

ACCIDENT ALERT SYSTEM USING GPS, GSM AND ACCELEROMETER

Neha Pandey¹, Mahvish², Kumkum Nishad³, Neha Agarwal⁴

Mr. Sudhir Shukla (Assistant Professor)⁵

Department of Electronics and Communication Engineering^{1 2 3 4}

Department of Electronics and Communication Engineering⁵

Dr. A. P. J. Abdul Kalam Technical University Lucknow U. P., 226031

Buddha Institute of Technology, Gida, Gorakhpur U. P., 273209

ABSTRACT: - Nowadays we have a tendency to square measure able to track vehicles exploitation several applications that helps in securing the non-public vehicles and also the public vehicles. And later there's a fast increase within the prevalence of the Road Accident. the arrival of technology has additionally accrued the traffic hazards and also the road accidents occur often that causes large loss of life and property as a result of the poor emergency facilities. This project a couple of system is developed to mechanically find associate accident and alert the closest hospital and medical services and this method will find the place of the accident thus it's simple for medical services are often directed in real time towards. the most aim of this paper is to create up the Vehicle accidental observation system exploitation legion numerous technologies like GPS and also the hottest GSM Technology. The system includes of measuring instrument, GPS & GSM Module support in causation the message in real time. The measuring instrument is employed to find the autumn and Threshold algorithmic rule is employed to find the accident. And last the Short Message are contain GPS

Keywords: - Measuring instrument, GPS, GSM, Arduino uno, LCD.

I. INTRODUCTION: -

The popularity of vehicles has additionally expanded the traffic dangers furthermore, the street accidents. Life of individuals is under high danger. This is a result of the absence of best emergency facilities available in our country. An accidents ready framework is present in this project. This plan is a system which can distinguish accidents in fundamentally less time and sends the essential data to emergency treatment focus inside a couple of moments covering topographical organizes, the time and point wherein a vehicle accident had happened.

This alarm message is sent to the salvage group in a short time, which will help in saving the significant lives. A Switch is likewise gave to end the sending of a message in uncommon situation where there is no loss, this can save the precious time of the clinical salvage group.

At the point when the accident happens the alarm message is sent consequently to the salvage group and to the police headquarters. The message is sent through the GSM module and the area of the accident is distinguished with the help of the GPS module. The accident can be identified decisively with the assistance of Accelerometer in particular ADXL335. The unexpected change in any axis also detect by the Accelerometer. This application gives the ideal answer for helpless crisis offices gave to the street's accidents in the most plausible manner. The use of auto mobiles has improved directly over the past decade, which expanded in the danger of human existence. This is on the grounds that due to the deficient crisis offices.

II. LITERATURE REVIEW :-

Vivek Kinage et al has described IoT Based Intelligent System for Vehicle Accident Prevention And Detection At Real Time. With an increasing number of vehicles, the number of accidents is also increasing at an unprecedented rate. Each year, among the total number of deaths 1.24 million deaths occurred due to the vehicle accident Our proposed system provides an efficient, cost-effective and real-time solution to prevent vehicle accident. When reading goes beyond predefined threshold values, an alert gets generated and if a driver does not take some action in specified time then our proposed system will handle the situation by cutting the fuel supply [1].

Parag Parmar et al has discussed Real Time Detection and Reporting of Vehicle Collision. This project aims at developing a system that can detect the occurrence of the accident, inform about the accident to the victim's family on the pre-defined numbers and locates the nearest hospital and inform them about the accident so they can immediately send medical help. This prototype makes use of gyroscope, accelerometer, GPS, GSM and auto dialer. The MPU6050 MEMS sensor detects the occurrence of accident with the help of 3-axis gyroscope and 3-axis accelerometer. With the auto dialer feature, the family of the victim is informed. The GPS module reads the accurate location of the accident spot and this information is sent to the emergency providers [2].

