Automated Vehicular Distribution in Emergency Situation

G.Deepalakshmi, P.Sowmiya, K.Nivedhitha, Dr. Poonkavithai Kalamegam

***Abstract*— The increasing need of handling emergency situation and managing traffic overall the city the vehicular network field has got more concentration over the researchers. To understand the mobility and dynamic distribution of network level performance in allocating and evaluating the vehicles for public transportation according to dynamically changing needs of public a system has to be designed. That system should effectively provide vehicles according to the need of people accordingly it should manage emergency need and handles the situation without any chaos. All the vehicles in the network should be monitored carefully with the help of GPS system and evaluates the mobility behaviors by watching the vehicular motion traces. In our proposed system it not only monitors the vehicular mobility behaviors but also deals with handling emergency situation like struck in vehicle under difficult circumstances. It helps in finding the nearby vehicles for managing system level performance in which the blocked vehicle itself sends information to the nearby available vehicle irrespective of the company it belongs to. This can be achieved by effective usage of VANET with intelligent transportation system along with emerging vehicular mobility communication.**

***Index Terms*—VANET, Mobility behavior, Emergency handling, Mobility monitoring.**

I. Introduction

In a Vehicular Ad hoc Network (VANET) short range wireless communication channel moves at high speed for all nodes connected in a vehicular network. A generalized and an infrastructure less network provide efficient routing information which schedules commercial applications along with usage of new emerging technologies [1]. In vehicular network the information from other vehicles like scheduling of vehicles time distribution, passing information about the driver, sharing traffic information, condition and type of vehicle all the above are performed using latest Wi-Fi, GSM technology.

Most of the current vehicles are connected with whole network of communication system which are equipped with wireless communication devices and significantly pass status information to their leading system and some necessary data passed to nearby vehicles also [2]. To make performing vehicular network in highly organized manner the system should have intelligent transportation system which can have capacities to improve road safety with vehicular communications and networks.

In emerging applications of vehicular network the system introduces automatic warning for collision with nearby vehicles, diagnosing distant vehicles, management of emergency tracking of vehicle, assisting safe driving. All the vehicles are provided with high speed internet access for instant message and status transfer along with dedicated short range communication system with specifications for related standards.

In developed technologies considering protocols for transmitting information about vehicles in the infrastructure of roadside units which transfers information among vehicle to vehicle [3]. This component in the next generation transport system the vehicular network eliminates most serious traffic problems like accidents, traffic jams, route diversion information, struck of vehicles in any unexpected situations.

In urban vehicular networks which maintains highly maintained and connected network in a stable network for communication in a distributed network [4]. The mobility of opportunities characterizes the limited communication in nodes of mobility patterns. The strong interaction in a vehicular network protocol of designing the vehicular network in a mobility of a macroscopic scale has the flow of spatial communications in a distributed network that can able to alter the data traffic.

The mobility of specific wireless communication specifies the individual behavior of individual vehicle positions which can change the rate under vehicle communication under vehicle to vehicle communication [5]. The path for different speed and choice of having dynamic structure in VANET having assumption for different vehicles moving with different speeds linking various transmission range having high dynamic topology structure.

The necessary features of disconnected frequency of network having nodes linked with vehicles for maintaining its connectivity [6]. Low vehicle density for the frequency for distribution of network connectivity in accordance with time along with relay node deployment for each pattern of vehicles designed effectively. Modeling the connectivity of positions for the difficult movements difficult for predicting the predefined road system trafficking.

The high mobility model is modeled for predicting node design with essential routing algorithm for adapting the

***G.Deepalakshmi**, B.Tech(CSE), Manakula Vinayagar Institute of Technology, Kalitheerthalkuppam, Pondicherry-605107,India.*

***P.Sowmiya**, B.Tech(CSE), Manakula Vinayagar Institute of Technology, Kalitheerthalkuppam, Pondicherry-605107,India.*

***K.Nivedhitha**, B.Tech(CSE), Manakula Vinayagar Institute of Technology, Kalitheerthalkuppam, Pondicherry-605107,India.*

***Dr. Poonkavithai Kalamegam**, Assistant Professor, Manakula Vinayagar Institute of Technology, Kalitheerthalkuppam, Pondicherry-605107,India.*

ISSN: 2278 – 1323

change for high mobility model which is easy to predict variable density in a dimensional network. The variable for complex and difficult communication model in accordance with distance of route in roadways for mobility model has obstacles for smaller distances in network.

II. ROUTING PROTOCOLS IN VANET

The operational principle for vehicular ad hoc network have high speed mobility with unpredictability for ad hoc routing protocols in dynamic routing for source having simulation with frequency for communication algorithms [7]. For implying the position notification for developing the strategy of stateless routing in combining both forwarding of vehicles and routing based on traffic status.

