**A NOVEL APPROACH TO DECREASE THE ACCURACY OF ACCIDENT ALERT SYSTEM USING GPS AND GSM**

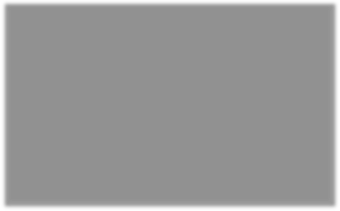
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**Abstract:** As the usage of vehicles is increasing, drastically the hazards due to vehicles also increased. In this paper, Arduino based vehicle accident alert system is designed using GPS, GSM and Accelerometer. Accelerometer detects the sudden change in the axes of vehicle and GSM module sends the alert message to registered mobile phone with the location of the accident and GPS tracks the signal with the help of a satellite, satellite provides the direction of Latitudes and Longitudes. Accident place is sent to the registered mobile phone in the form of Google map link. The rise in technology has improves the rate of road accidents which causes vast loss of life. The poor emergency services available in our country, just add to this problem. This system improves the accuracy of accident places compared to existence method.



Keywords: GPS Module ,GSM, Arduino, Accelerometer and alert system.

**I. INTRODUCTION**

Nearly, lakhs of people are dying due to road accidents. Due to employment reason the usage of vehicles are increased. Due to vehicle speed, accidents are occurring rapidly. So our paper is going to provide a solution for this problem. The main intention of this paper is to find the accident spot and intimating it to ambulance through the GPS and GSM networks.Global system for mobiles (GSM) technology is used to establish cellular connection.GPS is used to trace the position of the vehicle. Accelerometer detects the sudden change in the axes of vehicle.GPS and GSM makes the usage for intimation and identification of place.

**II. EXISTING METHOD**

When an accident occurs information is sent through GSM only.

Figure 1: Tracking through GSM

When an accident occurs information is sent through GSM and GPS.

Figure 2 : Tracking through GSM,GPS

**III. PROPOSED METHOD**

Suppose, when an accident occurs we can find the accident spot easily with the help of GPS module and sends a alert message through GSM and accelerometer detects the sudden change in the axes of vehicle.The poor emergency facilities are provided in India, our project is going to provide a solution to this problem.

Figure 3 : Sending accident spot through GPS and GSM

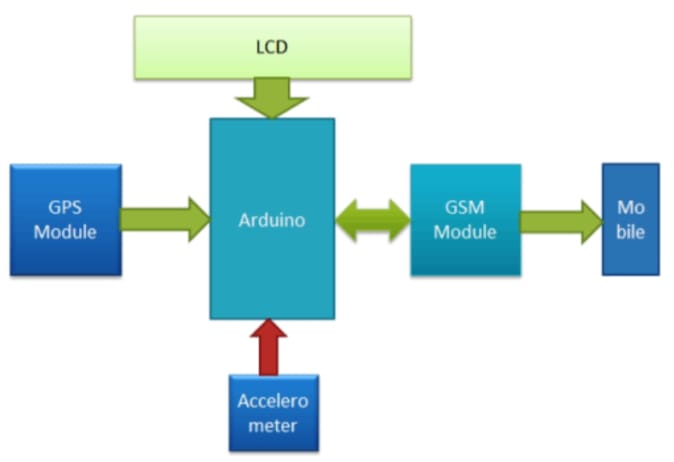
**IV. WORKING EXPLANATION**

Figure 4: Block Diagram For Proposed Method

Above figure 4, Arduino is used to control GPS, GSM and Accelerometer. GPS (Global Positioning System) GPS receiver or module provides accident location and time information in all whether conditions with the help of coordinates. GSM stands for Global System for Mobile communication. GSM is used to send an alert message to an registered mobile number. Accelerometer is used to change the axes of an vehicle.LCD is used to display the screen whether the accident has occurred or not. Whenever accident occurs the vehicle gets tilt and accelerometer changes his axes values in a vehicle. If any changes occurred in any axis information is send to Arduino. Arduino reads the extracting values in $GPGGA format from GPS module and sends an SMS to registered mobile number with the help of GSM module. This process is possible when hardware kit is ready.

