Accident Detection and Alert System

Rajshekhar Swami[1], Bibi Zohra Kazi[2], Akash Kapase[3], Mrs.Alfiya Shahbad[4]

[1]B.E Department of Computer Science, Trinity Academy of Engineering, kondhwa, Maharashtra, India
Email : rs03461@gmail.com
[2]B.E Department of Computer Science, Trinity Academy of Engineering, kondhwa, Maharashtra, India
Email : zohrakazi138@gmail.com
[3]B.E Department of Computer Science, Trinity Academy of Engineering, kondhwa, Maharashtra, India
Email : akashkapse9172@gmail.com
[4]Assistant Professor, Department of Computer Science, Trinity Academy of Engineering, kondhwa, Maharashtra, India
Email : alfiya.tae@kjei.edu.in

Abstract : In today's world accidents are major concern. Safety of driver and passengers are big issue, we can save many lives if we give proper treatment and care at the right time. This system not only detects accident but also notification alerts are sent to the nearby hospital and emergency contacts (family and relatives) using GSM module. Accidents are detected using Vibration sensors so as to get accurate results. This sensor forms the part of the IoT system which has an Arduino. On identification of an accident, a message is sent to the nearest hospital, ambulance and emergency contacts along with the current position of the GPS. The Arduino continuously receives the sensor data and concurrently it also provides real time GPS location. After detecting accident it processes sensor data and sends notification through GSM module to emergency contacts including ambulance services. This process can appreciably reduce the number of losses because of delay in getting proper medical care. Also in order to diminish false positives, so this paper will dealt with accident's problem, and it will detect accident through this system and save lives as many as possible.

Keyword: **Vibration sensor, Arduino, GPS, Android Application.**

I.INTRODUCTION

In present days the rate of accidents can be increased rapidly The automotive industry around the world has shown a tremendous enhancement in its production over the recent years. Millions of vehicles are being produced annually. But along with these, the accident rates are also getting significantly increased. As a result, even the optimistic nature of people has become worried while going outside.Most of the accidents occur due to human negligence, such as reckless driving, lack of

good infrastructure, etc. An immediate rescue process after an accident can be considered as a tightrope walk between life and death. Any fractional time delay of arriving medical help can cost the life of the victims.To reduce the accident rate in the country we are introducing a optimum solutionVehicle tracking system main aim is

to give Security to all vehicles. Accident alert system main aim is to rescuing people in accident. Systems major components are arduino, Vibration sensor, GSM,GPS and LCD display. Arduino is an electronic open source platform that based on easy to use hardware and software. Inputs - light on a sensor, a finger on a button, or a Twitter message - can be read by Arduino boards and converted into an output. And with the help of GPS (Global Positioning system). We can track the exact the location of an object (vehicle) GPS give us the name of the street we might be traveling on, but many GPS systems can also give us the exact latitude and longitude of where you are located.

And vibration sensor continuously send vibrations to Arduino and when accident detect which will be match with threshold frequency and it is display on LCD accident detected.. Then using an android pass message to the GPS and through GPS get notify message to the nearest location hospital, and registered emergency contact.

II. LITERATURE SURVEY

According to literature review there are n numbers of research are available for detection accidents and give emergency health services.

- In [2]In order to detect injuries, the authors used a shock sensor and sent additional passenger details, such as full name, blood type, telephone number, medical history, and telephone number, to the headquarters of the Public Safety Organizations.The main drawback of the system is that all passengers and vehicles need to be pre-registered with their details, which is not realistic.

- In [5] The Wireless SensorNetwork and Radio Frequency Identification Technologies were proposed for use in this paper.Sensors will be installed in a vehicle that will detect the location of the vehicle's accident and speed.These sensors will then send a alert signal to a monitoring station and monitoring station, in turn, will track the location where the accident has occurred.

- The other current framework uses the cloud storage system and IOT.Where the id of the vehicle is detected by the SVM (support vehicle machine) developed by the Ant Colony Algorithm Using magneto resistive sensors, the IOT will track vehicles here.The main goal of this project is to distinguish between traffic accidents and non-traffic accidents.

