

ALPHA-ACCIDENT LOCATION PATIENT HEALTH ASSISTENCE

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Abstract - Speed is one of the basic reasons for vehicle accident. Many lives could have been saved if emergency services could get accident information and reach in time. This project deals with accident detection system when the accident occurs it uses various components and alerts the Rescue team for help. An efficient automatic accident detection with an automatic notification to the emergency service with the accident location is a prime need to save the precious human life. The proposed system deals with accident alerting and detection. It reads the exact latitude and longitude of the vehicle involved in the accident and sends this information to nearest emergency service provider. The goal of the project is to detect accidents and alert the rescue team in time.

1. INTRODUCTION

The development of a transportation system has been the generative power for human beings to have the highest civilization above creatures in the earth. Automobile has a great importance in our daily life. We utilize it to go to our work place, keep in touch with our friends and family, and deliver our goods. But it can also bring disaster to us and even can kill us through accidents. Speed is one of the most important and basic risk factors in driving. It not only affects the severity of a crash, but also increases risk of being involved in a crash. Despite many efforts taken by different governmental and non-governmental organizations all around the world by various programs to aware against careless driving, yet accidents are taking place every now and then. However, many lives could have been saved if the emergency service could get the crash information in time. A study by Virtanen et al. shows that 4.6% of the fatalities in accidents could have been prevented only if the emergency services could be provided at the place of accident at the proper time. As such, efficient automatic accident detection with an automatic notification to the emergency service with the accident location is a prime need to save the precious human life.

1.1 PROBLEM STATEMENT

There are many applications in present which are used to search nearby hospitals, and for any other location based services but it's not integrated on a single platform

so user is facing many problems in this scenario and there is not a single application for first aid kit in case of any emergency.

1.2 OBJECTIVE

The objective is to develop an application that will provide help to the users in case of emergency. It helps by allowing the user to locate the nearest Emergency places, to send automated message with location sensing feature to find way to a preset location and to provide common health information.

1.3 SCOPE

The proposed system will check whether an accident has occurred and notifies to nearest medical centers, police station and registered mobile number about the place of accident using GSM and GPS modules.

2. LITERATURE SURVEY

[A]Title:- IOT based automatic vehicle accident alert system

Authors:- Nazia Parveen, Ashif Ali, Aleem Ali Published (First Online): 02-05-2021, Publisher Name : ResearchGate

Summary:- The main purpose of this system is to increase the chances of life of a person met with an accident. This device helps the paramedics to reach to the accident location with in the minimum time frame as it provides the alert message as soon as the accident occurs. So, it also helps in minimizing the communication delay and the person met with the accident can be treated timely. It plays a very important role in identifying the accident locations that occurs in midnights.

[B]Title:- Identification of accident and alerts using iot based system

Authors:- Saravanan Alagarsamy, S.Ramkumar, G.Vishnuvarthanan Govindaraj, Theepikashree, Published (First Online): 15-04-2020., Publisher Name : ResearchGate

Summary:- The suggested IOT based automatic vehicle accident identification and alerting system. This method gathers the accident information in less time and forwards the information immediately to the nearby first aid center. The mechanism involved in the method is very reliable and easy. In the existing techniques either the GPS or the SMS mechanism is used to deliver the accident information. The proposed technique combined both the concept of global positioning and short message service either if any one of the method fails, even in that case the user or the vehicle information will reach to the control room at the exact time for saving the life of the injured peoples in the accident.

[C]Title:- Accident Detection and Alert System

Authors:- T Kalyani, S Monika, B Naresh, Mahendra Vucha, Published (First Online): March 2017., Publisher Name : IJITEE

Summary:- 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.

[D]Title:- Automatic Accident Alert System

Authors:- V. N. Ghodke, Shruti Navanath Lokhande, Kiran Shivaji Ghule, Mandar ManoharPublished (First Online): June 2019., Publisher Name : IJSDR

Summary:- The road accident can be detected efficiently by using some particular parameters. Our proposed approach capable of deciding whether a situation is an accident or not and if so, then immediately traces nearest police station as well as hospital and send emergency alert message for help. Besides, we have demonstrated the reduction of false alarm in a greater extent compared to other previous works. Though the system requires a continuous network connection, but this it is very much cost effective and can be applied significantly in the practical world.

