ACCIDENT DETECTION AND REPORTING SYSTEM USING GSM AND GPS TECHNOLOGY

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Abstract

Recently technological and population development, the usage of vehicles are rapidly increasing and at the same time the occurrence accident is also increased. Hence, the value of human life is ignored. No one can prevent the accident, but can save their life by expediting the ambulance to the hospital in time. In many situations, we may not able to find accident location because we don't know where the accident will taken place. So we use GPS to track the location and GSM to convey message to coded number. The purpose of this work is to prevent the lives of human being and detect the accident. When accident occurs, immediately mems sensor will detect the signal and thnarduino will send the signal to the gps. The gps will track the location and signal send through gsm to coded number.

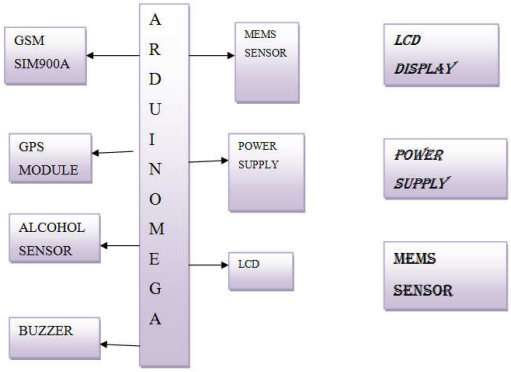
Introduction

To avoid accident it is necessary to take preventive measures like checking whether the driver is to rapidly increase in population of world, number of vehicles are increasing leading to increase in no of accidents. The aim of the work is to minimize vehicle accident which leads to loss valuable human lives by providing some safety. under influence of alcohol or not. Also after the occurrence of accident if the injured is treated immediately then it would save many lives so it is important to track the position.

Literature Survey

1. Intelligent automobile system for accident prevention and detection from this paper we got idea of alcohol sensor. Driver is alcoholic consumed ignition system remains off.
2. Intelligent accident identification system using gps and gsm modem.
   This paper tells about tracking of location of accident by GPS and convey the msg to coded number via GSM.
3. Real Time Vehicle Accident Detection and Tracking Using GPS and GSM.
   From this paper we get idea of accident sensors limit switches.

Block Diagram



Block Diagram Description

Block diagram consist of two parts: prevention and detection as shown in above figure. Hence prevention and detection of accident goes on simultaneously. If driver had drunk alcohol, buzzer will on and message display on LCD it will display driven is taken alcohol. If conditions are ok and accident is not detected the message on LCD is “normal situation”. Mems sensors are placed inside the car bonnet. Initially mems sensors are normal value. When accident occurs the sensor get high value and it will give signal to arduino microcontroller, on that time buzzer will on and message display on LCD is “accident detect”. Buzzer will remains on up till GPS tracks exact location. When GPS will track the location buzzer will get off and message send via GSM to coded number.

Hardware Description

Arduino

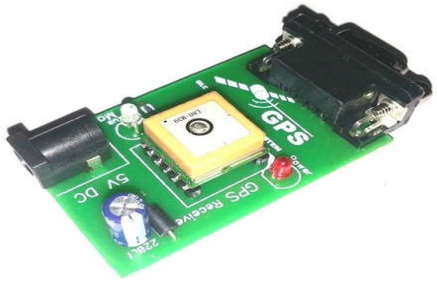
The Arduino Mega 2560 is a microcontroller board based on the ATmega 2560 (datasheet). It has 54 digital input/output pins (of which 14 can be used as PWM outputs) 16 analog inputs, 4 UARTs (hardware serial ports) A 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button.

Alcohol Sensor

MQ-3 is suitable for detecting alcohol in air. MQ-3 is a tin dioxide semiconductor gas sensor. This has high sensitivity to alcohol with quick response speed. The alcohol sensor would be placed on steering wheel of the car, because range of sensor is low so sensor has to be placed near to the driver of vehicle .When driver is under the influence of alcohol, the sensor's conductivity increases. Sensor is analog sensor and arduino microcontroller cannot read analog voltage so to convert signal in digital we use signal condition.

