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COLLISION AVOIDANCE IN VEHICULAR AREA NETWORK

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ABSTRACT

In highways accident is huge problem that cause huge loss for human life. This is caused due to lack of traffic control signals in highways. Most of the vehicles move with high speed so if there is any obstacle vehicle speed cannot be controlled at that moment. In existence Differential Global Positioning System (ADGPS) based on vehicle to vehicle congestion and collision warning system is being used that needs a simple GPS unit and basic motion sensors to detect a viable collision situation but, it invariably covers a very less area around the vehicle so this existing system is not so efficient. This paper proposes congestion control and collision avoidance in vehicular area network(VANETs) on highways by sending alert messages to the vehicle's on board unit by using zigbee.

KEYWORDS: VANETs, Zigbee, Sensors.

1. INTRODUCTION

An embedded system is a controller programme based real-time operating system (RTOS) within a larger mechanical or electrical system often with the real-time computing constrains. Embedded system are build on microcontrollers i.e. CPUs with integrated memory or the peripheral interfaces. They can control many of the common devices such as card readers in hotel door locks or several things in a car.

Fig1: V2V communication

Now a days number of vehicles are increasing immeasurably. As a result road accidents and traffic jam is major issue. Hence, researches improving road safety application is of immense concentration. By communicating through wireless network, safety applications can used to reduce the road accidents. In this field, Vehicular Ad-hoc network plays most significant role. Ad-hoc networks are used to communicates within certain range of an area. A group of moving vehicles are capable to communicating accompanied each other by using the VANET. They do not require any station or swap in the mobile network preferably itself forms a network. Here, communication can be done between nodes like vehicle to vehicle (V2V) . To form the communication infrastructure there will be a Road Side unit in every common point of the road and each vehicle will be provided with an Onboard Unit (OBU).

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In the proposed system there will be one Road Side unit (RSU) in junction of road and they connected by wire for faster and good communications. Other than in case if some connection get failure then RSU to RSU communications will become wireless but RSU to vehicles communications will always remained as wireless. For vehicle to vehicle communications each vehicle will have one Onboard Unit (OBU) attached that is effective of sending and receiving the messages. One OBU can communicate with its adjacent OBU and RSU. RSU is capable of sending message to OBUs within its coverage area.

2. EXISTING SYSTEM

Traditional collision warning system is based on the concept of intelligent transportation system. This system is used to find the effectiveness of collision warning system and predicts possible collision based on VANETs. A Differential Global Positioning system build on vehicle to vehicle collision warning system which require simple GPS unit and basic motion sensors to detect a possible collision. This system predicts the danger situations using the information of nearby vehicles to provide safety. This system invariably covers a very small area around the vehicle so it does not support traffic leading applications. Hence it is not so efficient way of avoiding the road accidents. Another existing system where vehicle trajectory collision warning system based on vehicle infrastructure integration system in order to improve the traffic safety. Vehicle collision can be detected in real time by the collision detection algorithm. The collision risk time to collision (TTC) is calculated and then create a warning to driver according to values of ability at highway collision detection.

3. PROPOSED SYSTEM

In our proposed approaches, emergency messages will transffered faster, and it will be helpful for the vehicles to avoid collisions and also to control the traffic congestion. A scheme for the proposed approach is there will be one RSU (Road Side Unit) in each intersection of road and they are connected by wires for faster communication. But RSU communication in every vehicle will be provided with the one Onboard Unit (OBU) connected to it that is efficient to sending and receiving the messages. One OBU can communicate with its nearest OBU and RSU. RSU is capable of sending message to the OBUs within its coverage area. We have divided complete system into two major process. one is the communicating purpose to avoid accident and process for the congestion control.

4. IMPLEMENTATION

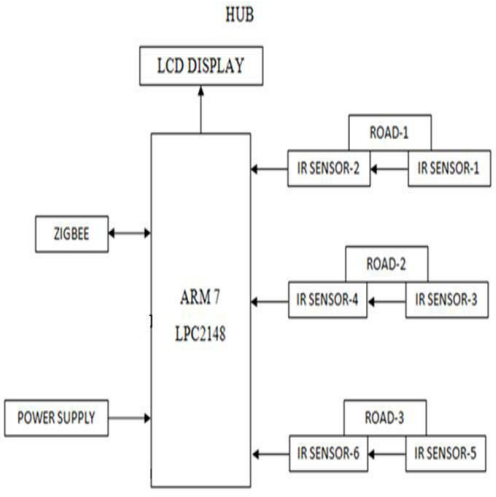

Fig 2: Block Diagram Of Road Side Unit (RSU)

