

Research Article

Information Recovery After Car Accident Using Black Box

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Abstract

Now day's automobile have become an integral part of our daily lives. In India, the number of vehicles have grown exponentially, making people lives easier and better. However, the number of highway coincidences have also kept in pace with this number. According to WHO, India suffered from the highest number of accidents in 2016, the country recorded at least 4,80,652 accidents, leading to 1,50,785 deaths. Automobile and computing technologies are creating new level of data services in vehicles. The Automobile Black Box has tasks alike to an aeroplane black box. It is used to analyse the cause of vehicular accidents and prevents the loss of life and property arising from vehicle accidents. The system involves enhancement of security by preventing tampering of the Black Box data. In addition, the Black Box sends an alert message to pre-stored number via Short Message Service (SMS) in the case of occurrence of an accident. The proposed system makes use of sensors to record the various driving data parameters. The PIC microcontroller is used to regulate these sensors. The system uses Global Positioning System (GPS) to collect the location data. In it we used the speed sensors to detect the speed of vehicle during the accident.

Keywords: Car Accident Detection, Information Recovery, Information gathering after vehicle accident

Introduction

According to World Health Organization more than million people in the world die because of transportation – related. In order to react this situation, the Black Box draws the first step to solve this problem. Like a flight data recorder in Aircraft, “BLACK Box”, can now play important role in motor vehicles. We have design such system which, in case of accident analysis will records the parameters and also help us to prevent any accident Our project mainly committed two section. The first is how detect and collect information from vehicle. Second is how present in data to user simplified way. To implement of first section many components and sensor are used. While second is implemented by using C programming language. This programming helps not only recording the data but also retrieving the data from microcontroller memory and display to an LCD display. Transportation has always been a crucial necessity for the survival of humankind. Today, we mainly exploit several types of vehicles including cars, buses, trucks, trains, trams, ferries, airplanes, motorcycles, bicycles, helicopters for the transportation. Safety is one of the most common issues during transportation. Thus, the researchers have been focused on preventing the accidents and enabling the safe transportation of driver, passengers and things.

Literature Survey

The Automobile Black Box has utilities like to an airplane black box. It is used to analyze the cause of vehicular accidents and prevents the loss of life and property arising from vehicle accidents. The system aims to achieve accident analysis by objectively tracking what occurs in vehicles.

1. According to Prof. Stev Felix, “in an important state of conditions several vehicles getting accident, the person will face who is sitting inside the vehicle so many problems due to this accident. To this heap of person lost their lives. The project will avoider such type of problems by using different sensor networks. The sensor will work as a providing security to the owner who is inside the vehicle. With these sensor networks some wireless communication technologies are used for reducing the accidents due to unreliable problems. The person who is the owner of the vehicle he is connecting some mobile communication application to his vehicle with one positioning system for find out the particular location of accident occurrence. The antenna network delivers not only safety to the driver but also used for checking van condition in different conditions like any gas outflow or fire accidents. The demonstration unit will shows the results of the each sensor network by computing the specific standards from the sensors. The project

deals with the accident prevention and safety providence for the both van motorist and vehicle.”[1]

2. According to Sharvin Pingulkar, “The main purpose of the paper is to developed a prototype of Black Box for vehicle diagnosis that can be installed into any vehicle. Like flight statistics plotters in jet, “Black Box” technology plays a key role in van crack investigations. This prototype can be designed with minimum number of circuits. This can contribute to construct harmless vans, refining the handling for crack losses, helping cover companies with their van crack investigations, and improving road status in order to decrease the death rate. The prototype provides complete information about the carriage along with Steering system in association with Google Earth. Car-ToCar Communication for examining suddenness in the upcoming vehicle before it plans to strike is a major field calculated in the paper along with live analysis through trials.”[2]

3. According to Karthik K S, “This scheme has two main principle modules namely Vehicle to Vehicle Collision Avoidance Unit (VVCAU) is used to prevention from cracking between vehicles and Black Box records the related details about a vehicle such as Engine Temperature, Distance from difficulty, Speed of vehicle, CO2 Content, Alcohol content, Accident Direction. The design selects AVR as embedded controller, UART (Universal Asynchronous Receiver Transmitter) is the common peripheral found on microcontrollers widely used for communication with the external devices and systems, I2C(InterIntegrated Circuit) for on-board communication, Electrically Erasable Programmable Read Only Memory and GSM module.” [3]

4. Opinion to Prof. E Venkatramana “The key determination of the paper is to develop a model of Black Box For van identification that can be installed into any vehicle. This model can be planned with minimum number of circuits. This can add to make safer vehicles, improving the treatment for crack victims, helping coverage companies with their vehicle crack surveys, and enhancing highway position in order to decrease the death rate.”[4]

