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IMPLEMENTATION OF GSM, ANDROID AND GPS BASED ACCIDENT IDENTIFICATION AND INFORMATION

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ABSTRACT

Now a day, it became very difficult to know that an accident has occurred and to locate the position where it has happened. There is no system of identification and intimation regarding an accident in previous. Later on the SMS service begins for intimation and purpose. GPS and GSM make the usage for intimation and identification of place. When an accident occurs the information only be sent through GSM but there is no possibility to locate the spot. This project presents a GPS and GSM based accident identification and information system using GPS and GSM-SMS services. So the main intention of the project is to find the accident spot at any place and intimating it to ambulance through GPS and GSM networks. The GPS based vehicle identification module contains vibrating sensor GSM module and a GPS modem connected to the microcontroller. The receiver section consists of a GSM receiver and a IOT.The transmitter section consists of a micro controller, GPS module, LCD, GSM transmitter and vibration sensor. GPS software is fitted in the vehicle will now start communicate with the satellite and get the latitude and longitude values and send the information to the centralized server. Then the server will search the nearest hospital and send the accident information to the hospital. The hospital will then be sending the ambulance to the accident zone.
Then the injured people will be saved as soon as possible. This process will save time in particular for the areas in the outer part of main zone.

INTRODUCTION

The appearance of automobiles impacts the life of people. It is becoming the progressive symbol of modern society.
Not only the demand on performance and quality of automobiles increase rapidly, but there is also demand on anti-accident system for vehicles.
Even though some sophisticated system like GPS can retrieve vehicles, but people does not use it due to the cost too high. By using the GSM network for anti-accident system, the cost is lower compare to GPS.
The main intention of this project is to find the accident spot at any place and intimating it to ambulance through the GPS and GSM networks.
The GPS based vehicle accident identification module contains vibrating sensor GSM module and a GPS modem connected to

the microcontroller. Global System for Mobiles (GSM) technology is used to establish cellular connection. GPS is used to trace the position of the vehicle.
The system is composed of GSM SIM 300 modem, PIC16F877A microcontroller, vibration sensor, 2x16LCD screen, buzzers (alarm) and user's mobile phone.

IMPLEMENTATION OF GSM, ANDROID AND GPS BASED ACCIDENT IDENTIFICATION AND INFORMATION

Along with adding demands for motorcars, a drastic increase can be seen in road accidents. As per data given by the WHO(https//www.who.int/news-room/fact-sheets/detail/road-traffic-injuries)1.35 million people die every time due to road accidents. This number is sufficient enough to show the global heads of road safety & creates a need to ameliorate the road safety installations & deliverance operation system.

In utmost cases when a road accident occurs, the deliverance platoon or the police authorities aren't informed in time. likewise, the detention caused by the deliverance platoon in reaching the accident point & the heavy business traffic in between the accident position and the sanitarium installations increases the threat of death for the victim. To overcome this issue, we've come up with this accident discovery system which will help the victims get saved well in time and reduce the threat of death caused by road accidents.

The system includes a detector, sound cadence, GPS and GSM module. The detectors will descry the accident & sound measures will spark an alarm. The GPS will track the position coordinates and the GSM will shoot an alert announcement to the near sanitarium & police authorities. therefore, this system will shoot an moment alert to the near deliverance platoon & sanitarium installation to notify them of the accident passed for them to take immediate conduct.

This operation aids in having a better collaboration and keeps all the concerned bodies and authorities informed and cautions them snappily which also saves time in delivering an accident case. When a person meets an accident, he's generally not in a condition to interact with an operation on his phone and ask for help.

In similar situation Accident is detected automatically in stoner app grounded on sound reading and detector reading, stoner app continuously senses for similar accidents. App also snappily assigns and sends announcement to the near Ambulance, near sanitarium and also the police informing in case of an accident detected. Ambulance also keep streamlining of the status of case whether dropped to the sanitarium. Sanitarium can also modernize status if admitted to the sanitarium from their app. This helps in keeping the assigned sanitarium set and informed. Also, the stoner details are participated with sanitarium and police which helps sanitarium to see the medical records of the case and police gets to see needed details of the stoner in an accident.

HISTORY OF MY PROJECT:

Existing system

The Existing system is built using the AT89S52 microcontroller from Atmel. This micro controller ensures all the functionality of the SMS alert system. It also filters the signal sat the inputs.

