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An Analysis of Best Routing Protocol in VANETs

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Abstract- *A Vehicular Ad hoc Network (VANET) is a form of Mobile Ad hoc Networks, to provide communication between vehicles. The main intension of VANET is safety and comfort for users. The successful distribution of critical message in vehicular ad hoc networks can create a variance between life and death. To get the life-saving goals, emergency data distribution needs timely and lossless medium access in vehicular ad hoc networks. However there previous medium access control (MAC) protocol that providing priority medium access in the previous work. The MAC protocol target on arithmetical importance for providing unicast flows instead of strict importance for separate pockets. So in this approach a new MAC mechanism to find this problem with its "Novel Pulse-Based Control:" scheme, the implemented MAC scheme understands strict packet-level importance arrangement for emergency packets in a fully transferred way. Using this mechanism the implementing mechanism supports different level of strict priority for immediate packets. The complete simulation outcomes in this approach shows the efficiency of the implemented MAC mechanism in helping critical messages in vehicular ad hoc networks. And also in this work we analyzing of vehicular networks. In vehicular networks mobile users in vehicles can admission the web and enjoy different aspects like Voice over IP (VoIP) and online streaming video. To gain better Quality of Service, we need to suitably place gateway to communicate mobile nodes to the web or any other data networks. To rectify the problems of QoS, in this paper analyzing that how to optimally place gateway in vehicular networks. And also reducing minimum number of hops from Access points to Gateway. With is work we can reduce communication delay.*

Keywords- *Medium access control (MAC), priority, quality of service (QoS), vehicular ad hoc networks, Gateways.*

I. INTRODUCTION:

The emergency information distribution will be a very vital type of application in vehicular ad hoc networks as vehicles converted more and more smart. For example, on the sector, if a battling vehicle detects mines, fatal gases, or other killing substances, the vehicle may want each of the separate units in the batch to be aware of the detection as shortly as possible. On toll roads, future smart vehicles will serve as wireless ad hoc networks and participate safety information to get better highway security [1]. For illustration, if a vehicle detects serious junk similar to a smart object fallen from a planning truck on the road, it will advise other vehicles behind to stay away from the object. In the particular cases, urgent messages must be delivered to each node within reach with essentially no delays. A single delayed or lost message could result in loss of life. A vehicle that detects a difficulty event usually only needs to circulate its urgent message to other vehicles in a limited, corresponding to a range of several hundred meters.

A single-hop distributed may be suitable for this type of application, which creates path for urgent packets less related. In that scenario medium access control (MAC) becomes the very emergency part in the Delivery process of a critical packet. Although, MAC for emergency message distribution is a challenging issue in VANETs. The cause is that MAC in a classic vehicular ad hoc network that requires to be fully transferred because the frequently moving and altered in network. Using fully dispersed MAC, packets may understanding random delays in media access due to delays and bakeoffs. Extensive medium access interruption is still intolerable for critical message distribution in vehicular ad hoc networks due to the limited lifetime of emergency data in such area network. And also various types of urgent messages normally have various lifetimes. In a fully transferred scenario, a MAC scheme for urgency messages distribution must be able to guarantee that a message with a longer lifetime produces to other information with shorter lifetimes [2]. Compare to delay, packet delay or loss also one of the major issue for critical messages transformation in vehicular ad hoc network. The neighbor node in the vehicular ad hoc network every time will modify. A growth in this type of objects cannot often know careful associate information. Some methods this type of certain repeat desire thus cannot ensure reliability for beam containers in this kind of litigation. Being lossless in medium access thus becomes essential for emergency packets in vehicular ad hoc networks.

By lossless medium access the emergency packages have a negligible loss of rate caused by Collusion in network. Basically, two nodes that cannot sense each other may still delay with each other at their receivers and, consequently, cause packet losses. Although there are current MAC protocols helping precedence get entry to within the literature consisting of, these protocols recognition on supplying statistical precedence for flows alternatively of strict priority for man or woman packets [3]. In addition, those protocols do no longer completely address the hidden terminal hassle. There are some other protocols within the literature which have been designed for addressing the hidden terminal hassle. The predominant contribution of this paper is its proposal of a new MAC scheme that successfully supports emergency message distribution in vehicular ad hoc networks. The primary technique of the proposed MAC scheme is the intelligent use of a single Manipulate channel for a couple of purposes. The proposed MAC scheme realizes low and stable medium get right of entry to delays for person emergency packets and does now not have the hidden terminal trouble. Moreover, the proposed scheme is completely distributed but capable of provide more than one ranges of strict precedence scheduling for emergency packets. The complete simulation results on this paper display the effectiveness of the proposed protocol in assisting emergency message distributed in vehicular ad hoc networks. The rest of this paper is prepared as follows: Section II affords in detail the proposed MAC scheme for emergency dissemination in vehicular ad hoc networks [4]. Section III evaluates the proposed scheme with sizeable simulations. Finally, Section IV concludes this paper.

