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Review Paper on Smart Vehicle

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ABSTRACT :

The vehicle-to-infrastructure (V2I) and Vehicle to Vehicle (V2V) communication system allows the exchange of information between vehicles and road infrastructures and vehicle to another vehicle. It aims to avoid or reduce vehicular accidents, increase mobility and provide other road safety benefits. This project aimed to review and analyze the literature on data exchanges in the V2I and V2V communication system. The factors considered to enhance the understanding of varied contextual aspects and characteristics of the sector were motivations, open challenges and proposals from other researchers. We systematically searched all articles on data exchanges within the V2I communication system. In that they uses DSRC and 5G,Bluetooth , WIFI technique but in that there is problem of range and data transfer rate. so ,to overcome that I broadcast the data openly using RF frequencies.

KeyWords : Communication, WiFi Techniqes, vehicular Mobility .

1.0 Introduction :

These days, road accident and traffic jams have increases significantly on the route due to higher number of vehicles [7]. The vehicular ad hoc network (VANET), which comprises the main part of the intelligent transportation system (ITS), is an extension of the mobile ad hoc network in which the nodes are vehicles. The VANET uses three main types o communication, namely, vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I) and vehicle-to pedestrian (V2P) communications. One of the challenging tasks of the ITS is the delivery of traffic information to drivers to enable smooth and safe driving. V2V communication is usually wont to send data between vehicles; however, manual vehicles aren't equipped with this capability. Therefore, V2I communication is needed to send information on vehicle status without the need to modify the indoor systems of manual vehicles .In this V2X technology enables 360 degree awareness of surrounding. The main objective of project is that to alert driver when he closes from another vehicle and any interrupt arises on surrounding. In this system the data like speed.emergency break,another closer vehicle send to our vehicle through frequency broadcasting .then our vehicle get warranted and avoid collision and accidents.These data accepted by our vehicle through voice and display on LCD[1]. This system develop to

get warning to driver like Intersection collision warning: in this use case, the risk of lateral collisions for vehicles that are approaching road intersections is detected by vehicles or road side units. This information is signaled to the approaching vehicles reduce the as to reduce danger of lateral collisions. Lane change assistance: the danger of lateral collisions for vehicles that are accomplishing a lane change with blind spot for trucks is reduced. Overtaking vehicle warning: aims to stop collision between vehicles in an overtake situation, where one vehicle, say vehicle1 is willing to overtake a vehicle, say vehicle3, while another vehicle, say vehicle2 is already doing an overtaking maneuver on vehicle3. Collision between vehicle1 and vehicle2 is prevented when vehicle2 informs vehicle1 to prevent its overtaking procedure. Head on collision warning: the risk of a head on collision is reduced by sending early warnings to vehicles that are traveling in opposite directions. This use case is additionally denoted as "Do Not Pass Warning" buttocks collision warning: the danger of rear-end collisions for instance thanks to a hamper or road curvature (e.g., curves, hills) is reduced. The driver of a vehicle is informed of a possible risk of rear-end collision ahead.Co-operative forward collision warning: a risk of forward collision accident is detected through the cooperation between vehicles. Such sorts of accidents are then avoided by using either cooperation between vehicles or through driver assistance. Emergency vehicle warning: a lively emergency vehicle, e.g., ambulance, cruiser , informs other vehicles in its neighborhood to free an emergency corridor. This information are often re-broadcasted within the neighborhood by other vehicles and road side units. Pre-crash. Emergency electronic brake lights: vehicle that has got to hard brake informs other vehicles, by using the cooperation of other vehicles and/or road side units, about this example . Wrong way driving warning: a vehicle detecting that it's driving in wrong way, e.g., forbidden heading, signals this example to other vehicles and road side units. Stationary vehicle warning: during this use case, any vehicle that's disabled, thanks to an accident, breakdown or the other reason, informs other vehicles and road side units about this example . Traffic condition warning: any vehicle that detects some rapid traffic evolution, informs other vehicles and road side units about this situation[3].

2.0 Related Work :

"R. Q. Malik1 , H. A. Alsattar2 , K.N.Bin.Ramli1 , B. B. Zaidan3 ,A. A. Zaidan3 , Z. H. Kareem1 , H. A. Ameen1 , Salem Garfan3 , Ali Mohammed4 , R. A. Zaidan3" Vehicles are enhanced the encircling situation by communicating with other vehicles and with other objects like Traffic Management System. supported the advanced sensor and wireless technologies propose a replacement solution for controlling the traffic management at the intersections also as reducing the waiting time just in case of high traffic. Arduino Mega board with ultrasonic sensor connected to the wireless module altogether the vehicles. When the ultrasonic sensor sense the vehicles. Within its range, the wireless modules connected will sent a sign to the driving force the space between the vehicles, its speed and its priority of the vehicles(in case of ambulance (or) the other emergency vehicles.

"Janis Jansons Department of Transport Electronics and Telematics Riga Technical University Riga, Latvia Janis" during this paper they present an experimental study of IEEE802.11n with diminished settings compared to the legacy system (i.e. IEEE802.11g) using off-the shelf devices in vehicle-to-infrastructure

scenario. so as to guage V2I kind of communication within the massive scale scenario, during this paper we propose an analytic model to characterize the goodput of WLAN-based networks using Buzen's method and Markov process .

"Georgios Karagiannis, Onur Altintas, Eylem Ekici, Geert Heijenk, Boangoat Jarupan, Kenneth Lin, and Timothy Weil"In this system they uses Direct short range (DSRC) for brief rang distance and GPS for transfer data.

