International Journal on Applications in Engineering and Technology
Volume 1: Issue 5: May 2015, pp 1-.6 www.aetsjournal.com *ISSN (Online) : 2455-0523*

A GRID VEHICULAR NODE LOCALIZATION SYSTEM VANET WITH LINER ERROR PROPAGATION

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Abstract:
VANET navigators have been popularly adopts by using drivers. However, due to these sensibilities of GPS signals to terrains, vehicles cannot to get their locations, when they are anyone inside a tunnel or a road it's surrounded by high rises, where satellite signal is ended. This mainly used for safety and convenience problems. But the VANETS advance into their critical areas and to become more dependent on these localization systems. GPS is starting to locate some uncertain problems, such not always being the available or not being robust enough for this some different applications. For the reason, a number of other localizations techniques such as Cellular Localization, Dead Reckoning, and Image Video Localization have been used in VANETs to overcome the GPS limitations. To address this issues, to proposes a novel Grid based On road localization system (GOT), where these vehicles with and without accurate of GPS signals self organizes into a Vehicular Ad Hoc Network (VANET), exchange the locations and distance information and helps to each others to calculate an accurate position for all these vehicles inside the network. The location information's can be exchanged among vehicles one or multiple hops away in this paper.

Keywords: **VANET, MANET, Localization, GPS, Vehicular Localization.**

I. INTRODUCTION

The research community has being interested as Vehicular Ad-Hoc Networks (VANETs) for several years since the deployment of this type of networks will be able to provide significant improvements in terms of road safety, where the majority of protocols adopted flooding techniques to warn all the nodes, as well as the traffic authorities, about the accident.

The proposed solution is essentially based on a technique of clustering, where a cluster head is chosen among a group of vehicles and a technique, for the establishment of the relative positions of the nearby nodes. Every cluster head establishes a local coordinate system and calculates the positions of all its neighbors in the group using the distances measured between vehicles. In the aim to reduce the calculate time in dangerous situation, the orientation of the coordinate system of the first cluster head and the global system are considered the same. This new solution provides sufficient location information and accuracy to support basic network functions [1].

Real-time video transmission has high requirements of terms on bandwidth and delay, while VANETs is characterized by very limited radio resources and high mobility. Furthermore, to ensure that good behaviour under any type of circumstances, also study the impacts of GPS drift on their schemes [2].

However, due to the sensibility of GPS signals to terrains, vehicles cannot to get their locations, when they inside tunnels or on a road surrounded by high rise where satellite signal is blocked. To address the issues, they proposed a novel Grid-based On-road localization system (GOT), where vehicles with and without accurate GPS signals self-organize into a Vehicular Ad Hoc Network (VANET), exchange location and distance information and help each other to calculate an accurate position for all the vehicles inside the network [3].

The majority of localization methods presuppose that some of network nodes (beacons) know their position, and these nodes act as a source for localization of the rest network nodes. Vehicles, equipped with Global Positioning Systems (GPS) receivers, are mostly used as beacon [4]. However, not all the vehicles have been equipped with their GPS. Also we give an overview of the existing methods of localization and especially their use in VANET networks [5].

The localization of a vehicle compared to an event when it's informed for the existences of accident or a looming danger. It's a mission of immense consequence that can avoid impact of vehicles and loss of human life [6].

But many ad hoc networks, such as vehicular Ad-hoc networks in which vehicles are consider as vehicles, due to highly mobile environment this change topology rapidly GPS information does not work in urban areas where the node density is low. Vehicles node move very fast in roads and highways, to be a safe and transport system, any vehicle should know about where a traffic problem due to broken vehicles or some other reason , where an accident has been taken place for provide safety in an intelligent transport system.

In these networks, vehicles communicate with each other and possibly with a roadside infrastructure to provide a long list of applications varying from transit safety to driver support and internet access[7]. In this network, acquaintance of the concurrent position of nodes is an assumption made by more protocol, algorithms, and applications. Here a very rational supposition, since GPS receivers can be installed their easily in the vehicles, a number of VANET applications into three main groups according to their localization requirements and show how position information is used by these protocols and algorithms [4].

To become an enable technology when attempting to provide instantaneous video transmission in vehicular networks; to present an applications that makes the use of traffic, focusing instead of evaluate the efficiency of different flooding schemes with the purpose of achieving a long-distance real-time video transmission under different circumstances, such as different vehicle densities and different degrees of GPS accuracy [8].

This establishment has been extensive, and more number of system equations have been explores to calculate locations through the help of location-aware nodes that are two hop away, First of all, because of the size of vehicles, the signal reflection and interference problem is more serious when measuring signal attenuation, and thus the calculated distance is likely to be more inaccurate. Recently to calculate the locations, further inside the tunnel to calculate the locations. Inside of this situation, errors are propagated by exponentially when they using this existing methods, resulting high inaccuracy [9].

