Accident Identification and Alert System using GPS

Prof. Sujata S Kadu[1]
Dept. of Inforamation Technology
Terna Engineering College
Nerul, Navi Mumbai

Anuja Londhe[2]
Dept. of Information Technology
Terna Engineering College
Nerul, Navi Mumbai

Sneha Sharma[3]
Dept. of Information Technology
Terna Engineering College
Nerul, Navi Mumbai

Shivani Anand[4]
Dept. of Information Technology
Terna Engineering College
Nerul, Navi Mumbai

---***---

Abstract - *The GPS based Accident Alert system aims at providing immediate aid to the person driving whenever an accident occurs. The traffic in cities is increasing at rapid rate and the number of accidents too. This project will help to decrease the rate of accident as it will detect the accident and provide an alert to the family member as well as nearby police control rooms and hospital. This existing systems also focuses mostly on prevention of accident rather than taking instantaneous actions after an accident; so that lives could be saved.*

1. INTRODUCTION

Vehicle use has increased over the last few decades. Day-to-day growing use of cars has increased the traffic hazards and road accidents. The country's emergency services are not adequate and there is a shortage of evidence of immediate medical assistance and, as a result, people's lives are at high risk. Living environment considerations are not only about people's lifestyle, but also about transportation. If an individual drives a vehicle and he / she encounters an accident, it may be that the individual may suffer minor injury or that the individual may also encounter a fatal accident. This system is a solution to the problem as it serves as an accident detection and warning device that gathers and sends information about the vehicle that has encountered an accident, and transmits it to the nearest police control room and ambulance. This project concerns a system that detects an accident and alerts the nearest rescue team and emergency contacts to the accident. The system is going to be accidents. The system will raise an alarm when an accident is detected.

2. PROBLEM STATEMENT

The main problem that we face every day is the accidents on the streets, the highways. The number of accidents is increasing due to population growth, the high speed of the new advanced cars and the use of mobile telephones while driving for calling or text. Many people have died in a disused highway because they have an accident, and no one is helping. Another scenario where the person who has the accident is unable to reach out for help or call the ambulance because he / she was injured, either he / she is not awake and helpless or the accident occurred on an inaccessible road or away from the neighborhoods. However, if the incident occurs in the area, where there are plenty of cars in the street that can create crowding if the emergency services are late. We find the time to be a very important element in preserving the lives of others. Owing to lateness we could lose many lives. Consequently, the problem in this work has to do with reducing the significant number of deaths resulting from the traffic accidents and caused mainly due to the lack or latency of assisting the injured person.

3. METHODOLOGY

This program is a conceptual model of the Accident Warning and Vehicle Tracking System using GSM and GPS modem and the functioning of the Hydra board in the following steps will be done:

- The sensor will first sense an incident, and send the microcontroller (hydra) its output. The unit transmits information to the micro-controller.

- Technology such as GPS, recognizes accident location. The GPS senses a vehicle's latitude and longitudinal position.

- The vehicle's latitudes and longitude location is sent as a message via the GSM, the intimate about an incident to the hospital and police department or other emergency communication to save lots of time and improve somebody's chance of surviving.

- Whenever an incident has occurred, the location is identified and a message is sent to the emergency contact numbers previously saved.
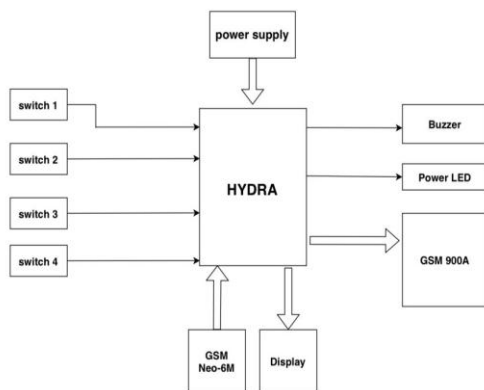
Fig -1: Block Diagram

4. HARWARE DESCRIPTION

4.1 GSM MODULE:

GSM is classified as a tool and is meant to send a message for handling and monitoring transformer charges from everywhere. It possesses its own deterministic type. GSM is used by sending a message through GSM modem to control and regulate the DC motor, stepper motor, temperature sensor, and solid state relay Hence no need to waste time through manual operation and transportation. This is also regarded as highly efficient mobile communication, and can be useful in manufacturing structures, automobiles, and computers which can be perated from anywhere else. This is both highly efficient and less expensive; thus more favored for this form of handling GSM. Connection is chosen between GPS, GSM and allocated cell number card GSM SIM900. The GSM module receiving pin and the GPS module transmitting pin are used to connect with the cell phone between the devices.

Fig -2: GSM Module

4.2 GPS MODULE:

The entire is divided into uncertain directions to pinpoint the location on Earth where a device called a GPS program can conveniently understand the location. The GPS module will classify the car's position, and the details obtained from

the GPS receiver will be retrieved from the coordinates and the data received will be transmitted to hydra for the first time, and the GSM module will forward the details to the touch saved. The software is more or less identical, be it navigation device or monitoring system. When an accident occurred anywhere then GPS system tracks the vehicle's position and sends the information through GSM to the particular person by alerting the person via SMS or a call. GPS module sends real-time tracking-related data and sends too many NMEA-formatted data.