Naji Taaib Said Al Wadhahi et al has discussed Accidents Detection and Prevention System reduce Traffic Hazards using IR Sensors. One of the solutions that is proposed in this paper is using IR sensors and Arduino Uno technology. The system has two phases-Accident Detection and Accident Prevention. The detection phase is carried out using IR sensors that could detect and alert the people by sending SMS using GSM module that contains predefined numbers and accident location using GPS module. Second Phase, Accident prevention is carried out using IR sensors by warning the driver about the neighboring vehicles when the distance between them is beyond the threshold value. Simulation results and Prototype is presented in this paper [3].

Oussama Tahan et al Go Safe: A Power-Efficient Android Application for Road Events Signaling and Notification. With the important emergence of smart mobile technologies and their usage on a large scale, deploying these technologies within Advanced Driver Assistance Systems "ADAS" becomes a needed approach to significantly reduce road casualties. In this paper, we discuss the implementation of Go Safe, a smartphone-based

application and system that helps drivers to signal and receive notifications about roads events. Go Safe application is built with voice-based interaction command and notification. This application uses the network-based localization technique as the main localization approach instead of the GPS receiver to improve power efficiency [4].

R. Sujitha et al has described Automatic Identification of Accidents and To Improve Notification Using Emerging Technologies. In this system considers the most relevant variables that can be characterize the severity of the accidents (variables such as vehicle speed, vehicle location, accelerometer condition) by using embedded systems. This system consists of several wireless network devices such as Global Positioning System (GPS) and ZigBee. GPS determine the location of the vehicle. Proposed system contains single-board embedded system that is equipped with GPS and ZigBee, along with microcontroller that is installed in the OBU vehicle. Based on vehicle motion, report is generated and to be taken by emergency services. If small accident has occurred or if there is no serious danger to anyone's life, then there is the option for alert message can be terminated by the driver or any other near peoples by a switch in order to avoid sends the message to control and save the valuable time of the medical rescue team. To improve the overall rescue process, a fast and accurate estimation of the severity of the accident system offered perfect facts to emergency services as soon as possible and saves precious life of peoples [5].

Supriya Sarker et al has described An Approach Towards Intelligent Accident Detection, Location Tracking and Notification system. Accident creates catastrophic situation for victims, especially accident occurs in highways imposes great adverse impact on large numbers of victims. In this paper, we develop an intelligent accident detection, location tracking and notification system that detects an accident immediately when it takes place. Global Positioning System (GPS) device finds the exact location of accident. Global System for Mobile (GSM) module sends a notification message including the link of location in the google map to the nearest police control room and hospital so that they can visit the link, find out the shortest route of the accident spot and take initiatives to speed up the rescue process [6].

III. USED TECHNOLOGY: -

The planned in-vehicle gadget works utilizing Global Positioning System (GPS) furthermore, Global System for Mobile Communication (GSM) innovation that is quite possibly the most regular ways for vehicle following.

1. GSM (Global System for Mobile Communication): -

We know that GSM helps in controlling the DC motor, stepper motor as well as the Temperature and messaging scheme. By this help we can minimize the need of manual system which is long process and time taken. The efficiency of manual system is also low. But if we talk about proposed system is fully automatic and functioning properly without any interruption.

Hence the automatic system is more efficient and less expensive and more convenient to use so, for more controlling this automatic will be preferred.

2. GPS (Global Positioning System): -

GPS helps in both tracking and navigation purpose Tracking systems is used to keep the track of the vehicle without the intervention of the driver. But a navigation system guides the driver to reach the destination without any type of disruptions. Both tracking and navigation uses the same architecture. As a accident occurs the tracking and detects the accident prone vehicles and sent a message to the rescue team through call or SMS.

