



IOT BASED INTELLIGENT TRFFIC CONTROL SYSTEM

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ABSTRACT:

Traffic is the major problem in so many cities of India and there are so many countries facing the same problem now days. The problem of the traffic is the failure of the signal lights and the bad traffic management has to lead to traffic congestion .And how it is the high time to manage the traffic congestion problem. with the various methods we can control the traffic management system and there are wireless sensor network and inductive loop detection and video data and analysis and sensors and there are many more like these etc. but there is the only problem with this that was the it occurs too much of cost and it takes so much of time and the maintenance of the system is also very high rated .

Keywords: *IOT, traffic, density, red led.*

1. INTRODUCTION:

Traffic jam is a great trouble in the world today as it affects life regime of urban areas and also perturbs the environment around us. The vehicle density on roads has seen a huge hike because of growth in population and expansion of cities. This makes the traffic crowding a main concern of many

big cities around the world. Traffic jams have negative effects on the fecundity, fierceness and economy of the country. Hence researchers have come up with numerous solutions to this issue. The research says that in the year 2014, 54% of world's total population resided in urban areas. The following years also have had the increase in urban



population which has put constraint on transport system. As the cost of living in business areas is high the employees living far from work place have to travel from their place of living. Though the making of roads bigger seems to be sudden response to the issue, cities must aim on running their roads smarter. The growth and improvement in internet with regard to bandwidth and speed, internet of things has been able to take the market on different node and has made way for numerous inventions. IoT is enabled due to the contribution of fields like embedded systems, automation, wireless sensor network and control systems. Smart traffic control is possible by the interaction amongst the elements of transport system. And all the feature of transport systems has the employment of IoT. Platform of IoT facilitates continuous inspection of traffic through wireless sensors and it ensures to alert when exceptions in management happen. The combination of traffic systems with the IoT will assure the smart security along with the road safety. The building of embedded system by combining of

many sensors with the concerned website which enables the access to real time information will result in the more effective and safe traffic control. In order to avoid the accident sand environment pollution, etc .Internet of Things is appears to be a new trend setter for intelligent traffic management due to advancement of data communication through internet, cloud utilization using various machine learning methodologies. It will reduce the traffic tensions for civilians such as vehicle drivers , elderly peoples, ambulance , and shipping services. This is the kind of intelligent traffic management system based on the IOT leads that to smart city management in the future. It includes an effective traffic information acquisition, suitable processing, analyzing various conditions and the categories of bulk traffic information in the crowded areas which takes to modern traffic management.

2. LITERATURE SURVEY:

The authors Mounir BOUHEDDA, Hamza BENYEZZA, Ibrahim METALI, Sofiane TCHOKETCH KEBIR, Samia REBOUH in



2019 have discussed, a platform of IoT where a NodeRed server is advanced and an intelligent controller rooted on fuzzy logic is executed using python language to manage the road intersections. The communication between the server and the road intersection is made possible by RF communication. The fuzzy control logic, which has been successfully designed and executed using Node-Red server reveals that this system can be implemented by applying any complex algorithm without facing obstacle of the memory size of microcontroller[1]. The authors Anilloy Frank, Yseer Slim Khamis Al Aamri, Amer Zayegh in 2019 have proposed, solution to control the traffic crowding by usage of Raspberry Pi along with Image processing abilities. The system is advanced by using IoT for observing and controlling traffic signal based on density applying image processing. The system has principal focus on the captured image using the camera. The apprehended image would be again checked with a present image that was laden in the server to calculate the density. The traffic motion is controlled rooted on density of vehicle. This decreases the total stand by time and brings out a smooth traffic flow[2]. The authors Satbir Singh, Baldev Singh, Ramandeep Baljit

Singh, Amitava Das in 2019 have proposed the system in which, the vehicles are counted before reaching the traffic jam points and information of vehicle density is sent for controlling of traffic jam. The well timed data of the traffic congestion is conveyed by internet and cloud for controlling the flow of vehicles. For real time calculation of vehicles, Open-CV is used. The system controls traffic on regional and concentrated servers by using the IOT and Intelligent Image Processing. Raspberry Pi rooted system has been used as hardware which is low cost and movable system to aid reducing the traffic crowding on roads at apex points[3]. The authors Mehal Zaman Talukder, Sheikh Shadab Towqir, Arifur Remon, Hasan U. Zaman in 2017 have discussed a system in which, microcomputer, multiple ultrasonic and Raspberry Pi are applied in every road to find the traffic density and lane is operated considering the vehicle density. Traffic information is continuously updated to website. This characteristic could be used for real time data of a intersection and change route duly. This can decrease the time wasted by people in traffic signal junction and decrease traffic crowding on busy roads caused due to signals on unoccupied lanes[4]. The authors