- In another proposed system which collected information and number of passengers in the vehicle, although the number of passengers in the vehicle does not need to be collected?Four crash sensors were mounted on the four corners of the vehicle in this system, which made the system less lightweight.

Therefore the major contribution made in this research is the development of an intelligent vehicle accident detection, location monitoring and warning device of a lightweight compact nature that sends a location to the nearest hospital and police station from Google map. This link on the Google map shows the location of the accident and also helps to find the optimal route to reach the location.

III-System Features And Overview

As shown in below image our System will work in this manner

It will consists of all these technology

-Arduino

-Vibration Sensor

-GPS –GSM

-LCD display

ARDUINO

Arduino is an Open Source Digital Appliance.Which makes it easy for us to use hardware and software.On sensors and finger prints, etc., Arduino boards can read Inputs-light.Arduino uno boards are an ATmega328 based microcontroller.There are 14 digital input/output pins in Aurdino, 6 of which can be used as PWM outputs, a 16 MHz ceramic resonator, an ICSP header, a USB port, 6 analogue inputs, a power jack and a reset button.And it provides aexcellent start and speed
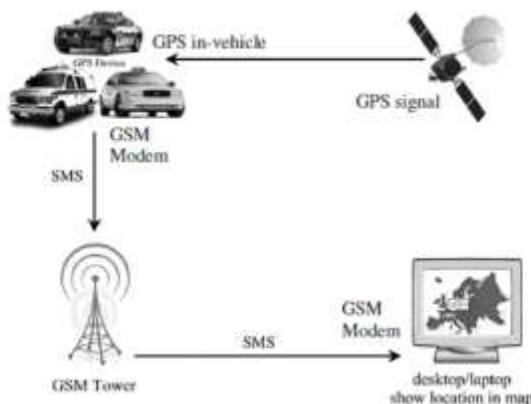
VIBRATION SENSOR MODULE

A piezoelectric sensor is also called a vibration sensor.Such sensors are versatile instruments used to test different processes.The piezoelectric effects are used by this sensor when calculating changes in acceleration, friction, temperature, force strain by switching to an electrical charge.

The sensitivity typically ranges from 10 mV/g to 100 mV/g for these sensors, and lower and higher sensitivities are also possible.Based on the application, the sensitivity of the sensor may be chosen.It is therefore important to consider the vibration amplitude range levels to which the sensor will be exposed during the measurements.

GPS MODULE

The whole is divided into certain coordinates to find the position on the earth where a module called the GPS module can easily capture the location.the GPS SIM28ML is used here.The location of the vehicle will be identified by this GPS module and the information obtained by the GPS receiver will be received via the

coordinates and the received data will first be sent to Arduino and the information will be transmitted to the saved contact via the GSM module or android application.
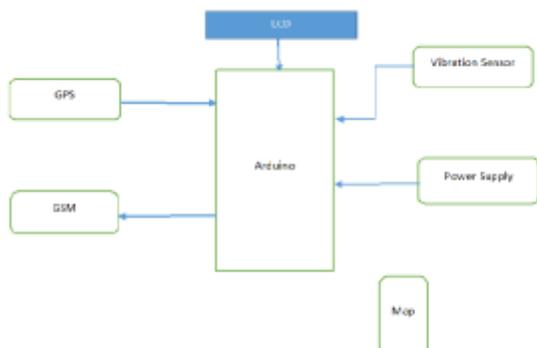

1.Fig –Over view Of The System

IV-Design Of System Architecture

block diagram shows in fig-2

The components and parts of the system or it can say over view of structure i.e.

