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Arduino Based Vehicle Accident Detection System

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ABSTRACT : Transportation is a basic need of society. It's make human life more easy and comfortable. As far as increasing transportation, accident is also increasing. It cause death of human and damages any part of body. To prevent the particular action, We try to implement a system is Accident detection and messaging system using GPS and GSM. In this system, the vibration sensor is used as an input to the systemand corresponding response is analyzing by the Arduino. If accident occurs, sensors reading exceed the threshold and it takes the appropriate action. The SMS is send to the authorities and provide the immediate help to the people who met in an accident. The proposed embedded approach provides the promising result.

KEYWORDS: Arduino, GSM, GPS, LCD, Vibration Sensor.

I. INTRODUCTION

In twentieth country, the number of vehicles exponentially increase due to growth in the automobile industry. As the number of vehicle increases, the accident also increases. The reasons of most of the road accident are heterogeneous traffic and lack of traffic separation.

According to World Health Organization(WHO), India is leading country in the road accident deaths. In India, 13 million peoples were dead in road accident in the year of 2014-15. These statistics are reported accidental records but there are numbers of accident which are unreported. Hence the numbers of actual accident are more than the statistic of WHO. According to the survey of Global Status Report on Road Safety, the reasons of the road accident are speeding, drunken driving, minimum use of safety appliances lie helmet and seat belts etc. The existing system mostly focused on the safety of the passenger but not on the immediate help after accident[1].

Our goal for the Integrated Automotive Safety system is to provide a level playing of all vehicles, regardless of age, when it comes to outfitting car as well as possible for any risks one can face on the road. These risks include rollovers, collision and non-responsive drivers after accidents and lack of location information after accident has occurred. These sort of risks plague every driver in the US and abroad, but sadly only the newest vehicle provide protection from dangers such as these. Where does that leave the average teen driving a late 90s, early 2000s high mileages car or perhaps an elderly person driving the same car they've had for 40 years? These car likely do not have sufficient safeguards for today risks, but our project can remedy this.

India has earned the dubious distinction of having more number of fatalities due to road accident in the world. Road safety is emerging as a major social concern around the world especially in India. Drinking and driving is already serious public health problem, which is likely to emerge as one of the most significant problems in the near future. The system implemented by us aims at reducing the road accidents in the near future due to drunken driving. The system detects the presence of Alcohol in the vehicle and immediately locks the engine of the vehicle.

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II. LITERATURE SURVE

Now-a-days, mobile phone is used almost by all people. With internet usage are also at all. So these mobile phone also provide communication platform as they are equipped with 2G & 3G network. There are lots of cause of accident of car and they are drunkenness of driver, drowsiness of driver, unconsciousness of driver and many time what happen driver is not responsible for accident but their neighboring car behavior also have made role to enforce accident. There are also some system have been implemented to avoid the accident but that do not give proper solution to implemented in car to avoid various accidents that they are normally being happen. For example, when driver at speed suppose 80km/h suddenly stop ignition system may leads to changes of dangerous accident.

There are several efforts, application: approaches are projected to produce security and safety just in case accident. A completely unique approach to extend the protection of road travel victimization the ideas of wireless detector network and therefore the Bluetooth protocol has been protected. It mentioned however, vehicles will type mobile ad-hoc network and exchange information perceived by the onboard sensor [3]. Platform of the robot in operation system and software system development atmosphere well-tried optimum resolution for public safety just in case of accident [2]. An honest survey of victimization personal itinerant, Microcontroller, Bluetooth and JAVA Technology has been well-tried [4].

It developed integrated system to manage, management associated monitor accessories within the vehicle so as to attain the concept of an intelligence automobile with ability to uses personal mobile hand phone as a far of interface. Sensible phone-based accident detection will scale back overall traffic jam and awareness of emergency responders. This approach conjointly has been projected [5].

