

Agent Based Communication (ABC) Model to Improve Communication Services in VANET

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Abstract— In the recent decade the VANET has been emerged as a prominent field for research and it receives considerable attention. VANET uses different specifications of the WLAN 802.11 family. It takes the basics of ad hoc network and the VANET creates a network with a collection of independent entities with the ability to communicate among them. The Adaption to the various 802.11 family causes a remarkable increase in the number of wireless network. The VANET has various benefits along with many challenges including security, privacy, Quality of communication, effective bandwidth utilization etc. In this thesis we propose an Agent Based Routing Scheme through which support routing with high number of nodes without flooding so that network bandwidth can be maximum utilizes. Proposed model provides a new Reactive routing algorithm that perform higher throughput and lower delay compare to the traditional VANET protocol like AODV and DSR.

Key words: VANET, AODV, DSR, WLAN, Security, Agent Based Routing

I. INTRODUCTION

Wireless communication has LED to the presence of wireless networks for private, commercial, industrial, and military use. In several applications, device location plays a vital role in network operations and services. Advances in distributed systems with progressively growing capabilities for economical file transport and their immediate consequence, i.e. the flexibility to apace replicate a content over a network, have created sharing of electronic files become a revolution in business and domestic environments. The high level of decentralization, dynamism network management, and self-management of variety of rising communication environments, together with cooperation, pure wireless distributed network and mobile impromptu networks (RRS), during this approach no of purchasers ar participated within the method of communication or collaboration while not looking forward to central authorities, enforce cooperation to play a necessary role within the overall network functioning. notably, impromptu networks depend on the cooperation among individual nodes to hold out essential tasks like packet forwarding. wireless distributed network file sharing systems face an analogous scenario. File sharing has become a typical follow for net users to get, for instance, computer code updates from public sites. However, such a follow still provokes mistrust. File corruption could occur simply through dishonest and malicious actions or maybe by mistake. Similarly, associate degree cheater may masquerade himself because the mastermind of a definite file, publication a corrupted version of the file. In fact, users of presently deployed file sharing systems are unable to verify that files they retrieve are uncorrupted, or whether or not the content has been actually created by the likely owner. Providing

higher level of security in Peer to see or impromptu networks is an energetic analysis space that prompts several challenges. Most of the business do through the networking devices and technology such storage devices are sensible for medical care however it comes onerous once volume of request and response gets higher thanks to significant traffic load , users manufacturing significant traffic , which require to be manage by network technology , currently are days internetworking is growing across the country it will have an effect on quality of services factors that place stress over the centralized server of network during this period information loss , frame delay and lower outturn has been monitor by the system during this case such a large amount of time user having dependableness problems degrades the standard of information communication , all the intermediate devices isn't acting sensible thanks to significant traffic throughout transmission such downside problems motivates such a large amount of researchers from very long time to resolve and maintain traffic peer to see network error controls such a large amount of papers and technology has been projected for resolution however the previous technology and protocol isn't sufficient for this purpose , thus we'd like to form and develop such sort of mechanism that not solely improve quality of service factors however conjointly resolve information loss problems in order that dependableness and answerableness are often deliver the goods at some extent.

In wireless distributed network a necessary issue is that the reliable routing policy. In wireless distributed network a necessary issue is that the reliable routing policy The ABC routing protocol relies on four respects, i.e.-resources distance, resources angle, the energy levels of resources and information measure link. The ABC protocol will improve the dependableness and stability of the prevailing routing mechanisms with less energy consumption.

II. LITERATURE SURVEY

In[4], Vehicular accidental network is one in every of the foremost attention-grabbing analysis areas because of low price, flexibility, fault tolerance, high sensing fidelity, making several new and exciting application areas for remote sensing. So, it's emerged as a promising tool for observance the physical world with wireless detector which will sense, method and communicate. Their applications vary from safety and crash rejection to net access and multimedia system [3]. VANETs are thought-about mutually of the accidental network real-life application enabling communications among near vehicles in addition as between vehicles and near mounted instrumentation, typically represented as margin instrumentation during this paper, we tend to ar most involved concerning the study of VANET

applications because it is associate evolving field that offers scope for analysis.

In [2], a good vary of services has been developed for conveyance accidental networks (VANETs), starting from safety to motion-picture show applications. a vital demand for such services is that they're offered with quality of service (QoS) guarantees in terms of service dependability and handiness checking out possible routes subject to multiple QoS constraints is, in general, associate NP hard drawback. Moreover, routing dependability must be paid special attention as communication links often break in VANETs.