It not only alert the neighbours through its siren, but also immediately sends a caution SMS to any four mobile numbers which are stored. This numbers can be changed at any time by the user using a 3X4 key pad as he prefer.

These numbers are stored in EEPROM. This uses regulated 5V,750mA power supply for its working.7805 which is three terminal voltage regulators that regulate the voltage of system.

Full Wave Bridge rectifies the ac output of secondary of230/12V step down transformer. Due to heavy hardware Dependability this Systems have a huge changes of failures.

PROPOSED SYSTEM

The approach in this application is of an android platform which is in demand now and will be same in future.

As most of the population have the smart phones containing the android which provide plenty of facilities such as Bluetooth, GPS, Wi-Fi, 3G etc which is fruitful for this project.

This project basically contains three modules which independently work on its own to notify about the occurrence of accident

In this module the approach is developed for an android application for mobile phone in which the user can insert and save the emergency numbers as many he want to whom the caution message should be delivered when any accident occurs.

The user application would contain the number insertion activity and the message receiver would get the message regarding occurrence of accident along with the link of map containing details of latitude and longitude through which he can detect the accident location and do help.

FUTURE OF MY PROJECT:

Few scopes and guidelines are listed to ensure the project is conducted within its intended boundary. This is to ensure the project is heading to the right direction to achieve its intended objectives.

The first scope is to design a controller that can control all the works in the system. The vibration sensor sense the vibration level and send data to microcontroller and can receive the GPS data, from satellite, display it at LCD and do transmit / receive to GSM module

Second scope of this project is to analysis the data from GPS receiver which can get the time, longitude, latitude, date and speed of the receiver. The data will be display at LCD Display.

The third scope is to store the data from GPS receiver into external memory EPROM. All the time, longitude, latitude, date and speed of the GPS receiver will be store into EPROM through the microcontroller.

The last scope of this project is to trace the location of the accident using Global System for Mobile communications (GSM) (two way communication between user and GSM Module) and Global Positioning System (GPS).

GLOBAL SYSTEM FOR MOBILE (GSM)

Pin no.	Signal name	I/O	Function
1	/DCD	O	Data carrier detected
2	/RXD	O	Receiver data
3	/TXD	I	Transmitter data
4	/DTR	I	Date terminal ready
5	GND	-	Ground
6	/DSR	O	Data set ready
7	/RTS	I	Request to send
8	/CTS	O	Clear to send
9	/IR	O	Ring indication

VIBRATION SENSOR

Pin	Symbol	I/O	Description
1	Vss	--	Ground
2	Vcc	--	+5V power supply
3	VEE	--	Power supply to control contrast
4	RS	I	RS=0 to select command register RS=1 to select data register
5	R/W	I	R/W=0 for write ,R/W=1 for read
6	E	I/O	Enable
7	DB0	I/O	The 8-bit data bus
8	DB1	I/O	The 8-bit data bus
9	DB2	I/O	The 8-bit data bus
10	DB3	I/O	The 8-bit data bus

11	DB4	I/O	The 8-bit data bus
12	DB5	I/O	The 8-bit data bus
13	DB6	I/O	The 8-bit data bus
14	DB7	I/O	The 8-bit data bus

FEATURES OF MY PROJECT

To design a GPS and GSM based accident identification and information system using PIC.
To trigger the car alarm when accidents are detected.
To interface PIC microcontroller to GSM modem.
To write a program in C programming language for the microcontroller to detect the sensors signals and trigger the alarm as well as send the alert message to owner via GSM modem.
To provide security for the vehicle user and also detects the accident if occurred and informs the respective authority (like ambulance, police, owner etc.) through wireless technologies.
To display the alarm status on 2x16LCD.

PROBLEM STATEMENT

From early era to today, cars have been a natural target for accidents. They are valuable, reasonably easy to resell their parts, they put wallet, coins, hand bags, important documents, smart tags, laptops and etc. that is why for a normal switches alarm is not enough to protect car from accidents.