III. PROPOSED METHODOLOGY AND DISCUSSION

This system is not only efficient but also worthy to be implemented. Accident detection and messaging system can be fitted in vehicle (Ambulance & Police) and they are informed about any such untoward incident at the go. Accident detection and messaging system is execution simple as the system makes use of GSM & GPS technologies. GPS is used for taking the coordinate of the site of the accident while GSM is used for sending the message to phone. To make this process all the control is made using Arduino whereas LCD is used to display the accident.

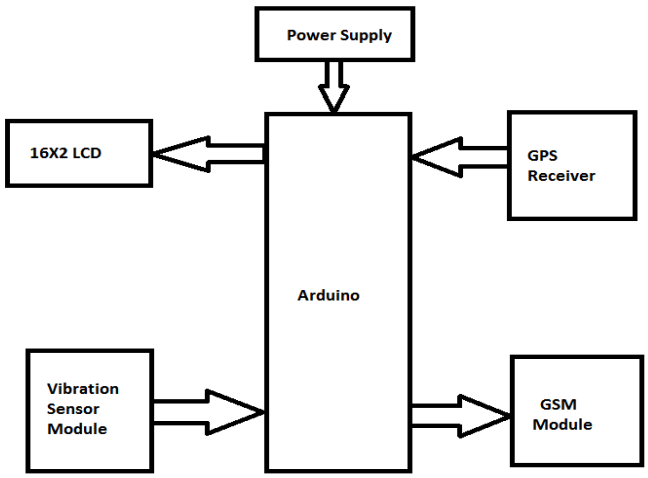

Figure 1: Block Diagram of proposed system

A. **ArduinoUno**: It is a microcontroller development board made using ATmega328. ATmega328 has 14 digital input/output pins 6 analog inputs. It works on 16Mhz crystal oscillator also consist USA connection, a power Jack and a reset button. It provides everything needed to support the microcontroller development board, it can be directly connected to computer with a cable and USB jack. Instead of using converter Arduino uses USB-to-serial converter.

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ATmega328 has 32KB of flash memory which is used to store the code. Among them 5KB is used for the boot loader. It contains 2KB memory SRAM and 1KB EEPROM. There is no restriction for input output pins. ATmega328 also supports various function such as serial communication ports, PWM, external interrupts etc.

B. Power Supply : A power supply is an electronicdevice that supplies electrical energy to an electrical load. Here Arduino Uno, sensor, GPS, GSMoperates with DC 12V supply.

C. VibrationSensor: Vibration sensor SW18010P is used for measuring and analyzing linear velocity, displacement or acceleration. Features of SW18010P. This is spring type directional vibration sensor. Which can detects vibration in any angle.

D. GSM: There are different GSM module are available in the market. SIMCOM developed different frequencies module includes 800MHz, 850MHz, 900MHz, 1800MHz, 1900MHz. We select SIM900a module for the proposed work. It is compact easy plug in module. The baud rate of the GSM 900a module is 9600-115200. Initially modem is in auto baud mode. The modem needs only two wires(Tx, RX)

E. GPS: Global Position System(GPS) is a space based satellite navigation system that provides location and time information in all weather conditions, anywhere on or near the earth where there is an unobstructed line of sight to four or more GPs satellite. The system provides critical capabilities to military, civil, commercial users around the world [3]. It is maintained by the united states government and is freely accessible to anyone with a GPS receiver.

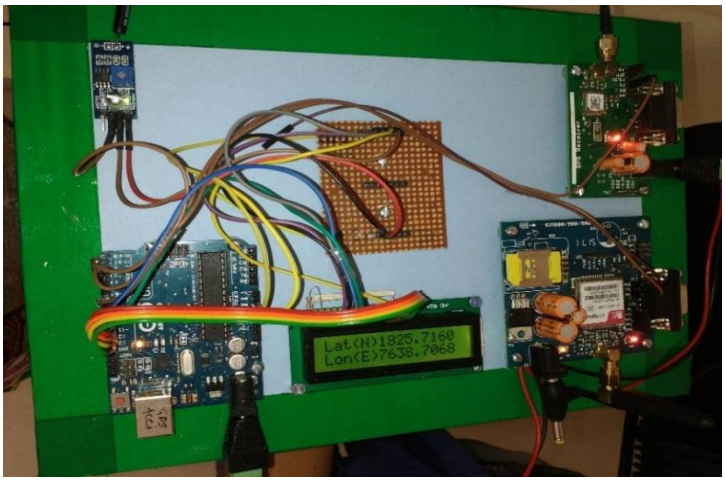
GPS devices may be capabilities such as:

