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**ABSTRACT**

This paper deals with designing an embedded traffic control system (TFC) using wireless ad hoc sensor and VANET. In this paper we discuss the details regarding the information about how the ad hoc sensors are used, how they are addressed, where they are located and how it is communicated to the central processing unit. It includes implementation of the central processing unit which is used to collect information on vehicle density from the sensors and open the traffic with respect to the density of the vehicle (traffic). A Vehicular Ad-Hoc Network or VANET is a technology used to collect and aggregate real-time speed and position information on individual vehicles to optimize signal control at traffic intersections. Today VANET is used mainly for the purpose of public safety, the comfort of travelers, information, traffic management, traffic coordination and assistance etc. Today many of these things are controlled automatically. For example traffic controls, road control, parking controlling. Keeping these things in mind we are trying to develop the project to automate the traffic tracking for the square. To make any project more useful and acceptable by any organization we need to provide multiple features in a single project. Keeping these things in consideration the proposed system is less with multiple methodologies which can be used in traffic control system.

**KEYWORDS:** VANET, TFC.

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**INTRODUCTION**

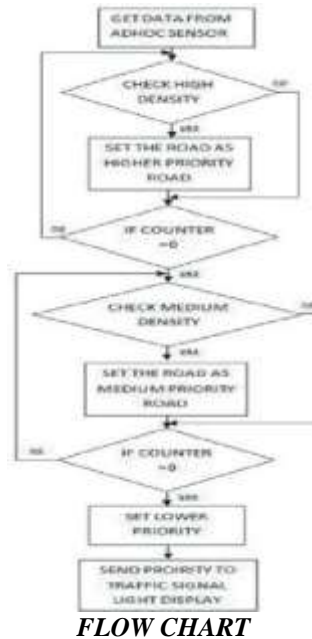
The purpose of a traffic signal is to provide the orderly movement of traffic by assigning right-of-way at intersecting streets. But gridlocks and accidents happen in many places as the vehicle population increases with respect to the population. The reasons for major gridlocks are improper transport system and traffic control.

Traffic jamming is the big problem in metro cities, traffic jamming may be because of an increase in the number of vehicles drastically in the last few years and most of the time traffic jamming occurs at the traffic signal because of a huge line of vehicles on the road or we can say traffic does not properly flow at the right time so the number of vehicles will be waiting for a long time in the lane, to overcome this problem we can use the approach of adaptive traffic control with VANET. Density, speed, and flow are the three critical parameters for traffic analysis.

In this case revising the transport system is needed. The solution involves embedding the Wireless Ad Hoc Sensor with the Central Processing Unit. Using this traffic flow can be controlled with respect to vehicle density in the road. The vehicle densities of each road are compared to the priorities of the road and traffic flow is opened accordingly.

**ARCHITECTURE**

The density of the traffic is determined and the present condition (whether the reception is there or not) is sent to the Intel 8255 which is interfaced with the MSC8051 microcontroller using Ad hoc sensors. Each Ad hoc sensor is addressed individually and the median Ad hoc sensor will arrange the data with respect to the address of the Ad hoc sensor in 8-bit format and the data. Then the data is received to a specific location using various 8255 control words. The controller is programmed in such a manner that the priority is set for the four roads and then the signal is given to the vehicle with respect to priority. The road which has high vehicle density is opened first. Then again the density is checked and the process repeats.



The Fig shows the flowchart of the system. The flowchart is used to set the road priority with respect to vehicle density. In the flowchart counter is a microcontroller register used to represent the road number to vehicle density. In the flowchart counter is microcontroller register used to represent the road number.

### Proposed Research:

We propose Adaptive Traffic Control Signal with VANET for reducing the delay at the time of intersection on Traffic signal and traffic flow smoothly without congestion. The problem of traffic jam will be overcome. We also propose Priority Based Signaling. Priority gives to emergency vehicles.

### PROPOSE METHOD

#### i) method:

Traffic Volume based signal timing here, we are developing a traffic signaling system which will decide the time interval by its own as per the traffic volume at road. The traffic volume will decide the exact time interval for every signal present at traffic signal. At peak time it will be greater and at less volume the Time Interval May Be Little. This will lead to time saving approach and will control the habit to jump the traffic signal due to low traffic signal interval at low traffic volume.

#### ii) Priority Based Signaling method:

Whenever an emergency vehicle like Fire Brigade Vehicle, Ambulance or Police on pursuit, the transmitter will transmit the RF signals to RF receiver fitted with the traffic poles, they will automatically turn green and rest of the signal stay RED. After passing of that vehicle, all the functionality of the traffic signal will be normal as per specified.

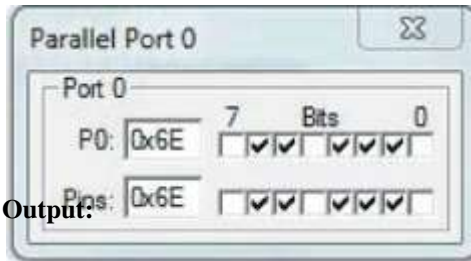


*Fig: Priority Based Signaling method*

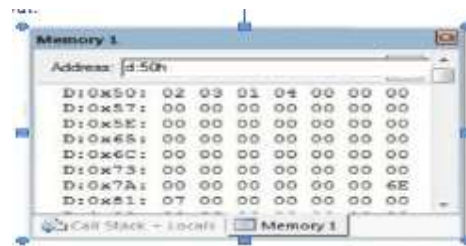
**Simulation:**

The simulated input and output using KEIL simulator are shown in below figures. Intel 8051 microcontroller is used here to show the simulated output of this system. The 8bit data having the information about the road density is given to the parallel port 0 of the microcontroller. It shows that the road 2 and road 3 has high traffic density, road 1 has medium traffic density and road 4 has low traffic density. The output is shown in the data space. The road number is stored according to the priority order.

**Input:**



**Output:**



**Density Algorithm**

This algorithm used to calculate the density of vehicle on the road and selection of appropriate time slots on the basis of density distribution on the mainline density is already high.

**Scheduling Algorithm**

The Method is based on an adversary technique in which the adversary creates a sequence of job arrivals based on the behavior of Density. At the beginning of each time unit, the adversary can determine how many jobs arrive and on which Vertices of the conflict graph.

**Expected Outcome**

We have developed a simulator that integrates a vehicular traffic simulator, in our simulation; the data aggregation the data aggregation module encapsulates the adaptive traffic signal control algorithms for the traffic lights. Simulation result has shown that the Traffic management is well smooth by using VANET.

**CONCLUSION**

By implementing the above idea traffic signals system can be equipped with wireless technology which in turn avoids spreading wires across roads. Also an effective traffic clearing system can be established. This system can be implemented at an expense of more consumption of power due to the usage of number of wireless sensors. This can be reduced by implementing various non-conventional energy sources. And VANET can be used to aid in traffic signal control. We implemented adaptive traffic signal control algorithm that reduces the delays experienced by the vehicles as they pass through the intersection. This algorithm produces lower delays, compared with other method and the pre timed signal control method. This Approach used to reduces the Problem of traffic jams at the traffic signal. This is used to flow traffic smoothly without congestion. This is help to provided Emergency services at the critical condition like Fire Brigade Vehicle, Ambulance or Police on pursuit by using Priority Based Signaling.

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