II. PREVIOUS WORK:

There are existing MAC protocols supporting importance access in the literature such as these protocols effort on providing arithmetical priority for flows instead of strict importance for individual packets. And these protocols not fully target the hidden terminal problem. There are some other protocols in the previous that have been implemented for addressing the hidden terminal problem. These protocols are mainly for unicast traffic and thus are not suitable for emergency message transmission in vehicular ad doc networks [5]. There is also previous work that addresses specific MAC problems for broadcast traffic in vehicular networks. Existing MAC protocols do not have the full capabilities to support emergency message dissemination in vehicular ad hoc networks. And also Vehicular networks have emerged as a hot literature topic lately. Although the problem of gateway insertion in VANET has not been well treated in the previous. Bejerano studies how to procedure gateway efficiently in ad hoc networks [6]. And Hwang et al [7]. given a system of gateways in sensor networks to provide proficient data querying. Currently Prasad and Wu focus on the problem of gateway deployment optimization in cellular wireless fidelity mesh networks. In their implementation they find best position of gateways to minimize the network installment cost. When keeping flexibility and an acceptable rate of service. The problem of a way to optimally vicinity the gateways is much like the ability area trouble, which may be traced again to the seventeenth century. In 1629, Fermat proposed a trouble: how to find a factor such that the entire distance from it to the three vertices of a triangle is minimized. Torricelli and Steiner studied this problem in 1644 and 1837, respectively, and developed a few geometric strategies. This trouble is known as the Fermat–Torricelli hassle, and the most reliable point is called Fermat's Point.

III. PROPOSED WORK:

The main implemented approach of MAC scheme in this paper to use "pulses" in a single control Network to get different goals. The pulse in the implemented scheme that are basically single tone waves with pauses of random lengths, which will be introduce in detail in section II-B. In this advanced the control channel brings only pulses, and pulses only look in the control channel. And the control channel is observed by all the nodes and all the nodes every time excluding when they are distributing in the channel. Here a node generating pulses in control channel to monitors the channel when its pules pause [8]. There is usually a transmission delay of a couple of micro-seconds when an antenna is switches its state. This late is small as compared with the duration of a pulse in proposed scheme.in the addition in the proposed scheme, the application layer controls the emergency of level of a message and puts this data in the packet header. The application layer also determines the variety of reproduction copies to ship for every emergency message. The reason of sending duplicate copies of an emergency message is to deal with the trouble that ARQ isn't always sensible for emergency message dissemination in a typical vehicular ad hoc network. Additionally, the proposed scheme assumes that there is a co-existing media get right of entry to manage protocol inclusive of IEEE 802.Eleven for regular packets, i.e., nonemergency packets. Emergency packets access the medium through the proposed MAC protocol, while everyday packets access the medium thru the coexisting protocol. And also in this paper, we do not forget the state of affairs wherein roadside Aps can cowl the entire avenue so that each car is related to a roadside AP within one hop. In this scenario, no matter how many cars there are, the cell customers in automobiles are constantly able to access the Internet [9].

SYSTEM ARCHITECTURE:

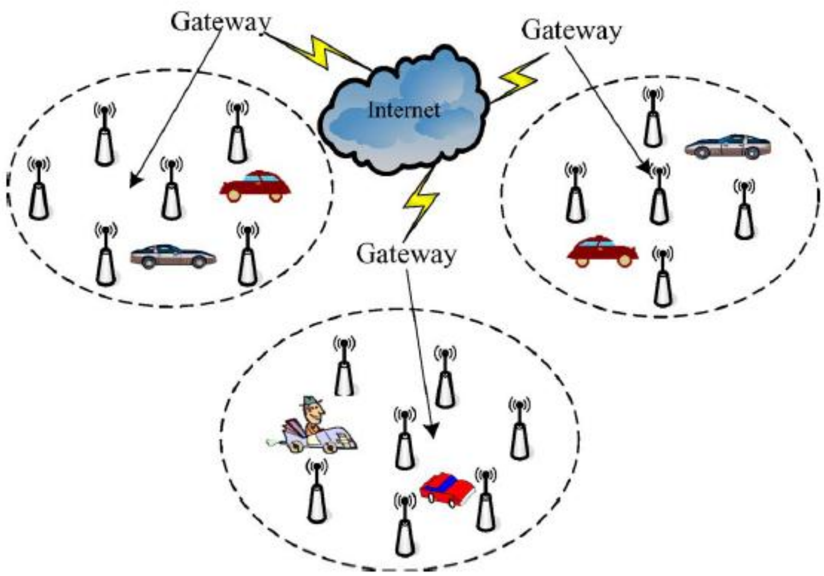

Fig.1 Gateway Architecture

FOGA ALGARITHM;