3. IMPLEMENTATION

The below diagram shows the design and sequence diagram of accident detection and messaging system. Here Arduino UNO is used as controlling unit, communicating between modules for better information transformation at time. Accelerometer can be used for detecting the collision direction from tri-lateral axis movements. Gyroscope can be used for rollover collisions after a threshold of roll and

pitch values, the weight and centre of gravity of vehicle plays an important role in rollover. The device also confirms from vibration sensors which detects the collision after a threshold voltage increase. Then a buzzer is provided to abort the false detection of accident to the passenger. Within of limited time of buzzer signal the GPS module collects the coordinates from Google Module. These co-ordinates nearby hospitals are alerted for emergency rescue call to passenger. The hospital approves the accident by verifying the accident at specified location and confirms the accident. The saved personal members of family are informed regarding the accident through GSM module.

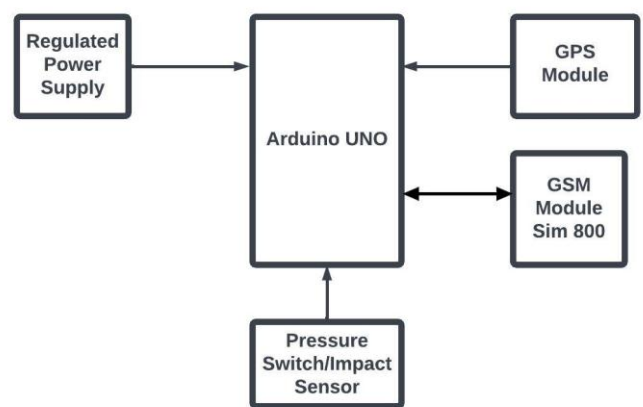


Fig 1: Design

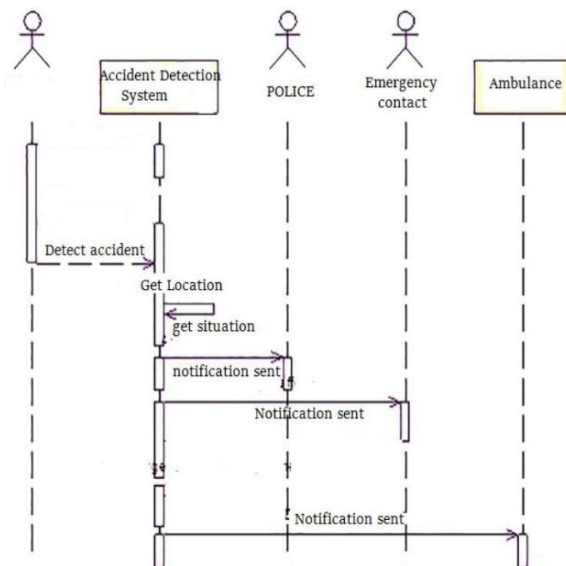


Fig. 2: Sequence Diagram

4. METHODOLOGY

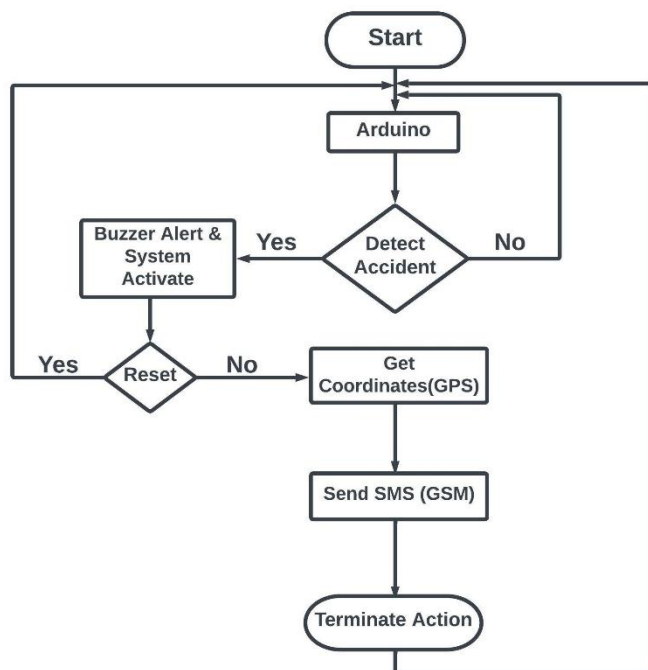


Fig. 3: Flow Chart

4.1 ARDUINO UNO

The Arduino UNO is a widely used open-source microcontroller board based on the ATmega328P microcontroller and developed by Arduino.cc. The Arduino is the major control unit to detect or alert when an accident occurs. It collects the data from vibration sensor, GPRS and GSM modules and reflects the output either in display system or through a message. Here impact sensor plays a major role. This sensor will receive the impact of the vehicle which in turn acts as an accident detection module. Arduino gathers the information from all other modules and sends the message to the receiver through GSM module.



