Survey on Internet of Vehicle -Routing Protocol & Security

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Abstract
The In this paper we focus on the cloud among the vehicle network. With the help of cloud, information is transferred from one vehicle to other vehicle (V2V communication). We have reviewed various research papers related to cloud and vehicle network. Therefore selecting of cluster head is an essential part in each cluster. We select the cluster header on the basis of the vehicle distance, energy, angle and bandwidth of particular cluster. Our proposed policy follows the Centralized Cloud System (CCS) to direct the vehicles in various cluster. After getting the cloud's permission only, vehicle can transfer the data to other vehicle. This transfer may be intra cluster or inter cluster of vehicle network.

Keywords
Cloud, Cluster, IOV, V2V

I. Introduction

Dear Internet of vehicles plays an important role in all network areas. Internet of Vehicle (IoV) may change according to the change of vehicles in network and increase or decrease of vehicles in network. Our network environment is full of human things and vehicles. Many developed technologies are used in this internet of vehicle for updating the applications and uses. Internet of vehicle takes a significant part in wireless contact technology and routing contact technology [1]. In this vehicle network, when the regulator of human is absent, the self- directed vehicles controls the traffic of roads and ways with powerful maintenance. With the help of effective infrastructure and process of distribution in atmosphere can offer new network of vehicles.

II. Review of Literature

YANG Fangchun, WANG Shangguang, LI Jinglin, LIU Zhiha and SUN Qibo [1] are clearly explained that the essential technology needed for generating a model IoV which represented that the combination between human, things vehicle and atmosphere.

A. Human

The term human denotes all persons who use the facilities provided by IoV. Human means, not only the person who uses vehicle but it includes the person who are in IoV atmosphere like, the person who is walking on the footpath, one who is cycling and household members of drivers is also called as a human.

B. Vehicle

The vehicle means which offers or consumes application and uses in IoV.

C. Thing

Any component which is other than vehicle and human is called as thing. We can see things inside the vehicle and also outside the vehicle.

D. Environment

The mixture of all the three is called as environment. It focusses on both the swarm model and individual model. Swarm model concentrates the different types of person, different types of things and different types of vehicles in different types of networks. In individual model, inter vehicle network is activated through the inter relationship between human, things and vehicle with environment. IoV offers different applications on the basis of swarm intellect, troop detecting and troop finding.

Now a day so many wireless networks are available such as Cellular Network, Satellite Network, IEEE 802.11 (Wi-LAN) and IEEE 802.16 (Wi-Max). According to, Mario Gerla, Eun-Kyu Lee, Giovanni Pau and Uichin Lee [2], in cloud designing, independent driving gets a better benefit than others. Internet vehicles have the capacity to know the customer's needs and wants. For this fulfillment of customers' needs, IoV concentrates the way of communication, and process of distribution in environment. Vehicular Cloud helps to make the possible development in the environment system. They also explain the internal functions and essential role of vehicular cloud. As per Yuyi Luo, Wei Zhang and Yangqing [3] Hu point of view, they develope a new creative protocol of VANET (Vehicle Ad hoc Network) which is based on the Cluster Based Routing (CBR). The major benefit of this protocol is to minimize the delay of packet delivery and overheads when the data is transferred from source node to destination node. This protocol also maximizes the ratio of packet delivery and memory power.

With the help of grids select the cluster header and all the data's were transferred through this header to neighbor header. The head of the cluster must know their own position and other nodes position. The general nodes must know their own position and cluster's header position in the grid. Through this header the packet transfers from the source node to destination node easily. They find a problem of this protocol is to selection of header in the grid and it need many hops to transfer the data from one cluster header to other neighbor cluster header.

D. Satyajeet, A. R. Deshmukh and S. S. Dorle [4] made a research about heterogeneous methods of cluster based routing (CBR) protocol which is used to keep steady topology in vehicular networks. From their investigation we find that, the simplest route or way of transferring the data from one cluster to other cluster without any loss.

Prof.Avinash Devare, Archana Hande, Anandmohan Jha, Sandhya Sanap and Shweta Gawade [5] concentrated the relation between vehicle to vehicle communication and vehicle to environment communication. They analyzed the major benefits of this communication such as,

- It permits only small and average range of communication.
- It allows minimum placement costs.
- It allows only short delivery of messages.
- It reduces the dormancy in communication linkage.

Totally it helps to avoid accidents and traffic. When an accident happens, it minimizes the alternative services in that situation. For calculating the density of vehicular, they not only consider the number of indicators received by RSU, but also consider the grid where the vehicles are placed.

As per the research of Leandros A. Maglaras, Ali H. Al-Bayatti, Ying He, Isabel Wagner and Helge Janicke [6], social internet

vehicle (SIov). This network allows social communication to both between vehicle and between vehicle drivers. In Social Internet Vehicle (SIov), central resource is selected as a cluster header. They are used various technologies in vehicles such as

- Autonomous driving in cars, security driving without any traffic and accidents,
- Societal driving which created the relationship with neighbor vehicles,
- Electronic Vehicles which are not producing any emission and fully power-driven, and
- Various mobile applications.

Nitti et al. [7] explains a public network vehicle, it provides connections between public vehicles which connect automatically for facilities and inter exchange the information related to vehicle traffic. Wan et al. [8] designed an active parking facility which is based on cloud and situation. It designed to provide facilities for traffic establishments, a parking booking facility and situation improvement. Their design permits the driver to leave the vehicle beside the highway for temporarily. But this model does not give a permanent solution for the flow of traffic. The authorized person in Traffic control can control the traffic in many cities. For providing these facilities, they concentrate the other related matters such as, the condition of road, and time (e.g., Peak hour).

