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A Routing Strategy Of Hybrid Routing Protocol For Vanets

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ABSTRACT:

VANETs area unit used for high-speed, short-range communication among near vehicles and between vehicles and edge infrastructure units. Conveyance unplanned networks area unit extremely mobile wireless networks that area unit designed to support traffic observance, conveyance safety and different business applications.

We planned a replacement hybrid location-based routing protocol which mixes options of reactive routing with location-based routing without GPS system in an exceedingly manner that with efficiency uses all the placement data out there.

The protocol is intended to graciously exit to reactive routing because the degradation happens in location data. We have a tendency to show through Analysis and simulation that our protocol has an optimum overhead and it's ascendible, even within the presence of high location errors.

Key words: VANETs, Hybrid Protocol, vehicles and routing GPS.

I. INTRODUCTION:

The term VANET was originally adopted to reflect the Ad-hoc nature of those extremely dynamic networks. However, as a result of the term Ad-hoc network was associated wide with unicast routing-related analysis, there's presently a dialogue among the pioneers of this field concerning redefining the descriptor VANET to deemphasize Ad Hoc networking. As a result of this discussion has not nevertheless reached agreement, we'll still ask vehicle-to-vehicle and vehicle-to-roadside communication supported wireless native space networking technology as a VANET. In this article we have a tendency to gift a tutorial overview1 on the communication and networking aspects of conveyance Ad Hoc networks. We have a tendency to initial look additional closely at the potential applications and their requirements with regard to the communication platform. Then, we have a tendency to gift what we have a tendency to take into account the specific challenges of VANET style. Because cost and safety dictate that simulations are a necessary tool for doing analysis during this field, we continue with a short introduction to conveyance traffic flow models and a few radio channel basics needed for realistic assessments of VANET systems and protocols

VANETs have wide range of applications. Examples for each class are:

- Cooperative forward collision warning, namely, to avoid hit collisions
- Traffic signal best speed informative, namely, to assist the driving force to arrive throughout a inexperienced phase
- Remote wireless identification, namely, to make the state of the vehicle accessible for remote identification.

Routing Protocols

An ad-hoc routing protocol may be a convention, or normal, that controls however nodes decide that thanks to route packets between computing devices in a very vehicular Ad Hoc network.

In ad-hoc networks, nodes don't seem to be accustomed to the topology of their networks. Instead, they need to get it. The essential plan is that a brand new node could announce its presence and will listen for announcements broadcast by its neighbors. Every node learns regarding nodes close and the way to succeed in them, and will announce that it, too, will reach them.

Note that in a very wider sense, Ad Hoc protocol can even be used virtually, that is, to mean a temporary and infrequently Ad Hoc protocol established for a particular purpose.

The following may be a list of some Ad Hoc network routing protocols.

Table-driven (Pro-active) routing

This type of protocols maintains recent lists of destinations and their routes by sporadically distributing routing tables throughout the network. The most disadvantages of such algorithms are:

- Respective quantity of information for maintenance.
- They will react slowly on restructuring and failures.

On Demand (Reactive) routing

This type of protocols finds a route on demand by flooding the network with Route Request packets. The most disadvantages of such algorithms are:

- High latency time in route finding.
- Excessive flooding will result in network obstructive.

II. RELATED WORK

[1]In this paper, author discusses the benefits and drawbacks of topology-based and position-based routing protocols and explores the motivation behind their style and trace the evolution of those routing protocols.

Pros and cons:

during this paper author summarizes the characteristics of representative routing protocols that have either been used or designed specifically for VANETs and conjointly indicated the sort and subtypes whether or not they area unit topology-based or position-based and whether or not they area unit proactive/reactive, DTN or Non-DTN, overlay or not.

[2]In this paper, author analyzes a position-based routing approach that creates use of the direction systems of vehicles and compares this approach with non-position-based ad-hoc routing methods (Dynamic supply Routing and Ad-Hoc On-Demand Distance Vector Routing).

Pros and cons:

the primary careful micro-level analysis of pathologies for geographic face-based routing protocols, within the presence of location errors in static sensing element networks was done however the placement errors will severely degrade performance in location-based forwarding schemes, creating

correct location data a necessity for many geographic routing protocols.

[3]In this paper, author principally survey new routing leads to VANET. He introduces Geo-cast protocol, MOBI-cast protocol, Broadcast protocol, UNI-cast protocol and multicast protocol. It's discovered that carry-and-forward is that the new and key thought for planning all routing protocols in VANETs.