HARDWARE REQUIREMENTS

1. GSM module
2. GPS module
3. Vibration sensor
4. Pic16f877A microcontroller
5. Liquid crystal display (LCD)
6. IOT
7. I2C (EEPROM)

SOFTWARE REQUIREMENTS

1.Proteus simulation software

2.Arduino IDE

3.MikroC software on which C language is written

MICROCONTROLLER

A Micro controller consists of a powerful CPU tightly coupled with memory, various I/O interfaces such as serial port, parallel port timer or counter, interrupt controller, data acquisition interfaces-Analog to Digital converter, Digital to Analog converter, integrated on to a single silicon chip. If a system is developed with a microprocessor, the designer has to go for external memory such as RAM, ROM, EPROM and peripherals. But controller is provided all these facilities on a single chip. Development of a Micro controller reduces PCB size and cost of design

GLOBAL POSITIONING SYSTEM (GPS)

Global positioning system is a satellite communication system. It is actually a constellation of 27 Earth-orbiting satellites (24 in operation and three extras in case of any one fails). The US military developed and implemented this satellite network as a military navigation system.

Global Positioning System (GPS) technology is changing the way we work and play. We can use GPS technology when we are driving, flying, fishing, sailing, hiking, running, biking, working, or exploring. With a GPS receiver, we have an amazing amount of information at our fingertips. Here are just a few examples of how we can use GPS technology.The high accident concentration can be easily identified. Different background maps can be conveniently used.The localization has to be performed at the accident spot right after the accident occurrence. It enables the most precise examination of the accident causes and its circumstances. For this purposes mobile GPS devices having sufficient accuracy to obtain the location data and to transfer them to a PC can be used. This method is suitable for safety analysis issues - road accident locations and spots vehicle.

GLOBAL SYSTEM FOR MOBILE (GSM)

Global System for Mobile Comm-unications (GSM) is the world‘s most popular standard for mobile telephony systems. The GSM Association estimates that 80% of the global mobile market uses the standard.

GSM is used by over 1.5 billion people across more than 212 countries and territories. This ubiquity means that subscribers can use their phones throughout the world, enabled by international roaming arrangements between mobile network operators.

GSM differs from its predecessor technologies in that both signalling and speech channels are digital, and thus GSM is considered a second generation (2G) mobile phone system. This also facilitates the wide-spread implementation of data communication applications into the system.

VIBRATION SENSOR

The vibration / shock sensor detects shock intensity caused by sudden knocks or hits and continuous vibration due to faulty ball-bearings on fans and other equipment.

The shock levels and monitoring durations can be set for each individual sensor, enabling a user-defined profile for customer

specific applications and equipment.

Each sensor incorporates a unique type and serial number providing true plug and play capability.

Whenever the accident occurs the vibrations are sensed by the vibration sensor and these signals are given to the microcontroller through the amplifying circuit. When the input is received by the microcontroller, the buzzer (alarm) is ON and the message is sent to the rescue team with the help of the GSM module.

The rescue team reaches the site of the accident with the help of the location given in the message. The location or the geographical coordinates where the vehicle is present are detected by the GPS module**.**

Program memory

Program memory contains the programs that are written by the user. The program counter (PC) executes these stored commands one by one. Usually pic16F877A devices have a 13 bit wide program counter that is capable of addressing 8kx14 bit program memory space. This memory is primarily used for storing the programs that are written to be used by the PIC.

These devices also have 8K*14 bits of flash memory that can be electrically erasable/ reprogrammed. Each time we write a new program to the controller, we must delete the old one at that time.

Program counter (PC) is used to keep the track of the program execution by holding the address of the current instruction. The counter is automatically incremented to the next instruction during the current instruction execution. The PIC16F87xA family has an 8-level deep x 13-bit wide hardware stack. The stack space is not a part of either program or data space and the stack pointers are not readable or writable. In the PIC microcontrollers, this is a special block of RAM memory used only for this purpose.

Each time the main program execution starts at address 0000-reset vector. The address 0004 is reserved for interrupt service routine (ISR).

PIC16F87XA Data memory organization

The data memory of pic16f877 is separated into multiple banks which contain the general purpose registers (GPR) and special function registers (SPR). According to the type of the microcontroller, these banks may vary. The PIC16F877 chip only has four banks (BANK0, BANK1, BANK2 and BANK4). Each bank holds 128 bytes of addressable memory.

The banked arrangement is necessary because there are only 7 bits are available in the instruction word for the addressing of a register, which gives only 128 addresses. The selection of the bank are determined by control bits RP1, RP0 in the STATUS registers together the RP1,RP0 and the specified 7 bits effectively form a 9 bit address. The first 32 location of banks 1 and 2 and the first 16 locations of banks and 3 are reserved for the mapping of special function registers

Data EEPROM and FLASH

The data EEPROM and Flash program memory is readable and writable during normal operation (over the full VDD range). This memory is not directly mapped in the register file space. Instead, it is indirectly addressed through the special function registers. There are six SRFs used to read and write this memory.

