



Performance Improvement of Delay based road oriented routing protocol for VANET

Payal B Kamble¹, Kamlesh A Kalbande²

^{1,2} Communication Engineering, G.H. Rasoni College of Engineering, nagpur India,

Abstract - Vehicular Ad-Hoc Network (VANET) is an prominent new technology develop in ad hoc network, wireless local area network i.e WLAN and cellular technology to achieve intelligent inter-vehicle communications ,improve road traffic safety and improve the efficiency .Within a given geographical region broadcast based geocast enable to provide efficient data dissemination to vehicle. Broadcast based geocast requires unnecessary retransmissions. The retransmissions is suppressed by controlled by packet forwarding to avoid rebroadcast . Much of existing broadcast suppression method don't work in urban environment due to building block of communication between two vehicles. In this paper, we propose a an adaptive delay based road oriented routing protocol which adapts delay based data transmission in VANET. This protocol minimize rebroadcasting problem and increase propagation gain. Furthermore, we use two types of forwarding mode to fulfill the requirement of geocast region.

Keyword - VANET,GR,GF,IF

I. INTRODUCTION

In Recent Era(VANET is an emerging new technology to generate the capabilities of new generation wireless networks to the vehicles.It achieve inter-vehicle communications (IVC) and improve safety of road and efficiency.Intelligent Transportation Systems(ITS) is the most imprtant application of VANETs.In VANET data dissemination is use for various application .The data dissemination use for circulation of the message to the number of vehicles. Here geocast is beneficial because it enable data dissemination to vehicle in given geographic region. In this project geocast region is the main region and forwarding region is consider as a node to forward the packet. Vehicle should broadcast the message for propagating an information in geocast protocol. In broadcast unnecessary retransmissions is reduce to avoid broadcast storm problem, which causes packet collision. To avoid this problem broadcast the waithing time should be less. The geocast and the area integrated directly. A method for distance based delay scheme is one of the area based method. This method can use to reduce redundant rebroadcast by assigning vehicles with different delay based scheme. This delay based scheme shows higher improvement in straight road model.

There are basically two oriented approach use in this paper i. e node oriented and road oriented. In node oriented the base station provides the service to that node that sends the request first. However, in the road oriented it calculate the number of traffic on road and select the road which contain high traffic, and provide service to high traffic road first. So that it become more efficient and helps to reduce the number of traffic on road to minimize collision.

In this paper, we propose an adaptive delay based road oriented routing protocol in VANET. It consist of two types of forwarding mode i. e greedy based forwarding mode which is use if there is no direct path from sender to receiver and the intersection based forwarding mode if there is direct path from sender to receiver. This forwarding mode are use for the calculation of waiting time. If there is only one dimensional path towards geocast region then it use greedy based forwarding and if there is two dimensional path towards geocast region then it use intersection based forwarding .In greedy based forwarding mode reduce the rebroadcast and increase propagation gain. By contrast in

intersection based forwarding mode the vehicles at the intersection can forward the message with the less waiting time. The approach is to develop packet suppression effect and packet reachability.

II. ROUTING PROTOCOLS

Routing is nothing but the path followed by the vehicle either in unicast or multicast routing. Our interest in this project is how vehicles follow the path between source and a destination for efficient communication. In unicast routing protocols, by research in the field, a number of unicast routing protocols were developed for VANETs; for example, optimized link state routing (OLSR), ad hoc on demand distance vector (AODV), dynamic source routing (DSR), and so on. These protocols can be divided into two basic types based on their transmission, i.e. reactive, proactive and hybrid. The proactive are again divided into two types that is distance based proactive and link based proactive. The reactive routing protocol is also divided into two types that is AODV and DSR. The AODV is more efficient protocol because it has the best packet delivery ratio.

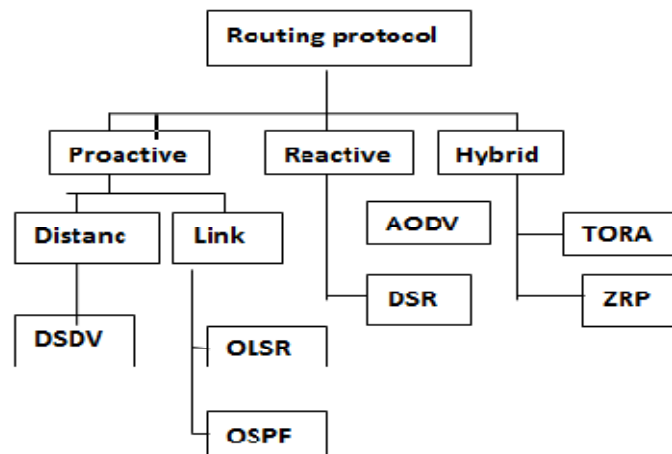


Figure 1: classification of Routing Protocols.