II. VANET

Automatic vehicles information can be viewed on electronic maps using the Internet or specialized software. The advantage of WiFi based navigations system function is that it can be effectively locates a vehicle, which is inside big campuses like airports, and tunnels, universities. In VANET network can be used as parts of automotive electronics applications, which has to be identify an optimal minimal path of navigation with minimal traffics intensity.

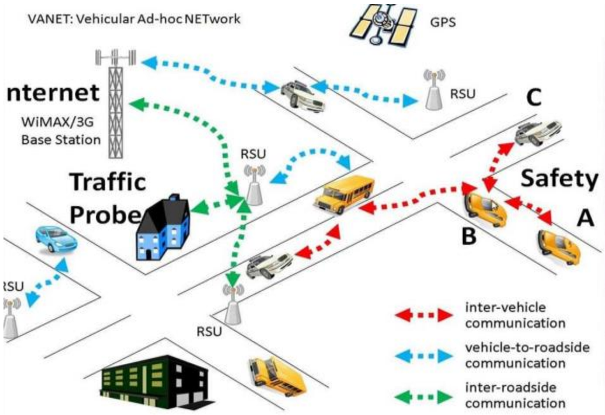

Fig 2.1 Vehicular Network

Inter-vehicle communication

In the intelligent transportation system, vehicles need only a concerned with activity on the road ahead and not been behind. There are two different types of message forwarding in inter vehicle communications; navy broadcasting and intelligent broadcasting. In navy broadcasting, vehicles to send broadcasting messages periodically and its regular intervals. Upon receipts of the message, the vehicles ignore the message, if it has comes from a vehicle behind it. If the message has to come from a vehicle in frontally, the receiving vehicle sends its own broadcasting message to vehicles behind it. This ensures that all enables vehicle moving in the forward directions to get all screen messages.

Multiple Adhoc networks technology integrated with VANET such as, ZigBee, WiMAX IEEE, and Wi-Fi IEEE for convenient, effective simple and plain communications within automobiles on active mobility. Security measurement are defined as vehicles by VANET, flowing communications within the automobiles, edutainment and telemetric.

Intelligent broadcasting with implicit acknowledgement addresses the problems are inherent in broadcasting by limiting the number of messages broadcasting for a given emergency event. If the event detecting vehicles receive the same message from behind, it assumes that at least one vehicle in the back has received it and cases broadcasting.

Vehicle – to - roadside communication

Vehicle – to - roadside communication configurations provide a high bandwidth links between the vehicles and roadsides unit. The roadside units may be placed at every kilometer or less, enabling high data rates to be maintained at heavy traffic. For instances, when the broadcasting dynamic speed limits, the roadside units will determines the appropriate speed limits according to its internal timetable and traffic conditions.

The roadside unit will periodically broadcast a message containing the speed limit and will compare any geographic or directional limits with vehicle data to determine if a speed limit caution applies to any of the vehicles in the locality. If vehicles violate the desired speed limits of broadcasting data will be deliver to the vehicle in the form of an auditory or visual warning, requesting that the driver reduce his speed.

III. Vehicle Monitoring

VANET, Most of us all the vehicles have GPS for finding the locations of the

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vehicle. It is mainly helps helps to finding the vehicles easily, the GPS handset reports wrong information's, when they are in crowded metropolitan area, such as Manhattan, where there are build many tall buildings. The GPS receivers also lose satellite connections in some places such as tunnels or multifloor bridges, resulting in safety and convenience problem.

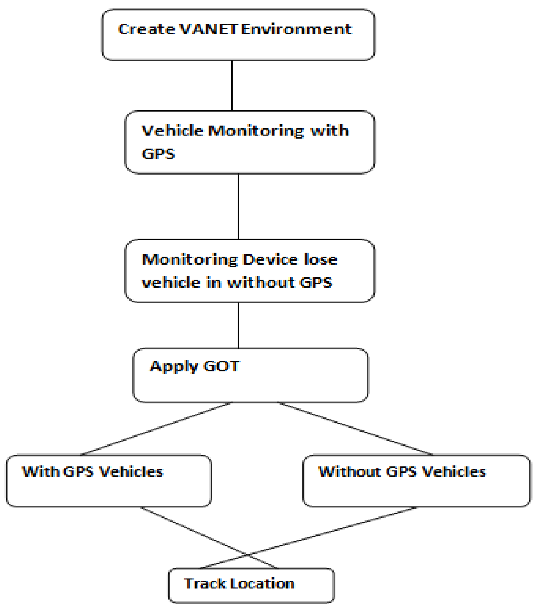

Fig 3.1 Vehicle Monitoring Block Diagram

GOT

Grid Based on road Localisation System (GOT) , where vechiles with or without accurate GPS signal self organise into vechicular Adhoc Network (VANET) , exchange the locations and distance information and help each others to calculate an accurate positions for all the vechiles inside the networks. A vehicle obtains the location and distance information's in its neighborhood through communication. The information will be discarded if its distance to the corresponding node is larger than our communication threshold. If a vehicle only knows the location of its neighbors and distances to them, it must know at least three location-aware neighbors to enable the location calculation.