Pros and cons:

This work surveys existing unicast, multicast, and broadcast protocols for VANETs and conjointly the work also surveys necessary multicast and geocast protocols for VANETs. A mobicast routing protocol in VANETs is additionally delineate and therefore the broadcast protocols in VANETs are introduced and foretold the tendency of the look of routing protocols for VANETs that should be the low time value, the low communication overhead and high adjustability for the town, highway, and rural environments.

[4]In this paper, author presents Ad-hoc On Demand Distance Vector Routing (AODV), a completely unique formula for the operation of such ad-hoc networks. Any-and-All Mobile Host operates as a specialized router, and routes area unit obtained PRN (i.e., on-demand) with very little or no reliance on periodic advertisements.

Pros and cons:

AODV is AN on demand routing protocol within which routes area unit established on demand and destination sequence numbers area unit accustomed notice the most recent route to the destination. The greeting messages supporting the routes maintenance area unit range-limited, attributable to this reason they are doing not cause gratuitous overhead within the network however the intermediate nodes will result in inconsistent routes if the supply sequence range is extremely previous and therefore the intermediate nodes have the next however not the most recent destination sequence range, that ends up in stale entries.

[5]In this paper, author provides a close analysis of the consequences of location errors on the correctness and performance of geographic routing in static sensing element networks. First, he performs a micro-level behavioral analysis to spot the attainable protocol error situations and their conditions and bounds. Then, the current results from an intensive simulation study of GPSR and GHT to quantify the performance degradation as a result of location errors.

Pros and cons:

The careful micro-level analysis of pathologies for geographic face-based routing protocols, within the presence of location errors in static sensing element networks is completed and it shows that the changed GPSR and GHT versions win near-perfect performance even within the presence of great localization errors however location measure is commonly rip-roaring and incurs some error.

III. PROBLEM STATEMENT

The VANET routing protocols area unit classified into the subsequent 2 major categories:

1) Topology-based routing.

2) Position-based routing.

Common characteristic of all topology-based routing protocols area unit that the performance degrades because the network size will increase, indicating the quantifiability downside.

The Position-based routing has many problems that have restrained its wide adoption most necessary of that is that of location error.

Disadvantages:

1. Increase within the routing overhead in VANET
2. Degradation in network quantifiability
3. Link failure downside

IV. SYSTEM IMPLEMENTATION

We propose a hybrid location-based unplanned routing protocol that was notably designed with optimum quantifiability performance. It combines a changed AODV protocol with a greedy-forwarding geographic routing protocol.

Our planned protocol is to with efficiency create use of all the placement data out there, to reduce the routing overhead, and to graciously exit to reactive routing because the location data degrades.

Advantages:

1. It possesses effective routing methods.
2. Routing overhead is low

V. ALGORITHM

Step1: Initialize the timer and generate the beacon message.

Step2: produce node table.

Step3: Check if the information is prepared or not?

Step4: Check the node table and routing table.

Step5: Check the node is offered or not?

Step6: If out there suggests that it'll send the information.

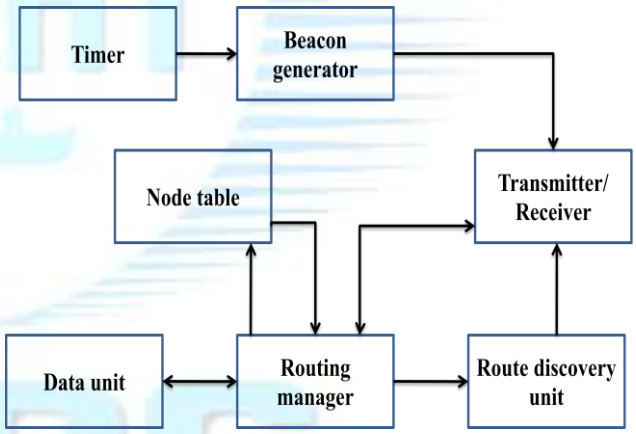
Step7: Else initialize route finding unit.

Step8: Forward the route request until it reaches the destination.

Step9: Destination offers the route reply.

Step10: If reply is received to the source?

Step11: Update the knowledge in routing table and node table.



1. HLR architecture

VI. SYSTEM DESCRIPTION

To make our proposed system as efficient, we divided our system into small modules

- Creating neighbor vehicle information
  - Create the node table file
  - Beacon message generation
  - Route discovery
    - Route request
    - Route reply
  - Hybrid model routing

Create the node table file

Vehicles ought to domestically broadcast tiny beacon packets periodically.