IV. FLOW CHART: -

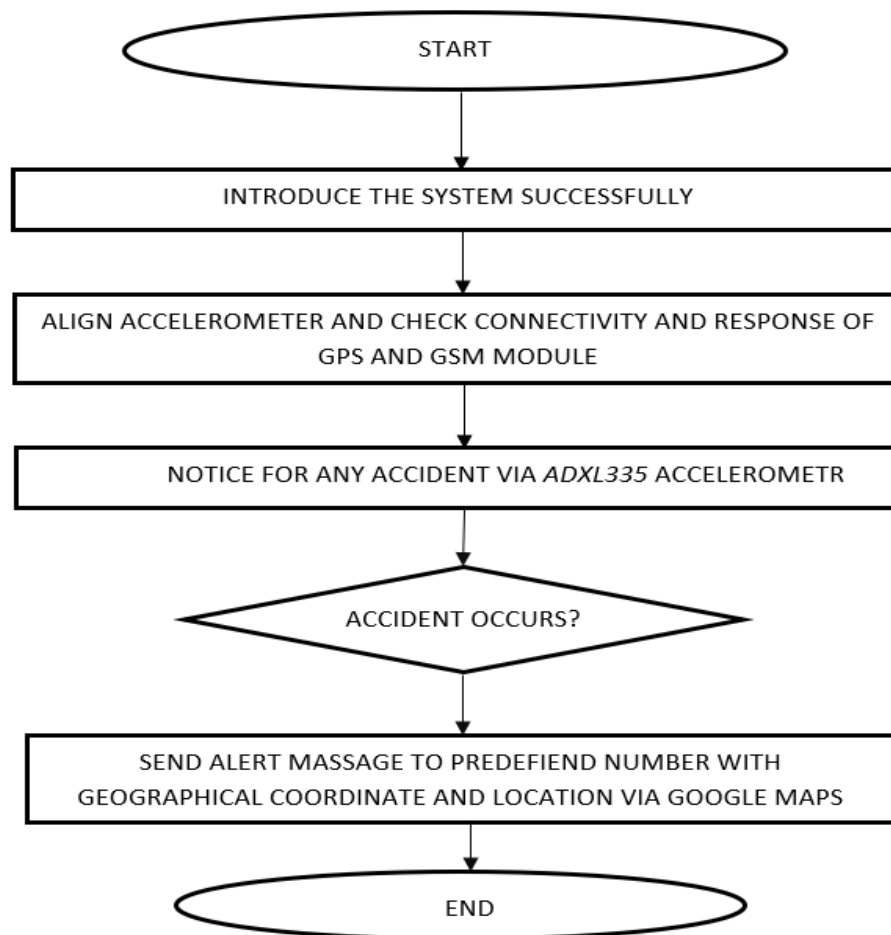


Figure.1 (Flow Chart)

V. PROBLEM FORMULATION: -

accident identification and vehicle informing framework utilizing GSM modem which assists with distinguishing accident by Accelerometer. Accelerometer assists with conveying the message to Arduino regulator. Arduino

regulators send the alarm message through GSM modem with area. On the off chance that the individual meets a little accident, the driver can educate consideration isn't needed by ending the message utilizing switch. This is to try not to burn through the hour of the clinical and police group. GSM modem is like cell phone with no showcase, keypad and speakers. This acknowledges a SIM card, and works over a membership to a versatile administrator.