Fig. 4: Arduino UNO

4.2 GPS MODULE

GPS Module is used to find the location on the earth the whole is divided into some coordinates where the location can be easily captured by a module called GPS module. Here the GPS used is SIM28ML. This GPS module will find the location of the vehicle and the information fetched by the GPS receiver is received through the coordinates and the received data is first sent to Arduino and the information is transmitted to the saved contact through GSM module. The frequency is operated in the range of 1575.42 MHz and the output of GPS module is in NMEA format which includes data like location in real time.

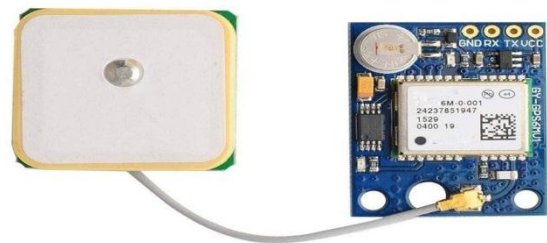


Fig. 5: ULTRASONIC SENSOR

4.3 GSM MODULE

For providing communication between the GPS, GSM and the allocated mobile number GSM SIM900 module is preferred. The name SIM800 says that, it is a tri band work ranging a frequency of 900MHz to 1900 MHz such as EGSM900 MHz, PCS 1900 MHz and DCS 1800 MHz. Receiving pin of GSM module and transmitting pin of GPS module are used for communication between the modules and the mobile phone.



Fig. 6: GSM MODULE

4.4 IMPACT SENSOR

When the front impact sensors sense a crash situation of the car, they send electric signals to the SRS. The SRS then compares this data with the car's yaw rate and, if needed, sends signal to deploy the necessary airbags via the airbag pressure switch and seatbelt restraints.