These broadcasted periodic beacon packets embody the vehicle's ID and therefore the current location coordinates.

These periodic beacon packets conjointly enable vehicles to make their neighbor information table.

Beacon message generation & Route discovery:

If the source vehicle has no route to the destination vehicle, then source vehicle initiates the route discovery in Associate in nursing on-demand fashion

After generating RREQ, node looks up its own neighbor table to search out if it\'s any closer neighbor vehicle toward the destination vehicle.

If it found any closer neighbor vehicle, the RREQ packet is forwarded to that vehicle.

If no closer neighbor vehicle is the RREQ packet is flooded to any or all neighbor vehicles.

Hybrid model routing

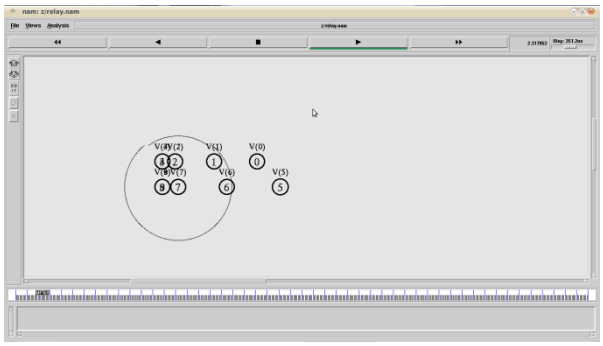
The hybrid model routing protocols combines the benefits of proactive and of reactive routing.

In these routing protocols the routing is at first established with some proactively prospected routes so serves the demand from additionally activated nodes through reactive flooding.

VII. PERFORMANCE ANALYSIS

We bestowed our project lead to two sorts, one is Nam window and another one is Xgraph.

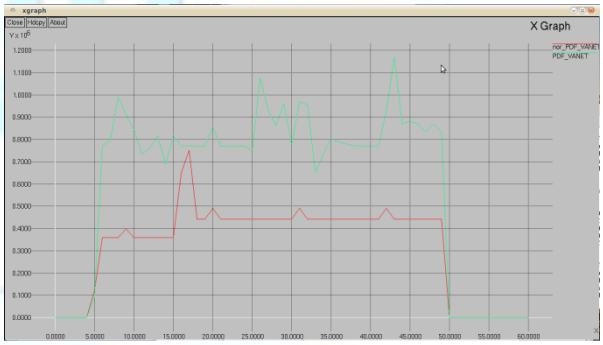
In Nam window, we tend to showing the method of auto moving from one position to a different and information transmission. From nam window output we are able to get clear distinction b/w reactive and hybrid routing operation.



2. Beacon sharing

From graph result we are able to apprehend reactive routing is not suitable for Vanet and hybrid improves the performance in vanet.

Normally hybrid making overhead as high compare than reactive, attributable to improved PDF, OH is ignorable

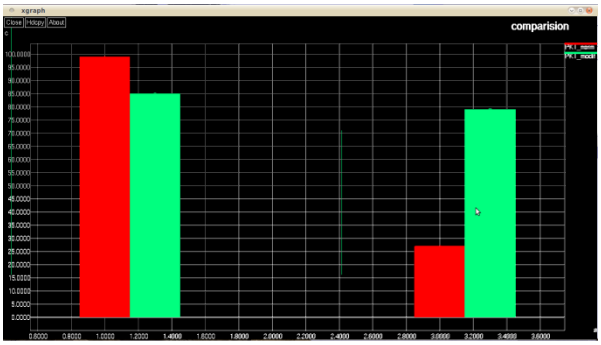


3. PDF function

While testing operation we tend to found an added detail, VANET performance is a smaller amount compare than MANET. And hybrid is not suitable for MANET (with our property) but it improves the performance compare than reactive in VANET.

Table1. Result parameter

Parameters	Reactive	Hybrid
PDF	27%	85%
OH	65 pkts	600pkts
DELAY	57ms	22ms



4. Comparison MANET and VANET

CONCLUSION:

In this paper, we've got bestowed a brand new circumstantial routing protocol, HLAR, which combines features of reactive routing with location-based routing. We've got incontestable however such a performance improvement leads to a climbable routing solution within the context of VANET environments. In our future work we will try to improve more quality by reducing overhead.

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