Traffic monitoring and vehicular accidents prevention using sensors

V.Kavitha[1], M.Yoga[2]

[1]Assistant Professor/Department of Information Technology/Nandha College of Technology,Erode.
Email:kavithamebit@gmail.com

[2]Assistant Professor/Department of Information Technology/Nandha College of Technology,Erode.
Email:yogamecse@gmail.com

Abstract

Vehicular accidents are caused by avoidable human errors and improper driving practices. With recent advances in sensing technologies, self-driving, connected cars and autonomous vehicles are becoming more and more practicable. A distributed system sharing sensor data coming from vehicles can reduce accidents by the use of direct or indirect vehicle to vehicle (V2V), vehicle to infrastructure (V2I) and infrastructure to vehicle (I2V) interactions. Sensor technology connected with cars allows drivers to improve their driving experience. This enables warnings and precautions and information regarding availability of crucial services. Such information is particularly beneficial to drivers in remote areas where roads cannot be equipped with traffic sensors[5]. This Paper implements a attainable various ITS answer for addressing such a problem considering mobile GPS-based traffic sensors directly put in in private/public transportation and alternative volunteer vehicles. during this state of affairs, a quick real time process of massive traffic information is prime to stop accidents. specially, considering a true reference state of affairs of mobile GPS-based sensors put in in private/public transportation and alternative volunteer vehicles[2], IoT is employed for traffic observation and alert notification supported OpenGTS and MongoDB for the quick process of massive traffic information. This paper considers a system where users aboard communication-enabled vehicles have Associate in Nursing interest in downloading utterly totally different contents from Internet-based servers. This state of affairs captures many of the image show services that conveyance communication is visualised to change, as well asnews news, navigation maps, and computer code change, or multimedia system file downloading.

.

Keywords: RSU, onboard unit, mobile sensors,GPS,V2V,V2I,I2V.

1. Introduction

Everything is turning into wireless. The fascination of quality, accessibility and suppleness makes wireless technologies the dominant methodology of transferring all types of information[7]. Satellite televisions, cellular phones and wireless web are well-known applications of wireless technologies. This work presents a promising wireless application and introduces a little contribution to its analysis community. Wireless analysis field is growing faster than the opposite one. It serves an oversized vary of applications below utterly completely different topologies all of that comes with some new specialised protocols.

2. Experimental technique

VANET is that the technology of building a robust Ad-Hoc network between mobile vehicles and every different, besides, between mobile vehicles and margin units. As shown in Fig. 1-1, there are 2 styles of nodes in VANETs; mobile nodes as On Board Units (OBUs) and static nodes as Road facet Units (RSUs) [8]. Associate OBU resembles the mobile network module and a central method unit for on-board sensors and warning devices [10]. The RSUs is mounted in centralized locations like intersections, parking tons or gas stations. They'll play an enormous role in many applications sort of a gate to the web [4].

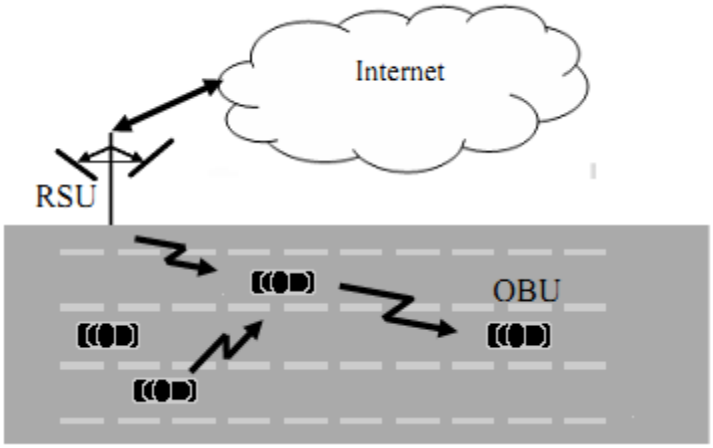

Fig 1.1 Node types in VANET

V2V communication within the VANETs is enforced on the intelligent transportation systems (ITS). Vehicles are enabled to speak among themselves (vehicle-to-vehicle, V2V) and via edge access points (vehicle-to-infrastructure, V2I). transport communication is predicted to supply safe and secure journey by providing the rode condition and alternative necessary data to the motive force, and additionally to create travel a lot of convenient.

