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Smart Traffic Management System

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Abstract : ***With continuously increasing urban population and rapidly expanding cities, vehicle ownership has been increasing at an exponential rate. Hence, traffic management has become a great problem in our day today life. So we proposed a sytem that provides smart traffic management system to overcome the problem that is prevailing in our daily life.***

Keywords - smart traffic, Emergency vehicle, autonomous management.

INTRODUCTION

Smart based traffic management system utilizing sensor data, communication and automated algorithms is to be developed to keep traffic flowing more smoothly. The aim is to optimally control the duration of green or red light for a specific traffic light at an intersection. The traffic signals should not flash the same stretch of green or red all the time, but should depend on the number of cars present. When traffic is heavy in one direction, the green lights should stay on longer; less traffic should mean the red lights should be on for longer time interval. This solution is expected to eliminate inefficiencies at intersections and minimize the cost of commuting and pollution.

NEED OF THE STUDY

Smart Traffic Management is a system that regulates the flow of traffic through a city in response to demand using centrally controlled traffic lights and sensors. All of the signals on the city's principal highways will be upgraded and integrated.By smoothing traffic flows and prioritising vehicles in real time in response to demand, you may significantly reduce everyday congestion. The traffic control unit receives data from sensors and peripherals and assists in the detection of traffic congestion. The system makes self-decisions and performs an action to minimise traffic based on the detection.

LITERATURE SURVEY

The exiting traffic system is generally controlled by the traffic police. The main drawback of this system controlled by the traffic police is that the system is not smart enough to deal with the traffic congestion. The traffic police official can either block a road for more amount of time or let the vehicles on another road pass by i.e. the decision making may not be smart enough and it entirely depends on the official's decision. Moreover, even if traffic lights are used the time interval for which the vehicles will be showed green or red signal is fixed. Therefore, it may not be able to solve the problem of traffic congestion. In India, it has been seen that even after the presence of traffic lights, traffic police officials are on duty, which means that in this system more manpower is required and it is not economical in nature.

In the paper presented by Mohammed Sarrab, Supriya Pulparambil, proposes an IoT based system model to collect, process, and store real-time traffic data.The objective is to provide real-time traffic updates on traffic congestion and unusual traffic incidents through roadside message units.The early-warning messages will help citizens to save their time, especially during peak hours.The experiments results show good accuracy in vehicle detection and a low relative error [1].

In the paper presented by Rachana K P and Arvind R the system overcomes the flaws of previous traffic administered systems. The structure takes traffic solidity as input from cameras which is abstracted from Digital Image Processing technique and sensors data, resultantly giving output as signal data, resultantly giving output as signals management.An algorithm is given to predict the traffic solidity for future tominimize the traffic congestion. Development of IOT based traffic management system. Identify and penalize traffic violators and help officials identify unauthorized drivers [2].

In the paper presented by Abdul Kadar Muhammad Masum and Md. Kalim Amzad Chy they have used several ways to detect traffic density consisting of different kind of sensors like surveillance cameras, ultrasonic sensors, RFIDs, the light beam that have merits as well as demerits. Ultrasonic sensors and RFIDs are suitable sources for our proposed system. The ultrasonic sensor is most used sensor to identify the traffic density level in TMS.It can calculate the distance up to 400 cm [3].

In the paper presented by Dr.D.Selvaraj and Gokul Nath they have proposed a system to improve the existing system a new Green wave system is developed ,in which the traffic signal management for emergency vehicle is included. To make the proposed system to work, each and every vehicle going for registration is provided with a RFID tag. In which information like vehicle's unique registration number and vehicle type is stored [4].

PROPOSED SYSTEM

In this traffic Management system we have proposed a model such that we have used Two Sensors and one RFID card Reader(for Emergency Purpose). Our Model will run such that if anyone tries to break Rules the sensor will detect that particular vehicle and photo will be captured by the camera placed over a signal. For Emergency vehicle we have placed a RFID card Reader for it. So they can use that and that lane signal will be made GREEN while other lane signal will be RED.