VI. BLOCK DIAGRAM: -

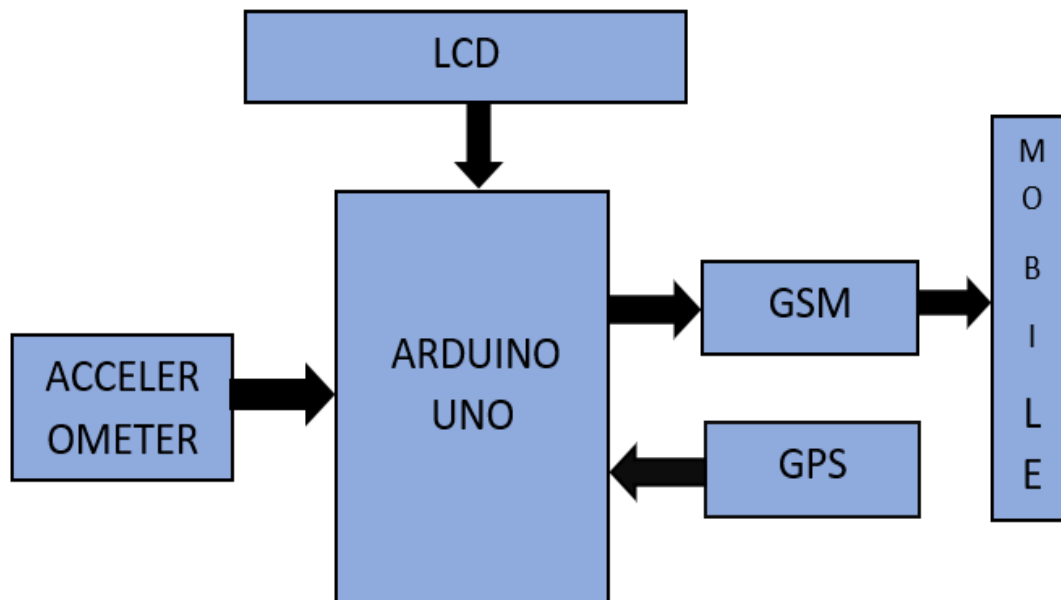


Figure.2 (Block Diagram)

VII. CIRCUIT EXPLENATION: -

Circuit Connections of this Vehicle Accident Alert System Project is straightforward. Here Tx pin of GPS module is straightforwardly associated with advanced pin number D0 of Arduino. Rx pin of GPS Module open. 12 Volt supply is utilized to control the GPS Module.

GSM module's Rx pins of are straightforwardly associated with pin D1 of Arduino. GSM module is likewise fueled by 12v stock. A discretionary LCD I2C information pins SCL AND SDA associated with pin A4 and A5 of Arduino. A Potentiometer is likewise utilized for setting differentiation or brilliance of LCD. Arduino reset pin are utilized as the reset button.

An Accelerometer is included this framework for distinguishing a accident and its x,y, and z-axis ADC output pins are straightforwardly associated with Arduino ADC pin A1, A2, and A3.

