

A Review Paper on Efficient Protocol for Intelligent Transportation in Vehicular Adhoc Networks Based on Traffic Management and Safety

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Abstract— The Vehicular network was implemented to enhance the security in the network. Despite of high demand of security in network, high security attacks such as DDOS, Sybil attack, black hole attacks also occurred and very dangerous for Ad-hoc networks but these days, more risky security threats have come up in a shocking manner. This research work will discuss progressive security threats in ad-hoc routing such as BLACK HOLE ATTACK. The network traffic in this attack give instruction to specific node and this specific node is known as black hole. The supportive mechanism described by fuzzy logic to check the efficiency of the developed mechanism. The aims of this research work is to reduce the black hole attack effects by constructing a unique fitness function by applying Genetic Algorithm. In the end, some matrices such as End to End Delay, Error Rate, throughput and Delivery Ratio of packet will be used for the technique measurement.

Index Terms— MANET, VANET, DDOS, Wireless Networks, Ad-hoc Networks, Protocols.

I. INTRODUCTION

Wireless networks have become very popular since 1970 due to several applications in the computing industry. It has become significant within the past decade due to enable mobility of wireless networks.

Wireless networks have two types. One is an infrastructure network, it is fixed gateway and the bridges in this network are called base station. In this, mobile unit connects and communicates with the neighbor base station which lies in its communication radius.

Another type is the infrastructure wireless network, also called an ad-hoc network. These networks have no any fixed routers and made up of continuous varying amount of hosts. An ad hoc network topology is much faster as compared to fixed networks. In this, all the nodes can be connected dynamically and can be easily move. The node of this network behaves as a router and manages the routes for other nodes. This network has applications in emergency rescue or search operations, data acquisition operations and meetings in which persons want to share information [1, 2]. It offers a way for hosts to join them without any manual configuration. An inter-building network, whose borders are defined by the facade of the building, is an example of this network and the mobile host constructs an ad-hoc network within building borders.

A. MANET

MANET "mobile ad hoc network" is a specially appointed and changeable system and it is an autonomous collection of mobile routers and associated hosts that are connected by the wireless links. These routers can organize themselves arbitrarily, thus, topology of network may change easily. Such networks connected to the wider internet and operate in a standalone fashion. In this network, geographic regions covered by a MANET can be change vastly due to the free mobility of nodes and it become impossible to believe on any fixed infrastructure in comparison to static ad-hoc networks. Vehicular networks belong to the MANETs and nature of vehicle move around [3, 4]. In MANET, diverse portable hubs are associated through remote connections and every hub is ability to move i.e. no focal controller accessible.

This network built through the presence of a many wireless communication links. In this, the transitive effects on the single-hop links makes the hosts to communicate with other different hosts, that is not within the direct link of communication, if host P can communicate with host Q and Q can communicate with host R, then host P can also communicate with host R by routing its packets through host B. It is known as *multi-hop routing*.

MANETs have some fundamental differences as compared to other conventional wired networks and one-hop mobile

phone systems. In MANET, the participating nodes deals with the unpredictable and frequent changes of the network topology, where the intensity of change depends on maximum sending range, density and the speed of the nodes within a MANET. In the vehicular networks, the node's velocity is most important factor. If we have imagined equal radio range and a network consisting of humans and vehicles, then two opposite walking humans can communicate for a long time than two opposite driving vehicles.

B. VANET

Due to the developing advanced sensor technologies, it is easy to communicate the nearby vehicles in the given zone and can determine critical driving conditions. Vehicles formed an unstructured network to construct such a vehicular Ad-hoc Network. VANET have large network which are publicly present on the road at any time and it can enhance and improve road safety and comfort level by vehicle to vehicle communication networks. Security is significant factor concerned with life threatening conditions on daily basis. The system must give credible information to drivers for their privacy. VANETs face different securities attack that can destroy the normal performance of the networks.

The black hole attack occurs in VANET and in this a malicious node arranges itself for the smallest path to the packet or to the destination node. This node shows the accessibility of new routes for its routing table and the attacker node is accessible to reply to the route request and data packet. In flooding protocol, the reply of malicious node is received by the requesting node before the reply of actual node and hence a fake route is created. When once route is established, then node can drop or forward all the packets to the unidentified address. Vehicular Networks are a foundation of the ITS systems having empowers the vehicles to talk with one another through IVC and with roadside base stations through Roadside-to-Vehicle Communication. It can provide secure and more productive streets by giving opportune data to drivers.

II. LITERATURE REVIEW

Ch.VijayaDurga et al," A productive convention for smart transportation in vehicular ad-hoc networks", (IJAEST) global diary of cutting edge building sciences and innovations vol no. 5, issue no. 2,2009, pp. 301 – 309, "Various neighborhood episodes happens on street arrange every day, a considerable lot of which may prompt clog and security perils. On the off chance that vehicle can be given the data about such episodes or activity conditions, ahead of time, the nature of driving can be made strides."

Gabriel Agamennoni at el," Robust deduction of vital street ways for shrewd transportation frameworks", IEEE exchanges on wise transportation frameworks, vol. 6, no. 1, January 2010 In the course of the most recent couple of

years, electronic vehicle direction frameworks have progressed toward becoming progressively more prevalent. Nonetheless, regardless of their omnipresence, execution will dependably be liable to accessibility of definite advanced guides. Most present computerized maps are as yet insufficient for cutting edge applications in unstructured situations. Absence of avant-garde data and lacking refinement of the street geometry are among the most essential weaknesses.

