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Nerual Network Based a Link Successful Reception in VANET

Harmeet Kaur
Student Masters of Technology
Department of CSE
Sri Guru Granth Sahib World University
Fategarh Sahib, Punjab, India

Mr. Vinay Bhardwaj
Assistant Professor
Department of CSE
Sri Guru Granth Sahib World University
Fategarh Sahib, Punjab, India

Abstract: VANET(Vehicular adhoc network) is a part of ADHOC Network,.A VANET adhoc network uses in cars as mobile node in a Manet to create a mobile network. Numerous number of techniques have been developed and further more are in area of research phase. Neural Network play an important Role in Link Successful Reception in VANET. in this work of thesis the technique is successfully developed to incrase System Reliability in terms of the probability of successful reception of the packet and delay of emergency message in vanet environment.If the research carried out successfully it will help to increase system reliability.

Keywords: VANET,Adhoc network, safely application,VANET Environment,DSRC

I. INTRODUCTION:VANET

An ad hoc network is a type of temporary computer-to-computer connection. In ad hoc mode, you can set up a wireless connection directly to another computer without having to connect to a wireless access point or router.A vehicular ad hoc network (VANET) uses cars as mobile nodes in a MANET to create a mobile network. A VANET turns every participate car into a wireless router or node, allowing cars approximate 100 to 300 metres of each other to connected and, in turn, create a network with a wide range. As cars fall out the signal range and drop out network, other cars can join in, connecting vehicles to one another so that a mobile Internet is created. It is estimate that the first systems that will integrate this technology are police and fire vehicles to communicate with each other for safety purpose.

VANETs are a form of mobile ad-hoc networks to provide communications among nearby vehicles and between vehicles and nearby fixed equipment. To this end, special radios and sensors would be embedded within the car. The V2V communication infrastructure assumes the presence of high bandwidth with low latency. The radios typically operate on unlicensed band making the spectrum free. The most compelling application for V2V would be the safety related application since the latency requirements for these applications are very stringent. The V2V infrastructure in VANETs can provide low latency data dissemination from the point of impact to the nearby vehicles using short range radio

