

# Intelligent Traffic Congestion Control in Vanet

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**Abstract-**The traffic congestion can occur anytime anywhere in the traffic. It is the condition where the traffic control fails. This may arise because of accidents, road maintenance, rule breaking, etc. Therefore, to avoid the congestion in traffic an efficient system is required. The active vehicular system used to communicate the vehicle in traffic is VANET (vehicular network). There are many active systems developed name electronic Route Guidance system (ERGS), Comprehensive Automobile Traffic Control System (CACs), PROMETHEUS (Program for European Traffic with Highest Efficiency and Unprecedented Safety), etc. The proposed system utilizes the VANET for emergency response and congestion control. This analysis of the proposed system shows that the emergency response will be automated and congestion in traffic can be avoided. This proposed system will act as active system to control the traffic in intelligent way by using VANET.

**Keywords** –VANET (vehicular network)component; electronic Route Guidance system (ERGS), Comprehensive Automobile Traffic Control System (CACs), PROMETHEUS (Program for European Traffic with Highest Efficiency and Unprecedented Safety).

## I. INTRODUCTION

This The traffic in India is increasing day by day. The increase in number of vehicles on the road ultimately increases the traffic. This is the scenario of every growing economy of the world and same is true in India. This increase in the traffic leads to the traffic congestion. This traffic must be controlled to avoid traffic congestion. This traffic control leads to the concept of traffic management. If the traffic is managed in right way then there will be no congestion. The traffic management in India is still followed by old methods. That is the traffic management is only depended upon traffic signals. But in the developed countries like USA, Japan and European countries they developed the VANET for traffic management and congestion control. In the VANET the vehicles can directly communicate with each other and with infrastructure which is an entirely new paradigm for vehicle safety and traffic congestion control. The VANET can be used for the traffic management, safety, efficiency, etc.

In 1970 electronic Route Guidance system (ERGS) was proposed in USA. The system was operating at 170 KHz using loop antennas installed at intersections and mounted in vehicles. Data rate was 2Kbps. In Japan (Nakahara and Yumoto) the Comprehensive Automobile Traffic Control System (CACs) project was deployed from 1973 to 1979 by agency of industrial science and technology of Ministry of International Trade and Industry (MITI). In Europe, the PROMETHEUS (Program for European Traffic with Highest Efficiency and Unprecedented Safety) framework initiated in 1986 and launched in 1988. The PROMETHEUS was organized in various sub programs known as PRO- CAR, PRO- NET and PRO- ROAD.

These above projects in different countries were developed for traffic congestion control, vehicular safety, etc. Similar projects are required in India for traffic management to avoid traffic congestion.

## II. LITERATURE SURVEY

While the past decades have witnessed proliferation of active safety systems will be realised by innovative applications of information available through wireless communications.

The information may travel between vehicles or and fixed infrastructure. The behaviour of current active safety systems is reactive and is relies on real time feedback with small constants from autonomous sensors. Furthermore, VANET not only promise safety benefits to drivers and those in the surrounding driving environment, but also improves mobility, increased comfort, reduced environmental impact.

## III. METHODOLOGY

The traffic management systems developed in many countries are completely automatic and do not need any human interference for operation. These systems are basically operating on the protocols for vehicle to vehicle communication, vehicle to infrastructure communication. These protocols specify how to route the data for unicast, multicast, geo-cast, broadcast. In the traffic every node is unaware of traffic at signal and routes until it appears. But while being at that location ultimately it increases it. Therefore the traffic management fails and the traffic congestion occurs. But in VANET every vehicle acts as node in network and sends data to another nodes regarding traffic to avoid the traffic congestion. In this way the traffic is managed and congestion is controlled.

The algorithm for the traffic control and emergency response are following:

- Define “i” number of images and labels.
- Create generate, reset, connect button.
- Create the picture box of size specified.
- Calculate the location for each image and label using random function.
- If the generate button is clicked then the node images with labels will be displayed.
- Then if reset button is clicked the node images with labels will be displayed at different location.
- If any two nodes selected as first and second node the node number will be displayed as in label as source and destination.
- If connect button is clicked after section of nodes then it will draw a path between these nodes.

The flow graph for the proposed protocol is shown below in the fig.1.