- EECON1
- EECON2
- EEDATA
- EEDATH

The EEPROM data memory allows single-byte read and writes. The flash program memory allows single word reads and four-word block writes. Program memory write operations automatically perform an erase before write on blocks of four words. A byte write in data EEPROM memory automatically erases the location and writes the new data.

GPS SEGMENTS

GPS technology requires the following three segments.

- Space segment.
- Control segment.
- User segment .

Space Segment

At least 24 GPS satellites orbit the earth twice a day in a specific pattern. They travel at approximately 7,000 miles per hour about 12,000 miles above the earth's surface. These satellites are spaced so that a GPS receiver anywhere in the world can receive signals from at least four of them.

- Each GPS satellite constantly sends coded radio signals (pseudorandom code) to the earth. These GPS satellite signals contain the following information.
- The particular satellite that is sending the information.
- Where that satellite should be at any given time (the precise location of the satellite is. called ephemeris data).
- Whether or not the satellite is working properly.

- The date and time that the satellite sent the signal.

Control Segment

The control segment is responsible for constantly monitoring satellite health, signal integrity, and orbital configuration from the ground control segment includes the following Sections:

- Master control station
- Monitor stations
- Ground antennas

Monitor Stations at least six unmanned monitor stations are located around the world. Each station constantly monitors and receives information from the GPS satellites and then sends the orbital and clock information to the master control station (MCS).

Master Control Station (MCS) is located near Colorado Springs in Colorado. The MCS constantly receives GPS satellite orbital and clock information from monitor stations. The controllers in the MCS make precise corrections to the data as necessary, and send the information (known as ephemeris data) to the GPS satellites using the ground antennas.

Ground antennas receive the corrected orbital and clock information from the MCS, and then send the corrected information to the appropriate satellites.

User Segment

The GPS user segment consists of GPS receiver. Receiver collects and processes signals from the GPS satellites that are in view and then uses that information to determine and display your location, speed, time, and so forth. GPS receiver does not transmit any information back to the satellites.

SYSTEM OPERATION

Our entire system is built around a microcontroller 16f877A which we have used at an operating frequency of 8MHz. Here the data from the GPS (Global Positioning System) is received in the form of NMEA code using the GPS receiver which is mounted on the vehicle and this is fed to the microcontroller through the serial port (DB 9). This data from the GPS is RS-232 compatible, so it cannot be directly given to the microcontroller as it is TTL compatible.

Hence we use MAX232 circuit which will converts this RS-232 compatible data to TTL compatible data (-3v to +3v) which can be accessed by the microcontroller. The microcontroller then processes this information. The processed data is then used in two stages:-

1. The data will be utilized by the microcontroller to reach the desired destination (by controlling the movement of the vehicle).

GPS DATA.

The GPS Navigation Message consists of time-tagged data bits marking the time of transmission of each sub frame at the time they are transmitted by the satellite. A data bit frame consists of 1500 bits divided into five 300-bit sub frames. A data frame is transmitted every thirty seconds. Three six-second sub frames contain orbital and clock data. Satellite vehicle (SV) Clock corrections are sent in sub frame one and precise SV orbital data sets (ephemeris data parameters) for the transmitting SV are sent in sub frames two and three. Sub frames four and five are used to transmit different pages of system data. Data frames (1500 bits) are sent every thirty seconds. Each frame consists of five sub frames. Data bit sub frames (300 bits transmitted over six seconds) contain parity bits that allow for data checking and limited error correction. Clock data parameters describe the satellite clock and its relationship to GPS time. Ephemeris data parameters describe satellite orbits for short sections of the satellite orbits. Normally, a receiver gathers new ephemeris data each hour, but can use old data for up to four hours without much error. The ephemeris parameters are used with an algorithm that computes the satellite position for any time within the period of the orbit described by the ephemeris parameter set. Almanacs are approximate orbital data parameters for all Satellites.

The GPS data is received in the NMEA code format.

GSM MODEM

A GSM modem is a specialized type of modem which accepts a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone. When a GSM modem is connected to a computer, this allows the computer to use the GSM modem to communicate over the mobile network. While these GSM modems are most frequently used to provide mobile internet connectivity, many of them can also be used for sending and receiving SMS and MMS messages. GSM modem must support an "extended AT command set" for sending/receiving SMS messages. It also comes in various interfaces, such as PCMCIA Type II, USB, and Serial. GSM Modem is however the main difference is that GSM Modem is wireless, while dial-up modem is wired. Some GSM Modems also has GPRS feature that allows transmission of data over TCP/IP (internet).

