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## VEHICLE EMERGENCY NOTIFICATION SYSTEM

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**Abstract:** *The population of our country has been increasing day by day which increased the vehicle density and lead to many road accidents. The main causes of accidents include drunk driving, use of mobile phones, collision of vehicle with obstacles, over speeding etc. A lot of accidents are taking place now-a-days because of increased vehicle density, breaking traffic rules and carelessness. A Vehicle Emergency Notification System for a vehicle includes a degree of damage predicting system that detects whether the vehicle occupant has been injured in an accident. It consists of position monitoring system that monitors the position of the vehicle. If any accident occurs, the communication terminal receives the signal and it informs to the nearest hospital about the accident, so that the occupant can be rescued soon and gets treatment. This project can be used in the areas where there is no one to help the injured occupant when they are met with an accident. The aim of this project is to reduce the road accidents occurring because of drunk driving which leads in loss of invaluable human life and other valuable goods, to avoid the theft action by making the car password enabled, detecting accidents and thus tracking the accidental vehicle to serve emergency medical services to the victim present inside the vehicle.*

**Keywords:** Accident detection, GPS, ILCRP, VANETs.

### I INTRODUCTION

World's road becomes overcrowded and increases road accident due to the increase in the number of vehicles in the globe. Most of the developing countries are the mainly suffering from road accidents due to the lack of proper infrastructure and accident management. Among over all road accidents in world highest number of the accidents and loss of lives are happening in India. Also, 90% of the world accident is happening in developing countries. In the European Union some research projects look into the potential of reducing road fatalities under the safety initiative (e.g. GST, Prevent). This project includes decision on the wireless communication standard to be used and message dissemination schemes capable of exchanging messages in many different network scenarios.

This paper focuses on VANET based units which will alert the nearby hospitals and police station as it senses accident[1]. This project will help to track the correct location of accident and immediate arrival of help will come. VANET is used for creating a network with vehicles that can interact

with other vehicles and roadside units. For establishing communication in our vehicular network, we use IEEE 802.11p (WAVE) protocol. WAVE is a standard protocol for Dedicated Short range communication. It is developed from existing IEEE 802.11 for supporting vehicular communication. WAVE supports both direct vehicle to vehicle (v2v) and vehicle to roadside unit (V2I) communication[2]. In our approach we use WAVE protocol to exchange vehicular status information with Road Side Units and for communication between the vehicles.

#### Existing technologies in VANETs:

VANETs or Intelligent Vehicular Ad-Hoc Networks defines an intelligent way of using Vehicular Networking. VANET integrates on multiple ad-hoc networking technologies such as Wi-Fi IEEE 802.11 b/g, WiMAX IEEE 802.16, Bluetooth, IRA, ZigBee for easy, accurate, effective and simple communication between vehicles on dynamic mobility. Effective measures such as media communication between vehicles can be enabled as well methods to track the automotive vehicles are also preferred.

**Proposed Work:**

A Vehicular Ad-Hoc Network, or VANET, is a form of Mobile ad-hoc network, to provide communications among Nearby vehicles and between vehicles and nearby fixed equipment, usually described as roadside equipment. The main aim of VANET is providing safety and comfort for passengers [3].

This network tends to operate without any infrastructure client and server communication. All vehicles equipped with VANET's therefore it will be a node in Ad hoc networks and can receive and depend on others messages through the wireless network.

**Safety Work:**

Safety in travel is the primary concern for everyone. This Project describes a design of an effective warning system that can monitor an automotive vehicle's condition while traveling. This project is designed to inform, about an accident that has occurred to the vehicle to the family members of the traveling persons.

This project uses a piezo-electric sensor which can detect the abrupt vibration when an accident occurred. This sends a signal to the microcontroller. A GSM modem is interfaced to the MCU. The GSM modem sends an SMS to the predefined mobile number and informs about this accident. VANET provide help in safety measurements of vehicles, streaming communication between vehicles, infotainment and telemetric [4].

**II RELATED WORK**

**A. ACCIDENT DETECTION**

This area of the accident management is well studied and several approaches are proposed for accident detection alerting. GSM and are used for alerting and positioning Accident vehicle to emergency responder.

**B. MESSAGE SENDING**

After detection of accident the message to the respective department such as medical department, traffic department, car break, family tracking is send. Zigbee technology is used for transmission of message from vehicles.

**C. DISPLAY OF MESSAGE**

Finally all the information is displayed on the LCD.

