SAFETY ALERT INDICATIONS IN TRANSPORT SYSTEM THROUGH VANET

[1]Ganga Bhavani Randhi, [2]Dr. D. Uma Devi

ABSTRACT

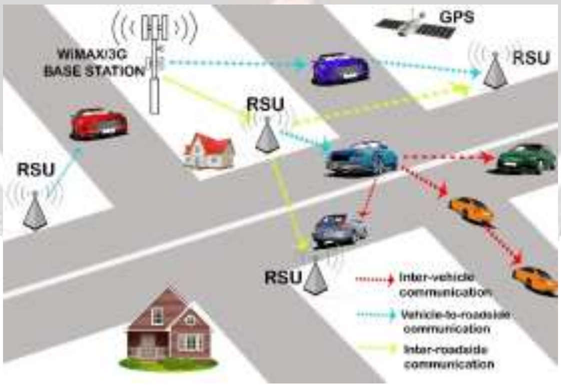
The VANET is one of the wireless communications and it is subgroup of MANET. The rapid growth in wireless communications made inter-vehicular communications (IVC) and Road-vehicular communications (RVC) possible in Mobile AD-Hoc networks. The next stage of MANET is VANET. In this paper my view is to maintain the security of drivers. By using VANET to avoid accidents and collisions. The safety message packets are broadcasted by one control channel. It is known as CCH. Some service channels are worked under this control channel used to transmit data.

INTRODUCTION:

VANET is known as vehicular Ad-hoc Network is one of the needs. Today, world the road safety is one of the major problems in transport system. VANET provides safety and security of drivers as well as passenger also it is Extension of manet now a day num6bers of vehicles are increasing day by day; accid6ents and collision frequenc6y is growing high so VANET is established for collision avoidance66 and its target is to se6nd safety messages to the vehicles with minimum delay. Two types of communications available in VANET

1. Vehicle to vehicle (V 2 V)

2. Vehicle to infrastructure communication
   (V 2 I)



SOME OF THE ROUTING PROTOCOLS

Depending on the routing topology three types of routing protocols.

ROUTING PROTOCOLS FOR VANET

1. ad-hoc routing protocols
2. Infrastructure protocol

3. Hybrid routing protocol

1. Ad-hoc routing protocol: Ad-hoc routing protocols are 2 types.

1. Topological routing protocol: Two types.

a) Proactive routing protocol

b) Reactive routing protocol

a) Proactive routing protocol: it is table driven routing protocol. Routing information is collected in tabular format.
Ex: DSDV, OLSR, FSR, FSLS

b) Reactive routing protocol: it is source initiated and on demanded routing protocol.
c) It is not periodically updated the information and loop free protocol also.
Ex: DSR, AODV

2. INFRA STRUCTURE ROUTING PROTOCOL:

It is one of the DISSEMINATION ROUTING PROTOCOL

These are established in two types.

1. UMB: Urban multi hop broad casting

2 .ODAM: Optimizing dissemination of alarm message.

The dissemination routing protocol is known as v2v delay- based broadcasting protocol. This approach compares two phases.

- The intersection and directional broadcasting.
- Transmission range adaptive broadcasting.

3. HYBRID ROUTING PROTOCOL:

Hybrid routing both proactive and reactive rules are worked in hybrid routing protocol.

Ex: ZPR (zone routing protocol)

Security is lot of concern in all form's communication network but ad-hock network faces the greater challenge due to their inherent nature of dependence on other nodes for transmission.

OUR EXISTING SYSTEM:

Our existing system is single forwarder chain transformation system. This is mostly worked in rural areas. In rural areas few vehicles are used to transport compare with urban areas. SD, SFD chain transformations are used in existing system.

PROPOSED SYSTEM:

Our proposed system is worked in double forwarder chain transformation. It is denoted by SFFD. The source node is S. destination node is D. the two forwarder F1 and F2 are used in proposed system. This is worked in urban areas like high density vehicle system.

CHAIN DETERMINING:

The proposed schemed is used in high density vehicle areas. In these urban areas the number of vehicles is travel in transport system. It is automatically applied rural areas when vehicle density is low. The SD, SFD, SFFD are three types of chains works with specific conditions.

Our main purpose is to improve the throughput for service packets. While maintaining the acceptable probability. The received message packets are not dropped in the middle of the travelling.

By the definition of the single forwarder chain the message traveling distance is in between 0 to 300m range. In double forwarder node to node distance is message traveling distance. In SFFD chain transformation the source node checks the distance that it separates from the destination which is chosen as RSU (roadside unit), according to this distance a chain will be created.

The source node S calculates the distance nearest RSU. It is denoted by (d) our assumption in data transmission range (X) here the transmission of data packets will be done directly, after competing 3-way hand shaking between the source and destination to atom connection agreement between them. As for SFFD chain it contains one source (S), first forwarder (F1), next forwarder (F2), the nearest RSU and destination node (D) show in the below figure.

