Hop Greedy Routing Scheme for Urban VANET Environment

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***Abstract* - Vehicular ad hoc networks (VANETs) is viable and valuable for their wide variety novel applications for road safety, multimedia content sharing, commerce on wheels,Multihop information dissemination in VANETs is constrained by the high mobility of vehicles and the frequent disconnections. Currently, geographic routing protocols are widely adopted for VANETs as they Currently, geographic routing protocols are widely adopted for VANETs as they do not require route construction and route maintenance phases. To obtain destination position, some protocols use flooding, which can be detrimental in city environments. Further, in the case of sparse and void regions, frequent use of the recovery strategy elevates hop count. Some geographic routing protocols adopt the minimum weighted algorithm based on distance or connectivity to select intermediate intersections. However,the shortest path or the path with higher connectivity may include numerous intermediate intersections.As a result, these protocols yield routing paths with higher hop count. Moreover, here introduce the back-bone nodes that play a key role in providing connectivity status around an intersection**

Keywords – Destination recovery, VANET, multihop information dessemination

I. INTRODUCTION

The basic concept of VANET is straightforward: take the widely adopted an expensive wireless local area network (WLAN) technology that connects notebook computers to each other and the Internet, and, with a few tweaks, install it on vehicles. A wide spectrum of novel safety and entertainment services are being driven by a new class of communications that are broadly classified as vehicle-to-vehicle communication and vehicle-to-infrastructure communication.intelligent transportation provide a wide range of activity such as road safety.

First, consider the opportunities. If vehicles can directly communicate with each other and with infrastructure, an entirely new paradigm for vehicle safety applications can be created. Even other non-safety applications can greatly enhance road and vehicle efficiency. Second, new challenges are created by high vehicle speeds and highly dynamic operating environments. Third, new requirements necessitated by new safety-of-life applications, include new expectations for high packet delivery rates and low packet latency. Further, customer acceptance and governmental oversight bring very high expectations of privacy and security.

Even today, vehicles generate and analyze large amounts of data, although typically this data is self-contained within a single vehicle. With a VANET, the ‘horizon of awareness’ for the vehicle or driver drastically increases. The VANET communication can be either done directly between vehicles as ‘one-hop’ communication, or vehicles can retransmit messages, thereby enabling ‘multihop’ communication. To increase coverage or robustness of communication, relays at the roadside can be deployed. Roadside infrastructure can also be used as a gateway to the Internet and, thus data and context information can be collected, stored and easy to manage.

2.NEED FOR THE SYSTEM

It warrants repeating that the interest in vehicular inter-networks is strongly motivated by the wealth of applications that could be enabled. First of all, active safety applications, i.e., accident prevention applications, would benefit from this most direct form of communication. Second, by collecting traffic status data from a wider area, traffic flow could be improved, travel times could be reduced as well as emissions from the vehicles. As it was concisely stated as the tenet of the Intelligent.

As described in the following, key technical challenges include the following issues:

• Inherent characteristics of the radio channel. VANET present scenarios with unfavorable characteristics for developing wireless communications, i.e., multiple reflecting objects able to degrade the strength and quality of the received signal. Additionally, owing to the mobility of the surrounding objects and/or the sender and receiver themselves, fading effects have to be taken into account.

• Lack of an online centralized management and coordination entity. The fair and efficient use of the available bandwidth of the wireless channel is a hard task in a totally decentralized and self-organizing network. The lack of an entity able to synchronize and manage the transmission events of the different nodes might result in a less efficient usage of the channel and in a large number of packet collisions.

• High mobility, scalability requirements, and the wide variety of environmental conditions. The challenges of a decentralized self-organizing network are particularly stressed by the high speeds that nodes in VANET can experience. Their high mobility presents a challenge to most iterative optimization algorithms aimed at makingbetter use of the channel bandwidth or the use of predefined routes to forward information.

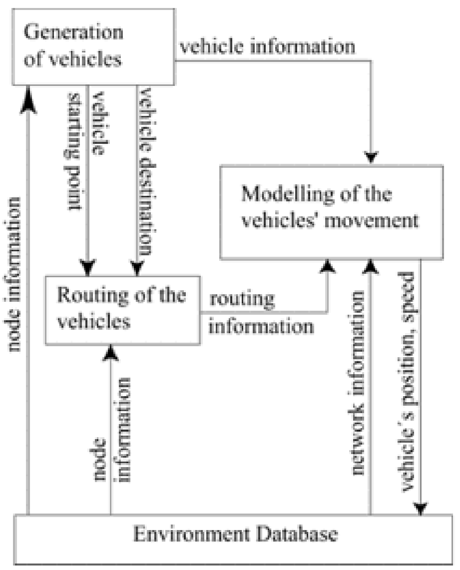
• Security and privacy needs and concerns. There is a challenge in balancing security and privacy needs. On the one hand, the receivers want to make sure that they can trust the source of information.From an application and socio-economic perspective, key challenges are as follows:

• Analyzing and quantifying the benefit of VANET for traffic safety and transport efficiency. So far, relatively little work has been done to assess the impact of VANET as a new source of information on driving behavior. Clearly,the associated challenge in addressing the issue of impact assessment is the modelling of the related human factor aspects.