"Jeffrey Miller Department of Computer Systems Engineering University of Alaska, within the V2V2I architecture, the transportation network is broken into zones during which one vehicle is understood because the Super Vehicle. Only Super Vehicles are able to communicate with the central infrastructure or with other Super Vehicles, and each one other vehicles can only communicate with the Super Vehicle responsible for the zone during which they're currently traversing. they describe the Super Vehicle Detection (SVD) algorithm for how a vehicle can find or become a superb Vehicle of a zone and therefore the way Super Vehicles can aggregate the speed and site data from all of the vehicles within their zone to still ensure an accurate representation of the network

"Ji Lianghai, Man Liu, Andreas Weinand, Hans D. Schotten Chair of Wireless Communication, University of Kaiserslautern, Germany, so as to satisfy requirements, 5G should be evaluated by new key performance indicators (KPIs) instead of the traditional metric, as throughput within the legacy cellular networks. during this work, they exploit network controlled direct V2V communication for information exchange among vehicles. This communication process refers to packet transmission directly among vehicles without the involvement of network infrastructure in U-plane.

3.0 Problem Statement:

Design and Development of a system to transfer data between vehicle to vehicle and vehicle to infrastructure at low power and long range and data transfer rate is minimum. this technique broadcast the info and another vehicle receives it. Implementing this technique then we avoid accident and traffic before they happen.

4.0 Objective and Scope :

In vehicle to vehicle communication the data transfer between two or more vehicle is in multi fashion.

1. Choose the sensors to urge data like distance sensor, break level, pressure sensor, voltage sensor as a input and given it.
2. Data collected through the sensor is given it to the microcontroller central unit.
3. MCU identify it and generate warning .
4. Radio frequency that transmitte to a special vehicle.
5. Software Required : Keil software use during this technique .

5.0 Methodology :

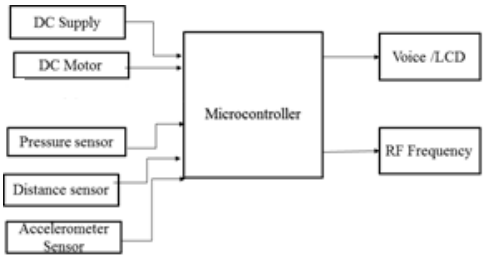

Fig -1: diagram of proposed system

1) DC Motor: DC motor is electrical motor it runs on DC electricity. It can operate directly from rechargeable batteries providing the facility for the primary electric power . DC motors where wont to run machinery, often eliminating the necessity for an area engine or combustion engine. Today DC motors are still found in applications also as small toys and DC drives. With power electronic devices modern DC motors are often operated in conjunction.

2) Power Supply: It provides supply to the circuit. We use 12v power supply in our project. it's wont to provide DC voltage to the components on board. 3.3V for lpc2138 and 4.2v for Wi-Fi module is apply from power supply. 5V is required for relay applied from power supply.

3) LCD: LCD can used to check the output of varied modules interfaced with the microcontroller. Thus LCD plays an important role to work out the output and debug the system modules wise just just just in case of system failure so on rectify the matter . Here we've used 16*2 LCD which indicates 16 columns and a couple of of rows. So, we'll 16 characters in each line. So, total 32 characters we'll display on 16*2 display.

5) Distance Sensor: distance sensor is used for the measurning distance between two vehicle and any obstacle distance from vehicle. Uses distance sensor for long range sensing.

6) Accelerometer sensor : This sensor is used for the sensing lan change of auto .

7) Radio Frequency: this is often often utilized in system for wireless communication and broadcast the data of auto .

6.0Working of System :

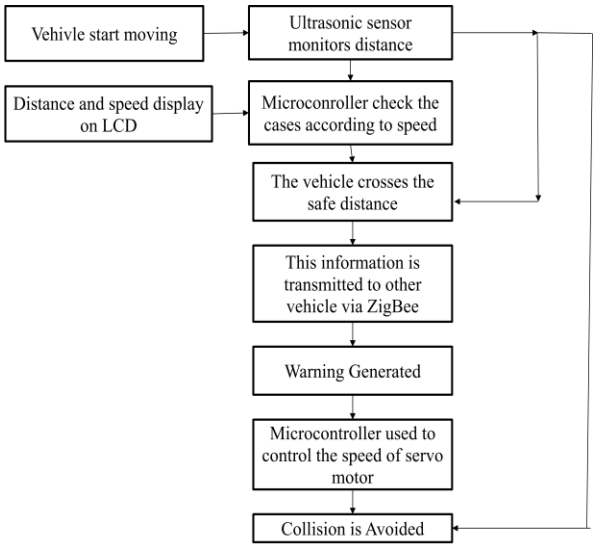

Fig -2: flow chart of proposed system

When vehicle start moving on road the sensor of system sense the space , tyre pressure, lane change speed of auto .then collected data by sensor given to microcontroller .microcontroller check the case accordingly the speed and distance .if vehicle crosses moderate speed and distance then vehicle is safe but if not then warning is generated and dc control the speed of auto .and this warning or data openly broadcast through the frequency and eventually collision is avoided or accident is avoided7.0

7.0 Conclusion:

In this work a system architecture to enable the direct V2X communication under network control is proposed. Besides, a resource allocation scheme is also designed to dynamically adapt to the real-time traffic requirement of the V2X communication. Moreover, several key technologies are also proposed and evaluated to improve the system performance of the direct V2V communication. Last but not least, a system level simulator is made up and aligned with reality to supply reliable simulation results. Based on

our evaluation work, it can be seen that all related technologies should add on top of each other to enable direct V2X communication and improve traffic safety and efficiency.

8.0 References:

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