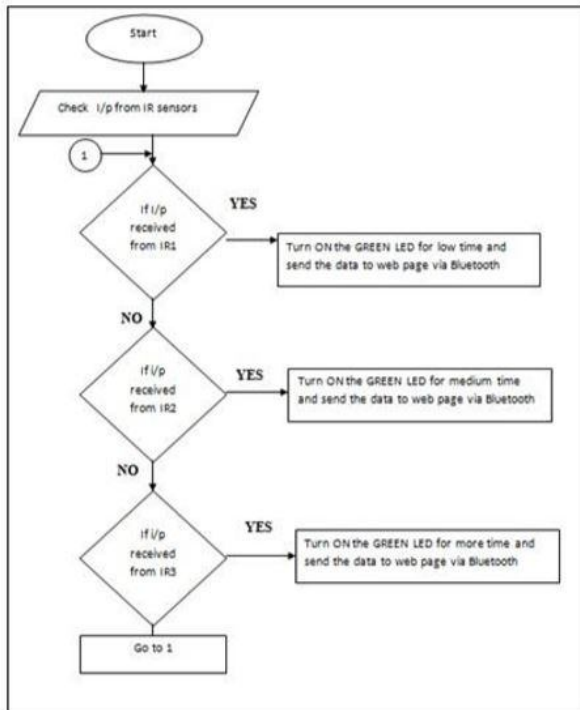


Fig. 2: Flow Traffic Density

b. Smart Penalty Charging

As we realize that time is the most significant thing now-a-days, such a large number of individuals disrupts the traffic guidelines just to reach at time to their goal. The purpose for disrupting the traffic norms is to hang tight for additional time whether the traffic is available or not. Along these lines, the proposed framework can diminish this issue of individuals and it will educate the individuals about punishment for defying the traffic norms by sending message through Application which is intended for our system. RFID peruser interfaced to the framework will constantly screen the vehicles disrupting the traffic guideline by perusing the RFID tag of that specific vehicle. At whatever point any vehicle defy the traffic guidelines for example crosses the sign when red Drove is shining, the RFID peruser will educate controller and afterward controller will send this information to the Android telephone by means of Bluetooth module, where a message is sent to the traffic police about guideline breaker and simultaneously proprietor of vehicle about punishment through Android Application.

c. Emergency Exit

In the event of Rescue vehicle or crisis vehicle development out and about, it is attractive to give right of the route to these vehicles notwithstanding the status of the traffic lights. Here the Label ID of these specific vehicles is as of now put away in controller. Whenever crisis exit is required

controller contrasts the ID and recently put away label ID's of vehicle and as needs be control the traffic lights.

d. Air Contamination Identification

The air contamination done by vehicles is additionally estimated with the assistance of proposed framework. The CO gas sensor interfaced to the controller will persistently screen the substance of CO gas noticeable all around. This data will be constantly useful for making controlling move to lessen the Air contamination.

e. Web Control and Checking

All the information identified with traffic thickness is sent to web server by means of Bluetooth module. So at extraordinary condition an approved individual can likewise control traffic lights utilizing Android application which we are going to structure. So it is profitable to screen and control framework from anyplace through web.

IV. SYSTEM ALGORITHM

1. START
2. Instatement of all gadgets
3. Check if any I/P got from one of three Ultrasonic sensors arranged at either roadside:
 - (1) IF I/P got from Ultrasonic at that point, Turn ON the Drove For low time
In the event that I/P got from Ultrasonic 2 at that point, Turn ON the Green Drove for medium time
In the event that I/P got from Ultrasonic 3 at that point, Turn ON the Green Drove for High time
 - (2) Send this information to web server by means of Bluetooth module.
4. Check if any VP got from RFID peruser signal is ON and IF YES Contrast the I/P and Label IDs Store in the framework.
On the off chance that Label id coordinate happens, Turn ON the Green Drove If No match happens, Send this information to web server where Application will send a SMS to the Traffic police and Proprietor of vehicle about punishment for rule break.
5. Check if any UP got from CO gas sensor IF Truly, send this information web server for observing
6. Check if any I/P got from Bluetooth module if truly, do activity as per order got.

V. RESULTS

The real execution of proposed framework. There are two areas of line spoke to in the module. The traffic signals are constrained by the base unit. Controlling depends on the information gave by the sensors. The LCD shows the yield of the framework by thinking about different module astute working.

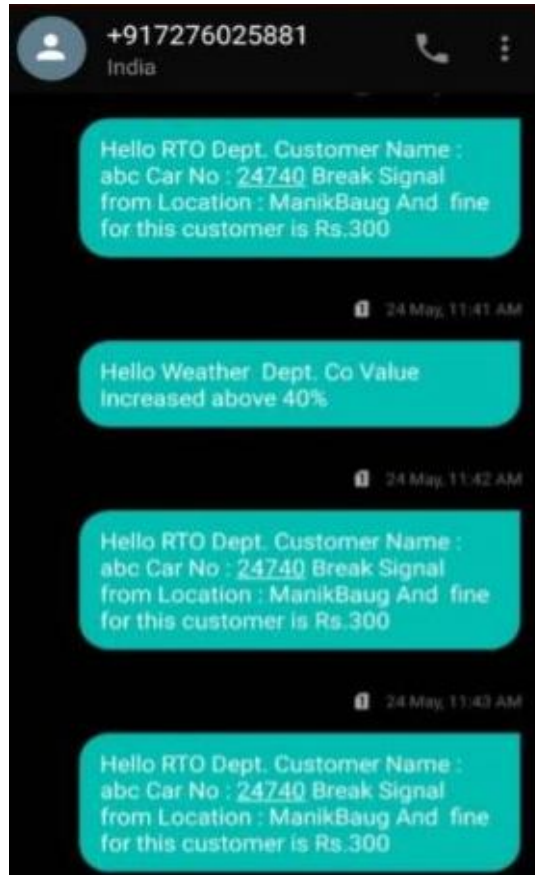


Fig. 3: Texts to Weather & RTO Department



Fig. 4: Information Related to the Density of the Traffic on the Road. Since the Output is Displayed for the 2nd Sensor- Density on the Road is Medium



Fig. 5: Subtleties of the Vehicle which has Disregarded the Traffic Standards at the Traffic Signal



Fig. 6: The Picture Gives Data that Extraordinary Vehicle Data has been received.

VI. CONCLUSION

This investigation has driven us to the conviction that the traffic can be overseen effectively by the assistance of proposed framework. Actualizing this framework gives the client a power over undesirable circumstance and limits the auto collision in overwhelming rush hour gridlock region.

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