TECHNOLOGICAL ADVANCES IN VEHICULAR COMMUNICATON: A REVIEW

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ABSTRACT:

In this project we focus on the problems related to a particular scenario and try to find out the solutions using Zigbee module. We present a generalize flow for combining various aspects into a single solutions and making future developments in this field. On the other hand reducing contention and maximizing the total network throughput is the most important aspects to be focused on in accident prone areas Zigbee is the latest technology which can be used to establish a temporary network for communication between the vehicles. We can also apply the intra communication system among the vehicles using Zigbee Technology. It is well known that the security of our vehicle play a important role in vehicle to vehicle adhoc network.Zigbee is most flourishing wireless technology which supports low cost,low power,short range wireless communication.

Key words: zigbee, car to car communication, VANET, controller area network, location awareness

1 INTRODUCTION:

Transportationcan be divided into three parts, namely land, sea and air. In the development of current transportation, road transportation is the transportation of the most widely used by people. Ground transportation can be done on the highway or railroad. While the means used to using private vehicles, public transport and rail. The use of private vehicles, particularly in urban areas is the most widely used today. Location search technology has experienced a remarkable improvement in recent years. It is characterized by ever increasing internet users who use smart phones as a tool in the search for the location where the phenomenon bring indirect benefits to the transportation industry in India. In line with the needs of the community against the traditional mode of transportation in India, especially in city is very crucial.

EXISTING PROBLEM:

Road accidents take the life of many people in the world each year, and much more people have been injuring and maiming. Statistical studies show that accidents could be avoid by 60% if drivers were informed only half a second before the accident (C. D. Wang and J. P. Thompson, 1997). The main reason of these accidents is a limitation in view of roadway emergency events that can be due to the distances, darkness, and existence of an inhibiter in the road. In addition, a delay of the vehicle's driver to react against the events on the roadway could make irreparable results. Road and traffic safety can be improved is drivers have the ability to see further down the road and know if a collision has occurred. This

can become possible if the drivers and vehicles communicate with each other. If traffic information was provided to drivers, police and other authorities, the road would be safer and travelling on them would become more efficient. It is possible to build a multi-hop network among several vehicles that have communication devices.

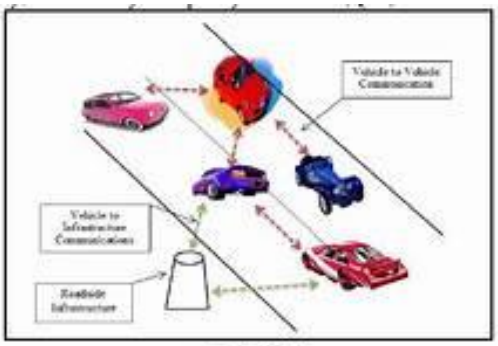

Fig. 1 VANET

3 LITERATURE SURVEY:

[1]. From Channel Selection to Strategy Selection: Enhancing VANETs using Socially Inspired Foraging and Deference Strategies Mohammad Abu Shattal, Member, IEEE, Anna Wisniewska, Student Member, IEEE, Bilal Khan, Member, IEEE, Ala Al-Fuqaha, Senior Member, IEEE, Kirk Dombrowski,, JUNE 2018 Dynamic Spectrum Access (DSA) has been hailed as a possible panacea for the "spectrum crunch," drawing significant attention from researchers and industry alike. Here we describe a novel system architecture for vehicular ad-hoc networks (VANETs) that relies on the DSA framework. In our system, nodes continuously and independently choose one of three strategies for channel selection. Two of these strategies are bio socially inspired, based on resource sharing behaviors known to have been prevalent in human societies over the course of thei natural evolution conditions. Within our system, a specialized Road Side Unit (RSU) continuously computes the game-theoretically optimal evolutionarily stable strategy and broadcasts this recommendationto all VANET nodes. Through **ns-3** simulation experiments across a range of social characteristics and channel condition scenarios, we demonstrate a significant and robust improvement in utility (from 3% to 136%) is achieved when a large fraction of VANET nodes adopt the RSU's recommendation. a short-term perspective, to one that provides VANET nodes with long-term recommendations for channel access strategy, both optimized for throughput and robust against attempts at circumvention by deviant users. **[11]**

