Automatic Vehicle Accident Detection and Messageing System

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***Abstract*-The technology development has increased the more traffic hazards and road accident due to lack of emergency facilities. Our paper will provide a solution to this problem. The dangerous driving can be detected using accelerometer in car alarm application. It used as crash or roll over detector vehicle during accident or after accident. An accelerometer receive the signal which is used to recognize the severe accident. In this paper, when vehical met with an accident or roll over the vibration sensor will detect the signal and sends it to ATMEGA 8A controller. GSM send alert message to police control room or rescue team from microcontroller. Now police can trace the location to the GPS after receiving the information. Then after conforming the location necessary action will be taken. During the accident, if the person did not get injury or if there is no serious threat to anyone's life, then the alert message can be stopped by driver by a switch provided. In order to avoid the wasting the time of the rescue team. This is used to detect the accident by means of vibration sensor.**

Keywords: ARM controller, Accelero meter, Vibration sensor, GSM module.

I.INTRODUTION

Due the more road accident takes place in various cities. Nowadays the cause of death increasing more by accident. If an accident met in a national highway roads no one there to rescue the person to met with an accident this is due to lack of emergency facilities and rescue team to overcome these drawback our paper proposed this method can automatic indicating device for vehicle accident is used in this paper it is used protect the people from the risk as soon as possible after occurrence the accident wasting a time may leads to death. so this system will detect the accident within the less time and convey the information to the police station and to rescue system after a few seconds. The location of the accident place will be detect by GPS by tracking the vehicle ARM controller is used to save the mobile number in the EE PROM and send the message to require person when an accident occurred. One more facility is provided for critical time incase of heat attacks or other health problems if the person requires help he can press the single switch provided in the system through GPS module the location of vehical accident is tracked and the message is transmitted through GSM modem.

Switch is provided to terminate the message sending when there is no severe injury. By this method the time of rescue system can be saved. Accident is detecting using vibration sensor. By this method the emergency facility will be efficiently used during the road accidents. Accelerometer sensor can be used in a car alarm application. By this sensor dangerous driving can be detected. Due to advancement technology. There is need for the identification of exact vehicle location, better data transfer facilities freedom to motoring the software.

II.EXISTING METHOD

Using Smartphone the accident location can be tracked with the help of 3G network. The message can be passed to police station or rescue via smartphone. The other existing method is stolen vehicle recovery system. The owner of the vehicle gets the message immediately about the location of vehicle through GSM. Automatic vehicle accident detection and messaging system uses accelerometer in Cr alarm application. So that dangerous driving can be detected. The accident can be sensed by using the vibration sensor. Using ARM controller the mobile number can be saved in EEPROM and sends the message when accident occurs. GPS is used for tracking the position of the vehicle, GSM sends the message to the rescue system and police station.

III.PROPOSED METHOD

Sometimes during accident the vehicle hits the other vehicle and it passes away without stopping. To overcome these drawback we proposed the method in the accident detection and rescue system. Along with this Bluetooth is added. By using this Bluetooth the information of the hitting vehicle can sends to the nearby vehicle within in the 10m distance. The vehicle which hits the other vehicle will automatically sends the details i.e informations like vehicle number, owner details etc.. to the nearby vehicles in order to identify the details of the hitting vehicle. By this police can easily find the hitting vehicle.

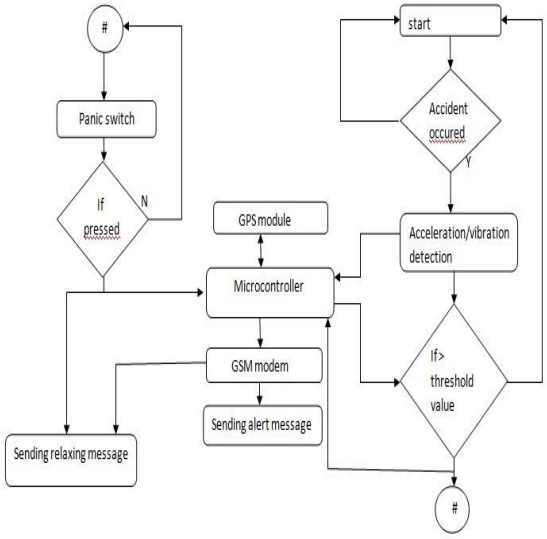

Fig2: Flowchart for the accident alerting system.

In the case of an accident the system detects it using the fact that the vehicle would be suddenly decelerated in such a condition. An accelerometer continuously monitors the acceleration of the vehicle and will detect decelerations greater than threshold value and send the data to the microcontroller via an ADC. The controller compares this with the threshold set value and immediately sends an SOS message to preset numbers. With this message the controller also transmits the GPS coordinates of the vehicle which it continuously obtains from the GPS module. This system will highly aid the search and rescue of vehicles that have met with an accident.