1. Maps, including streets maps, displayed in human readable for mat via text or in a graphical format turn by turn navigation direction to a human in charge of a vehicle or vessel via text or speech.
2. Directions fed directly to an autonomous vehicle such as robotic probe.
3. Traffic congestion maps and suggested alternative directions.

F. 16X2 LCD: 16x2 LCD means it can display 16 character per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. This LCD has two registers, namely, command and data. The command register stores the command instruction given to the LCD. A command is an instruction gives to LCD to do a predefined task like initializing it, clearing it's screen, setting the curser position, controlling display etc. The data register stores the data to be displayed on the LCD.

IV. RESULT

The system detects accident from vehicle and send message through GSM module. The message is received by another GSM module. Google Map Module It displays google map show u exact location of accident and it details. It gets detail SMS from accident location. Hence there is small variation in the coordinates, initial value of latitude and longitude are same but fractional value changes with small difference.



(a)

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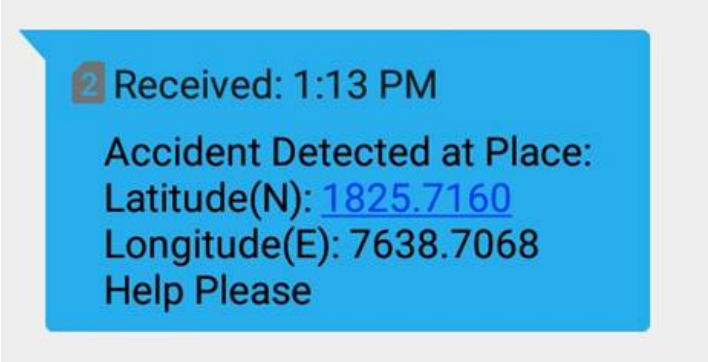

(b)

Fig: Result snapshots (a) hardware module (b) message received

V.CONCLUSION

The proposed system is developed to provide the information about the accident occur and the location of the accident. It helps to easily provide the assistant and help to the victim of the accident. This system uses GPS module to locate the vehicle. GSM is used to provide the information of accident. The results of the proposed systems are satisfactory.

FUTURE SCOPE

Further this system can be implemented by using sound sensor, in order to make it more accurate and efficient to detect an accident. This is extended with alcoholic detection also. If the person took alcohol who is driving then the vehicle will be stopped immediately by giving alarm. This can also be developed by interconnecting camera to the controller module that takes the photograph of the accident spot makes tracking easier.

REFERENCES

1.Rohit Ganiga, Rohit Maurya, Archana Nanade,"Accident detection system using Piezo Disk Sensor", *International Journel of science, Engineering and Technology Research(IJSETR) volume6,Issue3,March 2017,ISSN 2278-7798*
2.J.Whipple,W.Arensman,M.S.Boler,"public safety application of GPS enabled smart phones and the android operation system", *IEEE Int. conf. on system, man and cybernetics:2009*
3.Hemjit Sawant, Jindong Tan, Qingyan Yang Qizhi Wang," Using Bluetooth and Sensor networks for intelligent transport systems", *In proceeding of Intelligent Transport System; 2004*
4.Helia Mamdouhi, Sabira Khatun, Javed Zarrin," Bluetooth Wireless monitoring, Manging and Control for inter vehicle in vehicular adhoc networks", *Journal of computer Science, Science Publication;2009*
5.Jules White, Brian Dougherty, Adam Albright, Douglas C," Using Smartphone to Detect Car Accidents and Provide Situational awareness to emergency responders chirs Thompson", *Mobile Wireless Middleware, Operating system and Application;2010*

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