[2] CAOVA: A Car Accident Ontology for VANETs , Javier Barrachina, Piedad Garrido, Manuel Fogue, Juan-Carlos Cano, Carlos T. Calafate, Pietro Manzoni, 2012 Mobile and Wireless Networksvehicles will be provided with a variety of new sensors capable of gathering information from their surroundings. These vehicles will also be capable of sharing the harvested information via Vehicular Ad hoc NETworks (VANETs) with nearby vehicles, or with the emergency services in case of an accident. Hence, distributed applications based onVANETs will need to agree on a 'common understanding' of context for

interoperability, and therefore, it is necessary to create a standard structure which enables data interoperability among all the different entities involved in transportation systems. In this paper, we focus on traffic safety; specifically, we present a Car Accident lightweight Ontology for VANETs (CAOVA). The instances of our ontology are filled with: (i) the information collected when an accident occurs, and (ii) the data available in the General Estimates System (GES) accidents database. We assess the reliability of our proposal in two different ways: **[12]**

[3] A Novel Adaptive TDMA-Based MAC Protocol for VANETsShengbin Cao and Victor C. S. Lee, *Member, IEEE* IEEE COMMUNICATIONS LETTERS, VOL. 22, NO. 3, MARCH 2018 The medium access control (MAC) protocol plays an important role in vehicular ad-hoc networks (VANETs) to provide efficient broadcast service for safety applications. However, the highly dynamic nature of VANETs, such as high mobility and fast topology change, degrades the performance of existing MAC protocols. In this letter, we propose a novel adaptive Time Division Multiple Access-based MAC (VAT-MAC) protocol for VANETs. VAT-MAC accurately and adaptively optimizes each time frame length by estimating and predicting the number of vehicles within the coverage of a roadside unit. It has been proven by mathematical analysis and simulation experiment that VAT-MAC can significantly improve system scalability and throughput.**[13]**

[4] On Detection of Sybil Attack in Large-Scale VANETs using Spider-Monkey Technique C. O. Iwendi1, M. Uddin2, J.A. Ansere3, P. Nkurunziza3, J. H. Anajemba3, and A. K. BashiR 2169-3536 (c) 2018 Sybil security threat in vehicular ad hoc networks (VANETs) has attracted much attention in recent times. The attacker introduces malicious node with multiple identities. As the roadside unit (RSU) fails to synchronize its clock with legitimate vehicles, unintended vehicles are identified and therefore erroneous messages will be sent to them. This projectproposes a novel biologically-inspired spider monkey time synchronization (SMTS) techniques for large-scale VANETs to boost packet delivery time synchronization at minimized energy consumption. The proposed technique is based on the meta-heuristic stimulated framework approach by natural spider monkey behavior. An artificial spider monkey technique is used to examine the Sybil attacking strategies on VANETs to predict the number of vehicular collisions in a densely deployed challenge zone. Furthermore, this project proposes pseudocode algorithm randomly distributed for energy efficient time synchronization in two-way packet delivery scenarios to evaluate the clock offset and propagation delay in transmitting packet beacon message to destination vehicles correctly. The performances of the proposed technique are compared to existing protocols. It performs better over long transmission distance for detection of Sybil in dynamic VANETs system in terms of measurement precision, intrusion detection rate and energy efficiency.**[14]**

[5] UAV-assisted supporting services connectivity in urban VANETs Omar Sami Oubbati, Member, IEEE, Noureddine Chaib, Senior Member, IEEE, Abderrahmane Lakas, Member, IEEE, Pascal Lorenz, Senior Member, IEEE, IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY, VOL. XX, NO. XX, XXX 2019 To keep the services and applications of Intelligent Transportation System (ITS)

stable and active, Vehicular Adhoc Networks (VANETs) are considered as an essential building block to maintain and manage its features. A wide deployment of VANETs is possible only after addressing numerous research challenges. One of the most complicated issues consists in designing a routing strategy, taking into consideration several serious constraints, and especially in a network such as VANET. The severity of these issues would be increased significantly when aVANET is deployed over an urban area, where we distinguish the high mobility of nodes and existing obstructions (e.g., buildings, bridges, tunnels, etc.). **[15]**

Sr no	Year of publication	Title	Methodology
1.	2018	Enhancing VANETs using Socially Inspired Foraging and Deference Strategies	Dynamic Spectrum Access (DSA) has been hailed as a possible panacea for the "spectrum crunch," drawing significant attention from researchers and industry alike. Here we describe a novel system architecture for vehicular ad-hoc networks (VANETs) that relies on the DSA framework.
2.	2012	A Car Accident Ontology for VANETs	In this paper, we focus on traffic safety; specifically, we present a Car Accident lightweight Ontology for VANETs (CAOVA). The instances of our ontology are filled with: (i) the information collected when an accident occurs, and (ii) the data available in the General Estimates System (GES) accidents database. We assess the reliability of our proposal in two different ways: one via realistic crash tests, and the other one using a network simulation framework.
3.	2018	Novel Adaptive TDMA-Based MAC Protocol for VANETs	The medium access control (MAC) protocol plays an important role in vehicular ad-hoc networks (VANETs) to provide efficient broadcast service for safety applications. However, the highly dynamic nature of VANETs, such as high mobility and fast topology change, degrades the performance of existing MAC protocols.
4.	2018	On Detection of Sybil Attack in Large-Scale VANETs using Spider-Monkey Technique	Sybil security threat in vehicular ad hoc networks (VANETs) has attracted much attention in recent times. The attacker introduces malicious node with multiple identities. As the roadside unit (RSU) fails to synchronize its clock with legitimate vehicles, unintended vehicles are identified and therefore