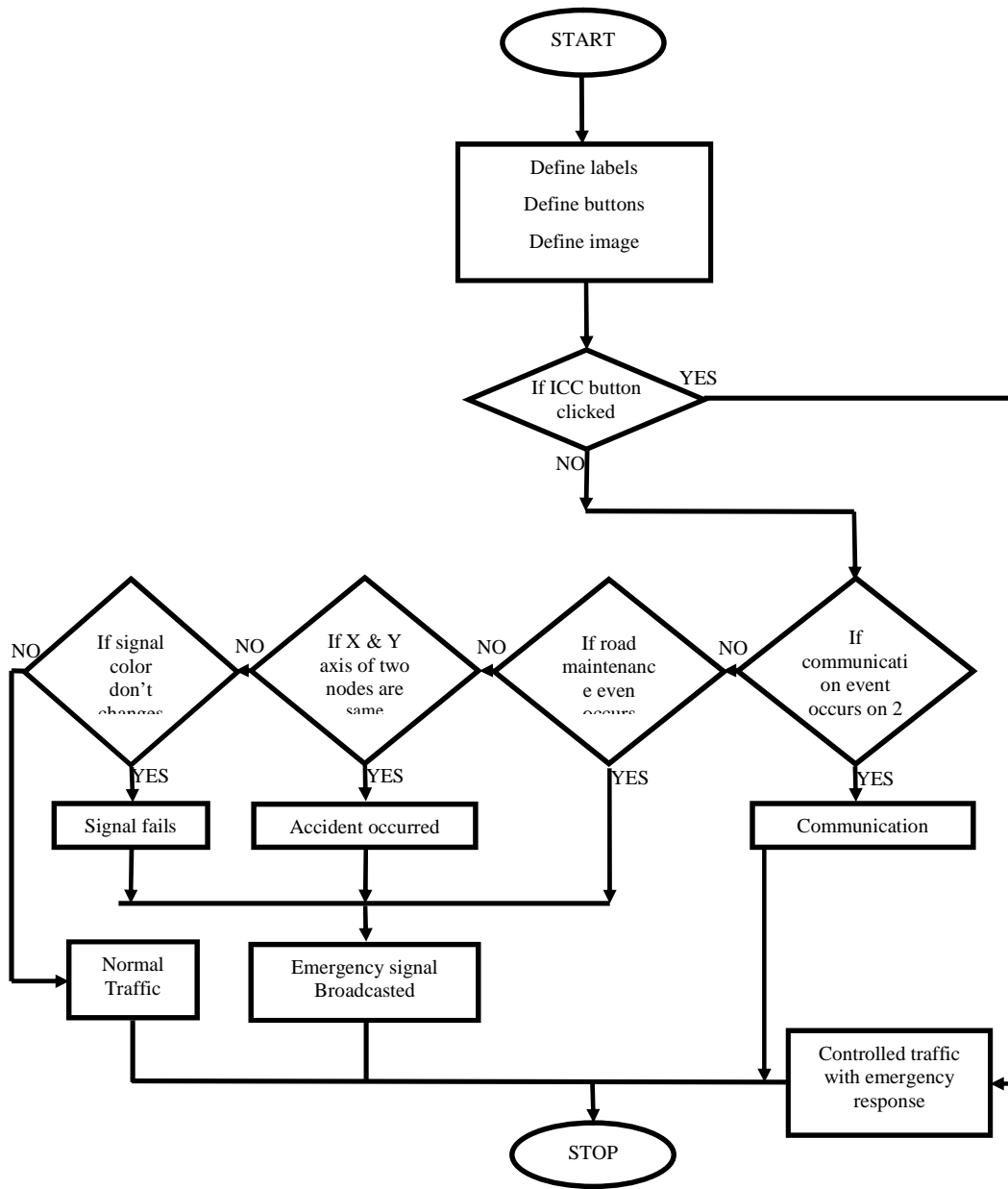
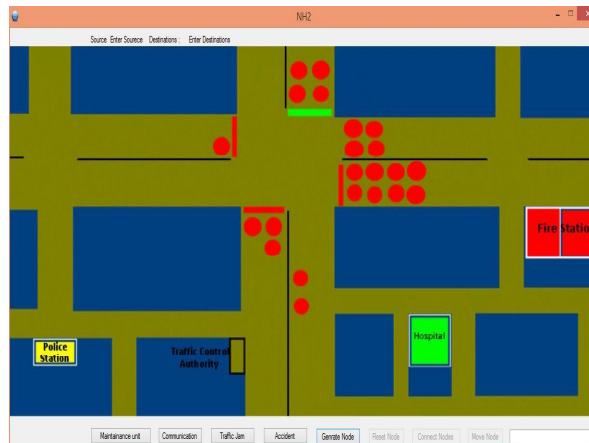


Fig.1. Flow graph of the proposed the intelligent congestion control system.

#### IV. SIMULATION RESULTS

The Visual Studio 2010 is utilized for the simulation. This package Visual Studio 2010 consists the C#.NET, VB.NET and ASP.NET. The language used to develop this project is C#. The simulation result is shown in fig. 2. as follows.



## V. CONCLUSION

The simulation results shows that the proposed system will efficiently control the traffic congestion and have active response for any emergencies like accidents, road maintenance, etc. Therefore the proposed system is more efficient as compared to the existing conventional traffic system to avoid congestion and respond to emergencies.

This system can also be utilized for various purposes like advertisement and luxury services to vehicles in future. The optimum development of this system in VANET can support the automated driving vehicles for any services.

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