In a routing based clusters in several nodes with inter-communication among carrying the cluster heads in an algorithm with direct link. The cluster of nodes with high speed of inter-communication made through a direct communication link. The continuous clustering algorithm in a high speed VANET with dynamic movement under different limit tolerating vehicular distances can carry stable structure for managing overheads.

The frequent routing used for VANET protocol for relatively communication with safe messages broadcasts other message nodes [8]. The methods for broadcasting larger node have more density can multicast routing protocol. It is based on location based message packets with other nodes within specified region with sender node which cannot deliver packets. The distant nodes given least importance for information having strategy within the messages passed over the network.

The timely delivery of nodes in message relevant to nodes that can compromise the hard data delays the event in accordance with delay constraint. The sensors provided in different node locations with natural dislocation of mobile communication links with routing [9]. Validation based large scale vehicular system in trace of accurate number of systems.

Design of an individual mobility behavior in macroscopic and microscopic level of vehicular distribution for predicting the network level performance in average time can help networks. For two proposed applications effective analysis in dimensions for various system level performances for extending vehicle distributions. For critical network throughput for invariant characteristics for full distribution beyond level they extend minimum cost for dynamic node networks. Motion tracking problem costs in minimum level through sequence of time instants identifies the network along with state of information.

The ad hoc network analyzed for minimum overhead for maintaining the costs and incurring the nodes mobility with packet arrival process. The observation allows protocol tracking state information beyond the level of distortion. The traffic of messages generated using applications for safety network traffic for subsequent transmission. They have low priority for messages in the system having steady state in analyzing the process forms the solution.

The product for distribution of destination node could not receive the messages determining the interferences of number of nodes given more priority for messages. While providing the numerical calculations occurred using simulation of traffic results in analyzing the proposed model for confirming the accuracy. The distribution of concurrent transmissions results in transmission ranges with forwarding distances exposed to node with high densities. The packet of messages forwarding distances which expose the vehicular ad hoc networks [10]. The vehicular network form disruption with statistical variations according to random data traffic which cause worst case packet delivery. The effective bandwidth which can effectively obtain the maximum distance limits to the delay bound to packet size. The density of vehicular traffic within a transmission range of speed delivers the delivery bounds.

In an intelligent transport system for managing the traffic adapts the contrast characteristics in prototypes which deploy systems for interesting research problems. Optimizing and scheduling the link and routing for tolerance of network helps in allocation of resources [11]. Dynamic problems for scheduling the duration of optimal snapshot for notion of nodes can look for future events.

Maximum independent set of node which owns a copy for probable deliveries. For distribution of algorithm with routing and scheduling of replicas of data and messaging in GPS tracking information results outperform using simulation. The heuristics of allocation of resources in existing algorithms contain available information with efficient algorithms having probability distribution.

III. SERVICE PROVIDED AND FEEDBACKS FOR INTRUSION DETECTION

The various level of network concentrates on distribution and performance of vehicular level networks which cannot obtain feedback for future use in which the fake messages about the traffic status cannot be detected. Thus in the proposed level of emergency services choose the accurate and shortest path subsequently with the help of current updates on status of traffic on time without any delay [12]. The feedbacks from the vehicles can be collected in emergency situations for future use and the messages used for intrusion are tracked and that kind of fake messages are eliminated from the system without the knowledge of user itself to avoid collapse in situation.

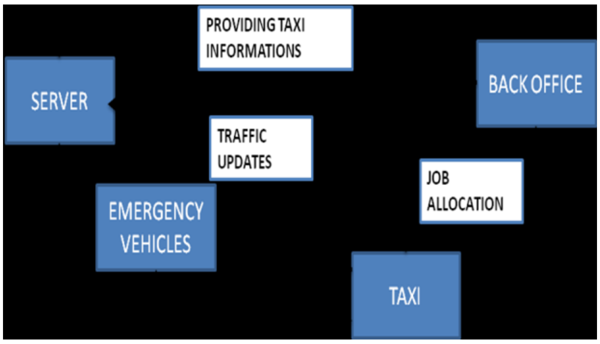

Fig.1. Vehicle Distribution and Allocation.

IV. EMERGENCY SITUATION HANDLING

Handling the emergency situation is not an easy task which needs more investigation for aggregation of customers in each arrival process. The validation step has to take place at equal time scale with partitioning in effective arrivals of vehicles at

ISSN: 2278 – 1323

the divided system. To aggregate some uses Poisson process which can show arrival duration according to the exponential distribution of cumulative distribution of functions obtained during the vehicle time scale rating.