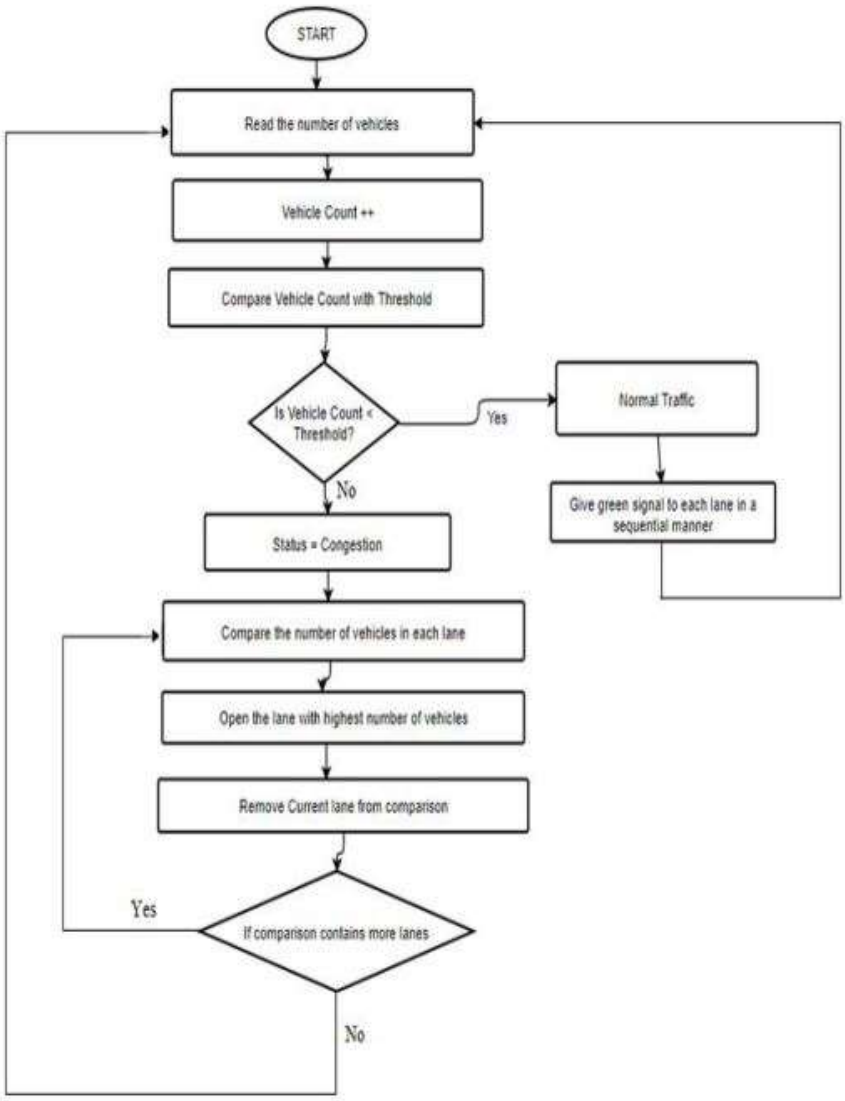
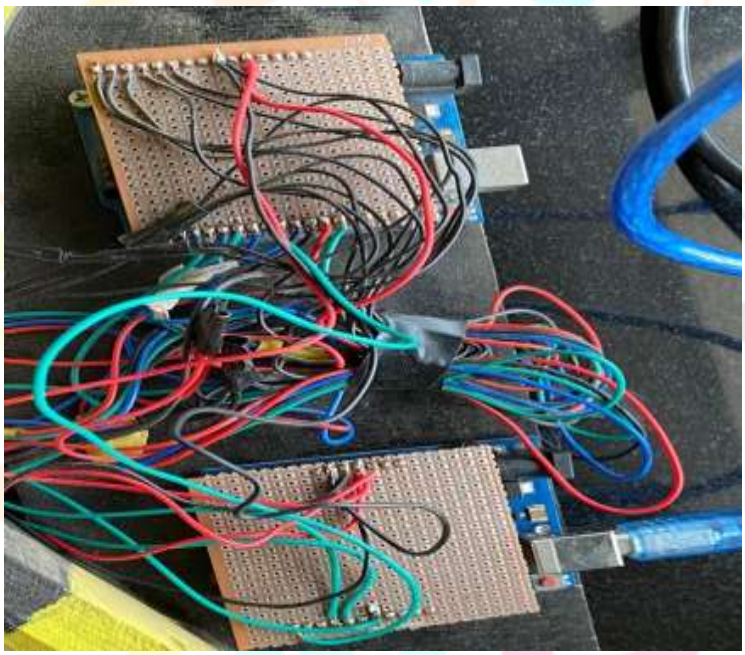


Fig.1 Flowchart

The proposed system helps in better time based monitoring and thus has certain advantages over the existing system like minimizing number of accidents, reducing fuel cost and is remotely controllable etc.

The proposed system is designed in such a way that it will be able to control the traffic congestion as well as track the number of vehicles. The administrator of the system can access local server in order to maintain the system.



CONCLUSION

Smart Traffic Management System has been developed by using multiple features of hardware components in IoT. Traffic optimization is achieved using IoT platform for efficient utilizing allocating varying time to all traffic signal according to available vehicles count in road path. Smart Traffic Management System is implemented to deal efficiently with problem of congestion and perform re-routing at intersections on a road.

This research presents an effective solution for rapid growth of traffic flow particularly in big cities which is increasing day by day and traditional systems have some limitations as they fail to manage current traffic effectively. Keeping in view the state of the art approach for traffic management systems, a smart traffic management system is proposed to control road traffic situations more efficiently and effectively. It changes the

signal timing intelligently according to traffic density on the particular roadside and regulates traffic flow by communicating with local server more effectively than ever before. The decentralized approach makes it optimized and effective as the system works even if a local server or centralized server has crashed. The system also provides useful information to higher authorities that can be used in road planning which helps in optimal usage of resources.

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