5. According to Prof. Ziad “The key purpose of this paper is to develop a model of the Van Black Box System VBBS that can be installed into any van all over the world. The VBBS can contribute to constructing safer vehicles, improving the treatment of crack losses, helping cover companies with their vehicle crack surveys, and enhancing highway position in order to decrease the death rate.” [5]

6. According to Pratibha Ghodake “This project grants an advanced step to the concept of van black-box in developing a comprehensive van protection system

which would not only record the video and audio, but also try to avoid a possible crash by limiting the speed of the vehicle in accident-prone areas. In case of an coincidence, the stage and place (co-ordinates) is sent through GSM to a preset number for immediate rescue and treatment. Recorded data can also be used for forensics, enlightening the difficulties that caused the coincidence and give producer an knowledge for improvement. So the motto is to develop an embedded integrated system consisting of a microcontroller, a power supply unit, sensors, memory, a motor driver unit and a GPS/GSM modem. [6]

Proposed Methodology

Accelerometer used in our system to detect an accident. When car met with accident accelerometer detects the vibrations of car during accident. Speed sensor used to detect the speed of the car when car met with an accident. PIC 18F4550 has in-built ADC (13 channel, 10 bit). It is ideal for low power consumption. 16x2 LCD can display 16 characters per line. Each character is displayed in 5x7 pixel matrix. This LCD has two registers, instruction register and data register. When an accident is held the message is send to the stored no.via GSM. Location of an accident is send to the nearby help services using GPS.

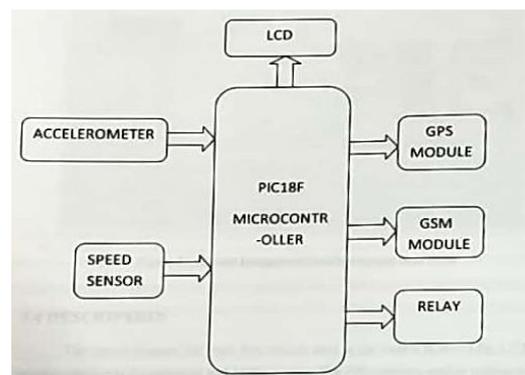


Fig 2.1: Block Diagram

Algorithm

1. Start
2. Initialize LCD
3. Display Project name, "Information recovery after accident using car black box."
4. "A ://LOOP
5. Is accident detected? No then go to A
6. If Yes then Delay for 1sec
7. Ignition Relay and GPS on
8. Send the message and location on mobile phones
9. And display the message on LCD

Software

MPLAB is a welcome combined development environment for the development of embedded

applications on PIC and dsPIC microcontrollers, and is developed by Microchip Technology. MPLAB X is the latest edition of software, and is developed on the Net Beans platform. MPLAB and MPLAB X support project management, code editing, correcting and programming of Microchip 8-bit, 16-bit and 32-bit PIC microcontrollers. software is considered to work with MPLAB-certified devices such as the MPLAB ICD 3 and MPLAB REAL ICE, for programming and fixing PIC microcontrollers using a personal. PIC Kit programmers are also supported by MPLAB.MPLAB 8.X is the last version of the legacy MPLAB IDE technology, custom built by Microchip Technology in Microsoft Visual C++. MPLAB is still offered from Microchip's archives.

MPLAB supports the following compilers

- a. MPLAB MPASM Assembler
- b. MPLAB ASM30 Assembler
- c. MPLAB C Compiler for PIC18
- d. MPLAB C Compiler for PIC32
- e. HI-TECH C.

Result and Discussions

1. In vehicle monitoring(black box) technology is rapidly increasing across the globe, with many different form of this technology now available(like black box).Essentially black box monitor how, when and where a vehicle is being driven and where the accident held ,record the data and provide an analysis of its as feedback on the emergency contact. It has great potential to significantly provide the recovered data to the insurance companies on their claims settlements after accident. This application ensures the fast arrival of emergency services to the accident site or location. Due to its low cost and easy installation, the application proves to be a better efficiency.

2. The sensor will work as a providing security to the owner who is inside the vehicle. With these sensor networks some wireless communication technologies are used for reducing the accidents due to unreliable problems.

3. We are using Black Box in the car or vehicle to record the final activity and to detect the location of the crashed vehicle. The Black Box is similar to the airplane black Box. The Black Box is also known as Data Recorder usually it is orange colour not black. The black box is able to reveal details of events happening just before the accident. Like flight statistics plotters in jet,"Black Box" technology plays a key role in van crack investigations.

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