V- Implemetation

After done with testing Each module all modules are run successful so that we have shown in Result part we add Screen shots into it

Result:

A-LCD display:

In this module we shown three images of lcd display's working which it shows different different outputs

2. Fig- Block diagram for Accident detection

Each components in the system are designed and made separately and tested. Finally, all of the modules have been completed. connected to each other and thoroughly checked functionality. In final setup all system parts and and after done using block digram result as shown in below image

In this image as we can see when device will start then that time LCD will display Smart Vehicle Monitoring System as you can see on image

Fig- System setup
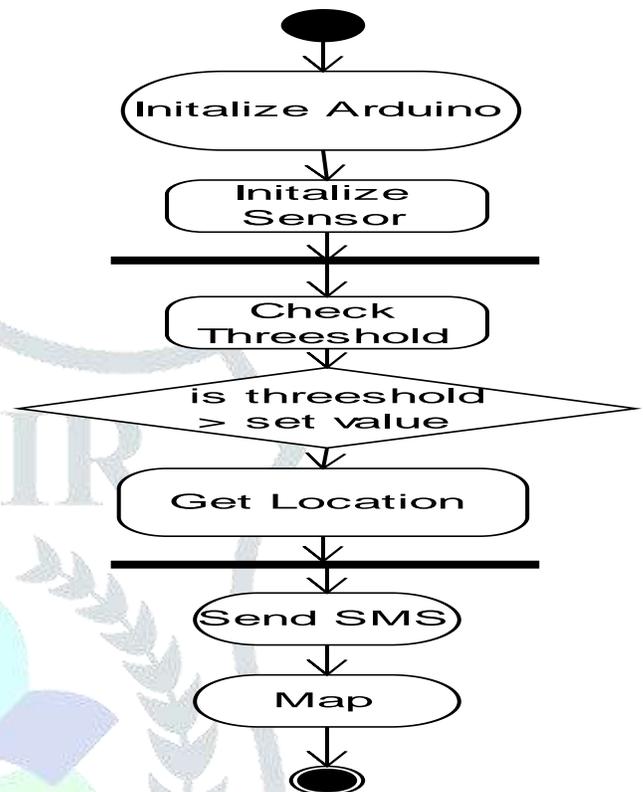
.

Fig-LCD display

In this image Lcd display show that run successfully and displaying result that receiving signals from GPS module using an Arduino

In this its clearly showing when accident is happened due to some reason and then vehicle get vibrated and that will be detect by using vibration sensor and then it pass
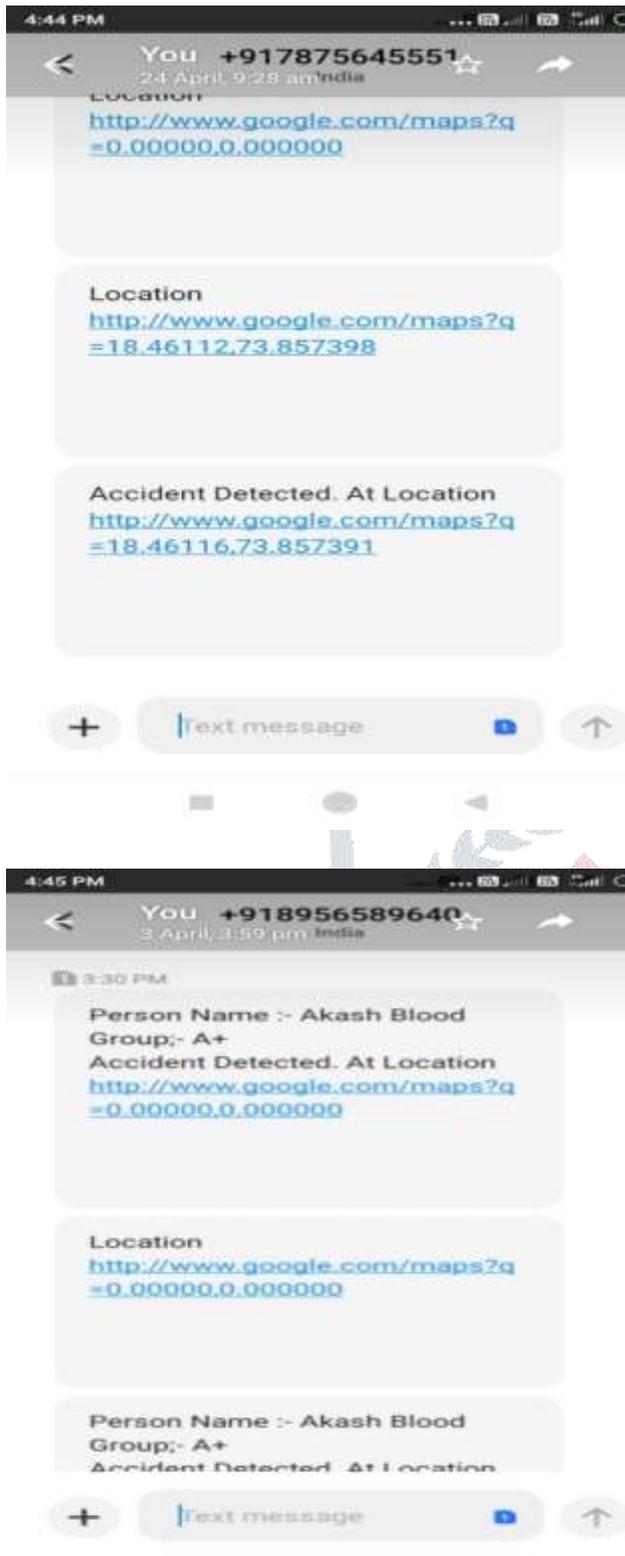
message to the Arduino and finally it get detect and then display that"Accident detected"