1. **SD chain transformation**
   While
   No message received
   Listen to CCH during CCHI
   If
   Message received from application layer
   Call source procedure
   END while
   If (d<X<2d) ://^\X=data transmission range.
   Call procedure fo6rwarder (1)
   Call SFD
   ELSE IF(d<X<4d)
   Call procedure forwarder (2)

Call SFFD

END IF

SOURCE PROCEDURE:

S calculates d \\ distance between source and destination

d=pd-ps \\ pd: destination position ps: source position

1. **Transformation of data in SFD**

Do

For (I = 1; I <6; I ++)

IF I <6 \\ in the 1st SCHI s

During SCHI (I) S transmits to F

END IF

During CCHI (1)

Switch (i)

Case 1. I=1 \\ in CCHI (1) do connection agreement.

Call SF

Case 2. I=2 \\ in CCHI (2) S listen to the safety packet

S listen to CCH

Call calculate p(i)

S sends p(i) to the chain members

Case 3. I>2

S listens to safety messages in p(i)

S broadcasts in (CCHt - p(i)) \\ in the second part of CCHI

Call calculate p(i) according to equation (1)

S sends p(i) to the chain members

While (X<dI<2X)

Call terminate chain

2.SFFD chain transformation of data

Do

For (i=; i<6; i++)

If i<4 \\ in the 1st 4 SCHIs

During SCHI(I) S transmits to F

END IF

During CCHI (I)

Switch (i)

Case 1.

I=1 \\ in CCHI (1) do connection agreement

Find the distance

If distance <300m then

Sd

Else if distance >300 and less<600

Call SFF

Else

Call SFFD.

Case 2

i=2 \\in CCHI (2)S listens to safety packets

S listens to CCH

Call calculates p(i)

S sends p(i) to the chain members.

Case 3.

i>2

S listens to safety message in p(i)

S broadcasts in (CCHt p(i)) \\ in the second part of CCHI

Call calculates p(I) \\ according to equation (1)

S sends p(i) to the chain members.

While(X<dI<4X)

Call terminate chain.

Example: S is source node it gets x1, gets y1

D destination node it gets x2, gets y2.

We find the distance between S and D with the help of distance finding formulae. It is in between d, 2d then we call single forwarder, and it is in between d,4d we will call double forwarder.

The data traveling distance is greater than the data communication range (X), according to this reason there will be a forwarder placed between the source node and destination node. The forwarder helps to waits for the response(s). First, we select the vehicle to starting node to transmit the data range is X and 3X. the data will be transmitted one by one scenario.

MODULE 2

CORDINATION BETWEEN CHANNELS:

There are several schemes used to transmit data. CCH is one of the control channels where safety message packets are broadcasted and six service channels SCHs are used to transmit the data. our main purpose is to improve the throughput for service packets while maintaining an acceptable probability of successful received messages.

In the table figure we can show the SFD, SFFD and its data transmission. During the six SI's the last four SI's the value of p(i) is needed for F and D to know the stopping of CCH (that means the listening of CCH forwarding and go back manner). The safety message received information will not listen from SCH during CCHI this message (packet) will be re-broad casting on CCHI by the source during the remaining time CCHT–p(i) all of the worst cases for sending a safety packets while the value of N will not during CCHI (50 meter).

Since the road traffic is not unchanged very short time. N represents the successful received packets. If some packets are collided and the actual number of safety packets are not sent the source will not be capture them. This time p (1) is calculated according to (1).

P(i)=CCHt-min(N-(i-1) * ts, k*CCHt) ………… (1)

N>: node forward.

N^: node broadcast.

N*: node listening.

SIMULATIONS:

To confirm our proposed protocols I performed

Several simulations using java programming. source node is randomly chosen. Some other nodes are randomly generated.

We show the possible sources X position in simulations taking the nodes into SFD and SFFD Chain. The nodes. The nodes are following X position 16, 17, and 18 each node have range of 300m SCH range. That is equal to 10 units on X axis. So the possible forwarders are nodes on X position 21, 23, and 24 (where X position 21 is we have two nodes one Y=1 and another is Y=2). In our implementation scenario chosen source protocol is X=17 and forwarder with X=24. The source node transmits data to its corresponding forwarder. The forwarder receives data or message packets to needed destination during four consecutive intervals.

The result show successful message packets received by the proposed protocol is approximately equal to the successful packet received by the standard, this is depending upon the K value.

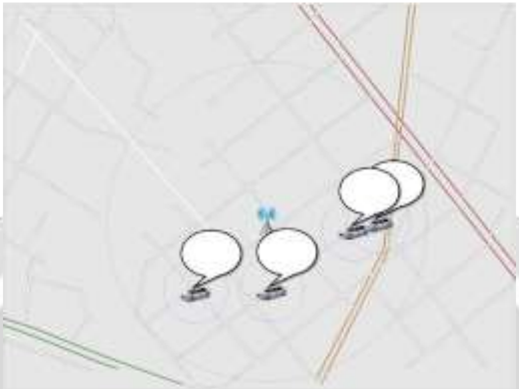
Finally, we can take 20 vehicles to simulate our results in the chain According to the Figure 9 in our scenario each vehicle is sending at a rate of 1 safety packet per second. In our assumption CCHI1 and CCHI2, are 18 out of 20 and 19 out of 20 respectively successfully received safety packets by the source. In CCHI3 and CCHI5 we have 16 out of 20 packets successfully received in P (1) and P (3) respectively. Where as in CCHI4 and CCHI6 we have 10 out of 20 packets successfully received in P (2) and P (4) respectively. These packets that were received in P (1) to P (4). In this interval we can recognized number of safety packet was randomly generated and the packets were randomly distributed. In each CCHI. The number of successfully received packets and it is not the actual number of safety packets sent, because some packets are collide and the source will not be send these packets.

