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Accident Detection, Prevention and Alert System

Asst. Prof. Vyavhare.V. A[1], Rajashri Kharait[2], Pooja Kulkarni[2], Yogesh pol[2]
[1]Assistant Professor, [2]Student
Parikrama College of Engineering, Kashti, Maharashtra, India

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ABSTRACT

It is observed that, the major hindrance on road is due to heavy traffic flow during peak hours especially when people commute to work. The total number of vehicles or objects exceeds its capacity by causing a blockage for emergency vehicles such as fire fighter and rescue vehicles, furthermore wastage of fuels adds more to the environmental pollution which is not adoptable for a country's economic growth. In order to develop an efficient, reliable, cleaner and safer mode of transportation, it is necessary to make the road transportation system automated as much as possible. To track the vehicle, we need to send the message to GSM device, so that it gets activated. It also gets activated by detecting the accident on the vibration sensor connected to the Arduino UNO controller. Once the GSM is activated it receives the last latitude and longitude position value and send message to the emergency server which is predefined in the program.

Keywords - GSM, GPS, MQ3 sensor, Arduino mega2560, LCD, Vibration sensor, Power supply

I. INTRODUCTION

The high demands of vehicle have also increased the traffic problems and the road accidents. Due to drivers carelessness there occur to demand chief road accidents with the cities, but also outside the city, accident mostly occur due to drunken driving Not only drunken drive, but also driving rudely without wearing seat belts causes a loss of lives. Due to this the life of public is at high risk. The reason behind this is the lack of best emergency facilities available in our country. An automatic alert system with maximum information of the accident is introduced in this paper. The proposed system which can detect accidents in significantly less time and sends the information to emergency centre with a few seconds which covers the exact location where the accident has been occurred and also the information such as the speed, alcohol percentage, has put the seat belt or not, number of members in the vehicle. This alert massage is been sent to the emergency server which will inform the ambulance, police station near to that location and also to the insurance office, which will help to save the valuable lives. A switch is also provided near diver seat in order to terminate the sending of message in rare case where there is no casualty, this can save the precious time of ambulance, police. When the accident occurs the alert message is been sent automatically to

emergency server. The message is sent through the GSM module and the location is been detected with the help of GPS module. The accident can be detected precisely using vibration sensor. This application provides the excellent solution to the poor emergency facilities which are provided to the road accidents in most possible ways.

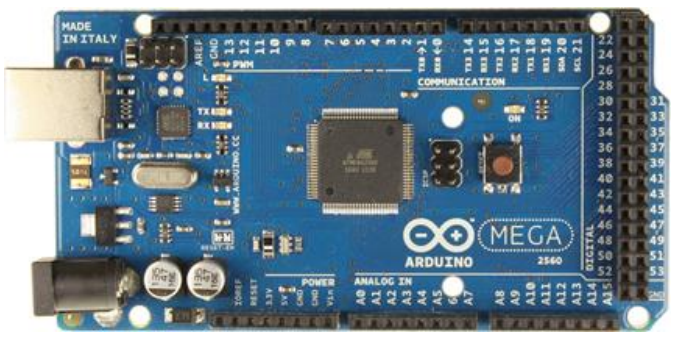
II. OBJECTIVES

- We can monitor the speed of the vehicle.
- We can find the location of the vehicle.
- Alert message to mobile phone for remote information.
- Mobile number can be changed at any time.

III. PART OF PROJECTS

Arduino mega 2560 : -

The Arduino Mega 2560 is a microcontroller board based on the ATmega2560. It has 54 digital input/output pins (of which 15 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. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with an AC-to- DC adapter or battery to get started. The Mega 2560 board is compatible with most shields designed for the Uno and the former boards Duemilanove or Diecimila.



Alcohol Sensor:-

An alcohol sensor detects the attentiveness of alcohol gas in the air and an analog voltage is an output reading. The sensor can activate at temperatures ranging from -10 to 50° C with a power supply is less than 150 Ma to 5V. Alcohol sensor (MQ3) detects the alcohol content in air which is connected to the micro-controller. It provides input to the controller is in the form digital data

- VCC is the Gas Detection Sensor's power supply pin, which can be linked to a 5V source.
- GND is the board's ground pin, which should be linked to the Arduino's ground pin.
- DOUT is the board's digital output pin; a low output indicates that no alcohol is present in the environment, while a high output indicates that Alcohol is present.
- AOUT is the board's Analog output pin, which will provide us with an analog signal that varies between Vcc and ground depending on the alcohol level detected:

GSM Module

Using AT commands GSM sends the SMS to corresponding student's parent. This GS Modem can accept any GSM network operator SIM card and act just like a mobile phone with its own unique phone number. Advantage of using this modem will be that you can use its RS232 port to communicate and develop embedded applications. . It can also be used in GPRS mode to connect to internet and do many applications for data logging and control. Applications like SMS Control, data transfer, remote control and

logging can be developed. The Global System for Mobile Communications (GSM) is a standard developed by the European Telecommunications Standards Institute (ETSI) to describe the protocols for second-generation (2G) digital cellular networks used by mobile devices such as mobile phones and tablets.

GPS module:-

GPS used for live tracking.it gives the input to the controller in the form of asynchronous data which contain latitude and longitude of the bus location The GPS module is a wireless chip module combined on the mainboard of a mobile phone or machine. It can communicate with the global satellite positioning system in the United States. It can locate and navigate according to the condition of a wireless network signal. Many mobile phones have Equipment with a GPS module can communicate with GPS synchronous satellites for free at any time and area.

Vibration Sensor:-

Vibration Sensor The vibration sensor is also called a piezoelectric sensor. These sensors are flexible devices which are used for measuring various processes. This sensor uses the piezoelectric effects while measuring the changes within acceleration, pressure, temperature, force otherwise strain by changing to an electrical charge. An accelerometer is a sensor that produces an electrical signal that is proportional to the acceleration of the vibrating component to which the accelerometer is attached. ... The acceleration signal produced by the accelerometer is passed on to the instrument that in turn converts the signal to a velocity signal.

Advantages:

- Reduces the accident rate.
- Works anywhere at any location.
- Get a proper location.

Applications:

1. His system can be further implemented with mishap impediment scheme.
2. that is to identify and avoid accidents before it happens.
3. Vehicle navigation application.

IV. CONCLUSION

The proposed system provides the emergency medical service as soon as possible and to avoid the mortality. It is to provide the details of the accident occurred and area of the accident with other information. It helps to easily provide facility and help to the victim of the accident. GSM is used to provide information regarding the accident and GPS module is used to traces the location of the vehicle.

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