



Vehicle accident and alert with datalog system

Devadharshini

devasakthivel1999@gmail.com

Avinashilingam University, Coimbatore, Tamil Nadu

Pavithra

pavithrasubramaniyam3@gmail.com

Avinashilingam University, Coimbatore, Tamil Nadu

Praveena

maheswaripraveena@gmail.com

Avinashilingam University, Coimbatore, Tamil Nadu

Summia Parveen

summiaparveen.col@gmail.com

Avinashilingam University, Coimbatore, Tamil Nadu

ABSTRACT

Now-a-days lot of accidents happens on highways due to increase in traffic and also due to rash driving of the drivers of the vehicle. Vehicle accident and alert with data log system presents review on the accident detection techniques and future possibilities in this field. And in such situations like that the family members or the ambulance and police authority is not informed in time. This results in delaying the help reached to the person suffered due to accident on the roads. Road accidents play the major part of the accidents in our world. The purpose is to find the vehicle where it is located by means of sending a message using a system, which is placed inside of vehicle system and ambulance. The message is sent to police station and authorized family member. Using radio frequency method, we can find the nearest ambulance. We can also save the accident data information in the cloud for later access for our use. Our vehicle accident and alert with data log system with GPS and GSM is designed to avoid such situations.

Keywords: GSM, GPS, Arduino UNO, Message Alert.

1. INTRODUCTION

Road accidents play the major part of the accident deaths all over the world. Due to the high demand of automobiles traffic hazards and the road accidents has also increased. The main objective is to detect the accident if occurred and inform the respective authority through wireless technologies such as GSM and GPS. Accident detection system enables to recognize the location of the accident and easily to reach the location of the accident. When an accident occurred the accident information system will get activated and message will be sent to respective authority. There will be loss of life due to the delay in the arrival of the ambulance but, most of the times we may not be able to find the accident location accurately because we don't know where accident happen especially during night time. In order to give treatment for injured people, first we need to know where the accident happened through location tracking and sending a message to respected numbers. The purpose is to find the vehicle where the accident had occurred and to give treatment for injured people. First we need to know where the accident happened through location tracking and sending message to your related one. Here we used programming language for better accuracy and GPS and GSM modules, which helps to trace the vehicle anywhere. According to this project when a vehicle meets with an accident the vibration sensor will detect the vibrations and signal and sends it to microcontroller and then the microcontroller sends the alert message through the GSM to an authorized mobile numbers and others etc. Here we are using radio frequency, where transmitter is placed in the vehicle and receiver in the ambulance. It helps to find the nearest ambulance and reduce the delay time. And we store the accident data in the cloud for further access.

2. RELATED WORK

Jazim Baramy et al^[1], Proposed a concept on Accident detection & alerting system. In this they have discussed that, Security in travelling is a primary concern for everyone. People lose their lives because of poor emergency facilities in the case of unattended accidents. Detecting the accident before hand on the roads is not possible but at least the after effects can be minimized. The system ensuring making emergency facilities available to accident victims as early as possible by letting relatives, hospital or a rescue team know the accident spot with the help of this module embedded in the vehicle. Sensors are attached to the microcontroller. When an accident occurs, the sensor gets activated and the GSM system will send notifications to the nearest hospital, police station or kins of the victim with the location coordinates where the accident has occurred. With the help of navigation system, GPS locates the position of the vehicle where accident has occurred anywhere at anyplace.

Namrata H. Sane et al^[2], Proposed a concept on real time vehicle accident detection and tracking using IOT. lot of accidents on highways are happening due to increase in traffic and also due to rash driving. In many situations the family members or the

ambulance and police authorities are not informed in time. This results in delaying help reaching the accident victim. Also they have designed a system to send message to the pre-defined number along with the location of the vehicle.

Amrutha Madhusan et al^[3], Proposed a system on Road accident detection and Reporting. In this survey they have observed that, the road accident is a major issue of concern. All the modern developments in the field of vehicle design, road lane design and management, accidents do occur. When an accident happens and taking immediate action with respect to emergency health care of victims by informing an emergency center about the accident on time plays a vital role in human safety and road traffic management. They have studied various methods to achieve this and also they have said that, each method has its own accuracy and limitations.

Hamid M. Ali et al.^[4], proposed a concept on accident detection and notification System using smartphone. In this study they have discussed, the ability to detect traffic accidents using smartphones because of the advances in the processing power and sensors deployed on smartphones. Smartphone based accident detection systems is based on high speed of the vehicle and the G-Force value to detect an accident. References assure that 90% of road-traffic accidents occur at high speed of the vehicles.

