A Synopsis

"Accident Identification System"

Submitted in fulfillment of the requirement for the award of the Degree

of

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in
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Accident Identification System Using Arduino

Abstract

Speed is one of the basic reasons for vehicle accidents. Many lives could have been saved if emergency services could get accident information and reach in time. Nowadays, GPS has become an integral part of a vehicle system. This seminar analyses the capability of a GPS receiver to monitor speed of a vehicle and detect accidents based on monitored speed and send accident location to an Alert Service Center. The GPS will monitor speed of a vehicle and compare with the previous speed in every second through a Microcontroller Unit. Whenever the speed will be below the specified speed, it will assume that an accident has occurred. The system will then send the accident location acquired from the GPS along with the time and the speed by utilizing the GSM network. This will help to reach the rescue service in time and save the valuable human life.

Key words

GSM Module

GPS Module

Vibration Sensor module

16×2 LCD

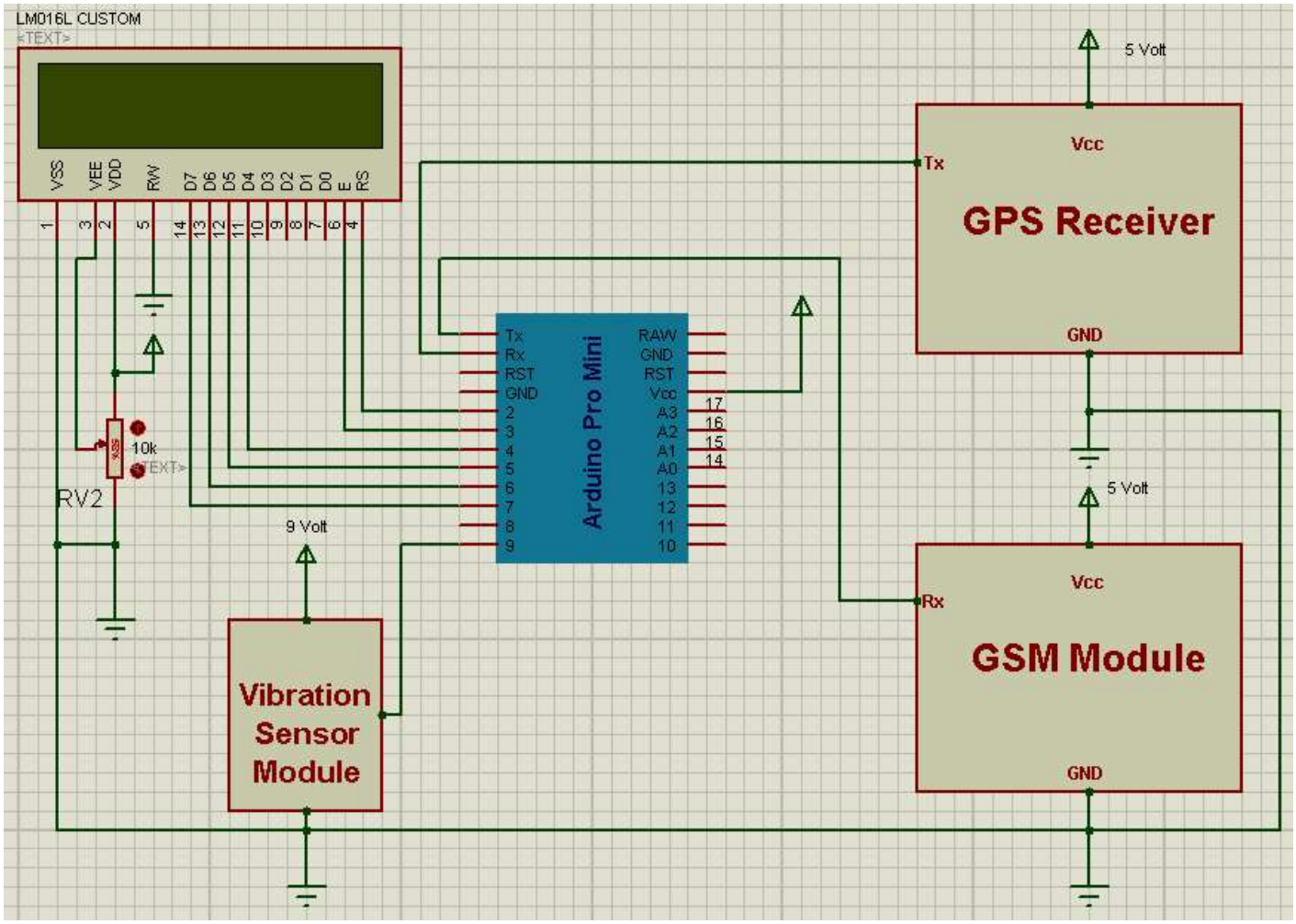
Power Supply

Arduino microcontroller

Introduction

The development of a transportation system has been the generative power for human beings to have the highest civilization above creatures in the earth. Automobiles have a great importance in our daily life. We utilize it to go to our work place, keep in touch with our friends and family, and deliver our goods. But it can also bring disaster to us and even can kill us through accidents. Speed is one of the most important and basic risk factors in driving. It not only affects the severity of a crash, but also increases risk of being involved in a crash. Despite many efforts taken by different governmental and non-governmental organizations all around the world by various programs to be aware against careless driving, accidents are taking place every now and then. However, many lives could have been saved if the emergency service could get the crash information in time. As such, efficient automatic accident detection with an automatic notification to the emergency service with the accident location is a prime need to save the precious human life. This seminar proposes to utilize the capability of a GPS receiver to monitor the speed of a vehicle and detect an accident based on the monitored speed and send the location and time of the accident from the GPS data processed by a microcontroller by using the GSM network to the Alert Service Centre.