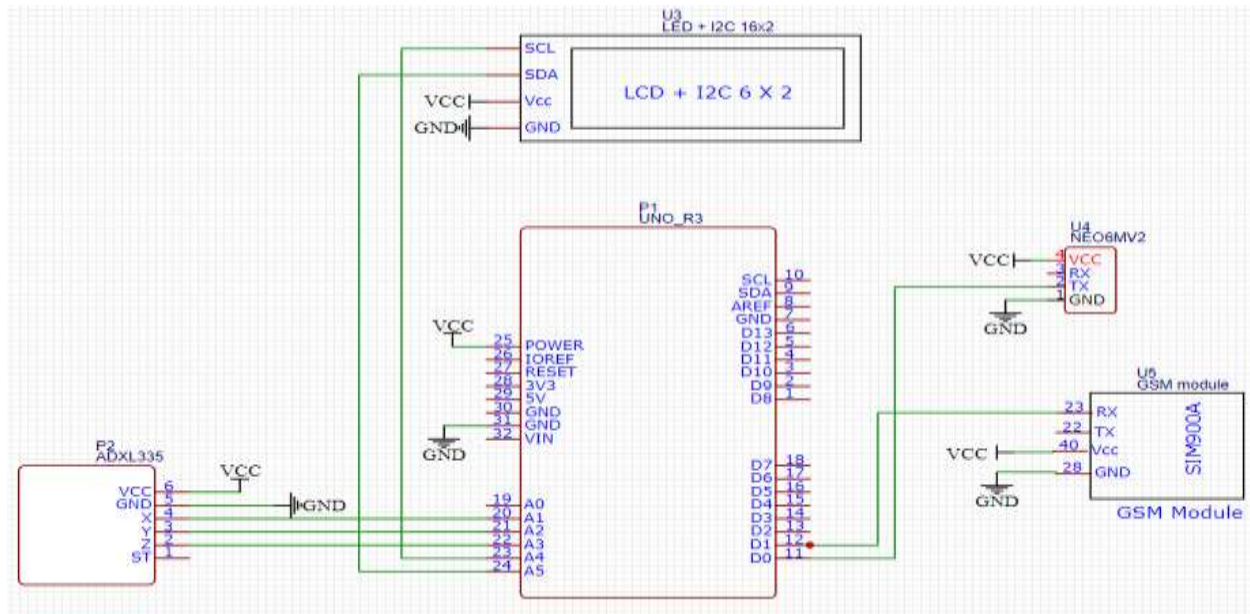


Figure.3 (Circuit Diagram)

VIII. WORKING: -

In this venture, Arduino is utilized for controlling entire the cycle with a GPS Receiver and GSM module. GPS Receiver is utilized for recognizing directions of the vehicle, GSM module is utilized for sending the ready SMS with the directions and the connection to Google Map. Accelerometer in particular ADXL335 is utilized for identifying accident or sudden change in any axis. I2C LCD is additionally utilized for showing status messages or organizes. We have utilized GPS Module 6MV2 and GSM Module SIM900A.

At the point when we are prepared with our equipment in the wake of programming, we can introduce it in our vehicle and force it up. Presently at whatever point there is a mishap, the vehicle gets slant and accelerometer changes his axis values. These qualities read by Arduino and checks if any change happens in any axis. In the event that any change happens, Arduino peruses facilitates by separating \$GPGGA String from GPS module information and send SMS to the predefined number to the police or rescue vehicle or relative with the area directions of accidents place. The message likewise contains a Google Map connect to the accident area, with the goal that area can be handily followed. At the point when we get the message then we just need to tap the connection and we will divert to the Google guide and afterward we can see the specific area of the vehicle.



Figure.4 (Full Picture of our Project)

IX. ADVANTAGES: -

- 1 Easy operation
- 2 Highly secure
- 3 Simple and reliable design
- 4 Isolates both GSM&GPM

X. LIMITATIONS: -

- 1 Network is must
- 2 Ecological conditions
- 3 GPS Location can be incorrect now and again.

XI. RESULT: -

The system distinguishes accident from vehicle and send message through GSM module. The message is gotten by another GSM module. Google Map Module It shows Google map show u definite area of accident and it subtleties. It gets detail SMS from accident area. Subsequently there is little variety in the directions, starting worth of scope and longitude are same yet partial worth changes with little contrast

XII. SCOPE AND FUTURE WORK: -

A remote webcam can be included this for catching the pictures which will help in giving driver's help. This can likewise be bettered by locking every one of the brakes naturally if there should be an occurrence of accident. Generally in accident, it gets genuine as the drivers let completely go and neglect to stop the vehicle.

XIII. CONCLUSION: -

Our thought is utilized to recognize accident and computerize crisis help administrations. Thus, system is sending SMS to the closest Emergency help specialist co-op from accidents area. The popularity of vehicles has likewise expanded the traffic dangers and the street accident. Life of individuals is under high danger. This is a direct result of the absence of best crisis offices accessible in our country. A programmed caution gadget for vehicle accidents. This plan is a system which can recognize accidents in fundamentally less time and sends the essential data. This alarm message is sent to the salvage group in a shot time, which will help in saving the significant lives. A Switch is additionally given to end the sending of a message in uncommon situation where there is no loss, this can save the valuable season of the clinical salvage group. At the point when the accident happens the alarm message is sent consequently to the salvage group and to the police headquarters and the message is sent through the GSM module.

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