When K value is increased At Data rate is 6 and 12 graphs are shown in different ways.

In proposed Approach 1 K=0.5 At Data Rate 6 or 16.

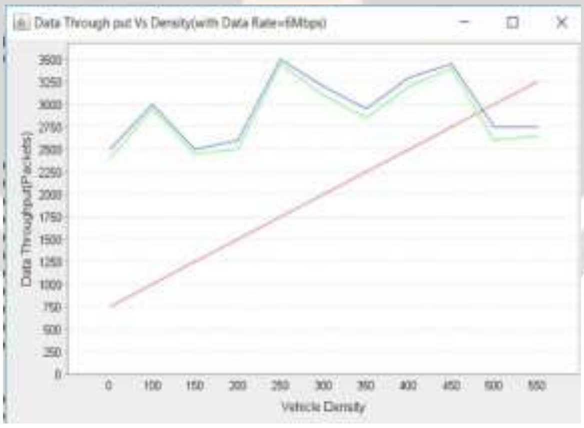
In proposed Approach 2 K=0.7 At Data Rate 6 or 16

In proposed Approach   K=0.9 At Data Rate 6 or 16.

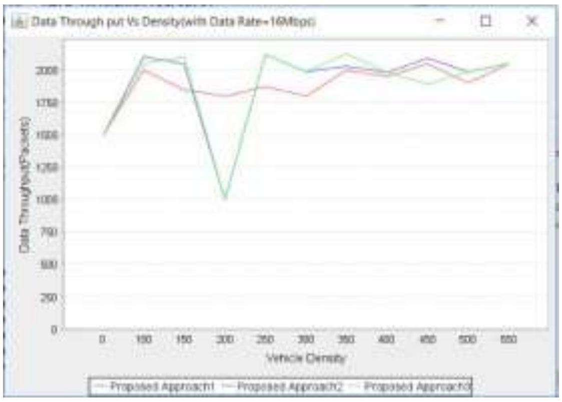


CONCLUSION

In this paper our main purpose is increasing the throughput on SCH while safety message rate is not high. in this paper our assumption is prove for the high-and-low density vehicles on road. We proposed an efficient protocol in VANETS. The efficient protocol helps to increasing the performance of the system. When vehicle density increases using two forwarders instead of one will help in increasing the data through put and overall system efficiency. The three are more forwarders used to increasing throughput of the system.



Graph 1: Data through put Vs Density of vehicles (12mbps)



Graph 2: Data through put Vs Density of vehicles (16mbps)

REFERENCE:

1) A survey of Security issues in Mobile Ad hoc and Sensor Networks, IEEE Communication Surveys Tutorials" Vol 7, D.Djenouri, L.Khelladi and N.Badache

2.Dedicate Short-Range Communications (DSRC) Standards in the United States. **Article** *in* Proceedings of the IEEE · August 201 DOI: 10.1109/JPROC.2011.2132790 · Source: IEEE Xplore

3.) Performance Analysisof theIEEE 802.11p Multichannel MAC Protocol in Vehicular Ad Hoc Networks

4)Dedicated Short-Range Communications (DSRC) Standards in the United States IEEE and SAE Standards for Wireless Access in Vehicular Environments (WAVE), most of which have been published in the past 12 months, are described in detail in this paper. By John B. Kenney, Member IEEE

5.) Performance Analysis of the IEEE 802.11p Multichannel MAC Protocol in Vehicular Ad Hoc Networks Caixia Song ID College of Science and Information, Qingdao Agricultural University, Qingdao 266109, China; cassiesong@mail.dlut.edu.cn; Tel.: +86-532-8608-0444 Received: 7 November 2017; Accepted: 6 December 2017; Published: 12 December 2017

6)Dedicated Short Range Communications (DSRC) Message Set Dictionary, SAE Std. J2735, SAE Int., DSRC Committee, Nov. 2009

7) Draft DSRC Message Communication Minimum Performance Requirements V Basic Safety Message for Vehicle Safety Applications, SAE Draft Std. J2945.1 Revision 2.2, SAE Int., DSRC Committee, Apr. 2011.

8) R. Resends, B Vehicle-to-vehicle and safety pilot,[in Proc. U.S. Department of Transportation Safety Workshop, Jul. 20, 2010. [Online]. Available:http://www.its.dot.gov/presentations/Safety_workshop2010/ Vehicle-to Vehicle

AUTHORS PROFILE:

Ganga Bhavani Randhi pursuing M. Tech in computer science and engineering at Gayatri Vidya Parishad College of Engineering (Autonomous) Vishakhapatnam. She completed her MCA from GITAM University at Visakhapatnam. Her research interest are data miming and computer networks.