# ACCIDENT DETECTION AND ALERTING SYSTEM USING GPS & GSM

**S. Haribabu**

Assistant professor of electronics and communication engineering, GITAM(Deemed to be university),Rudraram ,Patancheru mandal, Hyderabad ,Telangana, INDIA.

**AKURATI MOKSHADEEP,**

**SHYAM PADAVALA,**

**VRINDA RAMANIKA**

Department of electronics and communication engineering, GITAM(Deemed to be university),Rudraram ,Patancheru mandal, Hyderabad ,Telangana, INDIA.

**Abstract**

Nowadays we are able to track vehicles using many applications which help in securing personal vehicles, public vehicles, feet units and others. Furthermore there is a rapid increase in the occurrence of the Road accident. This paper is about a system which is developed to automatically detect an accident and alert the nearest hospitals and medical services about it. This system can also locate the place of the accident so that the medical services can be directed immediately towards it. The goal of this paper is to build up a Vehicle accidental monitoring system using vibration sensor, GPS and GSM Technology. The system comprises of accelerometer, MCU, GPS & GSM Module support in sending message. The accelerometer is used to detect fall and Threshold value are used to detect accident. Short Message will contain GPS[Latitude, Longitude]which helps in locating the vehicles.

**Keywords:**

ARDUINO UNO, GPS, SIM800L GSM, VAIBRATION SENSOR, LCD DISPLAY.

.

## 1. Introduction

The usage of auto mobiles has improved linearly over the past decade, which increased in the risk of human life. This is because due to the insufficient emergency facilities .In this paper we are using a alarm system which helps in improving the emergency system of the accident system. This system detects the accident occurrence and the co-ordinated of the accident are messaged to the rescue team .A switching system is used switch off in case there are no causality. The Accident is detected with the help of MEMS Sensor and Vibration Sensor. The Angle in which the car has rolled off is indicated through a message. This Application helps in providing feasible solution to the poor emergency facilitates.

In present days the rate of accidents can be increased rapidly. Due to employment the usage of vehicles like cars, bikes can be increased, because of this reason the accidents can be happened due to over speed. People are going under risk because of their over speed, due to unavailability of advanced techniques, the rate of accidents can't be decreased. To reduce the accident rate in the country this paper introduces a optimum solution. Automatic alert system for

vehicle accidents is introduced; the main objective is to control the accidents by sending a message to the registered mobile using wireless communications techniques. When an accident occurs at a city, the message is sent to the registered mobile through GSM module in less time. Arduino is the heart of the system which helps in transferring the message to different devices in the system. Vibration sensor will be activated when the accident occurs and the information is transferred to the registered number through GSM module. GPS system will help in finding the location of the accident spot. The proposed system will check whether an accident has occurred and notifies to nearest medical centers and registered mobile numbers about the place of accident using GSM and GPS modules. The location can be sent through tracking system to cover the geographical coordinates over the area. The accident can be detected by a vibration sensor which is used as major module in the system[1].

**2. LITERATURE SURVEY:**

To protect the vehicle and tracking so many advanced technologies are available in now a days. In olden days the information of accident can be transferred, but the place of accident spot cannot be identified. In any vehicle airbags are designed, air bags are used for security and safety travels[2]. The air bag system was introduced in the year of 1968. • TPMS is system designed to control the pressure inside the pneumatic tires on vehicles that provides different operating conditions such as a lower tire pressure is desired in order to maximize traction, maneuvering through challenging terrain, pulling a heavy load out of an incline at slow speeds, crawling out of soft dirt. The pressure ranges from 15 to 45 PSI. • Many other systems have been proposed to deduce the accident. The existing system deals with two sensors where MEMS sensor is used to detect the angle and vibration sensor is used for detection the change in the vehicle. • The other existing system uses IOT and cloud computing system. Where the vehicle detection id done through SVM (support vehicle machine) that is developed by Ant Colony Algorithm (ACA). Here IOT will monitor the vehicles using magneto resistive sensors. The main aim of this project is to differentiate the accidents which took place in traffic and at no traffic place. • Existing system also provides the

**Revised Manuscript Received on December 22, 2018**.

T Kalyani, AssistantProfessor, Department of Electronics and Communications Engineering, MLR Institute of Technology, Hyderabad, Telangana, India.

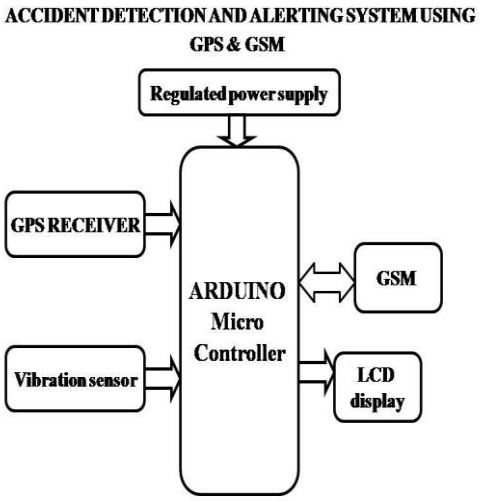
S Monika, AssistantProfessor, Department of Electronics and Communications Engineering, MLR Institute of Technology, Hyderabad, Telangana, India.

B Naresh, AssistantProfessor, Department of Electronics and Communications Engineering, MLR Institute of Technology, Hyderabad, Telangana, India.

Mahendra Vucha, AssistantProfessor, Department of Electronics and Communications Engineering, MLR Institute of Technology, Hyderabad, Telangana, India.

location of the accident using Atmega 328 Microcontroller and RF transmitter and receiver. The information is send to the saved mobile numbers [3].