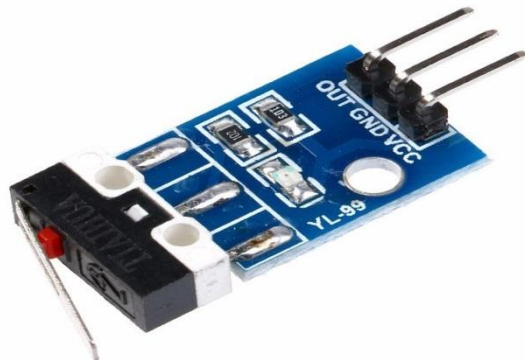


Fig. 7: GSM MODULE A GSM

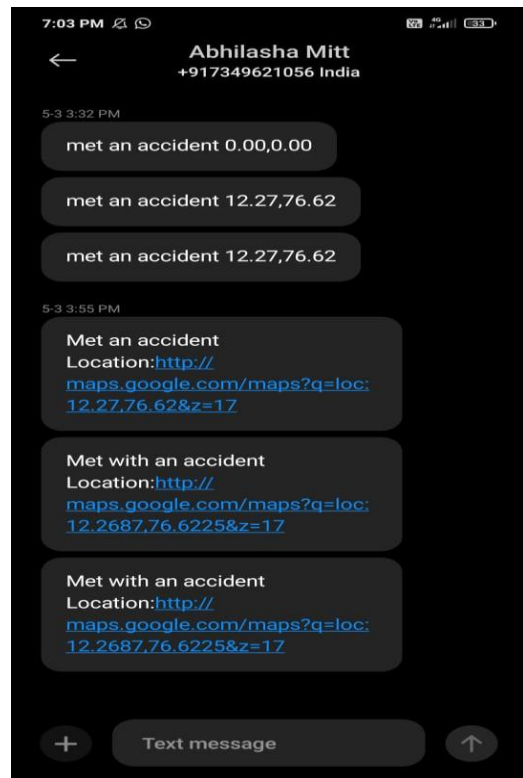


Fig. 9: Alert SMS

5. RESULTS

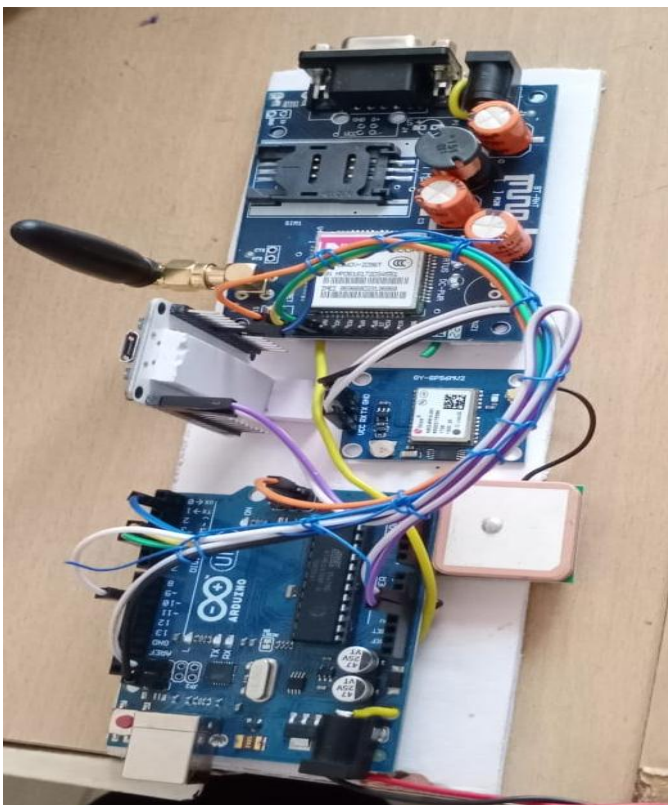


Fig.8: Interfacing controller with all other modules

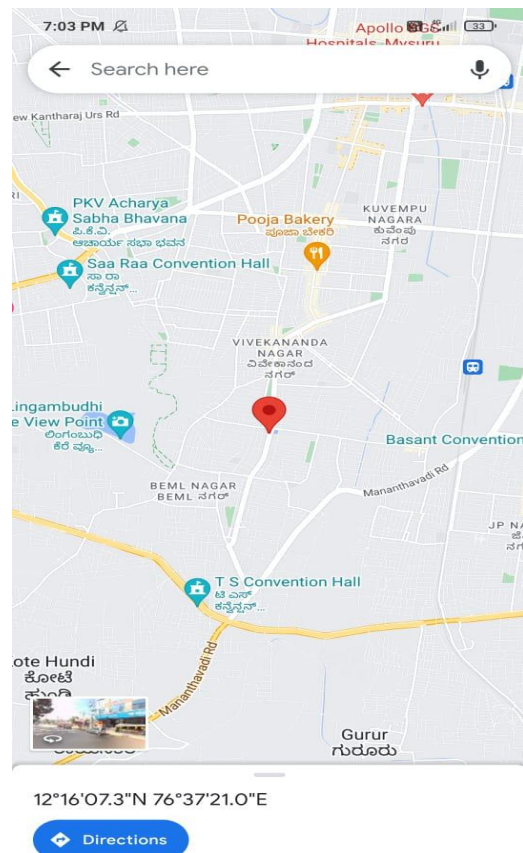


Fig. 10: LOCATION OF OCCURRED ACCIDENT

6. CONCLUSION

A system to detect an event of accident has been developed. The proposed system deals with accident alerting and detection. It reads the exact latitude and longitude of the vehicle involved in the accident and sends this information to nearest emergency service provider. Arduino helps in transferring the message to different devices in the system. 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.

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