TRAFFIC MANAGEMENT SYSTEM USING IOT

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Abstract: This innovative software projects is an effective traffic management project that allows for managing 4 way traffic signal management system. The system consists of 4 signals corresponding to each road. We here propose a traffic signal scheduling algorithm. The system is designed to manage traffic signal timings based on the density of traffic on its correspondingroad. The system represents the traffic strength of a road graphically using traffic judgments. By measuring the traffic lined up on a particular road the signal timings are adjusted to let that particular way clear out and then the next populated one. The entire system works according to an algorithm that allows for smooth and efficient traffic flow across all four ways. It also consists of an emergency override that allows traffic authorities to remotely let go a particular signal in case an ambulance or important vehicle arrives on that way.

I.INTRODUCTION

In today's high speed life, traffic congestion becomes a serious issue in our day to day activities. It brings down the productivity of individual and thereby the society as lots of work hour is wasted in the signals. High volume of vehicles, the inadequate infrastructure and the irrational distribution of the signaling system are main reasons for this chaotic congestions. It indirectly also adds to the increase in pollution level as engines remain on in most cases, a huge volume of natural resources in forms of petrol and diesel is consumed without any fruitful outcome. Therefore, in order to get rid of these problems or at least reduce them to significant level, newer schemes need to be implemented by bringing in sensor based automation technique in this field of traffic signaling system.

II.LITURATURE SURVEY

According to a survey, violation of traffic rules and failure of the maintenance are reasons to major accidents worldwide [1]. The first traffic light was introduced in London in 1868 and from that moment they came into existence and now they were implemented with many existing techniques [2]. Traffic lights consist of three common coloured lights. It consists of green light which allows traffic to proceed in the indicated direction, yellow light warns the road users to prepare for short stop, and last one red light signal prohibits any traffic from continuing [3].There are many problems occurred with the conventional traffic light controller. One of them is heavy traffic jammed where there has not been any realization on how to measure the level of this „jammed‟ thus pounder on the solution especially using time delay. Another problem with conventional traffic lights is when there is no traffic, but the waiting still continues [2]. Both development of economy and increasing population are factors contributor to traffic congestions. Traffic congestion is a condition on road networks that happened as the road users increased thus leading to slower speeds, longer trip times, and increased queuing time [4] In the last few years, a large number of researches have been done to reduce problems regarding these jams. For example, a traffic light with microcontroller, ultrasonic sensor, automatic switch, manual controller switch, circuit and displayer which were functioning to handle all the system process, figure out jammed level in traffic, switch between manual and auto mode, control traffic light manually, make sure process happened and display the wanted output, respectively was created. [5]. In 2014, a traffic light controlling system using microcontroller and light emitting diode (LED) was introduced by Ganiyu R. The microcontroller job is to receive a logic one instruction indicating that a switch, in this case a pressure switch sensed a weight of a car which passed on it. Each time microcontroller received logic one, time will be added to another 15 seconds and eventually trigger LED to light on at 15 seconds delay in that particular lane or traffic light [6 Microcontroller also is used by Sachin Jaiswal in 2013, along with few IR sensors and modified arrangements put across the loads in purpose of sensing the traffic density. An RF transmitter and receiver are installed at both vehicle and traffic light control circuit, respectively to manipulate the traffic light. It comprises of three different jam levels namely high density, medium density and, low density.

III.PROBLEM STATEMENT

To reduce traffic congestion and unwanted long time delay during the traffic light switch overs especially when the traffic is very low.

IV.PROPOSED SYSTEM
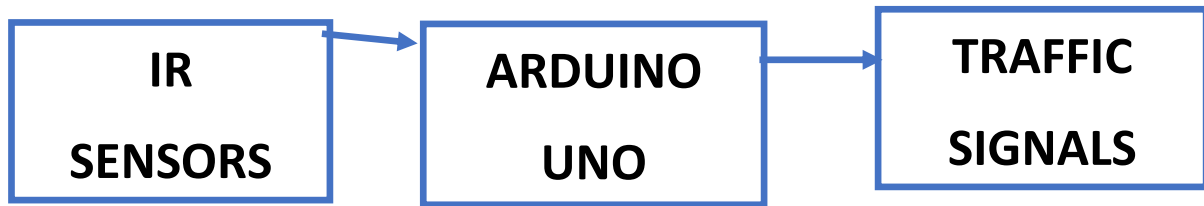
Fig 3.1: Block Diagram of Proposed System