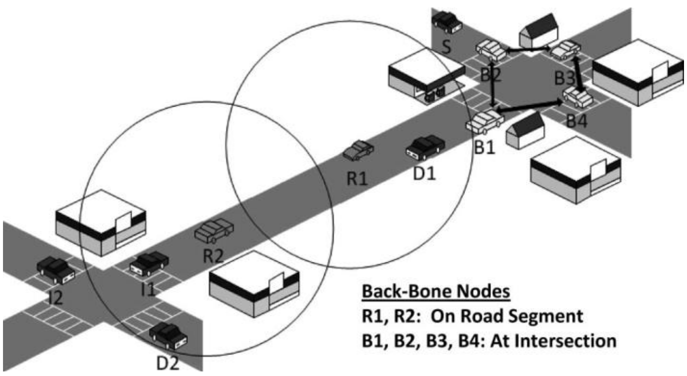
- Analyzing and quantifying the cost–benefit relationship of VANET. Because of the lack of studies on the benefits of VANET, a cost–benefit analysis can hardly be done.
- Designing deployment strategies for this type of VANET that are not based on a single infrastructure and/or service provider. Owing to the 'network effect', there is the challenge of convincing early adopters to buy VANET equipment when they will rarely find by a communication patner.

VANET convenience and efficiency applications comprise Internet access, service announcements, infotainment, payment services, and most notably collaborative traffic information services. it discusses the suitability of VANET to support this application class.. In addition, solutions based on centralized client–server systems, on peer-to-peer systems, and on pure vehicle-to-vehicle communications are compared. As the technical basis, data aggregation schemes are applied to the case of collaborative traffic information systems. Simulation results of these approaches for a city-wide scenario are presented that also indicate the benefit of supporting roadside units

3.DATAFLOW DIAGRAM



Back-bone nodes engaged in void region detection and forwarding packets at intersections



4.SIMULATION PARAMETERS

PARAMETERS	VALUES
Simulation Area	3000x3000m
Number of nodes	600
Number of intersection	1024
Number of road segment	3209
Vehicle speed	5-35m/s

Transmission range	300m
Data rate	2mbps
Simulation time	700sec
Beacon interval	1sec
Number of connection	10
Packet generation rate	0.5-5packet/sec

5.CONCLUSION

In this paper, explored crucial problems such as unreliable location service, intersection node probing problem, etc., experienced by VANET routing protocols. Then propose a hop greedy routing protocol that aims to reduce the end-to-end delay by yielding a routing path that includes the minimum number of intermediate intersections. The zone wise partitioning of a city road network is an important design framework for the efficient functioning of the destination discovery procedure. The hop greedy algorithm finds the best possible path in terms of both hop count and connectivity. To address connectivity issues such as void regions and unavailability of forwarders, the concept of back-bone node is introduced. The unicast request messages, the proposed routing scheme eliminates packet loss and congestion noticed in contemporary routing protocols that use broadcast request messages.

6.APPLICATION OF VANET

The Vehicular Safety Consortium (VSC), the Crash-Avoidance Metrics Partnership (CAMP) consortium and the Vehicle Infrastructure Initiative along with the giants of the light-duty vehicle manufactures, are working to develop pre-competitive safety technologies and various applications that can be offered in Vehicular ad-hoc Networks (VANETs), a special kind mobile ad-hoc networks where wireless equipped element called on-board unit (OBU) in vehicles form a network with the Roadside unit (RSU) without any additional infrastructure.

The RSU can be treated as an access point or router or even a buffer point which can store data and provide data when needed . All data on the RSUs are uploaded or downloaded by vehicles. A classification of applications is also done by as Car to Car Traffic applications, Car to Infrastructure applications, Car to Home applications and Routing based applications. here discusses about the various attacks based on their classification. Based on the type of communication, we are arranging the applications of VANETs into following classes:

1) Safety oriented,
2) Commercial oriented

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