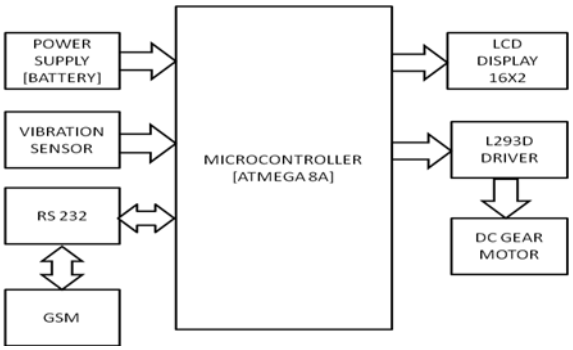

Fig1:Block diagram for accident detection and rescuing

IV.METHODOLOGY

The prototype model of an automatic vehicle accident detection and messaging using GSM and GPS modem using AT mega 8A working will be made in the following steps:

Complete layout of the whole set up will be drawn in form of a block diagram. A piezoelectric sensor will first sense the occurrence of an accident and give its output to the microcontroller. The GPS detects the latitude and longitudinal position of a vehicle. The latitudes and longitude position of the vehicle is sent as message through the GSM. The phone number is pre-saved in the EEPROM. Whenever an accident has occurred the position is detected and a message has been sent to the presaved number.

A. Atmega 8a Microcontroller

There are many families in the microcontroller but here the ATMEGA 8A is used because it provides the high output with low input. The operating voltage of the ATMEGA is 2.2-5.5 volts where the consuming input is low compared to other.It is performing with advanced RISC architecture with non-volatile memory segments.It allows 130 instructions which is normally high compared to other and it comprises of 16 bit address with 8 bit data. The data retention of the ATMEGA 8A is 20 years at 85^0 C and 100 years at 25^0C. The peripheral features includes two 8-bit Timer/Counters with Separate pre scalar, one Compare Mode One 16-bit Timer/Counter with Separate Pre scalar, Compare Mode, and Capture Mode. One of the special features of controller is Power-on Reset and Programmable Brown-out Detection with Internally Calibrated RC Oscillator.It can be varied with five sleep modes like Idle, ADC Noise Reduction, Power-save, Power-down, and Standby.

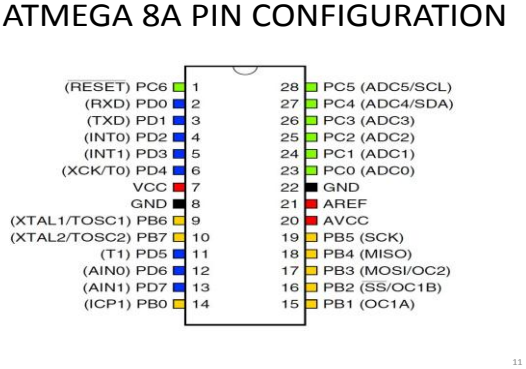

Fig3: PIN configuration of ATMEGA 8A

B. Gsm Module

GSM/GPRS Modem-RS232 is built with Dual Band GSM/GPRS engine- SIM900A, works on frequencies 900/ 1800 MHz The Modem is coming with RS232 interface, which allows you connect PC as well as microcontroller with RS232 Chip(MAX232). The baud rate is configurable from 9600-115200 through AT command.

The GSM/GPRS Modem is having internal TCP/IP stack to enable you to connect with internet via GPRS. It is suitable for SMS, Voice as well as DATA transfer application in M2M interface

The onboard Regulated Power supply allows you to connect wide range unregulated power supply . Using this modem, you can make audio calls, SMS, Read SMS, attend the incoming calls and internet etc. through simple AT command.

C.Power Supply

Transformer: A transformer is an electro-magnetic static device, which transfers electrical energy from one circuit to another, either at the same voltage or at different voltage but at the same frequency.

Rectifier: The function of the rectifier is to convert AC to DC current or voltage. Usually in the rectifier circuit full wave bridge rectifier is used.

Filter: The Filter is used to remove the pulsated AC. A filter circuit uses capacitor and inductor. The function of the capacitor is to block the DC voltage and bypass the AC voltage. The function of the inductor is to block the AC voltage and bypass the DC voltage.

Voltage Regulator: Voltage regulator constitutes an indispensable part of the power supply section of any electronic systems. The main advantage of the regulator ICs is that it regulates or maintains the output constant, in spite of the variation in the input supply.

D.Rs232

Due to its relative simplicity and low hardware overhead (as compared to parallel interfacing), serial communications is used extensively within the electronics industry. Today, the most popular serial communications standard in useis certainly the EIA/TIA–232–E specification. This standard, which has been developed by the Electronic Industry Association and the Telecommunications Industry Association (EIA/TIA), is more popularly referred to simply as "RS–232" where "RS" stands for "recommended standard". In recent years, this suffix has been replaced with "EIA/TIA" to help identify the source of the standard. We use the common notation "RS–232".

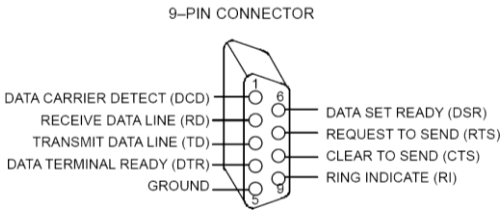

Fig 4. DB-9 Connector

V.CONCLUSION

This project presents vehicle accident detection and alert system with SMS to the user defined mobile numbers. The GPS tracking and GSM alert based algorithm is designed and implemented with ATmega 8A MCU in embedded system domain. The proposed Vehicle accident detection system can track geographical information automatically and sends an alert SMS regarding accident. Experimental work has been carried out carefully. The result shows that higher sensitivity and accuracy is indeed achieved using this project. EEPROM is interfaced to store the mobile numbers permanently. This made the project more user-friendly and reliable. The proposed method is verified to be highly beneficial for the automotive industry.

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