2.1 Understanding Traffic Dynamics in Cellular Data Networks

In the paper" Understanding Traffic Dynamics in Cellular knowledge Networks"[1] the authors U. Paul, A.P. Subramanian, M.M. Buddhikot, and S.R. Das were expressed that the he first careful measurement analysis of network resource usage and subscriber behaviour using a large-scale information set collected inside a nationwide 3G cellular knowledge network. The info set tracks on the brink of 1,000,000 subscribers over thousands of base stations. The analyze individual subscriber behaviours and observe a major variation in network usage among subscribers. They characterize subscriber quality and temporal activity patterns and establish their relevancy traffic volume[4].

2.2. Alpha Coverage: Bounding the Interconnection Gap for Vehicular Internet Access

Alpha Coverage: Bounding the Interconnection Gap for transport web Access", the authors Z. Zheng, P. Sinha, and S. Kumar were explicit that transport web access via open wireless local area network access points (APs) has been incontestable to be a possible resolution to supply timeserving knowledge service to moving vehicles[11]. Victimization associate in situ readying[3], however, such an answer doesn't offer worst-case performance guarantees because of unpredictable

intermittent property. On the alternative hand, a solution that tries to cover every purpose during a complete road network with APs (full coverage) isn't very smart owing to the preventative preparation and operational value.

2.3 Maximizing the Contact Opportunity for Vehicular Internet Access

maximising the Contact chance for transport web Access" [1] the authors Z. Zheng, Z. Lu, P. Sinha, and S. Kumar were explicit that with increasing quality of media enabled hand-helds, the necessity for top data-rate services for mobile users is clear.Large-scale Wireless LANs (WLANs) can provide such a service, however they're costly to deploy and maintain.Open local area network access-points (APs), on the opposite hand, want no new deployments[7], however offers solely timeserving services with no guarantees on short term turnout.In distinction,a fastidiouslyplanned thin preparation of edge wireless local area network provides associate economically climbable infrastructure with quality of service assurance to mobile users.In this paper, they propose to check preparation techniques for providing edge wireless local area network services. Specifically, they gift a brand new metric, known as Contact Opportunity [6], as a characterization of a edge wireless local area network network. Informally, the contact probability for a given preparation measures the fraction of distance or time that a mobile user is connected with some AP once moving through an explicit path. Such a metric is closely related to the quality of information service that a mobile user may expertise whereas driving through the system [12]. They then gift associate economical preparation technique that maximizes the worst case contact chance below a budget constrain.

They a lot of show the thanks to extend this idea and so the preparation techniques to a loads of intuitive metric – the common output – by taking varied dynamic elements into thought. Simulations over a real road network and experimental results show that the approach achieves quite 2 hundredth higher minimum contact probability, 30%-100% higher average contact chance and a significantly improved distribution of average turnout compared with 2unremarkably used algorithms.
In alternative words, solely the amount of contacts is taken into account however not the standard of every contact. In distinction, contact chance is a lot of closely associated with the $64000 performance that a mobile user experiences by taking numerous static and dynamic parameters into consideration,[6] like the coverage region of every potential location for deploying associate AP, driving speed, the info rate of APs (when average turnout is considered). Consequently, finding associate optimum preparation in terms of contact chance is significantly more difficult. they create the subsequent contributions during this paper.An efficient preparation technique that maxi-mizes the worst case contact chance given a budget constraint by utilizing submodular improvement tech-niques.The extend conceptionof contact chance and also the cor-responding preparation techniques to average turnout by modeling numerousdynamic parameters[13].

