INTERNATIONAL JOURNAL
FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Control and Monitoring Vehicle using Arduino and GSM Module

Dr. Rajendra M. Rewatkar[1], Shivani Mendewar[2], Yogita Mude[3], Vaishnavi Hole[4], Kajal Nyahare[5], Nita Bhagat[6], Nikhil Sawsakade[7], Prakash Thakare[8]

[1]Associate professor, [2,3,4,5,6,7,8] Student Department of Electronics and Telecommunication
Datta Meghe Institute of Engineering, Technology and Research, Sawangi (meghe), Wardha, India

Abstract: The Black Box control and monitoring system for vehicles concept is derived from the aviation industry, a flight recorder, colloquially known as a black box; although it is now orange-colored for easy search, is an electronic recording device placed in an aircraft for the purpose of facilitating the investigation of aviation accidents and incidents.
With the advancement in technology and cost coming down, in our project we attempt to build similar device for our cars, not only this device will help us in post-crash analysis but also it will help us in quicker emergency rescue operation. Our research has been targeted towards building an integrated system for emergency rescue services in the event of a road accident.
The purpose of the project is to find the accident location using GPS module and to send this location by means of sending a message using GSM module to the pre-coded number. This system is usually placed inside the vehicle. It reduces the time it takes for emergency rescue to arrive at the crash location.
Keywords: Black box, Arduino, GSM Module, GPS Module

I. INTRODUCTION

In day to day life vehicle accident is a major problem in many cities. This problem is still increasing in number due to poor riding behaviors such as driving at high speed, drunk driving, riding without safety etc. Car black boxes or the car monitoring system is having logical feature and functions considering that more people die in car accidents than an airplane crashes. Black box in aircraft help to determine the cause of an airplane accident and car black box helps us to determine what has caused a car accident.

The causes of car accident are not to difficult to investigate as plane crashes. They are particularly valuable when no witness are present during the accident and when each drivers has his/her own version of event .Car black box is a digital electronics device, which is used during the investigation of the accident which records and store vehicles speed ,vehicle temperature, vibration, distance from obstacles ,real time and vehicle other status information. Event data recorder holds the proof of the accident and it is useful for the police in investigation and for Insurance company, as they can find out what really caused the accident.with the GPS and GSM module interface the black box calls for help after accident immediately, which helps to give emergency treatment to the accident victims.

II. METHODOLOGY

The proposed system consists of the Arduino nano as the main processing unit for the entire system and all the sensor and devices are connected with the microcontroller.

The components are connected to the Arduino through serial communication. The GPS module repeatedly sends the data to the Arduino and at the second the limit switch is applied, the Arduino picks the data sent by the GPS module at that particular time and send that data to GSM Module which sends those received latitude and longitude to the pre-coded number. Similarly when the alcohol sensor senses the alcohol along with the temperature ,humidity and vibration sensor , it send a signal to the Arduino and the Arduino signals the GSM module with the data sent by GPS module and GSM module sends the latitude and longitude to the pre-coded number.

The implemented design consists of Arduino nano, GPS module, GSM module, limit switch, Temp.and Humidity sensor, vibration sensor and alcohol sensor. Detecting irregularity or sudden change in the data the GSM Module sends signal to the emergency numbers registered
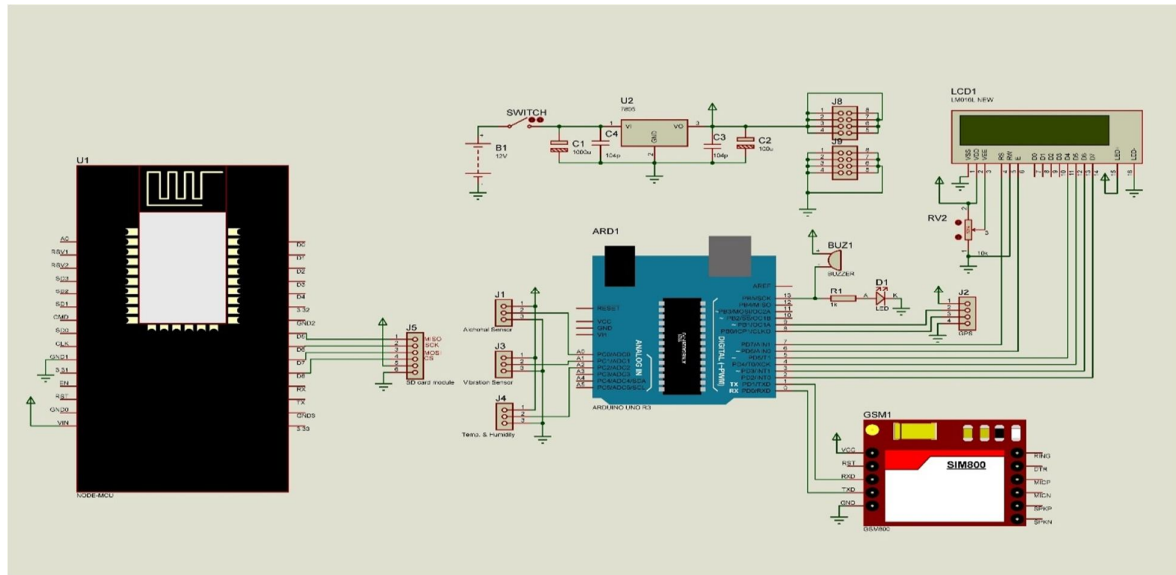
Fig.1: Circuit Diagram