V-Flowchart And Message Alert Notification

In above flowchart describing the working of our device so.

- START: In first step start the d device will automatically connect once vehicle start.

- Initialize Sensor: Once Start vehicle Vibration Sensor contiously send vibration Frequency to the Arduino.

- Check Threeshold: In this When Arduino get continouslr vibration frequency from sensor then if it is match with predefined and set threshold then through Arduino it display Accident detect and send message to GSM

- Get Location: In this section If Acciident is detect then Arduino send message to the GSM and through GSM registered mobile or control room will get notify through message along with location using GPS, GPS also send continuously longitude and latitude signals to the Arduino which is display on LCD

Once accident get detect then aurduino passed message to the GSM , and then GSM send message along with locationto the registered contact number and to the control room and hence through the location family and rescue team will get address of person who had accident of vehicle so this way we can save soule.

V- CONCLUSION

Hence the proposed system will detect accidents and alert notifications to the registered numbers via GSM module . Through this proposed system hospitality service (i.e. ambulance) can reach at the accident point or location as early as possible and inform to their family, friends through message and can give patient to the proper treatment at the right time so that we can avoid death cases or losses. And save's many lives through this proposed device.

ACKNOWLEDGEMENT

REFFERENCES

[1] Suraj Patil, Kamesh Patil, Swapnil Dhabekar, Mahendra Nirgude,Prof. Shashikant Renushe, "ACCIDENTIDENTIFICATION & ALERTING SYSTEM" Volume:02/Issue:07/July -2020/e-ISSN: 2582-5208

[2] DeviceMd. Palash Uddin, Md. Zahidul Islam, Md. Nadim[3], , Masud IbnAfjal "GPS-based Location Tracking System via Android ",1ISSN 2319-376X VOL :2 ISSUE : 5 (Oct-Nov 2013

[3] Bruno Fernandes, Vitor Gomes, Joaquim Ferreira and Arnaldo Oliveir, "Mobile Application for Automatic Accident Detection and Multimodal Alert", Instituto de Telecomunicações Universidade de Aveiro, Portugal

[4] HemjitSawant, Jindong Tan, Qingyan Yang Qizhi Wang, ' Using Bluetooth and Sensor Networks for Smart Transportation Systems, 'In Proceeding Intelligent Transportation System; 2004

[5] https://innovate.mygov.in/innovation/smart-vehicle-accident-detection-system

[6] https://circuitdigest.com/microcontroller-projects/arduino-based-accident-alert-system-using-gps-gsm-accelerometer

[7] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6540187