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AUTOMATIC VEHICLE TRACKER IN ACCIDENTAL EMERGENCY USING GSM & GPS NAVIGATION SYSTEM

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Abstract: Road accidents constitute the major part of the accidental deaths all over the world. Most of these deaths are due to delay in medical attention. We are proposing a system to removing the delay between accident incidence uses in vehicle Accident detection notification methods, and finding the accident which is major or minor. This project aims to detect the accident where it is occurred and Send the vehicles position, Information including personal details of car owner through SMS to ambulance, police Station and the relatives respectively. Also, provide an emergency switch for avoid emergency problems.

Keywords: GPS, GSM, MEMS Accelerometer sensor, Microcontroller.

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INTRODUCTION

Road accidents are a humans tragedy. They involve high human suffering and monetary costs in terms of untimely injuries, death. Unfortunately, more than half victims are in the economically active age group of 25-65 years. This project aims to detect the accident where it is occurred and Send the vehicle position, Information including personal details of car owner through SMS to ambulance, police Station and the relatives respectively. Also, provide a emergency switch for avoid emergency problems.

The purpose of the project is to find the vehicle accident where it is and locate the vehicle location by means of sending a message using a system which is placed inside of vehicle system Most of the times we may not be able to find accidental location because we don't know where accident will happen. In order to give treatment for accident injured people, first we need to know where the accident happened through location detecting and sending message to your relatives or to emergency services. So in this work we are using the basic microcontroller AT80C51 for cost effective and also for easy understanding. The message is send through the GSM modem and the accident location is detected with the help of the GPS modem.

1.1 GPS

The Global Positioning System satellites use for transfer signals to equipment on the ground. GPS receivers passively receive satellite signals; Each GPS satellite transmits data that indicates its location and the current time. All GPS satellites synchronize operational data so that these re-peating signals are transmitted at the same instant. Global Positioning System is space based navigation and monitoring System consisting of a constellation of Satellites and a network of stations used for controlling. When an accident occurred in any place then GPS system detect the location of the vehicle in the form of latitude and longitude.

Fig. 1.1 GPS Module

1.2 GSM

Communication between vehicle, Owner, police station and emergency is established accordingly as per requirement using GSM (Global Service for Mobile communication). A GSM modem could also be a standard GSM mobile phone the software driver is connected to a serial port on computer. GSM modem is similar to mobile phone without any display and speakers. It can send and receive messages and calls. GSM is a cellular network, which means that mobile phones con-nect to it for cells in the immediate vicinity..

Fig.1.2 GSM module

1.3 Microcontroller

The microcontroller is a 40 pin device. All 8051 microcontrollers have 4 input/output ports each comprising 8 bits which can be configured as inputs or outputs. Therefore, in total of 32 uses for pins enabling the microcontroller to be connected to peripheral devices are available depends its Pin configuration, i.e. whether it is to be configured as an input (1) or an output (0), input/output logic states.

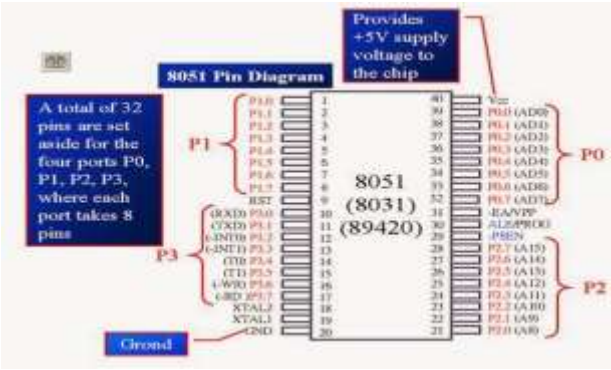

Fig 1.3 Microcontroller

1. 4 MEMS Accelerometer Sensors

An accelerometer sensor is a device that measures the vibration, or acceleration of motion of a structure. The MEMS sensor module is capable of producing outputs equivalent to vibrations range from 0.5 Hz to 1500 Hz. The lower limit has been set to 50 Hz and filter capacitors of 0.1 uF. The values given by this sensor is in analog values and the ADC IC id used for converting the analog value to the digital value i.e. binary value send to the microcontroller.

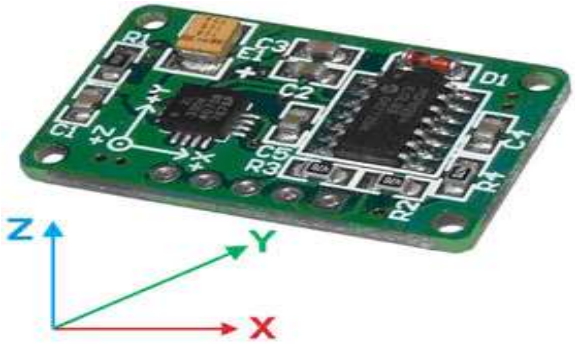

Fig 1.4 MEMS Accelerometer Sensor

2. LITERATURE REVIEW

Sr.no	Reference	Evaluation Approach
1	G Vijayalakshmi	He proposed the work on Sending SMS in GSM system through which communication can be established in between client and server.
2	B.Sulochana, B. A. Sarath Manohar Babu	It present on MEMS accelerometers, It is the system for detecting the range of vibration.
3	Ms. Anju Mr. Vasdewani	It present on Microcontroller is received information from MEMS accelerometer and GPS module and send the message by using GSM.