Venkatesh Alwarsamy^[5], has proposed an idea on programmed mishap notice and seriousness estimation. He has examined the new correspondence advances coordinated into current vehicles that offer an open door for better help to individuals harmed in auto collisions and furthermore discusses a framework to think about most significant factors, (for example, sensors) that can describe the seriousness of mishap.

A. Sriram^[6] have proposed an idea on clever framework for mishap warning. Right now, are informed consequently utilizing sensors alongside the wellbeing state of the travellers? This framework sends the traveler wellbeing condition as MMS, with the goal that the salvage group may think about the state of the traveller to carry them to medical clinic as ahead of schedule as conceivable which can be indispensably significant for some continuous applications.

Jingshu Wu^[7], proposed an idea on The Effect of Earlier or Automatic Collision Notification on Traffic Mortality by Survival Analysis. Right now talked about the impacts of prior crisis therapeutic administrations, programmed impact warning (ACN) and EMS appearance on traveller/driver survivability inside a brief timeframe outline following car accidents. Endurance investigation procedures are utilized right now car accident and EMS information are firmly connected with time. The Kaplan-Meier estimator and life bends are applied to look at the endurance rates between at least two conditions. The Weibull model with three parameters is utilized to anticipate mortality after some time; besides, the Cox corresponding peril model investigates numerous hazard factors identified with traffic mortality.

Montaser N. Ramadan^[8], proposed an idea on the Implementation of a proficient car security framework for hostile to burglary utilizing an inserted framework fitted with a GPS and GSM. Right now, through the framework with vehicles and decides their present areas and status utilizing Google Earth. Client tracks the situation of focused vehicles on Google Earth by utilizing GPS locator, the objective current area is resolved and sent, alongside different parameters got by vehicle's information port, by means of Short Message Service (SMS) through GSM systems to a GSM modem that is associated with PC or PC.

R. Rathinakumar^[9], proposed an idea on Wireless Accident Information System Using GSM and GPS. In that they have examined that, the planning of a Smart Display and Control system which will screen the zone and keeps up the predetermined speed in the zone levels incorporates mishap identification and data sending module.

Fogue M^[10], proposed an idea on Prototyping of a programmed warning plan for car crashes in vehicular systems. Right now examined, a framework, which requires every vehicle to be supplied with an On-Board Unit answerable for identifying and detailing mishap circumstances to an outer Control unit that evaluates its seriousness, distributing the important assets for its help. The improvement of a model dependent on off-the-rack gadgets shows that this framework could diminish eminently the time expected to send the crisis benefits after a mishap happens.

3. PROPOSED SYSTEM

The Accident Detection and Alert System utilizing Arduino is extremely adequate and qualified to be executed in the vehicle extraordinarily in creating nation like Nepal, India, Bangladesh and so forth. Mishap is expanding because of increment in number of vehicles subsequently consistently the quantity of death is expanding. The Accident Detection and Alert System using Arduino prevents the accident since this framework send the message alarm to the clinic or police headquarters. The message alert incorporate longitude and latitude.

