

OVERVIEW OF VANET BASED WIRELESS SENSOR NETWORK USING ZIGBEE TECHNOLOGY

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ABSTRACT

It is well known that the security of our vehicle plays a vital role in vehicle to vehicle adhoc network. Zigbee is the most flourishing wireless communication technology which supports low cost , low power, short range and low maintenance wireless communication. Due to drastically changing environment, various schemes are required which allow adhoc networking of predetermined devices. 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.

Keyword : - WSN Technology, Zigbee technology, VANET

1. INTRODUCTION

Our goal is to create transmitter and receiver environment in order to avoid collision in the traffic. Every year, road accidents cause almost 1.2 million deaths worldwide [1]. In Spite of the large number of these accidents, they are, in range, avoidable. Of 43,000 road accident deaths yearly in the US, 21,000 are caused by road departing and intersection oriented incidents [2]. This number can be significantly lowered by deploying active/cooperative safety systems enabled by vehicular communications. Vehicular adhoc network- (VANETs) have become a prominent technology for improving the standard of the safety levels in transportation schemes. VANETs consist of roadside units vehicle to vehicle communication nodes that respectively allow vehicles to transmit signals via establishing a temporary network in emergency cases like road accidents, landslides etc.

Due to wireless communication it is possible for vehicles to communicate to zigbee so that large range of area can be covered as per requirements. Here, spontaneous message generation through ultra sonic sensor message authentication and message integrity is also maintained throughout the communication process. Ultra Sonic sensors are implanted on the vehicles through which the message transmission becomes serially aligned. Hence VANETs cannot totally depend on short life time strategies, as a malicious vehicle can harm other vehicles until its strategic life time expires. Thus efficient coordination becomes the most important parameter in message generation and transmission in that particular order. For a practical demonstration method it is required that the allocation of misbehaving vehicles should take place as early as possible to prevent this vehicles from accidents. According to vehicular ad hoc network, it will completely rely on the public key maintenance as a perfect method to achieve these security requirements. A central authority issues and authentic certificate for each node used in communication through Zigbee.

1.1 Zigbee

- 1) If obstacle is detected in front of our ultrasonic sensor-It will detect the obstacle upto(6ft/180cms) and if distance is less than 50cm even if input is given to the transmitter remote the car will not start.
- 2) If there is collision ahead on the highway-This information will be received by our car and our car will automatically stop.