**3. Implementation:**




3.1 Block diagram of **Accident Detection and Alert System.**

The system "ACCIDENT **DETECTION AND ALERTING SYSTEM USING GPS & GSM"** can be interconnected with the sensors like accident notification sensor using GPS and alert the predefine mobile number in an instant messaging using GSM modem. This tracking system is composed of a GPS receiver, arduino and a GSM Modem. GPS Receiver gets the location information from satellites in the form of latitude and longitude. The arduino processes this information and this processed information is sent to the user/owner using GSM modem.

**4. Related Work:**

The brief introduction of different modules used in this project is discussed below:

**4.1. Arduino UNO**

4.1.1 ARDUINO UNO

The **Arduino Uno** is a microcontroller board based on the ATmega328. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.

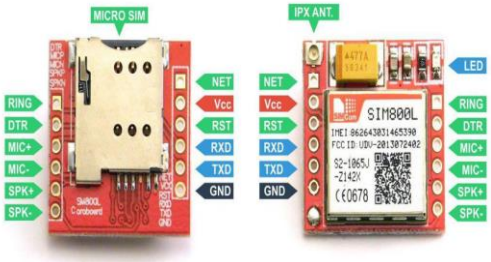
**4.2. VIBRATION Sensor:**

The working principle of vibration sensor is a sensor which operates based on different optical otherwise mechanical principles for detecting observed system vibrations.

4.2.1 VIBRATION sensor

The sensitivity of these sensors normally ranges from 10 mV/g to 100 mV/g, and there are lower and higher sensitivities are also accessible. The sensitivity of the sensor can be selected based on the application. So it is essential to know the levels of vibration amplitude range to which the sensor will be exposed throughout measurements.

**4.3.GSM(SIM 800L):**

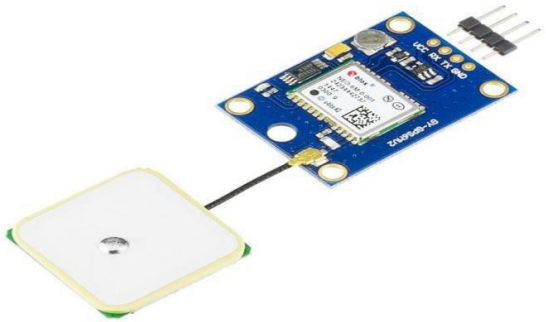



4.3.1 GSM MODULE

GSM module is used for GPRS transmission , that means sending or receiving of text messages and making or receiving of voice calls.It is low in cost and module size is small and has a quad band frequency make this module ideal for any project that requires a very long range connectivity, successfully.

**4.4. GPS(NEO 6M):**

GPS(NEO 6M) has four pins:VCC and GND for power supply of 3v-5v and grounding of the module.TX and RX for transmission and reception of data with respective to GPS NEO 6M and other end connected device.And it's default baud rate is 9600 bps(bits per second).



4.4.1 GPS MODULE

It is mainly used for finding the location using ht latitude and longitude values we obtain from GPS.Not only the latitude and longitude values would be found using GPS, we could also find location, tracking, timing, mapping, tilt, altitude and navigation.

The $GPGGA which is the basic "GPS National Marine Electronic Association" message, that provides 3D location and an accurate data.

**4.5 LCD Display:**
**LCD (LIQUID CRYSTAL DISPLAY) :**


**4.5.1 16*2 LCD Display**

One of the most common devices attached to a micro controller is a 16x2 LCD display. This means 16 characters per line by 2 lines and 20 characters per line by 2 lines, respectively. The project status will display on LCD.

**5. CONCLUSION:**

The proposed system deals with the accident alerting and detection. Arduino is the heart of the system which helps in transferring the

message to different devices in the system. Vibration sensor will be activated when the accident occurs and the information is transferred to the registered number through GSM module. Using GPS the location can be sent through tracking system to cover the geographical coordinates over the area. The accident can be detected by a vibration sensor which is used as major module in the system.

**6. ACKNOWLEDGEMENT**

We would like to thank all the authors of different research papers referred during writing this paper. It was very knowledge gaining and helpful for the further research to be done in future.

**7. RESULTS:**

ADD YOUR PROJECT PHOTO IN RESULTS

**REFERENCES:**

[1] World Health Organization Road Traffic Injuries Fact Sheet No 358, March 2013, Available from http://www.who.int/mediacentre/factsheets/fs358/en/ [Last accessed on 2017 Dec 16]

[2] National statistics of road traffic accidents in India, September 2013, Available from http://www.jotr.in/article.asp?issn=0975-7341;year=2013;volume=6;issue=1;spage=1;epage=6;aulast= Ruikar /[Last accessed on 2017 Dec 16]

[3] “Vehicle Accident Detection And Reporting System Using Gps And Gsm.” by AboliRavindraWakure, ApurvaRajendraPatkar, IJERGS April 2014.

[4] Tanushree Dalai, "Emergency Alert and Service for Automotives for India", International Journal of Advanced Trends in Computer Science and Engineering (IJATCSE) Mysore India, vol. 2, no. 5, pp. 08-12, 2013.

[5] Amit Meena, Srikrishna Iyer, Monika Nimje, Saket JogJekar, Sachin Jagtap, Mujeeb Rahman, "Automatic Accident Detection and Reporting Framework for Two Wheelers", IEEE International Conference on Advanced Communication Control and Comp(ICACCCT), pp. 962-967, May 2014.