From this figure 1. they explain the route way of internet of vehicle that is centralized management and control unit have a control over the two databases like Wi-Fi and Wi-Max and two networks like satellite network and cellular network. Through the management and control on the AP, all the vehicles are connected in a proper way to transferring the data.

Shu et al. [9] planned that to permit the drivers to allocate the actual matters related to travel or journey. Public drive gives the information related to attitudes and style of drivers, which is helped to minimize the usage of fuel. we can easily remove the unwanted driver behavior. Cunha et al. [10] explains the vehicles with their attitude and habits on the basis of flexibility. With the distance of resources, vehicle movement will be plotted as a public system. To expand the communication and operation of facilities, they use SNA method in vehicular communication. Cluster is used in this communication concept. According to Basaras, P.; Katsaros, D.; Tassiulas, L. Detecting [11], the middle point of resources acts a vital part in data dispersion in a communication network. Souza, E.; Nikolaidis, I.; Gburzynski, P [12] recommended that, on the glide of resource, the middle resource can be selected as a head of cluster. The head of cluster may play as a important resource for intended to various cluster or as a communicate resource for intra-head communication network. Maglaras et al.[13] planned to provide rank or priority to the vehicle, it is bases on the various sections in road, which is used to follow. On the bases of the vehicles number which enter and exit it in the network, ranking will be allocated for every road sections. The ideal way is selected with the consideration traffic. The authorized person in Traffic control can control the traffic in many cities. For providing these facilities, they concentrate the other related matters such as, the condition of road, and time (e.g., Peak hour).

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III. Proposed Scheme

A. Technics Used for Forming the Cloud Network

Heterogeneity in cloud contains of differences in offering services, customizing policies and Structures. Our strategy follows the Centralized Cloud Scheme (CCS) to strengthening the V2V communication for transfer of information in vehicle network. Cloud is acting as a monitor of all vehicles.in vehicle network, all the vehicles send request to the cloud for sending and getting information from other vehicle. Without getting cloud's permission, vehicles will not pass any instruction to other vehicle.

1. Coverage based Cluster formation

In our proposed scheme, for transferring information from the source vehicle to destination vehicle, the first step is to form a cluster in vehicle network.

First we, identify the position and number of vehicle in network. Then we find the coverage area of source vehicle. For that we prepare a table that contains all the vehicles and its distance from the source vehicle. From this table we can easily find the vehicles which are all come under the coverage area and it is considered as one cluster. Like that each cluster will form.

Intra cluster:

When the information is passed within a cluster is called as intra cluster.

Inter cluster

When the data transferred from one cluster to other cluster, it is called as inter cluster.in this inter cluster all the transferred are made by the cluster head.

Formation of cluster header:

After forming a cluster, we need to select one cluster as a cluster head. For this selection, we prepare various tables and priority tables on the bases of vehicles distance, vehicles angle, vehicles bandwidth and vehicles energy consumption level.

Distance:

Distance represents the space between the vehicles. It denotes in term of meter. Within the cluster the vehicle which is in high distance from the source vehicle need a minimum hop to transfer the data. Therefore according to this distance the priority rank is provided to the vehicles in a cluster.

Angle

Angle is calculated from the source vehicle to all vehicles in a cluster and maintains a separate table. Angle denotes in terms of degree. Also we find a degree of difference and give ranking for that. The vehicle which has a low difference can get a first priority.

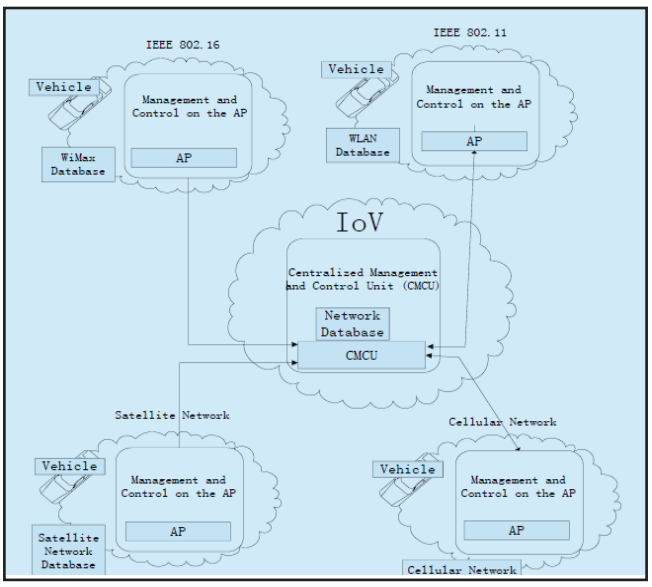
Bandwidth:

Bandwidth plays an important role in selecting cluster head in each cluster. From the total bandwidth available, we deduct the used bandwidth of each vehicle, we find the level of bandwidth of each vehicle in a cluster. We tabulate the power of bandwidth and provide rank for that. The vehicle which has a high bandwidth power gets a first rank in that table.

IV. Conculsion

All vehicle needs energy to transfer the information and to get the information from other vehicle. When we deduct the energy needed for transmission and receiving data, from the total energy, we easily find out the energy consumption of each vehicle. The calculated energy level will be tabulated and ranked. The vehicle which has a less consumption get a first rank in that cluster.

Finally, in a cluster, the vehicle which has a distance of minimum hop, less degree of difference in angle, strong bandwidth and less energy consumption is selected as a cluster head. If this header is moved to other group, then the next vehicle which fulfill all these four parameter is selected as the cluster head of that group, All the information's are exchanged through this cluster head of each group, not through any other resources.so that without any mistake or attacker the data will pass on to the destination vehicle.



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