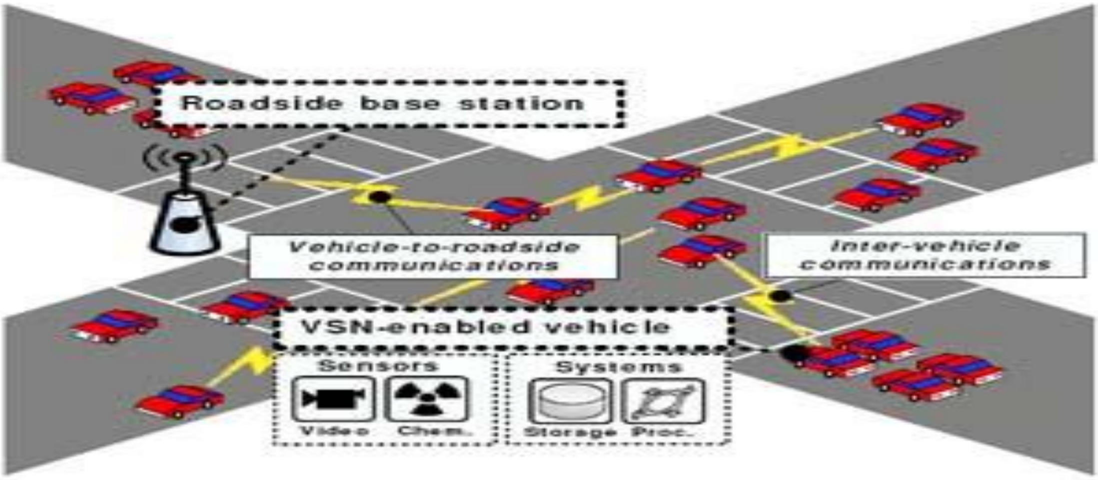

Fig1 VANET

II. VANET ENVIRONMENT CONSIDERED

Seeking to understand the achievable QoS in infrastructureless VANETs, we build a realistic simulation environment which assumes the optimal values of the *un-specified* VANET characteristics. The specified VANET characteristics include all of those that currently cannot be influenced by VANET protocol design: vehicle density, vehicle mobility, road topology, signal propagation, and DSRC as the emerging standard On the other hand, the routing protocols, the transport protocols, and the interference as a function of the employed routing and transport protocols, are un-specified characteristics (i.e., those that can and will be optimized by VANET research community) To ensure optimal functioning of the routing layer, we opted for the following solution. For every message between the observed sender and receiver, all of the available paths (i.e., routes over intermediate nodes) are analyze, and the *optimal path* is selected base on the minimum-delay criteria and The network layer forwards a message over each available path (if any) between the sender and receiver to determine the best path for the specific message. The process is then repeat for every message. , if the PHY and MAC layers of DSRC are able to relay the message between the sender and receiver, the network layer will deliver message over the optimal path without additional loss or overhead. Furthermore, we employ *only one sender/receiver pair per simulation run* in order to avoid the interference generated by other data sources.

III. Safety Application

In the safety applications of VANETs, vehicles broadcast two types of messages:

(a)warning (event driven)
(b)status messages.

While warning messages usually contain safety-related information, status messages are periodically sent to all vehicles within their range and contain vehicle's state info-rmation such as speed, acceleration, direction, and position.

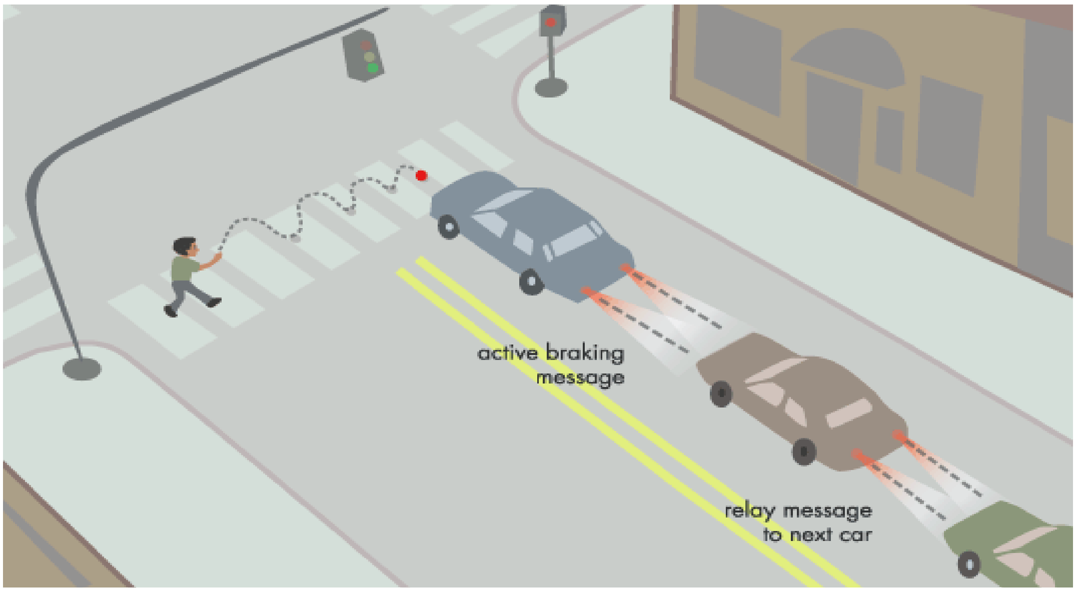

Fig2:Safty Application

IV. DSRC

DSRC is a two-way short-to-medium range wireless communication capability that permits very high data transmission critical in communications-based active safety applications In Report and Order FCC-03-324, the Federal Communications Commission (FCC) allocated 75MHz of spectrum in the 5.9 GHz band usein intelligent transportations sys-tems(ITS) vehicle safety and mobility applications. DSRC-based communications is a major research priority of the ITS Joint Program Office (JPO) at the U.S. Department of Transportation (USDOT) Research and Innovative Technology Administration (RITA). The cross modal program is conducting research using DSRC and other wireless communi-cations technologies to ensure safe, interoperable connectivity for help prevent vehicular crashes of all types and to enhance mobility and environmental benefits across all transportation system modes.