In [3] Data delivery delay from supply to destination for VANETs on bi-directional roadways. The topology includes bi-directional roadways, left-turn lane, straight through lane, right-turn lane with traffic lights deployed at the intersections. Because of the multi-hop feature of information delivery and also the restricted vary of radio transmission, the roadways' topology and also the switch operations of traffic lights can together have an effect on the information delivery delay. With the fast development of wireless technologies, conveyance accidental Networks (VANETs) has attracted nice attention recently because of its potential application in vehicles broadband service like multimedia system transmission, rising communication, etc [1].

In[5] information delivery delay is a very important issue to manage the performance of VANETs, particularly in road safety (e.g., incident warning, traffic alerts, et al.) and high QoS demand like spoken communication and multimedia system services [2] and plenty of analysis activities in each tutorial and trade are administered to review it. In [9] indicated that the directional propagation together with forward propagation and reverse propagation might be used for causation information packet for various eventualities and by mix 2 styles of directional propagations, the information delivery delay might be cut.

As seen in [7] Cooperative awareness on the road is meant to support the road users by providing information concerning the environment and depends on the knowledge exchange enabled by conveyance communications. To attain this goal the telecommunication normal institute (ETSI) delivered the quality linear unit 302637-2 for cooperative awareness messages (CAM). The CAM triggering conditions are supported the mechanics of the originating vehicle that is checked sporadically.

In [4, 9], Analytical calculations of the norm of the end-to-end delay in road conveyance ad-hoc networks (VANETs) are bestowed. Sadly, none of those papers bestowed calculations of the chance distribution of this delay that is important to grant probabilistically warranted higher bounds on the end-to-end delay in such VANETs. In [6], author introduced the primary analytical framework for the calculation of the chance distribution, and not solely the mean, of the end-to-end delay in multi-lane unidirectional road VANETs. This created it potential to supply guarantees of transmission in an exceedingly given timeframe with notable confidence [5,7].

III. PROPOSED METHODOLOGY

In order to Design and Develop most Efficient Agent Based Communication Model for VANETs we will go through following proposed methodology:

- Module 1: Coverage and position based self-adaptive quick node deployment algorithm, in this algorithm we develop a new prototype/algorithm to make, place, move the nodes in the VANET network area.
- Module 2: We develop an agent based algorithm called Best resource picker reliable routing (ABC) which should take the minimum hop count, no link failure, fast transfer, high throughput and packet delivery ratio with less energy consumption.
- Module 3: Pre-calculation step includes the process of node traverse direction, coverage area, energy level, linkage between nodes till the end of the simulation. Based on the pre-calculation result, we do the bandwidth adjustment algorithm to avoid the link failure.
- Module 4: Bandwidth adjustment algorithm will increase the bandwidth of the link which are in active and remaining node links bandwidth will get decrease since it is not participating in the transmission. When it conforms it is strong path, Start sending the packets do the same steps till the end of the simulation since it is ad hoc network.

IV. ALGORITHM

A. ABC (Agent Based Communication)

ABC (Agent Based Communication) algorithm has been implemented in following way to get best node picker to perform efficient communication at real time VANETs.

Find the source node and destination node:

- Find how many source and destination nodes are in the network.
- Based on number of source and destination, we need to provide the load balancing for the routing process.
- Send Request from destination to source with minimum number of hop by looking the Routing Table.
- Once source, got the request from the destination, the below process will get started.
- Make the empty routing table.
- Find the neighbor nodes list from the source node.
- Select the particular node which is available in all the 4 tables with high priority. Formula: (Table1 (Priority/Number of nodes)*100) + (Table2 (Priority/Number of nodes)*100).
- Using the above formula, fill up the routing table from source to destination to pick up the intermediate nodes.
- Once the best path formed, Pre calculation to check the path won't get break till the end of the simulation.