4. METHODOLOGY

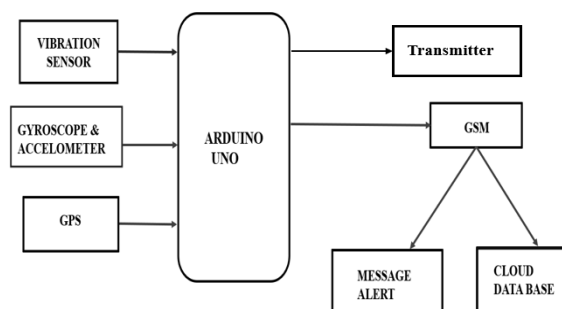


Fig. 1: Block diagram of vehicle accident

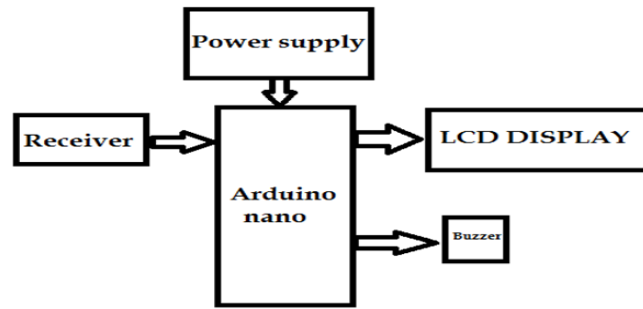


Fig. 2: Block diagram of ambulance

4.1 Arduino

Arduino is a open-source hardware tool and software tool which is used in electronic prototyping platform and for the building of digital devices. The arduino are licensed under the General Public License (GNU) , lesser General Public License (LGPL) or the GNU General Public License (GPL), for permitting the manufacture of Arduino boards and software distribution by anyone. Arduino boards are available commercially as pre assembled form or do-it-yourself kits software distribution by anyone. Arduino board is designed to use a variety of microprocessors and controllers on them. Microcontroller boards are equipped with set of digital, analog input and output pins that may be interfaced to various expansions of boards or breadboards (shields) and other circuits. The arduino boards have many serial communications interfaces, including Universal Serial Bus (USB) on models, which are used for loading programs from computers that are for personal use. These microcontrollers is programmed using C and C++ and other programming languages. In addition to using this, the Arduino provides an integrated development environment based on the Processing language project.

4.2 Vibration Sensor

Vibration sensor used to measure the vibration whose internal structure is like a metal ball, which is fixed in a special spring as pole, around it, is the other pole. When the vibration cross the threshold value, the two poles are connected so as to judge the shock occurs. Vibration sensor outputs digital signal.

4.3 GPS

The Global Positioning System is a system of satellite-based radio navigation system, computers which is able to determine the latitude and longitude. It is a global navigation satellite system that provides geo location and time information to a GPS receiver anywhere on the Earth by calculating the time difference for signals from different satellites to reach the receivers.

4.4 Gyroscope

Gyroscope is a device used for measuring and maintaining the angular velocity. Gyroscope is like a spinning wheel or a disc where it will assume the orientation by itself. According to the conservation of momentum, the orientation of the axis is unaffected by tilting while rotation. It is based on operating principles such as the microchip-packaged gyroscopes, which is found in electronic operating devices.

4.5 GSM

GSM stands for global system for mobile communication. it is digital cellular technology used for transmitting mobile voice and data services. The concept of GSM was emerged from a cell based mobile radio system at Bell Laboratories. . GSM is the widely accepted standard in telecommunication and it is implemented globally. GSM is also called global locating switched operating system that divides each 200 kHz channel into eight 25kHz time slots, GSM operates on the mobile communication bands 900MHz and 1800 MHz in the most parts of the world. GSM makes use of narrowband time division multiple access technique for transmitting signals. it has improved spectrum efficiency. it provides basic to advanced voice and data services including roaming services. GSM makes the data digitized and compressed. then sends it down through a channel with two other streams of user data, each of its own.

4.6 Transmitters and Receiver

The 433MHz remote module is one of the modest and simple to utilize modules for every single remote undertaking. These modules can be utilized uniquely two by two and just simplex correspondence is conceivable. Which means the transmitter can just transmit data and the collector can just get it, so you can just send information from direct A toward B and not from B to A. The module could cover at least 3 meters and with appropriate reception apparatus a force supplies it can reach up to 100 meters hypothetically. In any case, for all intents and purposes we can scarcely get around 30-35 meters in an ordinary test condition. The module itself can't deal with its own, as it required an encoding before being transmitter and interpreting in the wake of being gotten so it must be utilized with an encoder or decoder IC or with any microcontroller on the two closures. The easiest method to utilize it is with the HT12E Encoder and HT12D Decoder Citeh module utilizes ASK (Amplitude move keying) and henceforth it's anything but difficult to interface with microcontrollers also.

5. WORKING

- Interfacing GPS to Arduino and getting the scope and longitude information.
- Interfacing accelerometer and vibration sensor to Arduino and building up the equipment arrangement to identify the vehicle point and vibration information and send to the controller.

- Interfacing GSM to Arduino and setting the edge point an incentive to the controller in the event of edge and vibration surpasses the level scope and longitude is sent through message and further more refreshed in cloud.
- Interfacing RF with Arduino so the mishap identified will be sent to close by ambulance
- Preparing the web interface to gather all the vehicle mishap information