DSRC is the only short-range wireless alternative today that provides:

• Designated licensed bandwidth: DSRC ensures secure, reliable communications. It is primarily allocated for vehicle safety applications by FCC Report and Order FCC 03-324.
• Fast Network Acquisition: Active safety applications require the immediate establishment of communication and frequent updates.
• Low Latency: Active safety applications must recognize each other and transmit messages to each other in milliseconds without delay.
• High Reliability when Required: Active safety applications require a high level of link reliability. DSRC works in high vehicle speed mobility conditions and delivers performance immune to extreme weather conditions (e.g., rain, fog, snow).
• Priority for Safety Applications: Safety applications on DSRC are given priority overnon-safety applications.
• Interoperability: DSRC ensures interoperability, which is the key to successful deployment of active safety applications, using widely accepted standards. It supports both V2V and V2I communications.
• Security and Privacy: DSRC provides safety message Authentication and privacy.

V. Literature survey

Khalid et al.(2013)[1] in the paper “Performance Analysis and Enhancement of the DSRC for VANET’s Safety Applications” proposed An analytical model for the reliability of a dedicated short-range communication (DSRC) control channel (CCH) to handle safety applications in vehicular ad hoc networks (VANETs). Specifically, the model enables the determination of the probability of receiving status and safety messages from all vehicles within a transmitter’s range and vehicles up to a certain distance,. The proposed model is built base on a new mobility model that takes into account the vehicle’s follow-on safety rule to derive accurately the relationship between the average vehicle speed and density

MAHALLE et al. (2012)[3] in the paper “A DSRC BASED SMARTVANET ARCHITECTURE” presented a novel network architecture using the cross-layer paradigm to optimize the performance of the vehicular networks. The architecture is called Smart Vehicular Ad-hoc Net-work (SmartVANET) architecture. The SmartVANET architecture can support safety, traffic and commercial applications. The SmartVANET architecture abide by the DSRC channel plan. The architecture divide road into segments and assigns a service channel to each segment. The SmartVANET combines a segment base on clustering technique with a hybrid Medium Access Control (MAC) mechanism (known as the SmartMAC protocol). Using cross-layer integration, SmartVANET provide a solution for broadcast storm problems and offers scalability. This paper presents the SmartVANET architecture and states its advantages.

Mate Boban, Ozan K. Tonguz, and João Barros(2009)[9] in the paper “Unicast Communication in Vehicular Ad Hoc Networks: A Reality Check**”** We characterize the unicast performance available to applications in infrastructureless vehicular ad hoc networks (VANETs) in terms of connection duration, packet delivery ratio and end-to-end delay, and jitter in highway and urban VANET environments. The results show existence of several stringent **QoS** constraints for unicast applications in VANETs**.**

Fei et al.(2012)[2] in the paper “Efficient Data Dissemination in Vehicular Ad Hoc Networks” studie the inter-vehicle data dissemination problem based on a WAVE1/802.11p vehicular ad hoc network, using network coding. They first derive the probability mass functions (PMFs) of dissemination completion time in a prototypical three-node case for both random broadcast and with network coding, for quantify the benefits of the latter. For a one dimensional (1-D) infinite lattice network, we provide analytical results for the steady state dissemination velocity of data set, use network coding. The gains from such network coding, relative for baseline scheme of random broadcast, with perfect feedback, in presence of Rayleigh fading wireless links for this network are estimated using simulations.

Francesca et al.(2011)[4] in the paper “Measuring IEEE 802.11p Performance for Active Safety Application in Cooperative Vehicular System” present a measurement study of application layer performance in IEEE 802.11p vehicular networks. More specifically, their focus is on active safety applications, which are based on exchange of beacon messages containing status information between close by vehicle. We consider two performance metrics relevant to active safety applications: the first is application-layer goodput, which can be use for optimize congestion control techniques aimed at limiting the beaconing load on the wireless channel; the second is the beacon reception rate, which is useful for estimated the level of situation awareness achievable onboard vehicles. Their measurements were conducted using a prototypal, 802.11p communication device develop by NEC, in both stationary and mobile VtoV scenarios, and disclosed several useful insights on 802.11p application level performance. the best of knowledge, the ones presented in this paper are the first application-level measurement of IEEE 802.11p base vehicular networks reported in the literature.

VI. CONCLUSION

In this paper, we have discussed a particular case which is used to handle safety applications in vehicular ad hoc networks (VANETs).And it is suitable to enhance successful reception rate by train our system using a neural network technique .To increase system reliability in terms of the probability of successful reception of the packet and the delay of emergency messages in a harsh vehicular environment.

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