V. FLOW CHART (AGENT BASED COMMUNICATION SYSTEM)

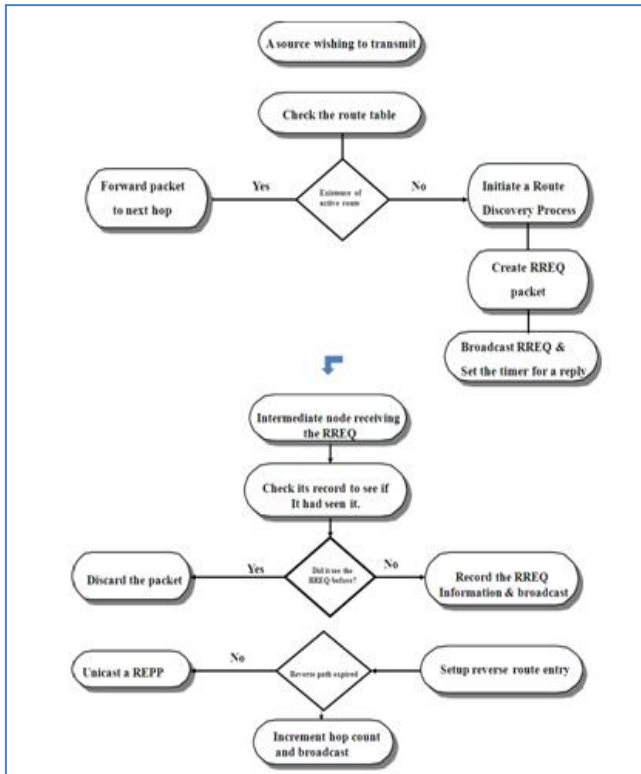


Fig. 1: Process Flow Chart of Agent Based Communication

VI. IMPLEMENTATION AND SIMULATION SETUP

In figure fig.2 we are able to see that ABC perform as per the planned formula here ABC uses server one and server two for distributed wireless networking services within the same method we are able to see in figure fig.2 that server has been find at the center of the network node for best communication at the terribly solicitation and server two has been set over the removed from server one to take care of heavier load.

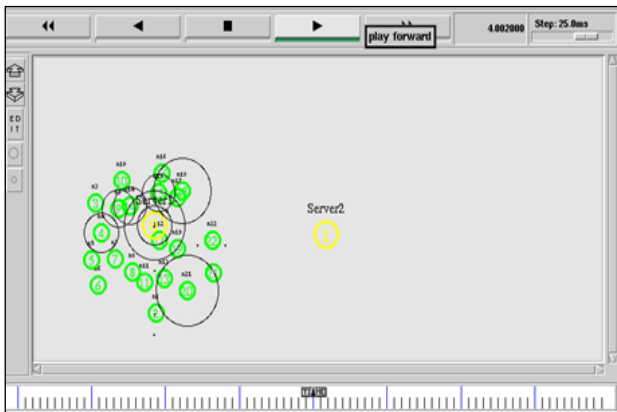


Fig. 2: Simulation of ABC with NS2

In figure fig.3(a and b) one will see that however ABC can works beneath complicated wireless network space with low and better no. of nodes with the assistance of primary (server1) and secondary (server2) for the management information loss and quality of communication services.

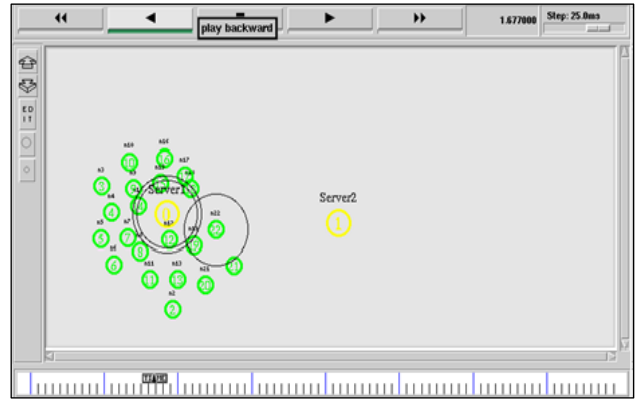


Fig. 3(a): Agent based VANET Testing on NS2

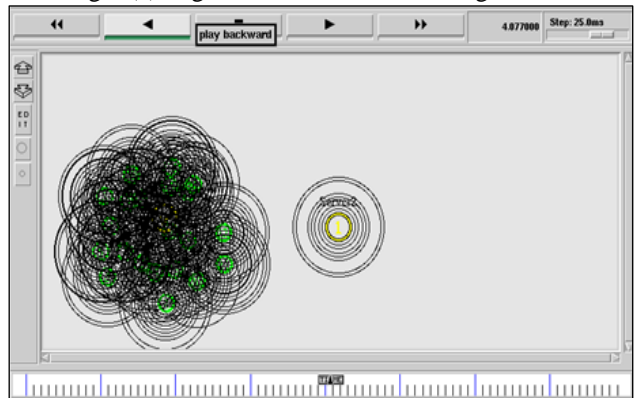


Fig. 3(b): Agent based VANET Testing on NS2

VII. RESULT ANALYSIS

A. Representation of Delay Vs Node Mobility

Fig.4 shows that the delay in numerous protocols. Delay state that the delays in transfer of knowledge until the destination in terms of milliseconds. Compared with different protocol, the planned protocol ABC transfers the packet with none delay until the destination resource.