Ahmad et.al. , "A steering technique for vehicular impromptu systems in city", upheld from EUIST Project CarTalk, 2010. Steering of information in a vehicular impromptu system is a challenging assignment because of the high elements of such a system. As of late, it was appeared for the instance of parkway traffic that position-based steering methodologies can deal with the high portability of system hubs. Be that as it may, standard position-based directing has difficulties to deal with two-dimensional situations with snags (structures) and voids as it is the situation for city situations. In this paper we analyze a position-based directing methodology that makes utilization of the navigational frameworks of vehicles. By methods for simulation we contrast this approach and non-position-based impromptu steering techniques (Dynamic Source Routing and Ad-Hoc On-Demand Distance Vector Routing). The simulation makes utilization of exceptionally practical vehicle development patterns got from DaimlerChrysler's Video traffic simulator. While DSR's execution is constrained due to problems with versatility and taking care of portability, both AODV and the position-based approach indicate great exhibitions with the position-based approach beating AODV.

Rajesh Rajamani et al," On separating arrangements for roadway vehicle robotization", American control meeting Chicago, June 2011Scientists realize that utilizing super capacitors in conjunction with batteries could significantly build the efficiency of half and half electric vehicles (HEVs) because of the way that super capacitors can recuperate and supply vitality substantially more rapidly than batteries. This capacity, for instance, permits a super capacitor to recoup the majority of the vitality amid hard braking, while a battery would enable the vitality to be squandered in frictional braking because of its powerlessness to rapidly gather vitality.

Mohammad Nekoui et al," The impact of intelli drive on the productivity of thruway transportation frameworks", Hindawi distributing partnership universal diary of vehicular innovation volume 2011, 11 pages, 2011. As of late, the Intelli Drive activity has been proposed by the US Department of Transportation (USDOT) to upgrade on-street security and proficiency. In this investigation, we give a numerical structure which predicts the impact of such advances on the effectiveness of multilane roadway frameworks preceding their genuine sending. Our

investigation should include blended movement conditions in which an assortment of helped, robotized and unequipped vehicles exist together. We demonstrate that inter vehicular interchanges enhances the stream of vehicles by decreasing the discernment response (P-R) times of drivers and, at times, taking into account more proficient path evolving tasks. As we should see, not at all like the last mentioned, the previous impact of Intelli Drive on driver P-R time is dependably there, paying little heed to the particular movement conditions.

Graham parker et al," the security of vehicular impromptu networks", ACM, 2012 Vehicular specially appointed system is a kind of Mobile impromptu system. VANET is a transitory system which makes correspondence between the vehicles with the assistance of base station. Vehicular system is utilized to make the driving more secure, comfort and charming. While voyaging, vehicle activity blockage is communicated as postponements. Activity clog is the real issue in the present life. Distinctive methods have been actualized to enhance this issue. In this paper, we will make a system to furnish the correspondence between the vehicles with the assistance of the different qualities of the VANET. The execution is estimated as far as the parcel conveyance proportion, number of bundles, number of bundle drop and overhead to deal with the activity clog issue in the system.

Rooshabh Kothari et.al, In this communication, analysis of black hole attack to identifies malicious nodes and separates them from the active data routing has reviewed. MANET that is a movable host having wireless network interfaces and without any permanent infrastructure, it structures a temporary network.

M. Arya et.al used multiple base stations to know the effect of black holes on data transmission. The simulation showed that this technique can achieve more than 99% data packet delivery success by one or more than two base stations and if there is enlargement in the radius of the black hole region, success rate will also increases with more base three stations. This scheme has used to identify hundred percent black hole nodes with negligible false positives.

Kanika Bawa et.al designed and implemented MANET using GA and BFO algorithm with black hole attack and saved the network system from threat.

III. MOTIVATION AND PROBLEM STATEMENT

Vehicular networking has the main objective to stipulate security and traffic management. Vehicles can inform other nearby vehicles about traffic jamming, risky road conditions or rapid stops. In such a system, the vehicles are assumed to send and receive emergency warning messages or up-to-date traffic information among themselves in a peer-to-peer manner.

One main problem in VANET is to Overcome Network Congestion. As the nodes in a MANET are free to move around the network is highly dynamic. The mobile nodes have no infinite radio range therefore it limits the exchange data of a node to its independently moving nearby nodes. This characteristic may cause a big MANET to break down into several independent network partitions. The complete MANET is to be fragmented into several independent networks. By this node will talk with each other but cannot communicate with nodes outside the partition due to missing network paths. Another problem is to find the proper route for packet to be traveled along its destination. Main problems of position-based vehicular MANET routing is:

The Greedy forwarding algorithms results in bad node choices, they don't know about the road infrastructure. They rely on geographic positions purely. If the road is not connected to the destination node's road in some way, the packet will eventually be dropped. This problem will be referred as the Route Problem. For this a proposed algorithm is designed that must be aware of road infrastructure and reciprocal path to the destination if no direct path is available from sender to destination.

The above two stated problems results into another problem called *Connectivity Problem*. There may be a case when the network load may be very high as high load at this time will not be efficient and vice-versa. So at that time we need to switch at other networks (nearby) having low load condition. This obstacle is solved by dividing the network into smaller networks and by maintaining a connection within the sub-network.

IV. CONCLUSION

Vehicular network is prominent, inherent and attractive technology devoted to comfort and safety services to the vehicle users. Due to several applications of VANET, such as unpredictable channel distribution and its high speed topology and, we can design an appropriate routing protocol algorithm that generate a near seamless network connectivity between the vehicular nodes. In the proposed work we have represented an algorithm that solves the congestion problem in networks path and got such a path that will provide efficient data transmission over the network. we have divided the whole network into smaller networks and performed the transmission to achieve an effective, efficient and suitable data transmission.

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