			erroneous messages will be sent to them.
5.	2019	UAV-assisted supporting services connectivity in urban VANETs	To keep the services and applications of Intelligent Transportation System (ITS) stable and active, Vehicular Adhoc Networks (VANETs) are considered as an essential building block to maintain and manage its features. A wide deployment of VANETs is possible only after addressing numerous research challenges.

4 PROPOSED WORK:

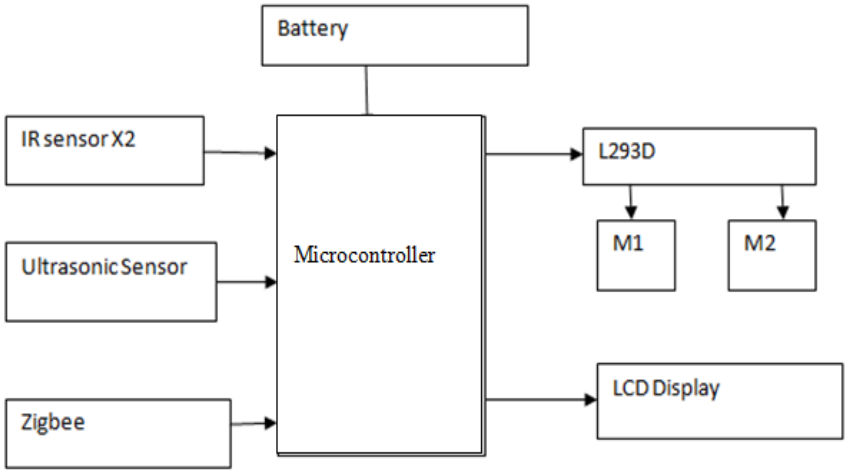

FIGURE 3.1

This system is useful to avoid the collision detection and avoid traffic on road. The wireless system to be formed by using arduino and zigbee protocol. Multiple sensor networks are used in system basically we use line follower robot .these two robots are connected by using zigbee protocolThe zigbee module has a much larger coverage than the Bluetooth and also it is much efficient. The system will be able to send commands about the real time conditions about the road condition with the help of Zigbee module installed in it.The riders and then can act upon the incoming message whether to go according to the command or continue on the same road. . One of the earliest studies on V2V communication started by JSK (Association of Electronic Technology for Automobile Traffic and Driving) of Japan in 7 early 1980s. In 1999, the U.S Federal Communication Commission (FCC) allocated 75 MHz of spectrum at 5.9GHz used exclusively for vehicle-to-vehicle and infra structure to-vehicle communication in the U.S called Dedicated Short Range Communication (DSRC).

4 FUTURE SCOPE:

The scopes of this project are to investigate and propose recommendations on possibility IVC concepts . The research will focused on the possible communications system and protocol that can used between vehicles. Multiple sensor networks are used in system basically we use line follower robot .these two robots are connected by using zigbee protocol. Keys are use to move the path of robot. Ultrasonic sensor used to detect the obstacle in path. L293D is motor driver used to move the motors used in system.

ADVANTAGES:

This system is useful to avoid the collision detection and avoid traffic on road. The drivers can communicate with each other and send the command about the traffic jams and road conditions to the driver way behind .

5 CONCLUSION:

Many vehicles that operate on the road in many cases are not followed by the awareness of road users to obey traffic signs or a lack of tolerance mutual respect fellow road users. The aim of this study is to create solutions in reducing the accidents by creating an inter-vehicle communication framework, which utilized mobile devices/sensors and mobile-based applications for the dissemination of information with a larger scale. The implementation model of this framework is called as a Cooperative Mobility Services of the Future - CoMoSeF. The implementation of CoMoSeF between vehicles are using wireless smart phones can help avoid accident by adding sensors; controller area network (CAN) BUS. In this study, the simulation was implemented using 802.11p system on a vehicle where the sensors worked well during the communication between vehicles. The sensor was connected to a mobile device that serves riders by giving information when there is a vehicle which may experience a collision with him.

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