- **FLOWCHART**
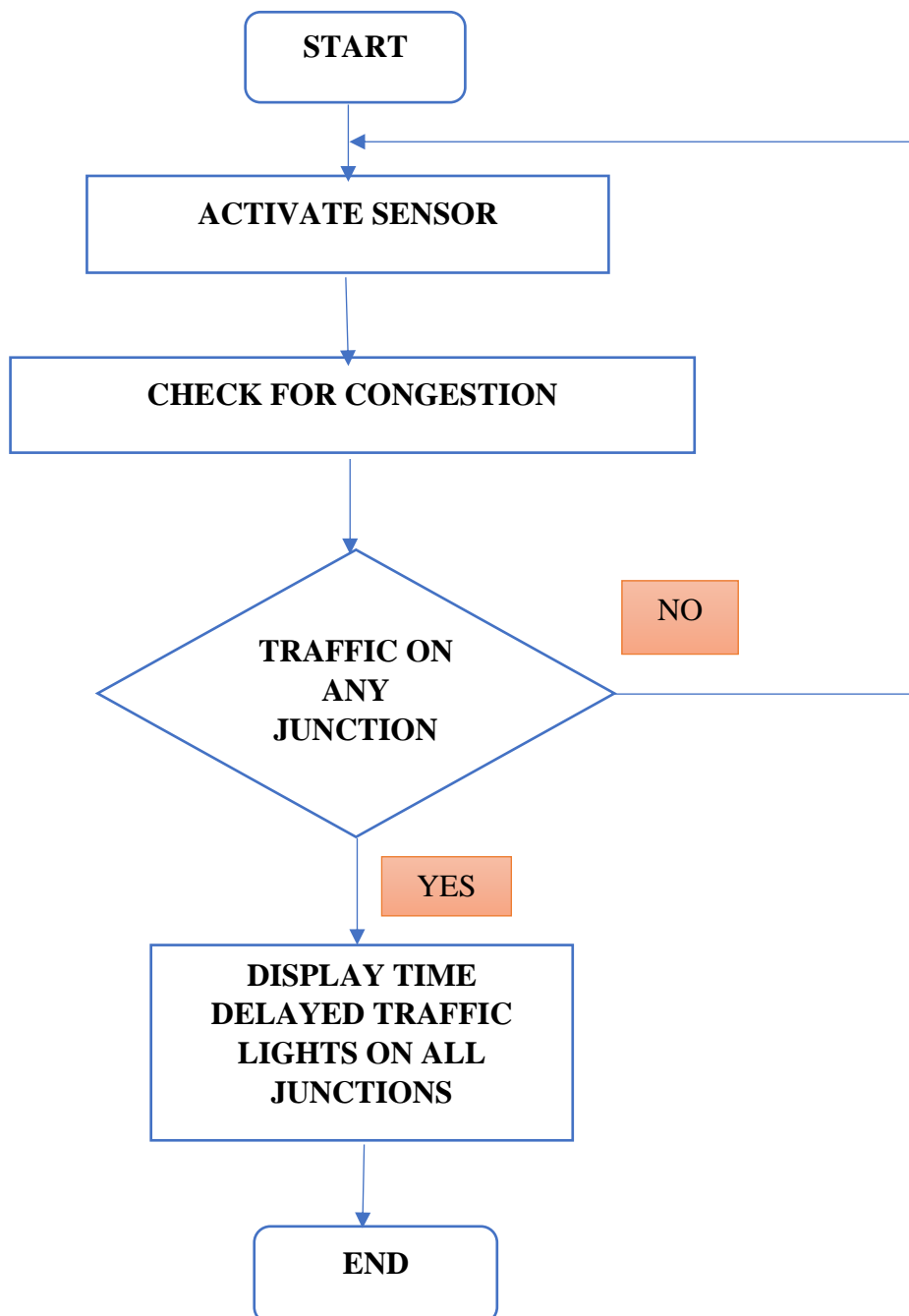
This system is based on microcontroller. The system contains IR transmitters and IR receivers which are mounted on the either sides of roads. This IR system gets activated when any vehicle passes on road between IR transmitter and IR receiver. The microcontroller controls the IR system and gets activated when vehicles are passing in between the sensors. Based on different densities of vehicles, the microcontroller decides the glowing time of the traffic lights. art, each traffic light is sensing any vehicle using the IR sensor. IR sensor has two parts; i) IR receiver and, ii) IR transmitter. IR transmitter is to transmit signal ray and the reflected signal ray will be received by the IR receiver. Signal ray is reflected when it struck a vehicle. One reflected signal ray counted as one vehicle. Then, the time is adjusted where one vehicle equal to 3 seconds delay time making the traffic light to delay. The maximum distance of a counted vehicle is at a 100 meter from the traffic light. The main aim of the proposed system is to constantly monitor the vehicle density present in all parts of the road at the junction. The elemental proceeding of operation is as follows: collection of vehicle density data from the roads; next is to send the same data to the device which compares the same and arrives at a particular characteristic output pattern; then the execution of the output design which is reflected in the signal design. In this model, the IR sensors are used to find the presence of any vehicle in that part of the road, when detected it sends a triggered output to Arduino UNO which is the heart of the project. Then Arduino analyses the number of such provoked outcome from the set of sensors placed in the different roads at the junction and correspondingly triggers the different LED lights in the signals in order to felicitate the vehicle movement.