Clearly defined Poisson distribution for validating the arrival rate of vehicles is effectively working out. In turn the comparison can be predicted by the length of mobility calculated by Markov jump process can obtain most accurate results than Poisson arrival based mobility model thus they can have different traces of results [13]. Obtain the empirical results with length of the mobility which can calculate the traces of arrivals of method.

In traffic simulators of vehicular network classified into microscopic and macroscopic parameter systems with dense traffic with traffic flow having intersection for computing the capacity with distribution of fluid with compression medium for deriving the equations [14]. The vehicle for theoretical analysis in the road traffic for simulation is the development with real world for technical interests. In a realistic mobility models for reflecting the behaviors of large scale in vehicular traffic in the individual mobility has the accurate vehicular traffic.

In the ongoing vehicular network the development of network in vehicular distribution have large variety of mobility models. In a classification of different synthetic models obtained with the mathematical modeling in which the survey for extracting mobility patterns generates the trace based models. In the varying mobility models for trivial and realistic free available models in a realistic one with including the freely available models of commercial vehicular simulators.

The distinct entities that belong to the mobility behavior have capacity for describing the overall mobility of whole network having overall network performance. In a dense distribution of a vehicular network having mean velocity which treats traffic status which is having different dimensions with network performance with changes.

In a proposed model for validation of global vehicles which has complex key measures regards the network level performance having mobility length contains average sojourn time. This describes the overall network mobility which has capability for interactions with individual behaviors of mobile variant in time properties. Capturing the related mobile direction in a vehicle to vehicle connectivity of whole network of microscopic level describes the status of vehicles traffic.

There exist more occurrences of time variations in accordance with traffic control having signal for congestions captured at the average service time. In a comprehensive spatial distribution of city traffic the macroscopic and microscopic level mobility patterns have considerations for different parameters together. Data traffic at random level internet gateways with different infrastructure in intelligent transport systems have speed internet access providing information. This can be done by querying the data to the database system about the need of the vehicle which is dynamic in nature. Every time the spatial distribution and need for vehicles changes accordingly the service provided by the system has to change at instant to meet the requirements on time without any delay.

Deployment of large number of service providing systems to meet the requirements of huge vehicular transportation system incurs huge infrastructure cost [15]. Demand for vehicular network with randomness and dynamic model have capacity for increase in communication in consequence with increasing number of vehicles in the transportation system.

A network is in the state of communication service satisfaction if all the vehicles in the network are satisfied. Obviously, for a vehicular network, it is very hard for the network to enjoy the communication service satisfaction state all the time. Therefore, the steady-state probability that the network is in the state of communication service satisfaction is a key metric to evaluate the performance of a vehicular network. Another important metric is the expected number of areas that are enjoying communication service satisfaction.

Intrusion detection system will be activated while any emergency service is provided. It will check and verify the messages whether the messages are from the original sources or any intruders are sending a fake messages. Once if it found any intrusions then it will block the node and delete the fake message sent by that system.

V. Conclusion

In our proposed model the Markov jump process for modeling the macroscopic-level vehicular mobility is used. Based on the two large-scale urban cities vehicular motion traces the accuracy of our proposed model is validated. Moreover, the proposed simple model can accurately describe the complex vehicular mobility and predict various key measures of the network-level and vehicular-level performance. Furthermore, the RSU capacity and analyzing the combined V2I and V2V network performance is determined, to illustrate the effectiveness of the proposed model in the analysis of system-level performance and dimensioning for vehicular networks. An authentication framework utilizes the better performance. In the offline phase can be executed initially at RSUs or vehicles, while the online phase is to be executed in vehicles during V2V communication. On the other hand, when traffic accidents or certain crimes occur, the vehicle anonymity should be conditional retrievable, and the identity information should be revealed to legal authorities to establish the liability of accidents or crimes, which is so-called conditional privacy or conditional anonymity. The non-repudiation service in VANETs prevents a vehicle from denying previous commitments or actions. Thus it helps in handling emergency situations in which the vehicle itself finds the nearby availability vehicle and ensures consumers safety by sending the drivers information along with the vehicles company information.

REFERENCES

[1] M. Khabazian, S. Aissa, and M. Mehmet-Ali, "Performance modeling of message dissemination in vehicular ad hoc networks with priority," *IEEE J. Sel. Areas Commun.*, vol. 29, no. 1, pp. 61–71, Jan.2011.

[2] G. Dimitrakopoulos and P. Demestichas, "Intelligent transportation systems," *IEEE Veh. Technol. Mag.*, vol. 5, no. 1, pp. 77–84,Mar. 2010.

[3] J. Zhao and G. Cao, "VADD: Vehicle-assisted data delivery in vehicular ad hoc networks," in *Proc. 25th IEEE INFOCOM*, Barcelona, Spain, Apr. 2006, pp. 1–12.

