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A MANUSCRIPT OF FLOODING ALGORITHM IN VANET: A REVIEW

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Abstract— A mobile unit in such a network connects to the nearest AP which is within its communication range in a single-hop communication technique. The self-configuration ability of MANETs makes them suitable for a wide variety of applications.In this Paper we study about the VANET . VANET helps in defining safety measures in vehicles, streaming, ,communication between vehicles, infotainment and telematics. In this Ppaer we proposed a algorithm has the concept of TTL through which it decreases the overhead and collision problem. The flooding algorithm can also be further optimized by applying other techniques such as probability based methods.

Keywords—MANET,VANET,IEEE802.11,ITS.

INTRODTION

Wireless Networks

Most mobile devices are equipped with short-range radio transmitters allowing them to inter-communicate using radio frequencies to transmit data and communicate with other devices on the same network. Wireless LANs are standardized under the IEEE 802.11 series [1]. IEEE 802.11 standard defines two operational modes: infrastructure and infrastructure-less (known as the ad hoc mode).

Infrastructure-oriented organisation is realised through fixed (typically wired) gateways or access points (APs) [2, 3, 4] that act as bridges to a fixed infrastructure. A mobile unit in such a network connects to the nearest AP which is within its communication range in a single-hop communication technique. The AP can connect other wireless nodes within its range with an existing wired network where the infrastructure mode is commonly used to construct a hotspot which provides a wireless access to the Internet. In the ad hoc mode, wireless nodes can communicate directly with each other. Infrastructure-less networks are commonly known as MANETs [3, 5] when they include mobile nodes.

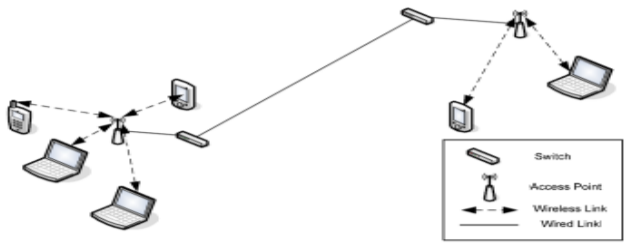


Figure 1.1 Infrastructure wireless network

Wireless Technology:-

Over the last years, the technology for wireless communications has made tremendous advantages. It allows very high mobility, efficient working and is almost extreme economical. On one side we have large area technologies as GSM, GPRS or UMTS, which have moderate bandwidth. On the other side we have the local area technologies as WLAN (Wireless Local Area Network) with much higher bandwidth.

The IEEE 802.11:-

The IEEE 802.11 standard places the specifications for both the physical layer and for the medium access control layer. Many extensions have already been added to 802.11 either enhancing the MAC or PHY Layer. The MAC extensions are mainly thought to improve security or quality of service (QoS).

MANETs:-

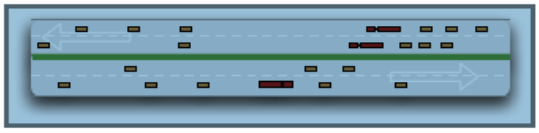
In MANETs, each node is equipped with a wireless transmitter and receiver and is typically free to move around in an arbitrary fashion. The self-configuration ability of MANETs makes them suitable for a wide variety of applications i.e. communication within groups of people through laptops and other hand-held devices. MANETs require completely different protocols from those used for wired networks and infrastructure wireless networks [5]. MANET characteristics differ from infrastructure networks since nodes can join and leave the network at any time. There is no central management and topologies change frequently and dynamically.

Vanet Scenario:-

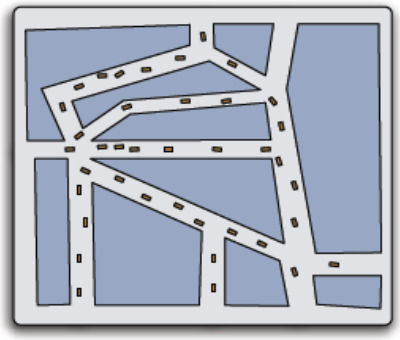
Fortunately, the less than satisfactory deployment of MANETs is not a dead end. From the original idea, a multitude of scientific and industrial spin-offs have emerged. Instead of focusing on transparent. One of these special Mobile Ad-Hoc Networks is called Vehicular Ad-Hoc Network, or VANET. As the name indicates, the typical node in a VANET is a car or a truck that is traveling on a road. While Internet connectivity is also an issue in these networks, the most likely mode of communication will be node-to-region rather than node-to-node or node-to-Internet, the basic focus being on Vehicular Safety. MANET protocols perform poorly in the presence of the movement behavior typical of vehicles, in particular their speed. Intuitively, knowledge about the “street topology” can be of use there. Thus, we propose different protocols for use in cities, with and without the assumption of having a digital street map. Some of the insights gained in the process of building a real vehicle-to-vehicle communication system have lead to the development of a rather (r)evolutionary manner of packet forwarding using geographic positions.