01. Initialization: We begin to search from this position: $x = \sum_{i=1}^{n} \frac{x_i}{n}$, $y = \sum_{i=1}^{n} \frac{y_i}{n}$.
02. Iteration: compare (x, y) with (x_i, y_i).
03. IF $(x, y) \neq (x_i, y_i)$, for $i = 1, ..., n$,
04. calculate $Scos = \sum_{i=1}^{n} \cos \alpha_i$, and $Ssin = \sum_{i=1}^{n} \sin \alpha_i$, where $\cos \alpha_i = \frac{(x_i - x)}{\sqrt{(x-x_i)^2+(y-y_i)^2}}$, and $\sin \alpha_i = \frac{(y_i - y)}{\sqrt{(x-x_i)^2+(y-y_i)^2}}$.
05. ELSE IF $(x, y) = (x_k, y_k)$, for some $k \in [1, n]$,
06. IF $u_k > 1$, where u_k is defined in (11),
07. calculate $Scos = \frac{u_k - 1}{u_k} \sum_{i=1, \neq k}^{n} \cos \alpha_i$, and $Ssin = \frac{u_k - 1}{u_k} \sum_{i=1, \neq k}^{n} \sin \alpha_i$.
08. ELSE
09. $Scos = 0$, and $Ssin = 0$.
10 END IF
11. END IF
12. IF $|Scos| \leq Threshold$ and $|Ssin| \leq Threshold$
13. Go to 18.
14. ELSE
15. Recalculate x and y: $x = x + step \cdot Scos$, and $y = y + step \cdot Ssin$
16. Go to 2.
17. END IF
18. Finish.

Graph:

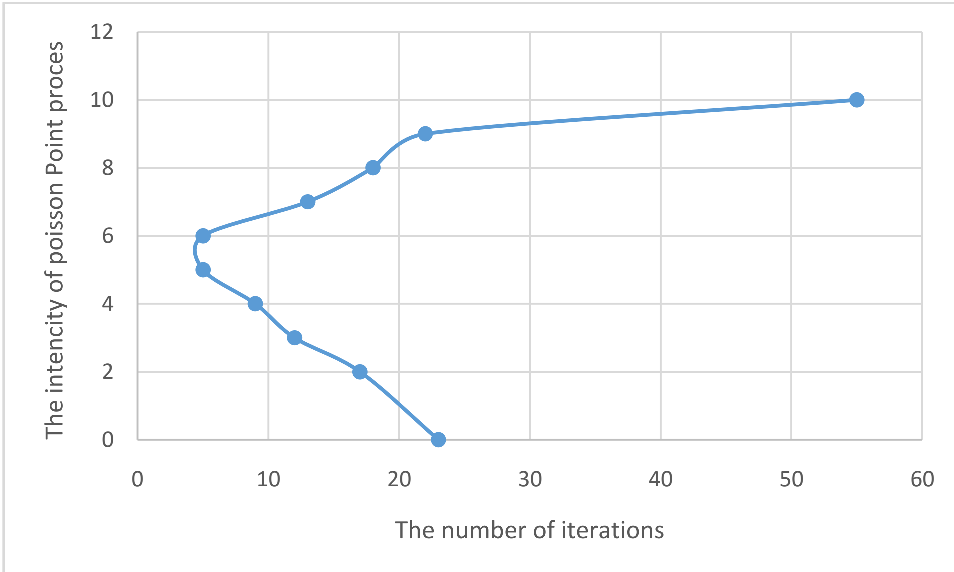

Fig.2 Graph between poisson point process and number of iterations

We have calculated the performance of FOG algorithm by simulations. We creates nodes in an area of 10 x 10 according to the Poisson Point Process and then find optimal Positioning using the FOG. In the model Threshold to be equal to the parameters step. The iteration times .i.e.., the numbers of steps from beginning point to the optimal point. As shown in Fig.2.

IV. CONCLUSION:

In our approach the emergency messages distribution in vehicular ad hoc networks is very important type of application and it need cross layer support in the network. However the medium access is a critical part in urgent message distribution in vehicular ad hoc networks. In this paper has represented MAC scheme to address the problems in existed MAC scheme. Using a novel pulse based control technique the MAC Scheme understands timely and lossless medium access for emergency messages. And also in this approach we target on the problem of optimally taking one or multiple gateways in both 1-D and 2-D vehicular networks to reduce the average number of paths from APS to gateways. Thus the interaction delay can be minimized. Moreover, the size of each AP can be increased. More specifically, in 1-D vehicular networks, we have obtained the analytical results for optimal placement of gateway. In this approach using FOGA algorithm we have implemented to determine the optimal positioning of one gateway in dense networks.

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