Review Paper On "Different approaches to crowd-sensing in vehicular Ad-hoc Network"

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Abstract: **In VANET environment the data of consecutive vehicle position truly are discrete, so the key to the moving vehicle modeling is to efficiently reduces update frequency of the position data to progress the Major Attributes regarding Security like communication and database management load Privacy, authentication and confidentiality for all applications of VANET. Geograhically VANET might be of two types either Fully connected or sparsly connected .Its type depends on day time or saturation rate of market devices. Many solutions of security Problems in VANET exist but its implementation is very costly for both user and for Service Provider.**

Keywords: **Vehicular Adhoc Network, Characteristics of VANET, Crowd sensing.**

I. INTRODUCTION

Nowadays most of the automobile have intra conveyance network that permits wireless communication between vehicle and electronic gadgets like good phone ,Global Positioning System (GPS) ,Bluetooth media players. however the lay conveyance communication network continues to be not on the market. therefore to produce lay conveyance communication VANET i.e. Vehicular ad-hoc Network technologies ar rising. Vehicular unexpected networks (VANETs) are designed as a set of mobile unexpected networks (MANETs) with the distinctive property that the nodes here are vehicles . So node i.e. vehicle movement is restricted by road course, encompassing crowd and crowd rules.

II. VARIOUS CHARACTERISTICS OF VANET

High Dynamic Topology: VANETs have very high dynamic topology .The communication links between node changes terribly speedily. Communication between two nodes remains for terribly less time . As an example if two vehicles moving off from one another with a speed of 25m/sec and if the transmission range is 250m, then the link can only last solely for less than five seconds (250m/ 50ms-1). Therefore, this however extremely dynamic topology is present in VANET

Frequent disconnected Network: From the above characteristic we have seen that connection between two or additional vehicle remains for five second roughly. To keep up the continuous property vehicles desires another association close straightaway. But if failure happens vehicles will connect with Road facet Unit (RSU). Frequent disconnected network in the main happens wherever vehicle density is incredibly low like country.

Mobility Modelling and Prediction: The above two properties needs the data of positions of vehicles and their movements however this is often terribly dealt to predict since vehicle will move willy-nilly and it doesn't have a pattern. Therefore quality models node prediction that supported the study of predefined road route model and vehicle speeds are use.

Communication Environment: Mobility model Highly varies i.e from rural to urban and highway to city . So mobility modeling and vehicle movement prediction and routing algorithm should adapt to these changes. For highways mobility models are very simple because vehicle movement is one dimensional.

Hard Delay Constraints: Some Safety phase like accident, abrupt break and urgent situation call of VANET application depends upon the delivery time of data. It can't concession for data delay in this sort of application. Therefore hard delay constrain is more important in VANET than high data rate.

Crowd Sensing in Vanet

Aim of Mobile crowdsensing is to offer a means to involve participants from the general public to capably and efficiently add and operate context .Also, a remarkable trend in mobile computing is the increasing use of mobile devices to access social networking services.In mobile devices there are many Sensing modules are available which enables many social networking services and extended them to incorporate location based services ad media tag services etc. so, there is rising importance in crowdsensing . Mobile social networks not only provide crowdsensing, but can also improve the context - awareness of mobile applications and enhanced assist users in mobile crowd sensing by analyzing and utilizing their social contexts.

III. RELATED WORKS

Kanhere, [1] et al. proposed an algorithm in which the evolution process of the message clustering is taken into account. The fuzzy clustering procedure normally divided into steps. In VANETs, several aspects of the vehicle state information, which are generated by on-board sensors, like as vehicle speed s, brake frequency b, acceleration e, message creation time t, horizontal or vertical geographical coordinate (σ, ρ). This information can be indirectly reflected the road crowd situation, or it can be grouped into a one atomic message as its attributes.

In [2] Baguena et. al. present "adaptive Anycasting solution for Vehicular Environments" (AVE), which is a message delivery protocol that combines geographical and topological information to dynamically adapt its behavior to network conditions. We focus on vehicle-to-infrastructure connectivity for cloud services, where the vehicles send the sensed information as individual and independent messages to a cloud service in the Internet. This scenario requires access to any available close-by roadside unit, thus making anycasting the ideal delivery mechanism. Simulations results show that the hybrid and adaptive approach of AVE is able to improve network performance.

In this, Fang [3] et al. proposed With the attained feature information, design the D-SEMA scheme to enhance the accuracy of an event detection by introducing with one message credibility assignment function or an enhanced D–S evidence reasoning theory. The system architecture of D-SEMA, the road congestion event is denoted as ''A''. If a huge number of aggregation messages are used in a D–S evidence combination, and the computational overhead of the event detection will be unacceptable. Therefore, firstly set the two threshold values θa, θs for the message attributes a(ni) r, s(ni) r to reduce an amount of aggregation messages. Only all of the message attributes of an aggregation message has satisfied the following conditions can be used as a congestion feature evidence.

$$\begin{cases} 0 \leq s_r^{(n_i)} < \theta_s \\ 0 \leq a_r^{(n_i)} < \theta_a. \end{cases}$$

In this method, L. J. Guibas [4] et al. proposed the research of congestion control algorithm which ensures a high reliability or time bases delivery of disseminating the event-driven safety messages. The purpose of congestion control algorithm that can be divided into following two main parts: measurement-based detection and event-driven detection. The flowchart steps for congestion control algorithm are demonstrated.