Mobility Characteristics:-

At least in first-world countries, vehicle traffic is mostly confined to roads. Whenever it is not, this is usually accompanied by a dramatic loss in node density, resulting in the lack of the possibility to communicate locally. Thus, VANET research concentrates on roads, more so on roads with some reasonable node density. From a birds-eye perspective, we identify two basic VANET mobility patterns: (a) highway movement and (b) city movement .



(a) Highway



(b) City

Figure 1.2 Vehicular movement scenarios

Vehicular highway movement is largely characterized by one dimensionality since junctions are infrequent and even if they do occur, they do not interfere with flowing traffic. Furthermore, the width Usually, highway scenarios are also assumed to be free of radio obstacles. The second basic movement pattern is called city movement. It is characterized by lower absolute car speeds than those on the highway, including a significant number of cars that do not move at all, Another important property of these scenarios is the presence of radio obstacles. While often neglected on highways, obstacle influence is an important factor in cities.The main goal of VANET is providing safety and comfort for passengers. To this end a special electronic device will be placed inside each vehicle which will provide Ad-Hoc Network connectivity for the passengers.

This network tends to operate without any infra-structure or legacy client and server communication. Each vehicle equipped with VANET device will be a node in the Ad-Hoc network and can receive and relay others messages through the wireless network. There are also multimedia and internet connectivity facilities for passengers, all provided within the wireless coverage of each car. Automatic payment for parking lots and toll collection are other examples of possibilities inside VANET. The interactions with roadside equipment can likewise be characterized fairly accurately. And finally, most vehicles are restricted in their range of motion, for example by being constrained to follow a paved highway.

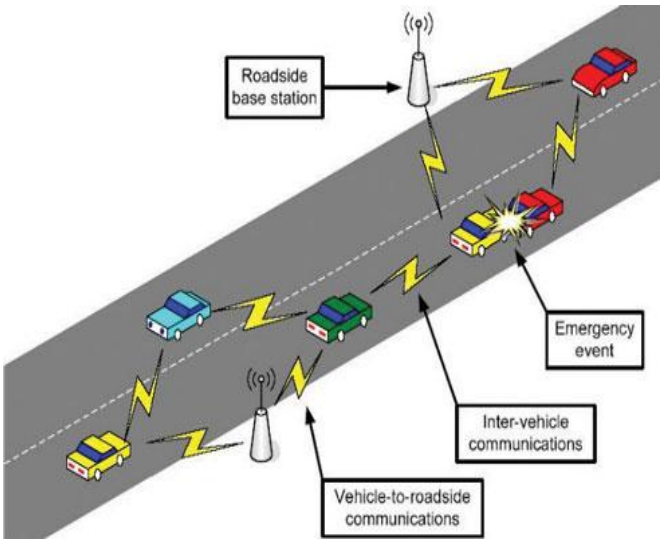


Figure 1.3 Schematic Representation of a Vehicular Adhoc Network

VANET.VANET integrates on multiple ad-hoc networking technologies such as WiFi IEEE 802.11 b/g, WiMAX IEEE 802.16, Bluetooth, IRA, ZigBee for easy, accurate, effective and simple communication between vehicles on dynamic mobility. Effective measures such as media communication between vehicles can be enabled as well methods to track the automotive vehicles is also preferred. VANET helps in defining safety measures in vehicles, streaming communication between vehicles, infotainment and telematics. Vehicular Ad-hoc Networks are expected to implement variety of wireless technologies such as Dedicated Short Range Communications (DSRC) which is a type of WiFi. Other candidate wireless technologies are Cellular, Satellite, and WiMAX. Vehicular Ad-hoc Networks can be viewed as component of the Intelligent Transportation Systems (ITS).