GSM

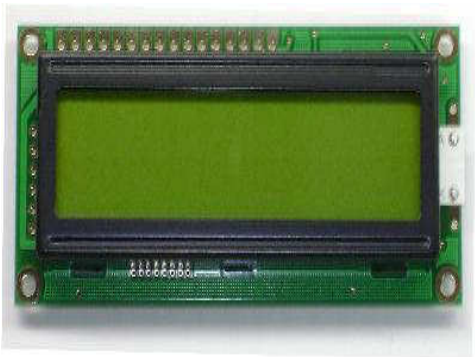
GSM (Global system for mobile communication) is a digital mobile telephony system used in all world.GSM uses TDMA system. In this project we use SIM900A GSM module. It is capable of receiving information from GPS satellites and then calculates the device geographical position. When an accident occurs GPS tracks that location of vehicle containing longitude and latitude details further send to controller and message to be send through GSM module to particular coded number.



GPS

The System (GPS Global Positioning) is a navigational system that uses a network of 24-32 satellites to. Determine the exact position of any object on earth. The satellites are positioned in orbits about an altitude of 12,000 miles from the earth surface. The satellites send microwave signals which are collected by GPS receivers. The collected information is used to infer the distance using velocity and time.

LCD



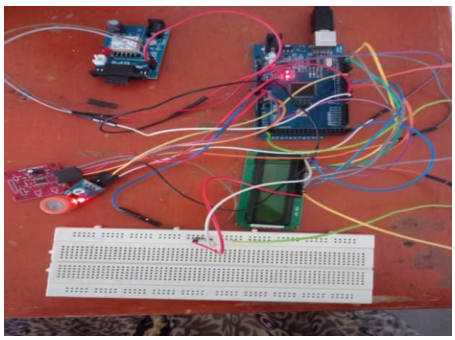
In this project 16*2 LCD is used to display message. It is basically used for displaying purpose on the occurrence of accident it would display the accident detected message

Software Description

Arduino IDE

It is a cross-platform application. It is used to write and upload programs to Arduino board. The Arduino IDE supports the languages C and C++ using special rules of code structuring. The Arduino IDE supplies a software library from the Wiring project, which provides many common input and output procedures. User-written code only requires two basic functions, for starting the sketch and the main program loop, that are compiled and linked with a program stub *main()* into an executable cyclic executive program with the GNU toolchain, also included with the IDE distribution. The Arduino IDE employs the program *avrdude* to convert the executable code into a text file in hexadecimal encoding that is loaded into the Arduino board by a loader program in the board's firmware.

Result



Conclusions

Due to rapid increase in accident rate, prevention and accident detection is more necessary. So we have designed a system which would prevent the accident by seat belt and alcohol test as well as detect accident and trace location details via GPS and send message via GSM

Future Scope

If driver is in alcoholic consumed slowly the car speed will controlled and car will get stopped. This can be developed by interconnecting a camera to the controller module that takes the photograph of the accident spot that makes the tracking easier.

Acknowledgement

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References

1. Intelligent accident identification system using GPS, GSM modem S.SONIKA, Dr. K. SATHIYASEKAR, S.JAISHREE (IJARCCE, vol 3, issue 2, Feb 2014).
2. Intelligent automobile system for accident prevention and detection S.SARANYA, M.SHANKAR, N.MUTHULINGAM (ICETSH 2015).
3. Real Time Vehicle Accident Detection and Tracking Using GPS and GSM NAMRATA H. SANE, DAMINI S. PATIL, SNEHAL D. THAKARE (IJRITCC vol 4, issue 4, april 2016).
4. Accident Detection and Message Conveyor System using GSM and GPS Module KHYATI SHAH, SWATI AIRAGI (IJCA ,Vol 176-no 2,oct 2017) arduino Datasheet.