## *GPS MODULE*

GPS (Global Positioning System)is used to notice the Latitude and Longitude of any location of the Earth, with exact UTC time (Universal Time Coordinated). GPS module is used to track the location of an accident vehicle in our project. GPS receives the coordinates from the satellite for each and every second, with time and date. We have previously take out $ GPGGA string in vehicle tracking system to find the Latitude and Longitude coordinates.

Figure 5 : GPS Module

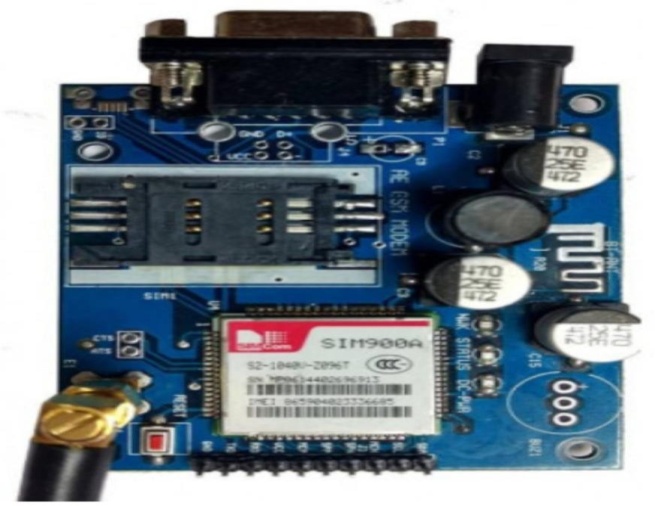
*****GSM MODULE***

Figure 6 : GSM Module

GSM**(**Global System for Mobile Communication) is used to send alert message through registered mobile number. The SIM900 is complete Quad-band GSM/GPRS component which can be entrenched easily used by client or hobbyist. SIM900 GSM module delivers to industry- standardinterface.SIM900deliversGSM/GPRS850/900/1800/1900MHz performance for voice, SMS, data with low power feasting. GSM Module is available in market easily.

***ACCELEROMETER***

X-OUT: This pin represents an Analog output in x-direction.

VCC: 5 volts supply should connect at this pin.

Y-OUT: This pin represents an Analog Output in y-direction.

Z-OUT: This pin represents an Analog Output in z-direction.

GND: Ground.

ST: Sensitivity of sensor.

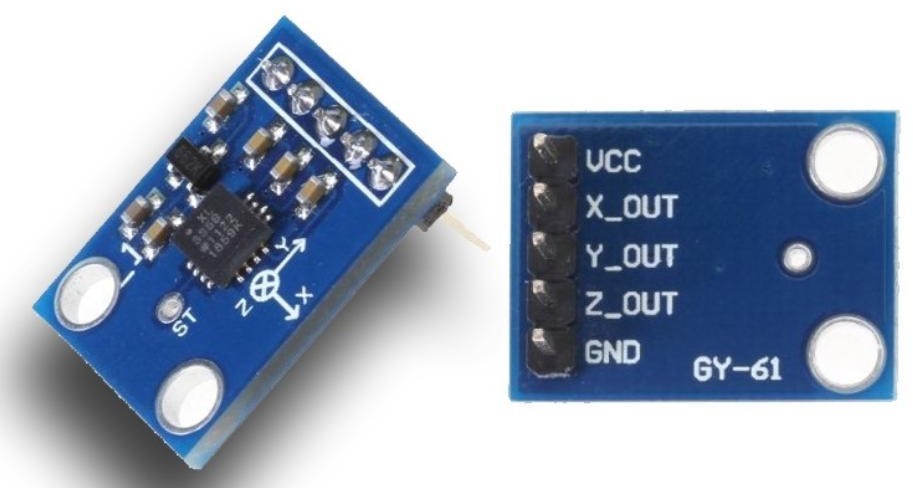
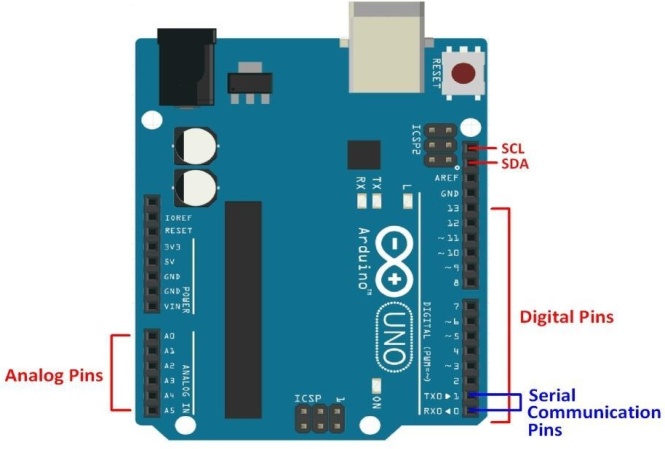