Pampa Sadhukhan, Firoz Gazi in 2018 have discussed a system in which, the density of traffic at road crossing is measured by applying ultrasonic sensor node (USN) and it in turn sets the signal time considering the counted values of vehicle density. It also utilizes a emerging technique of approximating the density of traffic crowding by usage of USN. The examination of operation of this discussed traffic control system by test bed is the expected future[5]. The authors Anna Merine George, V.I.George, Mary Ann George, in the year 2018, have discussed the system in which traffic data is examined applying techniques of Image processing and Adaptive Neuro fuzzy. A camera is staged crabwise the traffic signal light to get the sequences of images of road traffic. This image is transferred to the cloud server applying platform of ThingSpeak. The control signal given by the adaptive fuzzy controller decides the order of a lane to receive the needed traffic signal light is decided by adaptive fuzzy controller by examining of traffic information. The comfort and security for the drivers are achieved by augmented reality[6]. The researchers Varsha Sahadev Nagmode, Prof.Dr.S.M.Rajbhoj, in 2017, have

discussed the system that applies technology of sensing to observe information of traffic of vehicle by applying ultrasonic sensors to find traffic hierarchy and send data to unit of controller which processes information and exhibit it on server. This method is applied to decrease traffic issues and make priority for emergency vehicles at signal. If heavy traffic is found in any road, traffic signal time is increased for vehicle to pass. The embedded system which applies wireless sensor network gives a framework for observing and managing any traffic associated real-time data. This system is authentic for users [7]. The authors Rafik Zitouni, Jeremy Petit, Aghiles Djoudi and Laurent George, have proposed the system which applies designing, framework, and examining of MQTT protocol. This paper discusses a new model of urban traffic light control based on a network of IoT (IoT UTLC). The goal is to connect both lanes and armature with traffic signal light by means of IoT. They have framed this system by choosing protocol and mediums of wireless sensor network(WSN). Message queuing telemetry transport (MQTT) protocol has been combined to control QoS. This system has been analyzed for the

correlation between the protocol of MQTT and low traffic crowding [8].

3. PROPOSED SYSTEM:

In this project a new approach for controlling Traffic System is designed. The proposed system uses a concept of Internet Of Things. An intelligent traffic controller is designed with components like Arduino UNO, Camera, RFID, IR sensors, IOT module. Arduino UNO is the main component which is used to control all, it acts like a controller. Density of the traffic will be decided with the help of IR sensors. And in order to give Green path (Zero traffic) for emergency vehicles RFID technology is used. Along with this RFID is used to trail stolen automobiles too. The project proposes control of system in 2 modes i.e. 'automatic' without any human intervention and 'manual' with human intervention. This project uses regulated 5V, 500mA power supply. 7805 three terminal voltage regulator

is used for voltage regulation. Full wave bridge rectifier is used to rectify the ac output of secondary of 230/12V step down transformer.

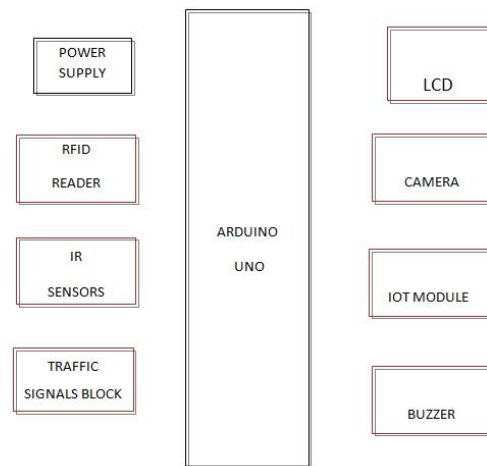


Fig.3.1. Proposed diagram.

4. RESULTS EXPLANATION

The direct communication between vehicles is using an Ad Hoc network is compared to as inter-vehicle communication (IVC) communication types.

Vehicle-to-Vehicle communication that will allow vehicles to exchange messages between them on the road. Vehicles can communicate with infrastructure deployed alongside the roads using Vehicle-to-Infrastructure communication. Each vehicle has Onboard Unit that similar to the vehicle computer with extra features allowing

the services and layers of VANET. The infrastructure is a network of Roadside Units that is installed on the roadside. The next generation of the VANET is referred as the Internet of Vehicles that will extend the functionality of VANET and inherits some many features of the Internet of Things . IOV involves Vehicle-to-Pedestrian, allowing the communication with vulnerable road users ,Vehicle-to-Sensor, on the inside of the vehicle ,Vehicle-to-Home, of the owner of the vehicle, Vehicle-to-Building, the surrounding buildings in the smart city. Vehicle-to-Grid, for electric charging, Vehicle-to-Device, for all the onboard devices, and Vehicle-to-Road signs.

OPERATION:

This research of this project we have tested everything that we used in the project we have firstly checked the raspberry pi and IR sensor and then it is working and then we checked RGB led and USB camera by attaching them and it worked properly. And in this intelligent traffic management system we

have been used python programming language .we have tested on camera and it took photograph of the man and over speed when they don't follow the rules and then buy using the WIFI signals of the poll it send the picture to the control room and then the worker who are working there they will send them the picture and ask to pay fine . these is how the we tested the camera and every thing.



Fig.4.1. Hardware kit.

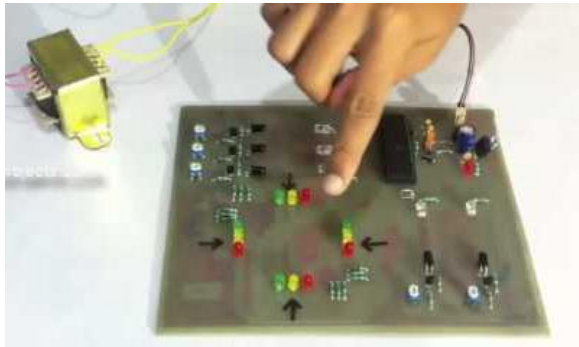


Fig.4.2. vehicle density detection.

5. CONCLUSION:

Hence, the project named as the intelligent traffic management system and it has been successful and we have tested everything and the sensors are also working great. And the main process of the project that intelligent traffic management system and how it work means if any one crossing the signal rashly and or going very speed or any one crossing the on the zebra lines when it is in green light then and there only the camera it will take a photograph and sends to the control room and sensors also will make one sound right there . it is very useful to keep those in and near traffic signals .

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