Fig -3: GPS Module

4.3 HYDRA MICROCONTROLLER:

Hydra is an ARM Cortex-M3 affiliate, mostly based on a steam-powered development board with LPC1768 microcontroller. It comes with Prime Framework (a suite of code libraries) and is suitable for beginners, like advance embedded developers, hobbyists. Hydra is standard style making any embedded and artificial intelligence instructional applications suitable. This can be used in comes that needs high computing power and as drones, wheeled robots, x-y plotters, 3D printers want to capture sensing aspect information quickly and accurately.
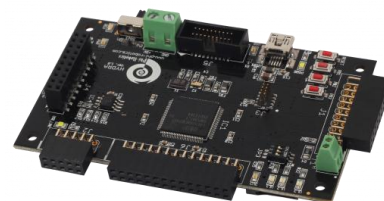

Fig -4: Hydra Microcontroller

5. DESCRIPTION/PROPSED SYSTEM

The framework explains the accident warning mechanism in this project. The microcontroller used in this project is Hydra, which is used to monitor all the modules in the circuit. The other two major elements other than microcontroller are module GPS and module GSM. The GPS continuously gathers satellite input data and stores values of latitude and longitude, i.e. the coordinates. The vehicle's latitude and longitude are transmitted using GPS module,

and GSM sends the transmitted co-ordinates to the user via SMS. The system also stores a collection of emergency contact numbers and their SMS sending information, and these contact details can be updated or changed as needed. When the person driving the vehicle encounters an accident the sensor detects the accident and further sends the details to the controller and the vehicle's location is received via GPS module and the vehicle's coordinates are sent to the GSM module. The information received is sent to module Hydra. Information about the received coordinate is collected and sent via SMS to the respected person, hospital and police station.

6. ADVANTAGES

- This system is an immediate aid system.
- Monitors all hazards and threats.
- Alert messages are sent to the nearby hospitals and police stations.
- It is an affordable system.
- Can be used in any kind of vehicle.
- The alert message regarding the accident is sent automatically.
- This system can be used for a social cause.
- It does not need any operation manually.

7. RESULT

This system is working properly , when an accident is takes place a alert message is sent to given emergency contact numbers saved in the system number. Thus help is sent immediately to the location received in terms of latitude and longitude. This way many life at risk could be saved.
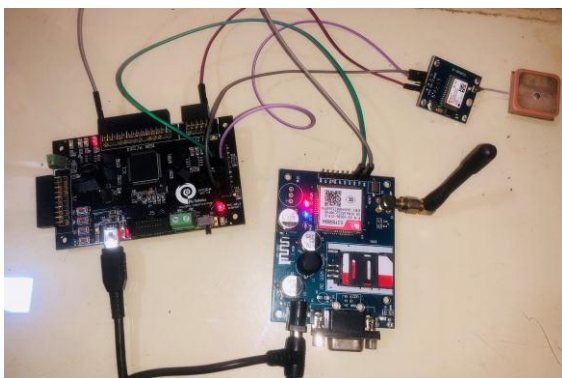
Fig -5: Working module of accident detection and alert system
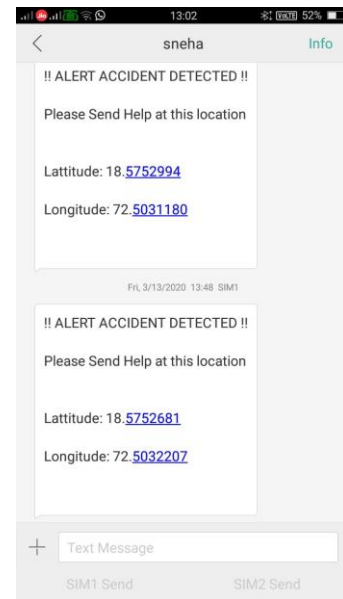
Fig -6: Alert SMS Received
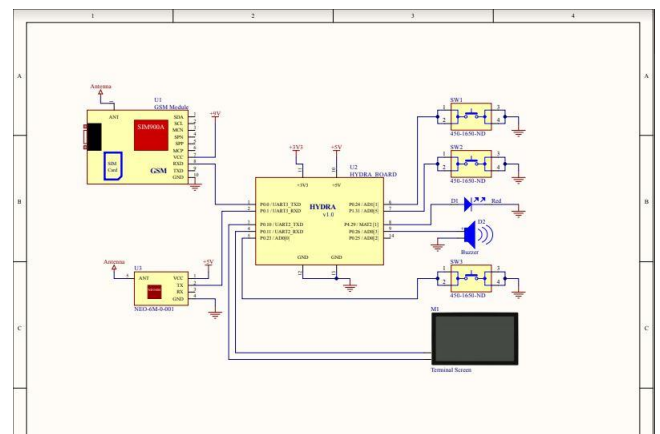
Fig -7: Circuit Diagram

8. CONCLUSION

The proposed program conveys the accident detection message and provides user a warning. Hydra module is the key component of the network and helps to communicate with other modules that are used in the network. GPS and GSM, by correctly exchanging messages between them. The sensor used will be triggered and the alert will be sent to the registered numbers when an incident happens, which will include the police station and hospital contact number. The geographic position can be monitored with GPS module, and user can be provided with immediate assistance and great mishap can be avoided.

REFERENCES

[1] "Accident Detection and Alert system." by Kalyani, S Monika, B Naresh, Mahendra Vucha , *International Journal of Innovative Technology and Exploring Engineering(*IJITEE) March 2019.

[2] 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.

[3] R. Ganiga, RohitMaurya, Archana Nanade,"Accident detection system using Piezo Disk Sensor", International Journel of science, Engineering and Technology Research(IJSETR) volume6,Issue3,March 2017,ISSN 2278-7798.

[4] HeliaMamdouhi, SabiraKhatun, JavedZarrin," Bluetooth Wireless monitoring, Manging and Control for inter vehicle in vehicular adhoc networks", Journal of computer Science, Science Publication; 2009. Jules White, Brian Dougherty, Adam Albright,

[5] https://phieducation.com/store/electronics/development-boards/hydra