To transmit data using GSM Modem, there are various methods that can be used, such as:

- SMS
- CSD or HSCSD
- GPRS /UMTS
- A GSM Modem can be used to build the following applications:

SMS Gateway i.e. to send and receive SMS.

- call-back service for VOIP
- SMS application, SMS solution, or SMS programme.
- vehicle tracking with cell broadcast feature or with integrated GPS terminal

Basics of working and specification of GSM module:

The GSM architecture is nothing but a network of computer. The system has to partition available frequency and assign only that part of the frequency spectrum to any base Tran's receiver station and also has to reuse the scarce frequency as often as possible. GSM was originally defined for the 900 MHz range but after some time even the1800 MHz range was used for cellular technology. The1800 MHz range has its architecture and specifications almost some to that of the 900 MHz range GSM technology but building the mobile exchanges is easier and the high frequency synergy effects add to the advantage of the 1800 MHz range.

GSM Modem Operating Modes

The SMS specification has defined two modes

- SMS text mode and
- PDU(Protocol Data Unit) mode

GSM Modem Specifications:

- Dual-Band 900/1800 Mhz GSM modem GPRS class 10 compatible
- Data, SMS, Voice and Fax services.
- RS232 port with full handshaking (serial RS232 cable and power supply)
- Standard AT command interface (according to GSM 07.07 or 07.05)
- GSM modem status LED

GSM modem software features

- Embedded TCP/UDP protocol
- FTP/HTTP
- MMS
- Embedded AT

GSM SIM 300 MODULES

This GSM modem is a highly flexible plug and play quad band GSM modem reset button. It can be used to send and receive SMS or make/receive voice calls. It can also be used in GPRS mode to connect to internet and do many applications for data logging and control. In GPRS mode we can also connect to any remote FTP server and upload files for data logging. Supports features like Voice, Data/Fax, SMS, GPRS and integrated TCP/IP stack.

Features of GSM SIM 300 Module

- Highly Reliable for 24x7 operation with Matched Antenna
- Designed for global market, SIM300 is a Tri-band GSM/GPRS engine
- Works on frequencies EGSM 900 MHz, DCS 1800 MHz and PCS 1900 MHz.

Serial Cable Details:

Serial Cable provided has following pins connected with RS232 level (+12V / -12V) output

- Pin 2 is RS232 level TX output
- Pin 3 is RS232 level RX input
- Pin 5 is Ground.

SMART MODEM (GSM/GPRS)

Analogic's GSM Smart Modem is a multi-functional, ready to use, rugged and versatile modem that can be embedded or plugged into any application. The Smart Modem can be customized to various applications by using the standard AT commands. The modem is fully type-approved and can directly be integrated into our projects with any or all the features of Voice, Data, Fax, SMS features (Optional TCP/IP), and Internet etc. Thismodem delivers all the power of instant wireless connectivity to our multiple applications

2Smart Modem kit contains the following items:

- Ana logic's GSM/GPRS Smart Modem
- SMPS based power supply adapter.
- 3 dB antenna with cable (optional: other types)
- Data cable (RS232)

Interface Smart modem:

- RS-232 15 pin D connector (Optional : USB port)
- Remote control by AT-commands (GSM 07.07 and 07.05)
- Baud rate from 300 to 115,200 bits/sec.

Product Description of GSM smart modem

The connectors integrated to the body, guarantee the reliable output and input connections. An extractible holder is used to insert the SIM card (Micro-SIM type). Status LED indicates the operating mode. Smart modem is a quad-band (850/900/1800/1900 MHz) GSM modem intended for data transmission via cellular communication networks. It supports GPRS class 12 and TCP/IP protocol stack. The modem is available with a wide range of standard interfaces:

- RS232 serial port (DB9 connector) for data cable connection;
- TJ-4P4C (1) connector for audio equipment connection;
- TJ-4P4C (2) connector for interface connection of RS485*/RS232*/UART* depending on modem specification.
- Terminal connector for interface connection of GPIO*, I2C*, ADC* and also for supplying power.

