LOCALIZING V2V SYSTEM FOR VEHICLE ASSISTANCE

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Abstract: As the number of vehicles expanding step by step, mishaps are likewise expanding quickly. These mishaps can be because of bogus estimation of close-by vehicle, aggravation as a primary concern of driver or any reasons because of which driver can't keep center around driving. In this way, not just the separation estimation of other encompassing vehicle is required yet in addition to take fast activities is important to stay away from any sort of mishaps. This task is explicitly founded on the mishap. This framework can quantify the separation between the driving vehicle and front item and can ascertain the wellbeing separation of the driving vehicle dependent on the current speed. In the event that the driver doesn't keep the base wellbeing separation with front item, it will caution the driver to hinder the speed of a vehicle to evade impact. Also, if the driver doesn't hinder vehicle this framework will naturally back off and stop the vehicle before the crash could happen.
Keywords:LPC2148 Microcontroller, Ultrasonic HC-SR04, LCD Display, Zigbee, L293D motor driver, GPS Module.

I. INTRODUCTION

In this Hi-Fi modernization world coping up with road safety and traffic congestion is the need of the hour. Many research works are proposed and undergoing in this particular thrust area. This paper proposes an Intelligent Transport System (ITS) that provides an effective Vehicle to Vehicle communication mechanism using Zigbee. Especially in Vehicle to vehicle communication Zigbee proves a vital role and it is the key protocol for wireless sensor network applications. The key features of Zigbee include long battery life, low-cost for installation and ease maintenance. These features in Zigbee enable uniform mesh networking, which effectively supports the wireless communication between many vehicles, routers and receivers. In this paper suggestions are proposed for periodic monitoring of vehicular movements, enhancing road safety and handling traffic congestion are dealt with. Since these two above mentioned issues are the core aspects in transportation industry and an important problem which the world faces today, this paper deals with effective inter communication of vehicles using Zigbee protocol.

II. EXISTING SYSTEM

The rapid growth in the vehicle ownership isone of the major for economic growth of the country. Explosion of the new trends and technologies requires fast transportation of all goods alike. The goal of each one is to reach the destination without wasting time and money.But the infrastructures provided by currentresources are very limited. So the trafficmanagement at road is essential to reducewaiting and travelling times, saves fuel andmoney. In current scenario the low and hightraffic information is offered by only who areaffected by that traffic problem for waiting longtime to get signal to move other side. Thus thereis wastage of fuel. If accident is occurringsharingthe information take much amount of time.

Fig: Heavy Traffic Flow

III. PROPOSED METHOD

Various factors such as crest of a hill, heavy fog, blind corner, heavy rain, snowfall, icy roads, and vehicle mechanical problems contribute to vehicle crashes are considered to be the leading cause of more than 92% of all accidents. It is due to the inability of drivers to react in such emergency situations. These problems can be avoided by taking certain precautions by the use of Vehicle to Vehicle Communication. In Vehicle to Vehicle communication, the vehicle can communicate with the other vehicle in the specified range and share the information about the traffic jam, road accidents, direction speed, and weather ensure a safer and more comfortable drive.
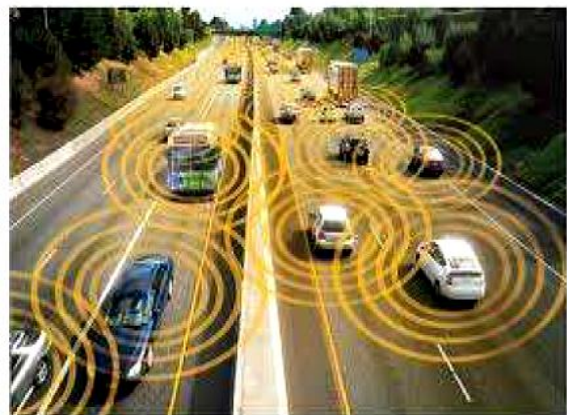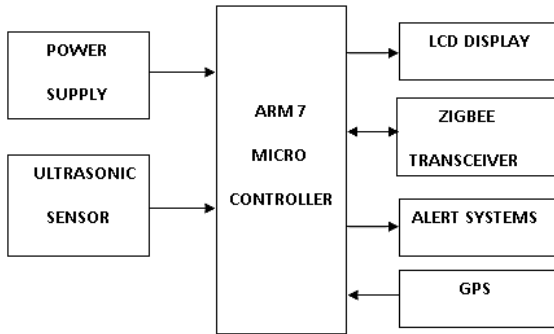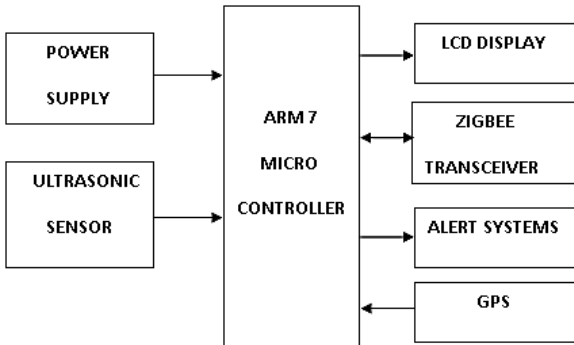

Fig: V2V Communication.