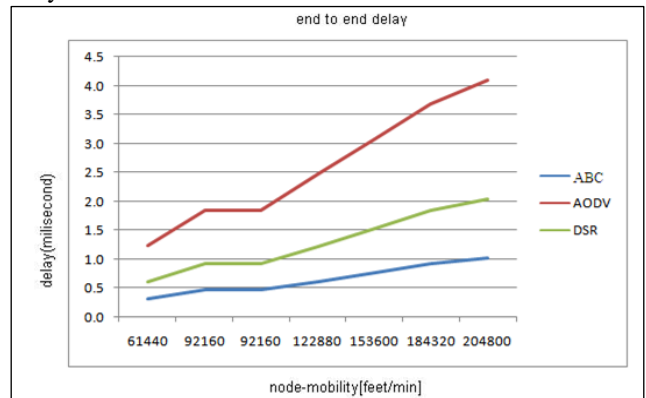


Fig. 4: Representation of Delay vs Node Mobility

B. Representation of Throughput Vs Node Mobility

Fig.5 explains that the turnout worth of ABC protocol. Turnout explains the speed of transfer of information until the destination resource. Compared with different protocol like-AODV protocol and DSR protocol, ABC protocol transfers the packet in terribly high speed.

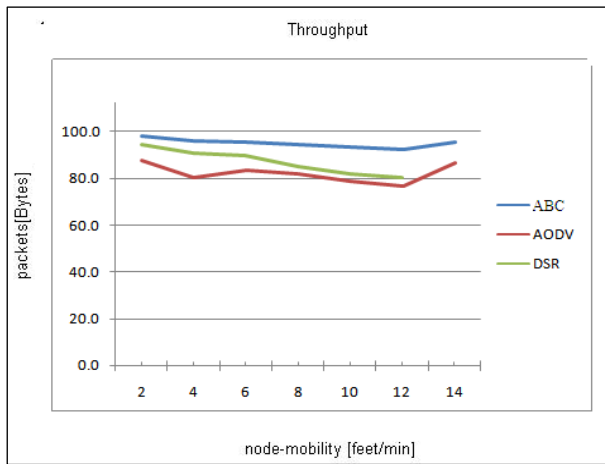


Fig. 5: Representation of Throughput vs Node Mobility

C. Representation of Packet Delivery Ratio Vs Node Mobility

Fig. 6 explains the packet delivery magnitude relation of various protocols. Packet delivery magnitude relation delivers the yields packets to the destination resource. It's expressed in terms of proportion. The projected ABC protocol delivers the packet within the best manner with high magnitude relation to avoid the loss of packet compared with alternative protocols.

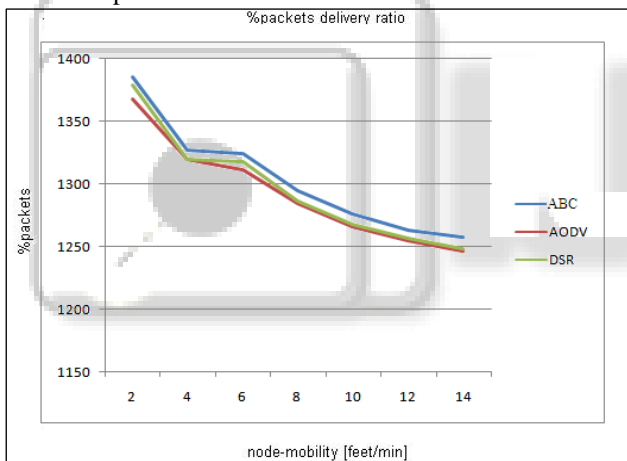


Fig. 6: Representation of Packet Delivery Ratio vs Node Mobility

VIII. CONCLUSION

This thesis focuses on the reliable routing protocol and resource management for wireless peer to look network and discusses the problems of peer to look network on basis of performance and security. Every wireless node in an exceedingly peer to look network acts as a router by forwarding the packets within the network. Hence, one among the challenges within the style of routing protocols is that it should be tailored to suit the dynamic nature of the nodes. The second chapter discusses a number of the opposite challenges long-faced by the designers of routing protocols for peer to look network. An entire understanding of those problems can facilitate in coming up with economical and effective routing protocols. It additionally classifies the protocols and describes some of them.

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