VIBRATION SENSOR

The vibration / shock sensor detects shock intensity caused by sudden knocks or hits and continuous vibration due to faulty ball-bearings on fans and other equipment. The shock levels and monitoring durations can be set for each individual sensor, enabling a user-defined profile for customer specific applications and equipment. Each sensor incorporates a unique type and serial number providing true plug and play capability.

Whenever the accident occurs the vibrations are sensed by the vibration sensor and these signals are given to the microcontroller through the amplifying circuit. When the input is received by the microcontroller, the buzzer (alarm) is ON and the message is sent to the rescue team with the help of the GSM module. The rescue team reaches the site of the accident with the help of the location given in the message. The location or the geographical coordinates where the vehicle is present are detected by the GPS module.

SELECTION OF VIBRATION SENSORS

The three parameters representing motion detected by vibration monitors are displacement, velocity, and acceleration. These parameters can be measured by a variety of motion sensors and are mathematically related (displacement is the first derivative of velocity and velocity is the first derivative of acceleration). Selection of a sensor proportional to displacement, velocity or acceleration depends on the frequencies of interest and the signal levels involved.

- Displacement sensors: are used to measure shaft motion and internal clearances. Monitors have used non-contact proximity sensors such as eddy probes to sense shaft vibration relative to bearings or some other support structure. These sensors are best suited for measuring low frequency and low amplitude displacements typically found in sleeve bearing machine designs. Piezoelectric displacement transducers (doubly integrated accelerometers) have been developed to overcome problems associated with mounting non-contact probes, and are more suitable for rolling element bearing machine designs.

- Velocity sensors: are used for low to medium frequency measurements. They are useful for vibration monitoring and balancing operations. As compared to accelerometers, velocity sensors have lower sensitivity to high frequency vibrations.

- Accelerometers: Piezoelectric accelerometers having a constant signal over a wide frequency range, up to 20 kHz, for a given mechanical acceleration level, are very useful for all types of vibration measurements. The basic acceleration sensor has a good signal to noise ratio over a wide dynamic range. They are useful for measuring low to very high frequencies and are available in a wide variety of general purpose and application specific designs. The piezoelectric sensor is versatile, reliable and the most popular vibration sensor for machinery monitoring. When combined with vibration monitors capable of integrating from acceleration to velocity, accelerometers can be a useful component in a Multi-Parameter Monitoring Program. The user is, therefore, able to determine both velocity and acceleration values for the same machine point with a single sensor.

For vibration analysis and condition monitoring, look at sensors with an AC or charge output. For continuous monitoring and machine protection, sensors with DC output are a better choice.

Five main features must be considered when selecting vibration sensors:

- Measuring range
- Frequency range
- Accuracy
- Transverse sensitivity and
- Ambient conditions.

Measuring range can be in Gs' for acceleration, in/sec for linear velocity (or other distance over time), and inches or other distance for displacement and proximity. Frequency is measured in Hz and accuracy is typically represented as a percentage of allowable error over the full measurement range of the device.

Working/ measuring principle of vibration sensor

The vibrating probe is stimulated by a piezo and oscillates at its mechanical resonance frequency. If the probe comes into contact with material, the oscillation is dampened and this is electronically registered, and sent out as a signal. Once the probe is no longer comes in contact with material, the probe can oscillate again and a new output signal is generated. The installation is generally on the inside of the vehicle at the predefined of the required measurement. The vibrating rod of vibration sensor is activated to vibrate via the piezo drive. If the vibrating rod is immersed, the amplitude will be damped. The electronics detects this damping and converts it into a switching command.

RESULTS AND DISCUSSIONS

The indication of change in angle, read pin gives the information or data to the microprocessor. When a microprocessor reads the signal from vibration it indicates that an accident has been occurred .in order to locate the spot of accident we use GPS, output of GSM and GPS is given to MAX-232 .MAX-232 is a level converter which change RS-232 to TTL and vice-versa. When accident occurs immediately GPS is activated and it gives the values of location in terms of Latitude and Longitude.

CONCLUSION

A system to detect an event of accident has been developed. The proposed system deals with accident alerting and detection. It reads the exact latitude and longitude of the vehicle involved in the accident and sends this information to nearest emergency service provider. Arduino helps in transferring the message to different devices in the system. Accelerometer monitors the accident happening direction and gyroscope is used to determine rollover of the vehicle. The information is transferred to the registered number through GSM module. Using GPS, the location can be sent through tracking system to cover the geographical coordinates over the area.

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