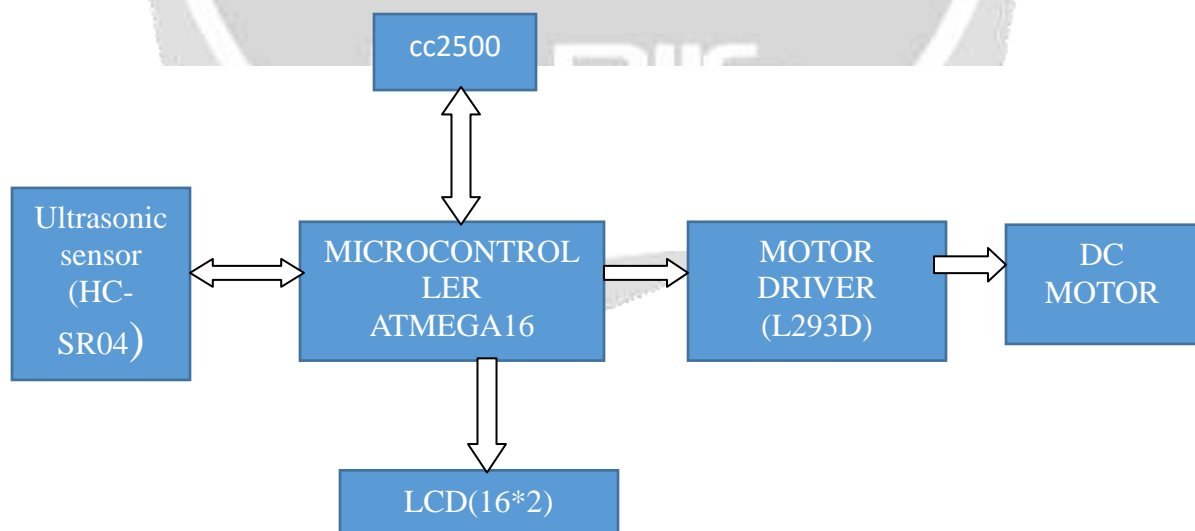
2. LITERATURE REVIEW

2.1 Wireless Sensor Based Hybrid Architecture for Vehicular Ad hoc Networks Kashif Naseer Qureshi¹, Abdul Hanan Abdullah², Raja Waseem Anwar³TELKOMNIKA, Vol.12, No.4, December 2014, pp. 942-949In this paper, we propose a wireless sensor based hybrid architecture for navigation systems for vehicular Ad hoc networks. The architecture is suitable for mountain range roads, where vehicles cannot communicate properly. The proposed architecture is used to exchange and perceive roadside information and helpful in navigation decision process and for alert Messages.

2.2 Zigbee based vehicular adhoc networking Neha Shinde, Shobha Bhor, Trupti Wable, Sayli Dubule International Journal of Infinite Innovations in Technology|ISSN:2278-9057 IJIT|Volume-IV|Issue-III|2015-2016 January|Paper-07 Due to drastically changing environment various schemes are required which allow adhoc networking of predetermined devices. In this paper we discuss the problems related to a particular scenario and try to find out the solutions using Zigbee module.

2.3 Zigbee based Vehicular Ad-hoc Networks for Accident Rescue Missions R. SAI LAKSHMI¹, R.V.V. KRISHNA² ISSN 2319-8885 Vol.03, Issue 28 September-2014 This paper provides a comprehensive approach towards developing an efficient emergency response system to manage rescue missions of vehicular accidents occurring at remote locations with the aid of Vehicular Ad-hoc Networks (VANETs) deployed in a third generation (3G) Wideband CDMA (WCDMA) cellular network setup. The system utilizes Zigbee for tracking the vehicular positional coordinates and resorts to WCDMA for effective voice communication.

3. BLOCK DIAGRAM



4. COMPONENT USED

4.1 ULTRASONIC SENSOR (HC-SR04)

This is the HC-SR04 ultrasonic ranging sensor. This economical sensor provide 2cm to 400cm of non-contact measurement functionality with a ranging accuracy.



4.2 CC2500

Low-Cost Low-Power 2.4 GHz RF Transceiver datasheet (Rev. C). The transceiver is integrated with a highly configurable baseband modem. It provides extensive hardware support packet handling, data buffering, burst transmission, clear channel assessment and link quality.

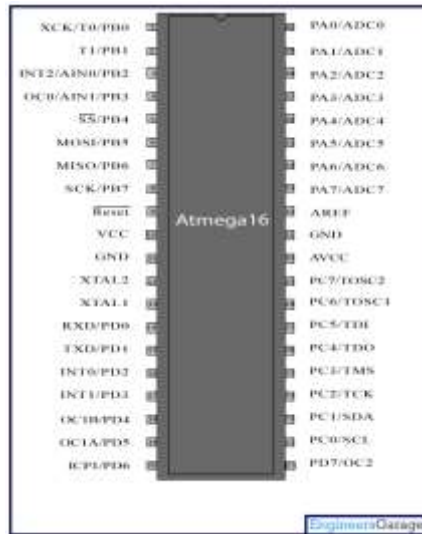


4.3 LCD (16*2)

LCD (Liquid Crystal Display) screen is an electronic display module and find a wide range of application. A 16*2 LCD display is very basic module and is very commonly used in various devices and circuits.

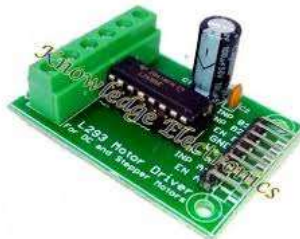


4.4 MICROCONTROLLER ATMEGA16



4.5 MOTOR DRIVER (L293D)

Motor driver ICs act as an interface between microprocessors in robots and the motors in the robot. The most commonly used motor driver ICs are from the L293D.



4.6 DC MOTOR

A DC motor is any of a class of rotary electrical machines that convert direct current electrical energy into mechanical energy. The most common types rely on the forces produced by magnetic fields.



5. CONCLUSION

In this project, we first gave a description of architecture, standards & protocols of vehicular ad hoc networks, followed by the characteristics with various applications based on its classification. The implementation of applications at present and in future in countries that are deploying VANETs in one way or the other. Although the works are numerous, there are still issues which may be untouched. However, we want to clarify that the list of applications identified here is not exhaustive.

6. REFERENCES

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