IV. METHODOLOGY

Vehicle section 1:

Vehicle section 2:

The system we designed here does thefollowing jobs:
• The time elapsed after applying the brakes till it stops.
• The zigbee sensor measures the distance between the vehicle in front of the car and will warn the vehicle in case there are any chances of collision.
• Easy traffic movement on the busy roads.
• Emergency Braking of vehicle moving in front.
• Reduces the number of accidents in case of emergency warnings delay.
• Supporting large number of vehicles on the road.
• Improve the work in the field of vehicle to vehicle Communication.

V. HARDWARE SYSTEM

ARM 7:The ARM7TDMI core is a member of the ARM family of general-purpose 32-bit microprocessors. The ARM family offers high performance for very low power consumption, and small size. The ARM architecture is based on Reduced Instruction Set Computer (RISC) principles. The RISC instruction set and related decode mechanism are much simpler than those ofComplexInstruction Set Computer(CISC) designs.

Liquid-crystal display (LCD): It is a flat panel display, electronic visualdisplay that uses the light modulation propertiesof liquid crystals. Liquid crystals do not emit light directly. LCDs are available to displayarbitrary images or fixed images which can bedisplayed or hidden, such as preset words,digits, and 7-segment displays as in a digital clock.

ZIGBEE: Zigbee is a low-cost, low-power, wireless mesh networking standard. The low cost allows the technology to be widely deployed in wireless control and monitoring applications, the low power-usage allows longer life with smaller batteries and the mesh networking provides high reliability and larger range. Zigbee has been developed to meet the growing demand for capable wireless networking between numerous low power devices. Zigbee is an established set of specifications for wireless personal area networking (WPAN), i.e. digital radio connections between computers and related devices.

GPS MODULE: The System (GPS Global Positioning) is a space age navigational framework that can pinpoint your position anyplace on the globe, more often than not inside a couple of yards or meters. GPS utilizes a heavenly body of 24 satellites in exact circles roughly 12,000 miles over the earth. The satellites transmit information through high recurrence radio waves back to Earth. GPS utilizes satellite running to triangulate your position. As such, the GPS unit essentially measures the movement time of the signs transmitted from the satellites, at that point duplicates them by the speed of light to decide precisely how far the unit is from each satellite it's inspecting.

Distance= (speed) x time

At that point locking onto motion from least 3 unique satellites, GPS can compute a scope and longitude and track development. With at least four satellites in view, the beneficiary can decide the client's scope, longitude and height. [2] GPS collector utilizes NMEA - 0183 convention as characterized by the National Marine Electronics Association (NMEA).It gives yield messages as pursues. So we get 7-8 distinct messages.

GGA-Global situating framework fixed information. GGA contains message ID, UTC position, scope, longitude, north-south, east-west.

GLL-Geographic position –scope/longitude.

Message ID-$GPGGA that is called as convention header.

V. RESULTS

1. Distance measurement of nearby vehicles with the help of ultrasonic sensors is DONE. The following image shows the user interface.
2. Ultrasonic sensors can detect the objects which are at the distance 0.03~3 meters.
3. One sensor is fitted at the front of the vehicle having direction diagonally downward, detects the end of road.
4. The system is cheap and requires ultrasonic sensors as major components.
5. If this system is installed in cars, heavy vehicles like bus, truck, etc the accidents and traffic problems would reduce by 70% to 90%.
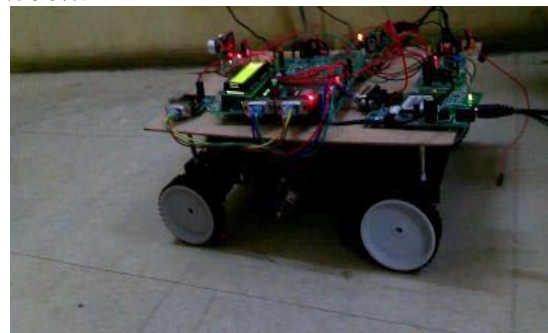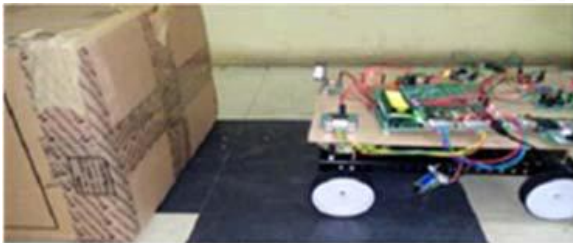

Figure: Vehicle Section

Figure: Output of ultrasonic sensor is displayed on LCD

VI. CONCLUSION

This framework utilizes ultrasonic sensors which effectively measures the separation of the vehicle ahead and to one side with the goal, that driver will get the judgment of different vehicles and typically at a separation not as much as to limit separation set in the program the brakes will be dynamic for the front ultrasonic sensor. On the off chance that the driver of our vehicle feels tired or is inebriated, at that point the framework will go in programmed mode. In programmed mode, the framework will work as indicated by calculation, for example, it will either stop (when there is any vehicle ahead and to one side) or will go in the left path and stop (when there is no vehicle ahead just as to one side). So the vehicles moving in the fast track can undoubtedly push forward without causing traffic issues and furthermore forestalling accidents. This framework will absolutely forestall the mishaps occurring at the midnights because of lack of sleep or sluggishness. Such a framework can be actualized not just in tops of the line vehicles like Mercedes and Audi yet in addition for little end autos like Swift and even nano with certain alterations. Averting Mishaps and securing lives with financial adjustments for the officially produced or in assembling procedure of vehicles is the fundamental point of this venture.

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