2.4 Cooperative Download in Urban Vehicular Networks

"Cooperative transfer in Urban conveyance Networks" the authors M. Fiore and J.M.Barcelo-Ordinas were expressed that urban things where conveyance users will transfer huge files from road-side Access Points

(APs), and description a framework to require advantage of expedient encounters between mobilenodes to extend their transfer rate. During this paper, They determine and address 3 main challenges:
• APs deployment: Urban roads don't seem to be all identical, as some are a lot of full than others, some are bidirectional et al. unidirectional, some have higher speed limits than others. This should be taken under consideration once deploying APs, since numerous planning's of the infrastructure will yield dramatic variations in terms of transfer rate achieved by vehicles[9].
APs readying techniques should be so devised to favour the cooperative transfer method among vehicles.
• Carriers selection: Contacts between cars in urban environments don't seem to be simply foreseeable like in main road situations. Idle APs cannot haphazardly or inaccurately choose vehicles to hold and forward information, as most of the chunks risk to be ne'er delivered to their destinations[7]. selecting the correct carriers for the right transferer vehicles is so a key issue in urban cooperative download.

2.5 Vehicular Opportunistic Communication Under The Microscope

In the paper "Vehicular timeserving Communication underneath the Microscope", [3] the authors were explicit that the matter of providing conveyance web access victimization wayside 802.11 access points. They turn on previous add this space with an in depth experimental analysis of protocol operation at tier of detail not antecedent explored[14]. They report on information gathered with four capture devices from nearly fifty experimental runs con-ducted with vehicles on a rural main road. The analysis mentioned in fig.2. The 3 primary contributions are:

- They through an experiment demonstrate that, on average, current protocols solely deliver the goods five hundredth of the general turnout doable during this state of affairs.
  In specific, even with a efficient affiliation setup procedure that do e s not U.S.A. e DHCP, high packet losses early in a very conveyance affiliation are to blame for the los s of nearly twenty fifth of overall output, 15 August 1945 of the time.
- They quantify the results of 10 issues caused by the mechanics of existingprotocols that are to blame for this turnout loss; and that they suggest best practices for victimization conveyance timeserving connections.

3. Structural Analysis

3.1Network configuration

In this module, a typical conveyance Network (with RSU Installed) is shown diagrammatically. The panel management is employed to draw the node details.

3.2 Access point configuration

In this module, access purpose unit are accessorial and saved to 'Access Points' table. The access purpose can produce and transfer info to vehicles that become relays or downloader's. During this module, Access purpose details are fetched from 'Access Points' table. The records are displayed victimization information grid read management.

3.3 Neighbour access point configuration

In this module, Access purpose id and Neighbour Access purpose id details are accessorial and saved to 'Neighbour Access Points' table. During this module, Access Points and its Neighbor Access

Points details are fetched from 'Neighbour Access Points' table. The records are displayed victimization information grid read management.

3.4 File configuration

In this module, Access purpose id is chosen, file id and file path is keyed in and also the details are accessorial and saved to 'Files' table. The file is traced into 'Files' folder within the folder. During this module, Files details are fetched from 'Files' table. The records are displayed victimization information grid read management.

3.5 Vehicle configuration

In this module, vehicle id is accessorial and saved to 'Vehicles' table. The vehicle can act as relay furthermore as receiver. during this module, vehicle details are fetched from 'Vehicles' table. The records are displayed victimization information grid read management.

3.7 Vehicle density based access point data downloading

In this module, Vehicle density is calculated based on previous temporal changes and the new vehicle density is calculated. The access points' capabilities square measure adjusted so it works a lot of in high vehicle density surroundings and works less in low vehicle density surroundings.