**III METODOLOGY**

**A. ARDUINO**

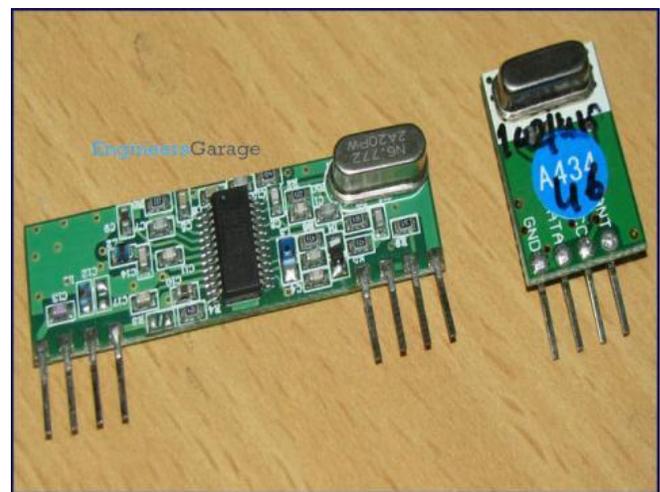
The **Arduino Uno** is a microcontroller board based on ATmega328. Arduino microcontroller is an open source computer hardware and software company, project, and user community that designs and makes single-board microcontrollers and microcontroller kit for building digital devices and intercommunication objects that can detect and control activities of objects in the physical world.

"Uno" stands for 1 in Italian and is named to mark the upcoming version of Arduino 1.0. The Uno and version 1.0 will be the reference versions of previous Arduino models, moving forward. The Uno is latest version of arduino controller present compared to old models.



*Figure 1 Arduino Uno kit*

**B. ZIGBEE TRANSMITTER AND RECEIVER**



*Figure 2 Zigbee transmitter and receiver kit*

Zigbee technology is for low-data rate, low-power applications and is an open standard. This enables the mixing of implementation from different companies, but in real practice, Zigbee have been expanded and edited by vendors and therefore plagued by various issues. In contrast to Wi-Fi networks used to connect endpoints to high-speed networks, Zigbee supports much lower data rates and uses a networking protocol to avoid hub devices and create a self-healing architecture. Zigbee standard is based on the Institute of Electrical and Electronics Engineers (IEEE).

Association's 802.15 specification. Zigbee is built for control and sensor networks on the IEEE 802.15.4 wireless standard for wireless personal area networks (WPANs).The Zigbee WPANs operate on 2.4 GHz, 900 MHz and 868 MHz frequencies. The Zigbee specifications, which are maintained and updated by the

Zigbee Alliance, boost the IEEE 802.15.4 standard by adding network and security layers in addition to an application framework.

The standards created by the alliance that can be used to create various interoperable offerings. Companies that developing applications that don't need to operate with the applications of other companies can create their own extension.

C.MOTORDRIVER

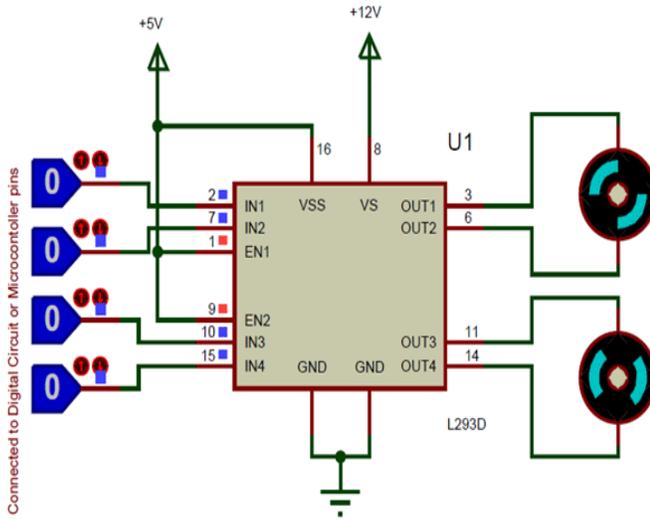


Figure 3 MOTOR DRIVER

In order to control the speed and direction and direction of two motors simultaneously the motor driver module is used. This motor driver is designed and developed on L293D IC. L293D is a 16 Pin Motor Driver IC.

This IC is designed to provide bidirectional drive currents at voltages from 5 V to 36 V. The L293D is a 16 pin IC with eight pins on each side for controlling of 2 DC motor. There are four INPUT pins, four OUTPUT pins and 2two ENABLE pin for each motor.

D. LIQUID CRYSTAL DISPLAY (LCD)

How to use an LCD display



Arduino Tutorial

Figure 4 Liquid Crystal Display

LCD consists of 2 states of matter solid and liquid. Liquid crystal displays are super-thin technology display screen that are generally used in laptop computer screen, TVs, cell phones and portable video games. An LCD is made up of an active matrix display grid. Most of the Smartphone's

with LCD display technology uses active matrix display. The liquid has an advantage of having low power consumption than the cathode ray tube.