In this, Darus, Mohamad Yusof [5] et al. proposed the measurement-based congestion detection that will monitor the CCH channel based on the packets of channel queue. The CCH channel is based on the research which is concluded that a queue with the length of five beacon messages that can be sufficient to used for 802.11p beaconing. In congestion control algorithm, congestion control discarded a packet queue much more than 5 beacon safety messages.In this method, Darus, Mohamad Yusof [6] et al. proposed an event driven detection method that monitors an event-driven safety message or decides to intialize the congestion control algorithm. When an event-driven safety message is detected and generated. The congestion control will be launched immediately the queue freezing technique for the all MAC transmission queues that except for an event-driven safety message. Follow the order to send an event-driven safety message with minimum delay, the lower priority messages like as beacon messages emission has breezed. Presently, an event-driven detection method is used in existing of congestion control algorithm.

In [7], PM Dhanya et al. proposed the major goal of CEP system is to track and detect real world situations, known activities such as crowd-sensing along a motorway. The CEP is based on the idea which an activity has been split in simpler ones. In this case, crowd-sensing can be divided in various groups of the slow vehicles. In turn, each of the activities can be divided into sub activities with lower level of abstraction [11]. In the summing up, some are reflected as clouds of the interrelated rough events in lowest layer of an IS. In present scope, the target IS has own VANET. The CEP system gets as input of the rough events and creates a layered hierarchy of the events with individual levels of the abstraction to compose one and more complex of events which represent an initial real-world activity. These complex events can be sent to back-end system that performs some kind of actions or procedures.

To do the CEP tries to search relationship, detailed as predefined patterns, among the events of IS. The patterns are described in the CEP system as the event-processing rules that comprise both of pattern definition and the action to be changed whenever pattern is met. It based on EPRs, the event processing agents are planned. An EPA is composed of EPRs which produce events of a particular level of abstraction. It contains an event processing engine [8,9]. This engine is charged while running the individual EPRs of EPA and performing their associated actions.

In this, H. Takagi [10] et al. proposed the EDA that acts as a middleware between network level that is in charge of VANET communications at low level, and higher level holds the back-end applications. The general structure of EDA takes beacon messages from a network layer as rough events, or the EPAs perform a CEP processing of afterward; more so, the EDA gets as input events from the data sources that state road environment. These data sources mainly inform the weather conditions on EgoV road. Such these events are merged with events that made up from the beacon messages; conversely, the EPAs works in cooperative way and a hierarchy has composed. In the conclusion, the EDA creates a crowd alarm when a crowd jam is detected or tracked. This event is sent to back-end application and they could be used, either to an alert both driver and passengers of the EgoV and to display a warning message on information panels of motorway depends upon, where the EDA is running.

Alberto Gordillo Muñoz et al. [11] proposed Multicast over vehicle adhoc networks. In this work, several approaches are categorized and compared which provides its merits and demerits to give better result for multicast over vehicle adhoc network. VANET might improve many features like efficiency of road travel but there are still many challenges are standing which it needs to face and overcome.There exist many different protocols that try to solve these issues using different approaches.

Marwa Altayeb1 and Imad Mahgoub et al. [12] offered A Survey of VANET Routing Protocols .The goal is to provide a survey of the VANETs routing mechanisms, this paper gives an indication of VANET and the offered VANET routing protocols Which focus on vehicle to vehicle (V2V) communication and protocols.

Sanjoy Das, and D.K Lobiyal [13] Offered a performance Analysis of LAR Protocol for VANET in City Scenarios. In this they have completed LAR protocol I different cities. This model was considered as Manhattan mode wich is l used to imitate the faction pattern of nodes i.e., vehicles on streets defined by maps. The idea is to give a qualitative analysis of the LAR protocol in different city scenarios in VANET . The simulation work has been conducted using the Glomosim 2.03 simulator. The results demonstrate that LAR1 protocol achieves highest packet delivery ratio is 99.68 % and maximum average end-to-end delay is 7.319969 ms when the network is lightly occupied. Additional, for compactly occupied network greatest achieved packet delivery ratio is 87.58% and average end-to-end delay is 0.017684 ms.

IV. CONCLUSION

A systematic review of various works done in the field of vehicular cloud computing has been presented in this paper. Vehicular Cloud Computing is an interesting area of research these days and has become quite popular recently. The reason is its extensive utility in traffic congestion and collision avoidance. The paper summarizes all the works related to such areas and discusses them for their utility and limitations. In future other novel concepts of cloud computing can be applied on VANET like security, storage efficiency improvement, Software as a Service, etc and the performance can be compared with their traditional counterparts

V. REFERENCE

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