

# Broadcasting Emergency Messages in VANET after an Emergency Event

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*Abstract*— With the increasing traffic on the road, Vehicular Ad-Hoc Networks can help reduce traffic accidents by broadcasting emergency messages to vehicles in advance so that vehicles can take necessary precaution to avoid accidents. In VANET environment it is a difficult task to deliver messages to right vehicles without delivery latency. The previously proposed protocols have been used in VANET which causes various problems such as message latency while disseminating messages among vehicles as well as the messages not delivered to the right vehicles. We propose a new protocol which decreases delivery latency while broadcasting emergency messages.

**Key words:** Arduino Sensor, GPS, Dissemination, Ad-hoc Network

## I. INTRODUCTION

The main objective of this project is to broadcast emergency messages among vehicles in a VANET environment to reduce traffic accidents. Now a days traffic accidents has been increased due to not obeying the rules in our country. In traffic safety applications for VANETs, some warning messages have to be disseminated in order to increase the number of vehicles receiving the traffic warning information. However existing protocols suffer from one or more problems which minimize the effect of existing systems. Some system suffers from delivery latency which effectively delays the message broadcasting to right vehicles at right time. Also existing schemes can be classified into categories for example in probability-based schemes vehicle rebroadcast depends on a predefined probability. A major application of Vehicle-to-Vehicle (V-to-V) and Vehicle-to-Roadside (V-to-R) communication protocols such as DSRC/WAVE is the avoidance of traffic accidents. The considered safety applications already rely on positioning through the Global Positioning System (GPS), possibly refined through internal sensors in the vehicle. The primary challenge of this type of schemes is to assign an optimal (or reasonable) probability of rebroadcasting for each vehicle.

## II. RELATED WORK

In this project we are going to use four modules which acts as the main objective to broadcast the emergency messages among the vehicles in the VANET environment after an emergency event occurred. The four modules used are

- 1) Network formation
- 2) Neighbour calculation
- 3) Emergency event occurred
- 4) Broadcasting emergency message

## III. NETWORK FORMATION

In this module, we create a network consisting of nodes. Each node acts as a vehicle and has its own distance and range. Latitude and Longitude are given as inputs to describe the

location of the vehicle. The nodes will be dynamic in changing their positions. We create 'n' number of nodes based on our requirement to form network environment or network formation.

## IV. NEIGHBOUR CALCULATION

After forming the network, based on each node latitude and longitude neighbor calculation will be calculated. The neighbours are calculated to send messages among nodes and communicate among them. Data will be sent to destination from source via neighbors if both source and destination are not within their communication range.

## V. EMERGENCY EVENT OCCURED

In VANET environment many emergency events can occur like for example Partial Brake, Emergency Brake, and Overtaking etc. When an emergency event occurs it create confusion within the environment. Based on the emergency event occurred an emergency message will be created.

## VI. BROADCASTING EMERGENCY MESSAGE

After an emergency event occurred an emergency message will be created by the vehicle. These emergency messages are created based on the type of emergency event occurred. sudden break, Partial Brake, Overtaking, ambulance takeover etc are some of the examples of the emergency event. If a vehicle detects a dangerous event, it immediately generates an emergency message and broadcast the message to the vehicles in the target region with safety risks, such that the nearby vehicles can take effective actions to avoid traffic accident.

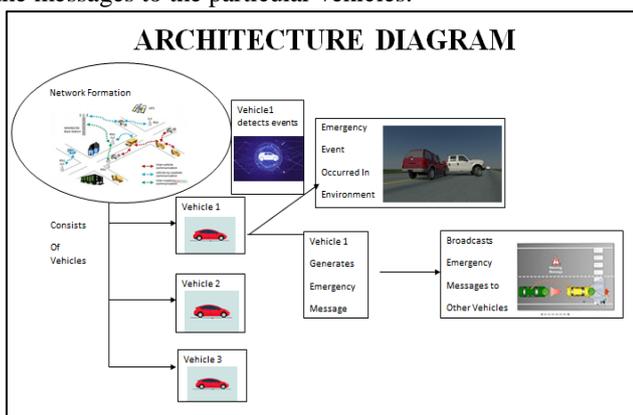
## VII. PROPOSED SYSTEM

In this project we are proposing a new position based protocol to broadcast emergency message in VANET environment. In this system messages are broadcasted only in their target region with safety risks so that delivery latency will be decreased. In Proposed system if a vehicle in the environment detects a dangerous event, it immediately generates and broadcasts emergency message to vehicles in region of interest, so that the vehicles can take preventive measures to avoid accident. Emergency Messages will be broadcast to vehicles which are needed to take action to avoid accident.

## VIII. SYSTEM ARCHITECTURE

Here, this architecture explains about the broadcasting emergency messages in VANET environment. It consist of number of vehicles which can act as a node. It forms a ad-hoc network between vehicles then it starts to calculate the neighbour hood to generate the messages from their locations. It can calculate with the help of Latitude and Longitude directions. It is based on single hop and multi hop .If an

emergency event occurs it can help to detect and disseminate the messages to the particular vehicles.



### IX. SENSOR & ITS USES



#### A. Arduino Sensor

Arduino is a hardware and software platform which is useful in developing interactive devices to communicate and to an interactive development environment. Arduino can change the surrounding environment with the help of microcontroller which is designed with the programs and run in the Arduino development environment.

#### B. View of Sensor Working



#### C. Uses

It can control and manage the device which are connected with it with the help of its characteristics.

#### D. Advantages of this Project

- 1) The proposed models of data dissemination reduce the number of total broadcasted messages by limiting the region of interest.
- 2) The proposed model also makes sure that the messages are not broadcasted through the entire network thus tackling the broadcast storm problem.

### X. CONCLUSION

This may help to reduce Traffic accidents by broadcasting emergency messages to vehicles in advance so that vehicles can take necessary precaution to avoid accidents. So the messages are transmitted without any delay so that the vehicles are intimated before an emergency event occurs.

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