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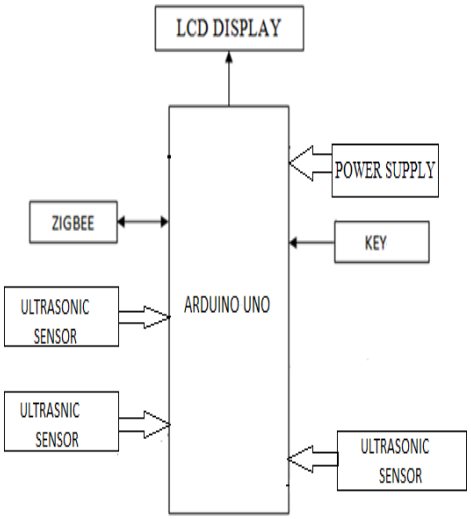

Fig 3: Block Diagram Of Vehicle On Board Unit (OBU)

5. APPLICATIONS

- **Aware during accidents**: This process alert the vehicles towards the place of accident area that traffic condition have been modified and it is necessary to be more careful. It is also necessary in case of reduced vehicles density to be able to retain the message in order to retransmit it if another of the vehicle enters ther etransmission zone.
- **Collaborative driving**: It is a concept that improves road transport safety addition to decreasing the number of victims in accident involving automobile vehicles. This innovation is based on informations exchanged between vehicles equipped with instrument (for example, sensors) enabling them to perceive what surround them and to collaborate in dynamically formed group.
- **Protection application**: Monitor the surrounding road, approaching vehicles, road surface by exchanging the warning message to its neighbouring vehicles .
- **Comfort application**: mainly of traffic management type to enhance traffic efficiency by looking the convenience of drivers.

6. RESULT

This project is successfully conducted and performed by:

- Vehicle communicate with its nearest vehicle.

Fig 4. Message displayed on the on board unit.

- Detecting the position of the nearby vehicle

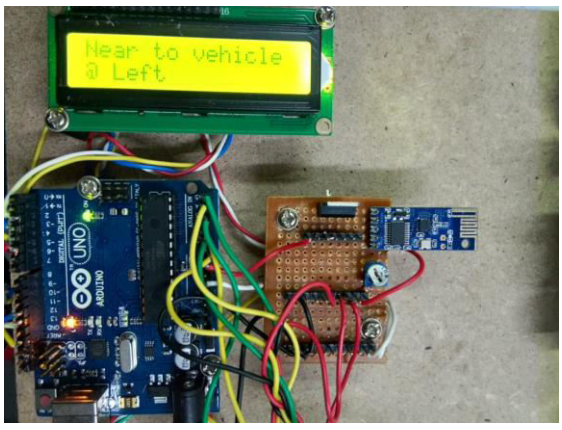

Fig 5. Displaying the vehicle position

7.CONCLUSION

Vehicle to vehicle communication technology has the potential to dramatically reduce the amount of road congestions and collisions. There is no doubt that complete safety on the road will come in the future and the development of this technology is a step in the right direction. This paper presents different methodologies and techniques that handle the avoidance issues in the VANETs. The communication of emergency messaging system deals with cluster based organization of vehicles, trajectory planes predictions, warning messages, collision probability estimation, capture set and vehicle information.

8. REFERENCES

[1] K.Bhattacharjee and R.K.Pal, "Vehicular Ad-hoc networks in mobile routing protocols", Assam university journal of science and technology, 2011.

[2] A. Benslimane, " localization in vehicular ad-hoc networks",proceeding of the 2005 System Communication.

[3] Y. Toor and P. Muhlethaler "Vehicle ad- hoc networks: application and the related technical issues", IEEE, 2008.

[4] M. Gerlach, VaneSe-an approach to VANET security, 2005.

[5] A. Zedan , M. M. Al-Doori, "A comprehensive survey on vehicular Ad [6] U.Nagaraj and P. P. Dhamal, "performance evalution of proactive and reactive protocols in VANETs", International journal of information and education technology, 2012.

[7] A. Khandakar, "step by step procedural comparison of DSR, AODV and DSDV Routing protocol" international proceedings of communication

[8] B.Ramakrishnan, "performance analysis of 802.11 and puter science and information tech, 2012. 802.11p in cluster based simple highway model", international journal of computer sciences,2014.