LITERATURE SURVEY

VANET is an application of a mobile ad hoc network to inter-vehicle communication. Each vehicle is aware of its position information by GPS or other methods. Position-Based routing is a useful approach in VANET. The Position-Based routing protocol can be classified roughly into a Next-Hop Forwarding method and a Directed Flooding method. It can be classified into a Next-Hop Forwarding and a Directed Flooding method. In both methods, a source node has to know position information of both itself and the destination node. The Next-Hop Forwarding method is a method to forward a packet to the selected next-hop node by unicast [2][3]. This method decides the next-hop node from the position information of the sender, its neighbour nodes and the destination node. To know the position information of neighbour nodes, each node exchanges a hello packet which contains its node ID and position information, or each node may collect neighbor information on demand by broadcasting neighbor request to avoid hello exchange. In addition, as for this method, retransmission control in the MAC layer is performed because a packet is transmitted using unicast. Many routing protocols have been proposed for such kind of networks.

Most of them try to exploit the information which may be available at the vehicle by the time that a routing decision must be made. In addition, some solutions are designed taking into account the particular, highly partitioned, network connectivity in vehicular settings. To do so, they embrace the store-carry forward paradigm of delay-tolerant networks[4] The fundamental component for the success of VANET (Vehicular ad hoc networks) applications is routing since It must efficiently handle rapid topology changes and a ragmented network. An inter-vehicle ad-hoc routing protocol called GyTAR (improved Greedy Traffic Aware Routing protocol) suitable for city environments. Vehicular adhoc networks is a subclass of mobile adhoc networks which provides a distinguish approach for intelligent transport system. The survey of routing protocols in vanet is important and necessary issue for smart ITS.Broadcasting task was sometimes studied in the context of address serving [1] in hierarchically clustered packet radio networks. Each node has a hierarchical address used in routing packet to that node. This hierarchical address is the sequence of enclosing clusters, starting with the highest level and ending with the lowest level, in which the node resides. Address servers located in each bottomlevel cluster (thus associated with each cluster head) keep track of a node's hierarchical address.

An uncovered node is elected as a cluster head if it is has the highest degree among all its uncovered neighbors. Although the algorithm is expected to perform well on many randomly defined graphs , it may not produce any CH for graphs which do not have any node with the highest number of neighbors (interval and triangular graphs, where almost all nodes have degrees two and three, respectively).

PROBLEM FORMULATION

Most of the concerns of interest to Manets are of interest in Vanets, but the details differ. And finally, most vehicles are restricted in their range of motion, for example by being constrained to follow a paved highway. In addition, the term Manet mostly describes an academic area of research, and the term Vanet perhaps its most promising area of application. In Vanet it is easy to do communication between vehciles which is not possible in Manets. Instead of focusing on transparent IP unicast for MANET-to-MANET or MANET-to-Internet communication, these fields focus on special flavors of networks and their specific challenges, most of them exploiting the locality of the desire to communicate.In Vanet the mechanism through which messages are sent to other nodes to other nodes is known as Flooding. Flooding ensures the full coverage of all the network, that is ,the broadcast packet is guaranteed to be sent to every node in the network providing the network is static. This flooding generates many redundant transmissions. Every neighbor pair will send copies of the same flooded message.The simple flooding algorithm with respect to MAC load, have power consumption and collision. The steps are as follows:

A. The algorithm for simple flooding starts with a source node broadcasting a packet to all neighbors.
B. Each of those neighbors in turn rebroadcast the packet exactly one time .
C. This continues until all reachable network nodes have received the packet.

CONCLUSION & FUTURE WORK

CONCLUSION

The implementation of flooding algorithm has been implemented successfully. This proposed algorithm has the concept of TTL through which it decreases the overhead and collision problem. With the help of some constraints we solve the problem of rebroadcasting like using cluster based routing scheme in which the nodes act as a cell and a node which communicates with other cluster act as a gateway.

FUTURE WORK

Below are the points which we would like to augment in our current implemented flooding algorithm:
1. The result of flooding can be improved by applying more optimized and intelligent algorithms.
2. The flooding algorithm can also be further optimized by applying other techniques such as probability based methods or location based methods.
3. We would also like to do simulation with different parameters such as more nodes in the network, higher mobility, increasing pause time. We believe that under different situations , the effectiveness of this technique will be different.

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