The principle of LCD screen works on blocking light rather than emitting light. LCD requires backlight as they do not emits light by them. We use devices which are made up of Liquid Cristal displays. Cathode ray tube draws more power compared to LCD's. Cathode ray tubes are also heavier and bigger.

The principle of the LCD's is that, when an electrical current is applied to the liquid crystal molecule, the molecule tends to untwist. This is causes by the angle of light which is passing through the molecule of the polarized glass. And also cause a change in the angle of the top polarizing filter. As a result a little light is allowed to pass the polarized glass through a particular area of the Liquid crystal Display. Thus that particular area will become dark as compared to other area.

When we constructing the Liquid Crystal Display, a reflected mirror is arranged at the back. An electrode plane is made of indium-tin oxide and is kept on the top and a polarized glass with a polarizing film. It is also added on the bottom of the device.

The complete region of the Liquid Crystal Display has to be enclosed by a common electrode and above it should be the liquid crystal matter. When we come to the next the second piece of glass with an electrode in the form of the rectangle on the bottom and, on top, another polarizing film. It must be considered that both the pieces are kept at right angles.

When the current is zero, the light passes through the front of the LCD and it will be reflected by the mirror and it will be bounced back. When the electrode is connected to a battery the current from it will cause the liquid crystals between the common plane electrode and the electrode shaped like a rectangle to untwist. Thus the light is blocked from passing through that particular rectangular area appears blank.

IV SYSTEM OVERVIEW

TRANSMITTER SECTION

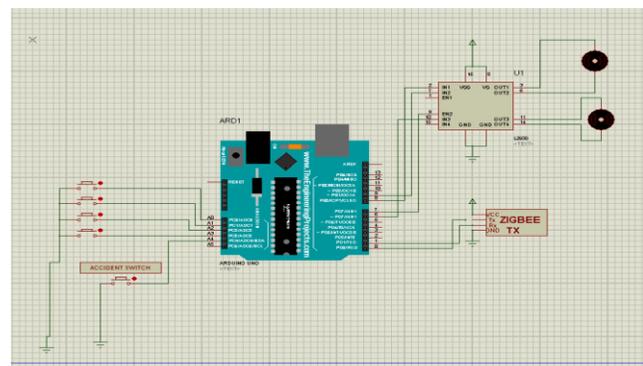


Figure 5 Transmitter Section

RECEIVER SECTION

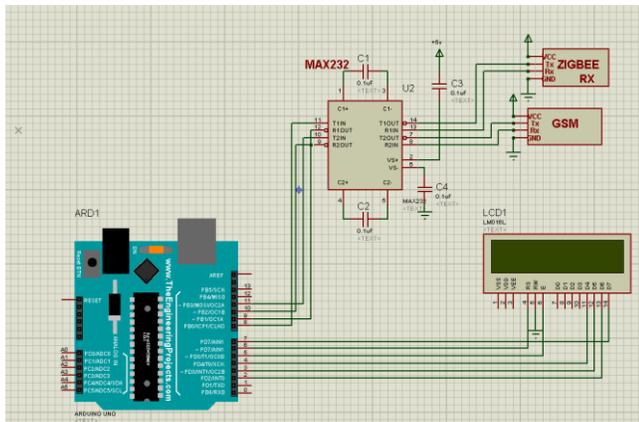


Figure 6 Receiver Section

V ADVANTAGES

- Ease of operation
- Low maintenance cost
- Fit and forget system
- Fast service.
- Monitors all hazards and threats Alerts message to mobile phone for remote information
- Ease of investigation as location is sent.
- More reliable than traditional method.

VI FUTURE SCOPE

- Ambulance Management.
- Accident Information system.
- Insurance Companies.
- Police Department.
- Blood Banks.
- Regional Transport Office (RTO).
- Toll way Accident Management.
- Road Travelling service

VII CONCLUSION

In the present world the percentage of accident has increased so widely because people were not helping when accident occurs even if the person is fallen in front of their eyes. After development of this system in future if accident of person is happened he would not have to depend on other people for help one more advantage will be that , by using this application the location of nearby hospitals be acknowledged to the user and message will be send to nearby hospital.

REFERENCES

[1] Communications for safety. [Online] . <http://www.comesafety.org>

[2] Advanced Safety Vehicle Program [Online] .<http://www.ahsra.or.jp/demo2000/eng/demoe/ahse7/iguchi/iguchi.html> Stampoulis, A., & Chai, Z. (2015).

[3] A survey of security in vehicular networks. <http://zoo.cs.yale.edu/~ams257/projects/wireless-survey.pdf> (accessed: May 29, 2010).

[4] <http://sites.ndtv.com/roadsafety/important-feature-to-you-in-your-car/>

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