Sensors	Incident/Event category					
	Network configuration	**Access point configuration**	**Neighbour access point configuration**	**File configuration**	**Dynamic network topology graph (dntg)**	**Vehicle density based access point data downloading**
Magnetic sensor	**X**	**X**			**X**	**X**
Imapact sensor	**X**		**X**			
Ultrasonic sensor	**X**		**X**			**X**
Sonic sensor	**X**		**X**	**X**		
Punctual radar		**X**			**X**	**X**
Infrared sensor		**X**		**X**		**X**

Fig.2 Structural Analysis

4. Conclusions

The projected framework is based mostly on time-expanded graphs for the study of content downloading in conveyance networks. The approach permits to capture the house and time network dynamics, associated to formulate a max-flow downside whose resolution provides an bound to the system performance [5]. Simulation results showed that the physical- and MAC-layer assumptions on that the framework depends have a minor impact, resulting in a good bound. The strategy and also the extension of the AP readying play a significant role within the low-penetration regime, with well-planned deployments resulting in a turnout double or 3 times on top of that determined underneath a careless placement.

REFERENCES

Nandagopal S, Karthik S, and Arunachalam VP., "Mining of meteorological data using modified apriori algorithm", European Journal of Scientific Research, Vol.47 No.2, pp.295-308, 2010.

Kavitha.V S.S.Mageshwari , "Classification Using Dempster Shafer Algorithm", International Journal On Engineering Technology and Sciences ,vol.1,Issue.4,pp. 402- 405,August 2014.

Vijayakumar.M, Prakash, S. and Parvathi, R.M.S. "Inter Cluster Distance Management Model with Optimal Centroid Estimation for K-Means Clustering Algorithm," WSEAS Transactions on Communications, Issue 6, Vol. 10, pp. 182-191, June 2011.

Prakash S, Vijayakumar M and Parvathi RMS, "A novel method of mining association rule with multilevel concept hierarchy", International Journal Computer Application(IJCA),pp.26- 29,2011.

Saranya.M and Nithya .K, "Campus Navigation and Identifying Current Location through Android Device to Guide Blind People", International Research Journal of Engineering and Technology(IRJET), Vol.02,Issue : 08,Nov 2015.

Nandagopal S, Arunachalam VP and Karthik"A Novel Approach for Mining Inter-Transaction Item sets", European Scientific Journal,Vol.8,No:14,pp.92-108,2012.

Prakash S and Vijayakumar M, "An effective network traffic data control using improved Apriori rule mining", Circuits and Systems 7,pp. 10,3162-3173,August 2016.

V.S. Sureshkumar, Dr.M. Vijayakumar, "DDoS Attack Detection By using Traffic Flow Analysis for Streaming Data", International Journal on Engineering technology and Science pp:2-7, Issue 8, volume 2,2015.

C. Palanisamy V. Kavitha, "Digital Fragile Blind Watermarking using Discrete Wavelet Trans formation", International Journal of Advanced Research in Technology, vol.1, Issue.1, pp.59-63, Mar 2011.

DhivyaaCR, NithyaK and SaranyaM, "Automatic detection of diabetic retinopathy from color fundus retinal images", International Journal on Recent and Innovation Trends in Computing and communication,Vol.2 ,Issue 3,ISSN:2321-8169,2012.

V.S. Sureshkumar "*Extended Framework For Dynamic Resource Allocation Using Asjs Algorithm In Cloud Computing Environment",* International Journal on Engineering Technology and Sciences, pp:1-7, Issue 8, volume 1,2014

C. Palanisamy V. Kavitha, "A Survey On Classification Techniques", International Journal of New Technologies in Science and Engineering,vol.1,Issue.3,pp. 7-14,Sep 2014.

Yoga.M,Vadivu.R , "Affinity Propagation Clustering with Background Knowledge using Pair Wise Constraints", CiiT International Journal of Data Mining and Knowledge Engineering,vol.4,Issue.1,pp. 402- 405,2012.

Nithya K, KalaivaaniPCD and ThangarajanR, "An enhanced data mining model for text classification", International Conference on Computing, Communication and Applications, pp.1-4,2012.

V.S. Sureshkumar, A.Chandrasekar, "Fuzzy-GA Optimized Multi-Cloud Multi-Task Scheduler For Cloud Storage And Service Applications*",* International Journal of Scientific & Engineering Research , Volume 4, Issue3, March-2013