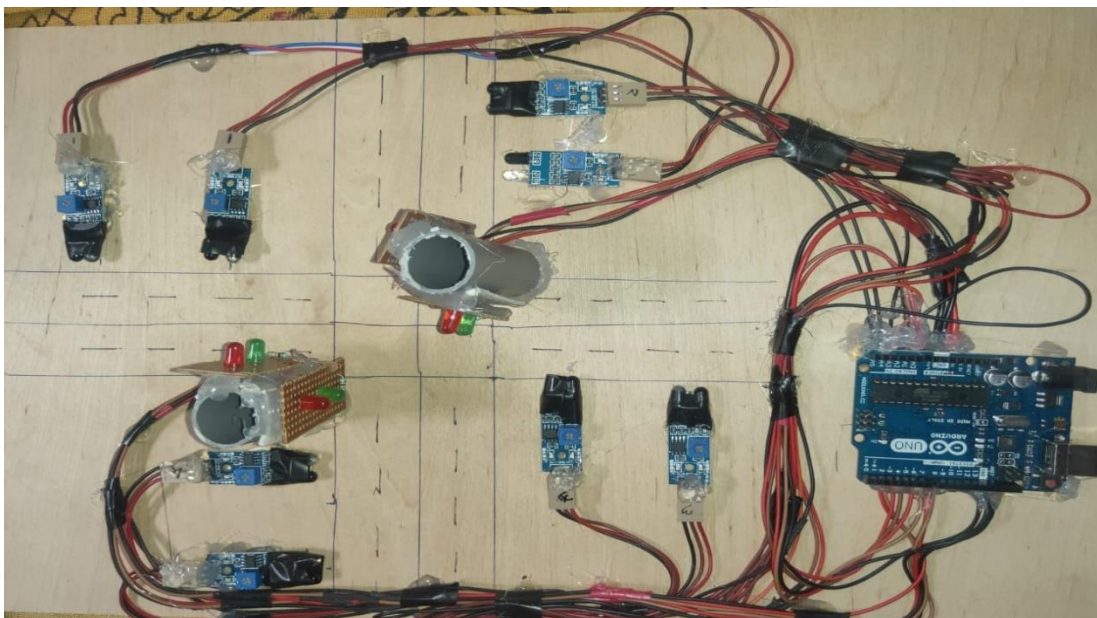## V.RESULT

HARDWARE RESULT

Fig 6 .1 Hardware Design

We implemented signal management system based on arduino and IR sensor. first we take data from 2 IR sensor to detect traffic level . we implemented 2 IR for each route for 2 level traffic. according traffic we showing green signal to users to remove traffic.

VI. CONCLUSION

The project may be very well used in where the traffic signals is kept and in many other places where we need to full fill the need of the automation. In this project we have studied the optimization of traffic light controller in a City using IR sensors and Arduino. By using this system configuration, we try to reduce the possibilities of traffic jams, caused by traffic lights, to an extent and we have successfully got the results. we successfully designed and implemented a smart traffic management system using Arduino to solve the jam traffic . The proposed method investigates and manage daily traffic at four-line intersection using Arduino. Development of this traffic management system project using IR sensor is done very well. By applying this system, it can reduce traffic congestion especially during peak hour and hence also can reduce road accidents in the present and future since traffic density will always increase as the population increase.

VII.REFERENCES

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