III. DELAY BASED PROTOCOL

In this paper, we adapt delay based scheme for geocast and urban environment. Vehicles use the two types of forwarding mode based on the situation. The main approach is to reduce redundant rebroadcast while maintaining the reachability.

Assumption

Assume that each vehicle knows the position of their intersection and get their own position from the GPS.

IV. PROPOSED METHEDODOLOGY

A. SENDER

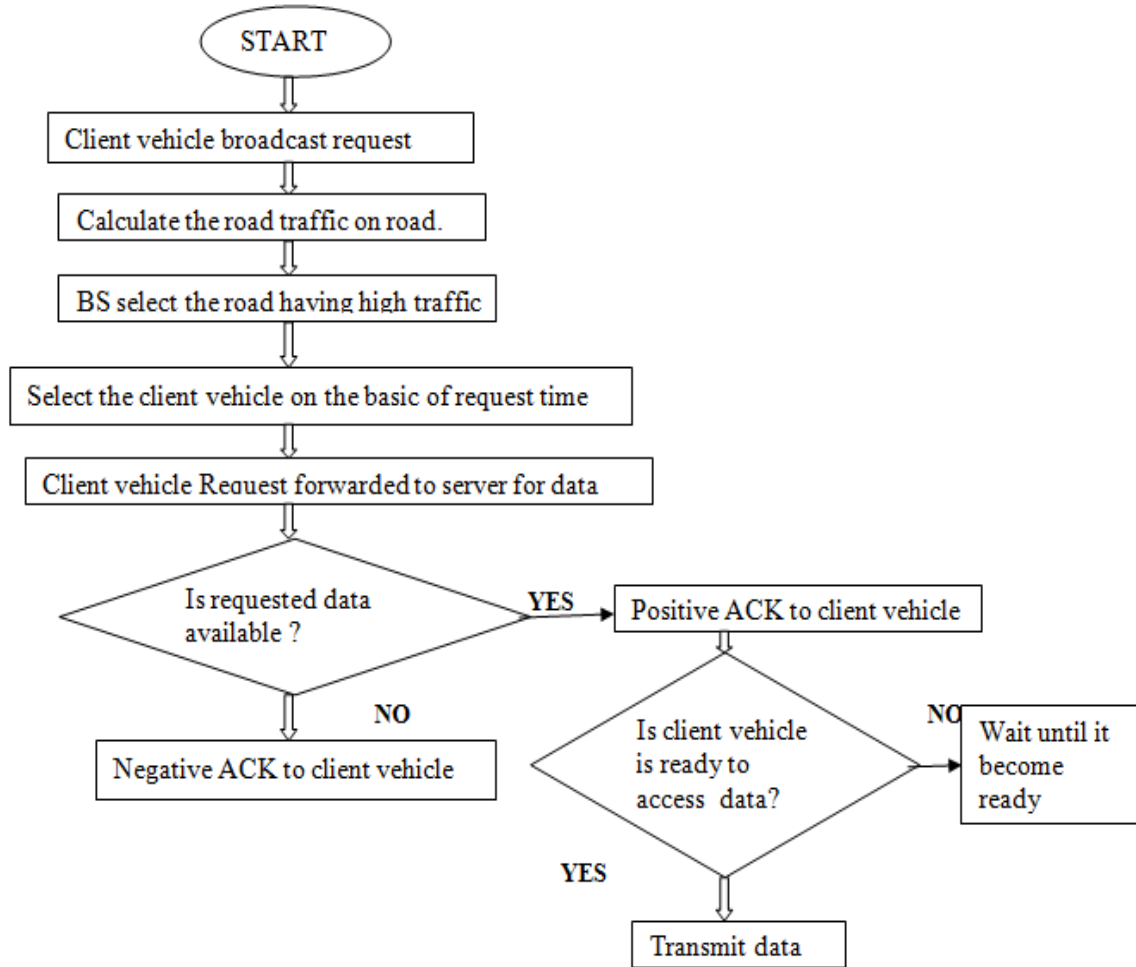


Fig. 2. Flowchartdescribing packet processing at transmitter.

The packet processing at the transmitter side is as shown in fig.3. First the client vehicle broadcast the request to the all vehicle and this is depend upon the capacity of base station. On the basic of request it calculate the number of traffic on the road. Then it select the road which contain the higher traffic than the remaining road. So that the traffic on the road reduced and it is efficient to increase reachability. Then select the client vehicle on the basic of request time. Then client vehicle request forward to the server for data. Then the server check is the requested data available or not, If it not available then it send negative ACK to client and if its available then it sends the positive ACK to client vehicle. Then it check that client vehicle is ready to access data or not .If its busy then wait until it become ready and if not busy then transmit the data .Due to the selection of road having high traffic the efficiency of the vehicle increases.