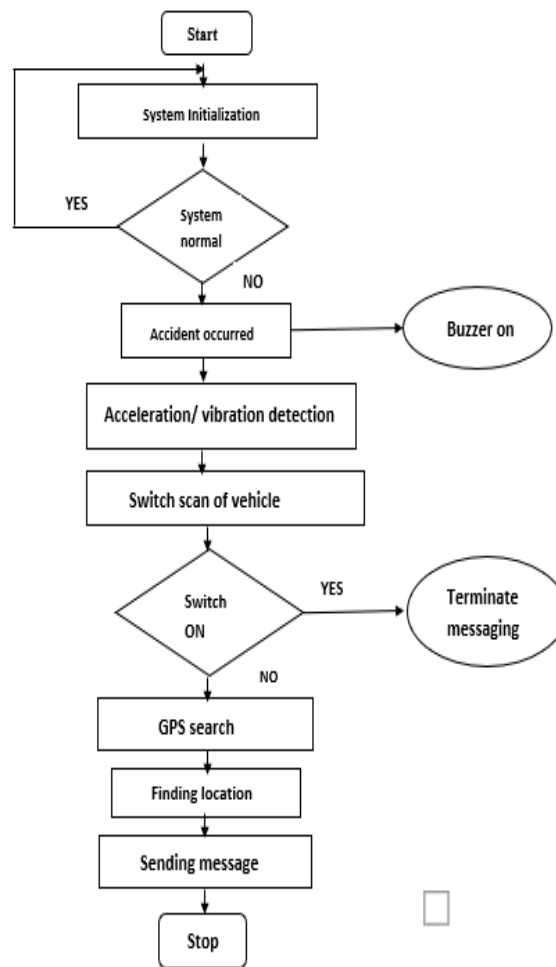


Fig. 3: Flow chart

6. FUTURE SCOPE

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 all the brakes consequently if there should arise an occurrence of mishap. For the most part in mishaps, when the drivers lose control and neglect to stop the vehicle. In such cases, the vibration sensor will be activated as a result of the vibrations got and furthermore handled by the processor. The processor must be connected to the gadgets, which can bolt the brakes when activated. With this improvement, we can stop the vehicle and can debilitate the effect of the mishap.

7. CONCLUSION

The framework is getting progressively significant in enormous urban communities and it is more verified than different frameworks. It is totally incorporated so that once it is executed in all vehicles; at that point it is easy to follow whenever from anyplace. The greatest preferred position of our task is, at whatever point the sensor is initiated we will be promptly getting the affirmation from GSM modem to our respective numbers, which are put away in cloud, immediately.

8. REFERENCES

- [1] P. D. Patting, N. R. Kolhare, "Smart Onboard Public Information System using GPS and GSM Integration for Public Transport", International Journal of Advanced Research in Computer and Communication Engineering, Vol. 1, Issue, July 2012.
- [2] Varsha Goud "Vehicle accident automatic detection and remote alarm device", International Journal of Reconfigurable and Embedded Systems 1 (2),49,2012.
- [3] Sri Krishna C Varma, Poorest. Al, "Automatic Vehicle Accident Detection and Messaging System Using GPS and GSM Modem", International Journal of Scientific & Engineering Research, Volume 4, Issue 8, 2013.
- [4] C PrakharSunithaAnita "Automatic vehicle accident detection and messaging system using GSM and GPS modem "International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering,2014.
- [5] V praveena,Adithya raam sankar,S jeyabalaji,V srivtsan"Efficient accident detection and rescue system using ABEONA algorithm",International Journal of Emerging Trends andTechnology in computer science ,vol 3,2014

- [6] Aboli Ravindra wakure,privanka pradeepkumar, “Vehicle accident detection and reporting system using GPS and GSM”,International journal of engineering research and development 10(4),25-28,2014
- [7] Sachin M S, Prasanna P ,“Automatic vehicle accident detection and traffic control system”, International Journal on Recent and Innovation Trends in Computing and Communication, Vol. 3 Issue 6, 2015.
- [8] D. Kumar, S. Gupta et. al, “Accident Detection and Reporting System Using GPS and GSM Module”, Journal of Emerging Technologies and Innovative Research, Volume 2, Issue 5, 2015.
- [9] Prasad P.Pingle,Amey S.Marathe "Intelligent Vehicle Accident Detection and Notification System Using Smart Sensor and GPS Technology”, International Journal of Engineering,vol-2,Issue-4,2016.
- [10] NH Sanet,S Patil,SD Thakare "Real time vehicle accident detection and tracking using GPS and GSM",International Journal on Recent and Innovation Trends in Computing and Communication,2016.
- [11] S George Fernandez,R Palanisamy,K Vijayakumar "GPS and GSM Based Accident Detection And Auto Intimation",Indonesian Journal of Electrical Engineering and Computer Science,2018.
- [12] Bhavana Patil,Harsh Amrite,Kailas Gaikwad "Smart Car Monitoring System Using Arduino",International Research Journal of Engineering and Technology 5 (3),2018.
- [13] R Thrivikumar, N akash, C kaarthikeyan,J rajaskumar, “User alerting system for vehicle accident detection system”, International journal of advance ideas and innovation in technology(IJARIIIT),vol.2,2018
- [14] BK Dar,MA Shah,C Maple "Delay-Aware Accident Detection and reporting system using fog computing",International Journal in Computer Science and Engineering,volume 4,2019.