3. ARCHITECTURE OF WORKING MODULE

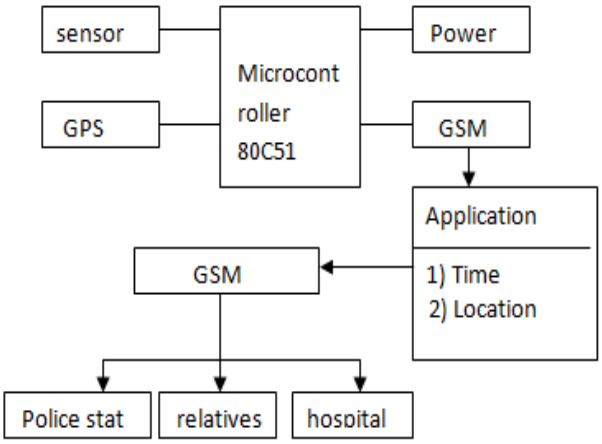

Fig 3 Architecture of working module

Our paper describes about the Automatic Vehicle Tracker in Accidental Emergency using GSM and GPS navigation system. We are using 80C51 microcontroller in our project. When the vibration sensors that we are using in our project sense range of vibration, that range sends to micro-controller. Check the vibration frequency whether accident is major or minor in case if frequency is high then assume as the accident is major. The application is used to display the location, time information use for estimating the accident is major or minor. And also provide an emergency switch for avoiding the emergency problem. The GPS detect the location of the Accidental vehi-cle and gives the position information of vehicle. This information will be sent to a mobile num-ber through a message i.e. the information of longitude and latitude values, personal details of owner and Vehicle information like as vehicle number, Insurance number etc. This message will be send using GSM modem present in the vehicle. The GSM modem is transfer the data into three Authorities, police station, hospital and relatives by using GSM via SMS.

4. RESULT AND DISSCUSSION

In this project, firstly, interface the sensor with microcontroller. The sensor gives the range value in analog form and the ADC-IC converts it into digital form i.e. binary value to the microcontroller. Trough microcontroller, vibration range can be display on application. It checks the range of vibration, if it is high then display the alert message i.e. accident notified. Then longitude and latitude value will be fetch from the GPS and show the all information about

vehicle ,owner de-tail and location, That information will be send into three authorities i.e. police station, hospital and relatives.

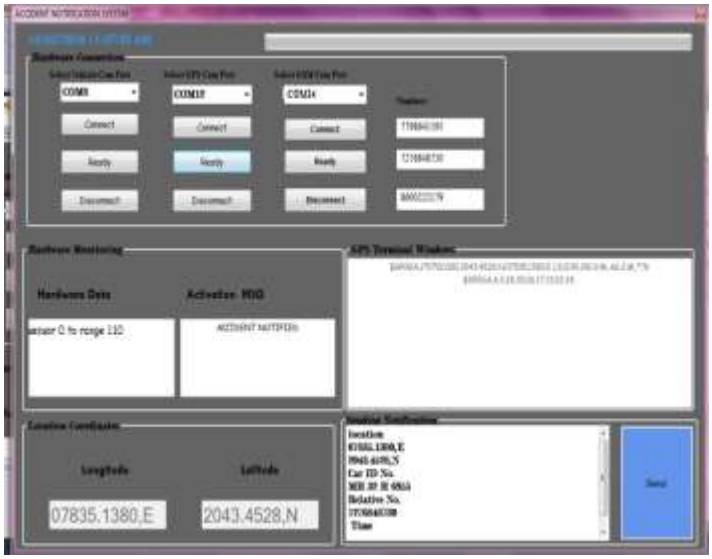

Fig 4 Display System

5. CONCLUSION

Automatic Vehicle Tracker System in Accidental Emergency Using GSM & GPS Navigation System is designed in this project. When accident occurred, It is the sensed the range of vibration when accident is the major or minor. An emergency case we provide the emergency switch to avoid the major problems. Owner information and vehicle information will monitor. It pro-vides safety for four wheelers more than 70%. It is the fact that implementation of system will increase cost of vehicle but it is better to have some percept safety. It is an opportunity for better assistance to people injure in rural area accident, reducing the response time of emergency services. And bring the passenger to hospital in earliest conditions.

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