B. Receiver

All the vehicle receives packet from sender and it determines where should packet forward or not. The packet processing at the receiver is as shown in fig 4. Is check the received packet is unknown packet or not and each vehicle check its location in forwarding zone. If it is in forwarding zone, The vehicle has capable of existing forward the packet otherwise the vehicle discards the packet. In this protocol, The forwarding zone is the region near to the geocast region rather than sender. Due to the limited capacity of the base station geocast region is develop .The vehicles inside the forwarding mode and geocast region(GR) calculate the back off time themselves. The calculation of back off

time is different according to which forwarding mode as well as the vehicle used. The main aim is to reduced the rebroadcast. Back off time is nothing but the probability that the same will collide again. The rebroadcast increase the power supply required for the system. The reduction of the redundant rebroadcast increase the system performance.

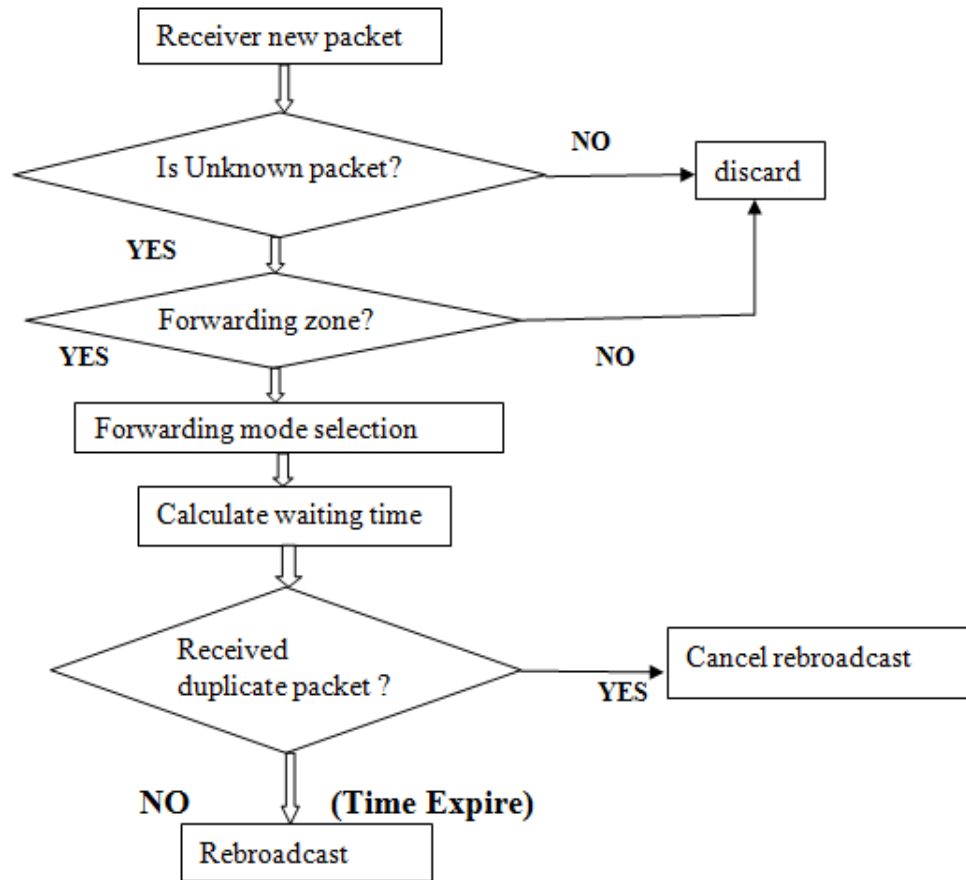


Fig. 3. Flowchart describing packet processing at receiver

REFERANCES

1. Ryosuke Akamastu, Keiji Obara, Hiroshi Shigeno " Road-Orinted Geographic Routing Protocol for Urban Vehicular Ad Hoc Networks" IEEE2015 .
2. M. Fogue , P. Garrideo, F. Martinez, J. Cano, C. Calafate, and P. Manzoni,"An Adaptive System Based on Roadmap Profiling to Enhance Warning Message dissemination in VENETs," IEEE/ACM Transaction on Networking, vol.21, no. 3,pp .
3. R. Akamastu, K. Obara, and H. Shigeno,"Geo-Routing Protocol Based on RoadNetwork in Vehicular Ad Hoc Network ," IPSJ Jernel, vol. 56, no. 2, p. 9, February 2015 9to be published).
4. R. Akamastu , M. Suzuki, Y. Okamoto, K. Hara, and H. Shineno," Adaptive Delay-based Geocast Protocol for Data Dissmination in Urban VANET," in Proc. Of 7th International conference on Mobile computing and Ubiquitous Networking (ICMU 2014), 2014 ,pp.141-146.