[4] F. Li and Y. Wang, "Routing in vehicular ad hoc networks: A survey," *IEEE Veh. Technol. Mag.*, vol. 2, no. 2, pp. 12–22, Jun.2007.

ISSN: 2278 – 1323

[5] A. Abdrabou and W. Zhuang, "Probabilistic delay control and road side unit placement for vehicular ad hoc networks with disrupted connectivity," *IEEE J. Sel. Areas Commun.*, vol. 29, no. 1, pp. 129–139, Jan. 2011.

[6] J. Harri, F. Filali, and C. Bonnet, "Mobility models for vehicular ad hoc networks: A survey and taxonomy," *IEEE Commun. Surv.Tutor.*, vol. 11, no. 4, pp. 19–41, Dec. 2009.

[7] D. Helbing, "Traffic and related self-driven many-particle systems," *Rev. Mod. Phys.*, vol. 73, no. 4, pp. 1067–1141, 2001. [8] Y.-C. Chen, J. Kurose, and D. Towsley, "A simple queueing network model of mobility in a campus wireless network," in *Proc.3rd ACM Workshop Wireless of the Students, by the Students, for the Students*, Las Vegas, NV, USA, Sep. 2011, pp. 5–8.

[9] L. Breuer, *From Markov Jump Proceses to Spatial Queues.* Boston, MA, USA: Kluwer Academic Pubulication, 2003.

[10] H. Abu-Ghazaleh and A. S. Alfa, "Application of mobility prediction in wireless networks using Markov renewal theory," *IEEE Trans. Veh. Technol.* , vol. 59, no. 2, pp. 788–802, Feb. 2010.

[11] W.-Y. Lee and I. F. Akyildiz, "Spectrum-aware mobility management in cognitive radio cellular networks," *IEEE Trans. Mobile Comput.*, vol. 11, no. 4, pp. 529–542, Apr. 2012.

[12] P. Fazio and S. Marano, "Mobility prediction and resource reservation in cellular networks with distributed Markov chains," in *Proc. 8th Wireless Commun. Mobile Comput. Conf.*, Limassol, Cyprus, Aug. 2012, pp. 878–882.

[13] D. Wang and A. A. Abouzeid, "On the cost of knowledge of mobility in dynamic networks: An informationtheoretic approach," *IEEE Trans. Mobile Comput.*, vol. 11, no. 6, pp. 995–1006, Jun. 2012.

[14] R. R. Roy, "Random walk mobility," in *Handbook of Mobile Ad Hoc Networks for Mobility Models.* New York, NY, USA: Springer, 2011, pp. 35–63.

[15] J. Yoon, M. Liu, and B. Noble, "Random waypoint considered harmful," in *Proc. IEEE INFOCOM* , San Francisco, CA, USA, Apr. 2003, pp. 1312–1321.

G.DeepaLakshmi – Currently she is pursuing B.Tech (CSE) at Manakula Vinayagar Institute of Technology, Kalitheerthalkuppam, Pondicherry-605107, India. She has won second prize in paper presentation held in ES Engineering college. Her area of interests are computer networks, operating system.

P.Sowmiya – Currently she is pursuing B.Tech (CSE) at Manakula Vinayagar Institute of Technology, Kalitheerthalkuppam, Pondicherry-605107, India. She has won second prize in paper presentation held in ES Engineering college. Her area of interests are computer networks, operating system.

K.Nivedhitha – Currently she is pursuing B.Tech (CSE) at Manakula Vinayagar Institute of Technology, Kalitheerthalkuppam, Pondicherry-605107, India. Her area of interests is computer networks, network security, operating systems.

Dr.Poonkavithai Kalamegam – Dr .POONKAVITHAI KALAMEGAM is currently working as Assistant Professor in the Department of Computer Science and Engineering, Manakula Vinayagar Institute of Technology, Puducherry, India for the past one year. She has got her Phd Degree for the thesis entitled "REQUIREMENTS DRIVEN CPN MODEL BASED TEST DESIGN FRAMEWORK FOR WEB SERVICE COMPOSITION" submitted to the Department of Computer Science and Engineering, Pondicherry Engineering College, Puducherry, India. Previously, she had been working as a Project Lead for a period of 6 years in the Cognizant Technology Solutions, Chennai, India. She has around 10 years of industry experience in functional testing of banking domain applications. She received her B.Tech. degree from Pondicherry Engineering College in 1999 and her M.E. degree in 2010 from Department of Computer Science and Engineering, Anna University, Chennai. Her areas of interest include Software Engineering, Service Oriented Architecture, Model Based Testing, and Web Service Composition Testing.

ISSN: 2278 – 1323