III. CONCLUSION

Control and monitoring the vehicles using Arduino and GSM and GPS module is proposed in this paper. The framework in the proposed system is placed in moving vehicle to detect accident and report to In Case of Emergency (ICE). The first responder is getting notice through GSM and in addition to that the vehicle accident zone longitude and latitude information is obtained through GPS and GPRS. The proposed work can save life as the emergency team reaches the spot on time, take care of the victim and give medical treatment on time. The black box records the accident occurs and the sensors in the system and keep on data which can be used for further investigation.

IV. FUTURE SCOPE

In future we can interface the system with more sensors or other components like wi-fi module or 360^0 camera and many more to increase the credibility of the system. This will optimize the proposed technology to the maximum extent and deliver the best accident detection system.

REFERENCES

[1] A Black Box with SMS Alert for Road Vehicles
[2] Ranjitha S L, Ristha A S, Shilpashree M.P. Aravind R Department of Electronics & Communication Engineering GSSS Institute Of Engineering & Technology For Women, Mysuru, Karnataka
[3] Abdallah Kassem, Rabih Jabr, Ghady Salamouni and Ziad Khairallah Maalouf, Vehicle Black Box System, IEEE International Systems Conference, April 2008
[4] P. Ajay Kumar Reddy, P.Dileep Kumar, K. Bhaskarreddy, E. Venkataramana and M.Chandrasekhar Reddy, Black Box For Vehicles, International Journal of Engineering Inventions (IJEI), Volume 1, Issue 7, October 2012
[5] Sri Krishna Chaitanya Varma, Poornesh, Tarun Varma and Harsha , Automatic Vehicle Accident Detection And Messaging System Using GPS and GSM Modems, International Journal of Scientific & Engineering Research (IJSER), Volume 4, Issue 8, August 2013
[6] Shaik Khadar Basha and P Sireesh Babu , Wireless Black Box Report for Tracking of Accidental Monitoring In Vehicles, International Journal Of Professional Engineering Studies (IJPRES),Volume 1, Issue 2, Dec 2013
[7] Rajashri R. Lokhande and Sachin P. Gawate, Design & Implementation of Vehicle Black Box For Driver Assistance And Alert, IOSR Journal of Computer Science (IOSR-JCE), 2014
[8] Prof. Ashish B. Dudhale, Steve Felix S, Harsha Phatak and Sayali Jathar, Car Black Box System for Accident Prediction and Crash Recovery, International Journal of Engineering Science and Computing (IJESC), May 2014
[9] Ramchandra Patil and Shivaraj Hublikar, Design and Implementation of Car Black Box with Collision Avoidance System using ARM ,International Journal of Innovative Technology and Exploring Engineering (IJITEE), Volume4, Issue3, August 2014
[10] Vikram Singh Kushwaha, DeepaYadav , Abusayeed Topinkatti and Amrita Kumari, Car Accident Detection System Using GPS and GSM, International Journal of Emerging Trend in Engineering and Basic Sciences (IJEEBS),Volume 2 , Issue 1, Jan- Feb 2015
[11] Mr.Dinesh Kumar HSDK, Shreya Gupta, Sumeet Kumar, Sonali Srivastava, Accident Detection and Reporting System Using GPS and GSM Module, Journal of Emerging Technologies and Innovative Research (JETIR), Volume 2, Issue 5, May 2015

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)