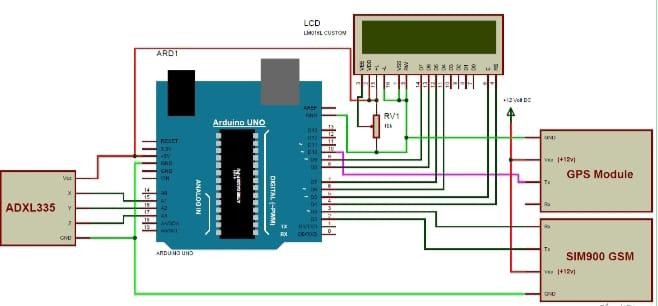
Figure 7 : Accelerometer

***ARDUINO UNO BOARD***

* + - Operating Voltage:5V
    - Input voltage:7-15V
    - Analog Input Pins:6(A0-A5)
    - Digital I/O pins:14
    - Flash Memory:32KB
    - EEPROM : 1KB
    - Frequency:16MHz

 Figure 8 : ARDUINO UNO

**V.CIRCUIT DIAGRAM**

**** Figure 9 : Circuit Diagram

Here transmitter pin of GPS module is directly connected to digital pin number 10 of Arduino Diagram allowed serial communication on pin 10 and 11, made them receiver and transmitter respectively and left the receiver pin of GPS module open. By default pin 0 and pin 1 are used for serial communication. TX and Rx pins are directly Connected to pin D2 and D3 of Arduino. GSM module need 12v power supply. LCD’S data pins D4, D5, D6, D7 are connected to pin no 6,7,8 and 9 in Arduino board. Command pin RS and EN of LCD are connected to pin no of 4 and 5 of Arduino and RW pin is directly connected to ground. An accelerometer is added in this system for detecting an Accident and it’s X, Y and Z-axis ADC output pins are directly Connected to Arduino ADC pin A1, A2 and A3.

**VI.RESULTS**



Figure 10 : Interfacing circuit to software

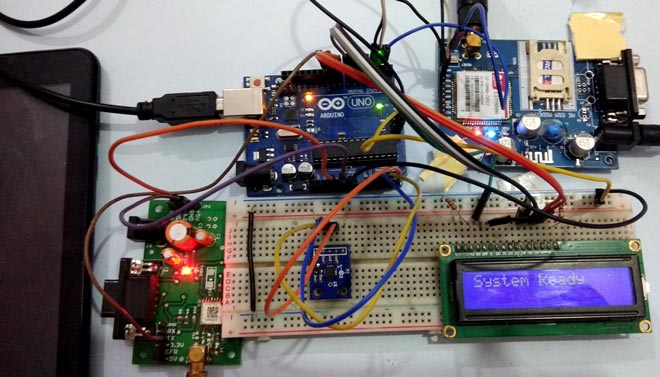


Figure 11: Output

From this paper we can find accident spot easily with the help of GPS, GSM and Accelerometer.

**VII. CONCLUSION**

We have successfully designed vehicle accident detection method by using GPS, GSM and ACCELEROMETER. When an accident occurs, LCD will activate and give the signal to GSM. GSM will send a message to registered mobile number. GPS tracks the location where the accident has occurred. GPS tracks the signal with the help of a satellite, satellite provides the direction of Latitudes and Longitudes. ACCELEROMETER helps us to find in which direction the accident has occurred.

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