Circuit Diagram with Description



Required Component Details

Arduino Uno It is a microcontroller board based on ATmega328P (datasheet). It has 14 digital input/output pins, 6 analog input, a 16 MHz quartz crystal, a USB connection, a power jack, a header and a reset button.

GSM Module A GSM modem or GSM module is a hardware device that uses GSM mobile telephone technology to provide a data link to a remote network.

GPS Module GPS modules contain tiny processors and antennas that directly receive data sent by satellites through dedicated RF frequencies

Vibration Sensor module The Vibration module based on the vibration sensor SW420 and Comparator LM393 to detect if there is any vibration that exceeds the threshold.

16×2 LCD These LCDs are ideal for displaying text/characters only, hence the name 'Character LCD'.

Power Supply The adaptor converts AC wall power to 9-volt DC for powering most instrument pedals and other 9-volt battery devices.

Cost Estimation of Project

sl.no	Component	Cost(approx)
1	Arduino Uno	400/
2	Power Supply	173/
3	16×2 LCD	135/
4	Vibration Sensor module	90/
5	GPS Module	400/
6	GSM Module	950/
7	Others.	-
Total -		2148/ (approx)

Applications of the project

The circuitry of the Accident Detection and Messaging System is similar to vehicle tracking system. The Tx pin of the Arduino is directly connected with the Rx pin of the GSM module and the Rx pin of the Arduino is directly connected with the Tx pin of the GPS receiver. The output pin of the Vibration sensor is connected with pin number 9 of Arduino. The 16×2 LCD's data pins are connected with the arduino's pin number 4,5,6,7 and the command pin and en of LCD are connected with arduino's pin number 2 and 3. The rw pin of the LCD is directly connected with ground. Vibration sensor module sends an active low signal when the accident occurs.

Another important aspect of the project is the Power Supply. The Vibration Sensor requires about 9 Volt of DC supply, if we opt for a 5 Volt DC power supply then this circuit will not work properly.

References

1. https://github.com/PrakritiMaiti/Accident-Identification-System.git
2. https://www.researchgate.net/publication/275824874_A_seminar_report_on_Accident_Detection_and_Reporting_System_using_GPS_GPRS_and_GSM_Technology
3. https://www.engineersgarage.com/accident-detection-and-messaging-system-using-gsm-and-gps/
4. "**Arduino**",[Online]Available:"Arduino - Home"
5. "Google",[Online]Available:"Google"