AODV Protocol

In AODV, the network is silent until a connection is needed. At that point the network node that needs a connection broadcasts a request for connection. Other AODV nodes forward this message, and record the node that they heard it from, creating an explosion of temporary routes back to the needy node. When a node receives such a message and already has a route to the desired node, it sends a message backwards through a temporary route to the requesting node. The needy node then begins using the route that has the least number of hops through other nodes. Unused entries in the routing tables are recycled after a time.

IV. SIMULATION RESULT

CREATE NETWORK TOPOLOGY

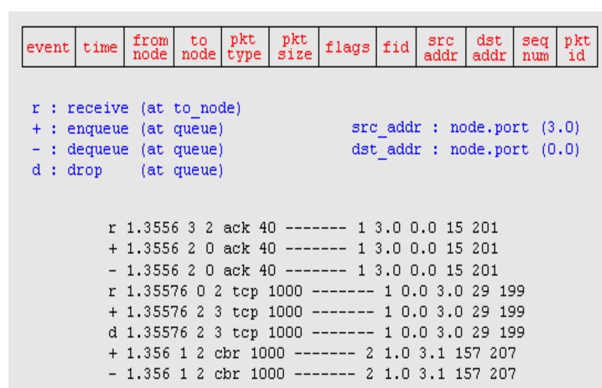

Fig 4.1 Turn on Tracing

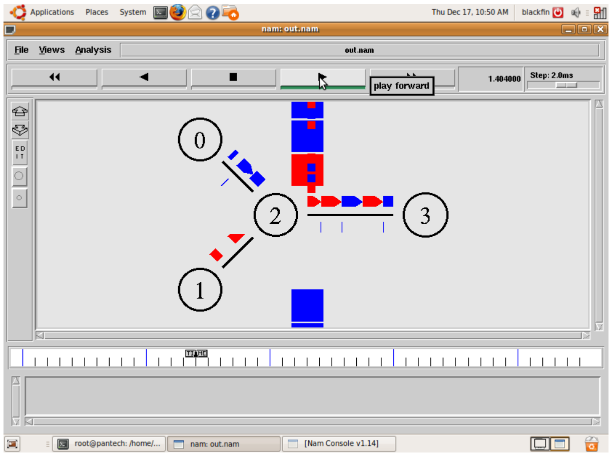

Fig 4.2 NAM Output

The above diagram Fig 4.2 shows that NAM output, it is an network animator which describes that to shows the output on animation. For the animation the node has created and to move the nodes of a one node to another node.

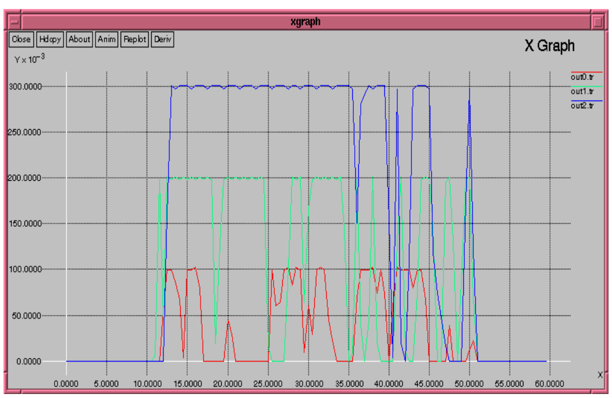

Fig 4.3 X Graph

Testing and debugging

The testing and debugging phase of a project can easily take more time than it took to write the application. Testing includes both checking that the code runs at all, that it runs correctly under all circumstances, and that it runs the same way it did before you made changes. Tcl's error diagnostics make it easy to track down coding errors; the modular nature of Tcl code makes it easy to do unit testing of functions, and the tcl test package makes it easy to write integrated regression test suites.

Simulation

In the simulation process the first step is to debugging a Tcl script is to examine the Tcl error output closely. Tcl provides verbose error information that leads you to the exact line where a coding error occurs. Tcl error messages consist of a set of lines. The first line will describe the immediate cause of the error.

V. CONCLUSION

This paper proposes a Grid based on road Vehicle Localization system. For study the different geometric relationship among their vehicles and design a grid based mechanisms to calculating the vehicle location. Some other solutions for localization, such as a channel utilization analysis have been also conducted by highlights EDF-CSMA has higher channel utilization than other well known mechanisms. All of these approaches have their own advantages and disadvantages. We also discussed data fusion techniques for position information. This survey will help researchers develop new efficient approaches to address localization issues in VANETs.

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