

TRACKING OF VEHICLE ACCIDENTS USING GPS AND GSM

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ABSTRACT

GPS, GSM, and vibration sensor are used in an Arduino-based Vehicle Accident Alert System. The vibration sensor detects an abrupt change in the vehicle's axis, and the GSM module sends you an alarm message with the accident location to your phone. Our daily lives have been made easier by advances in technology. Since there are two sides to each coin. Technology, like everything else, has advantages and disadvantages. Increased Road accidents have become more common as a result of technological advancements, resulting in significant human loss. The critical situation Our country's resources only exacerbate the issue. This will be addressed in our project. Here we are using fire sensor in this project. Fire sensor is used to detect the fire and send alert message to the registered mobile number. When a fire is successfully detected, the device sends data to a central server with GPS coordinates, which allows us to determine the exact position using the maps programme on an Android phone using the link received via SMS. The monitoring approach can be used to monitor and control the indications read through each and every detector from any level.

Keywords: Arduino uno, vibration sensor, fire sensor, GPS, GSM, LCD display, buzzer, power supply.

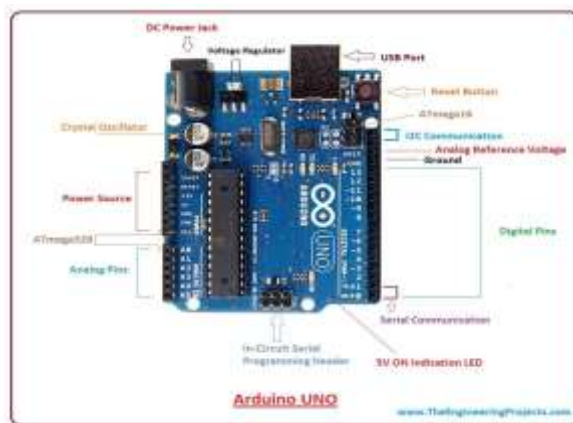
INTRODUCTION

Wireless communication is used by the registered mobile. When a city has a traffic accident, the notice is sent out is transmitted

through GSM module to the registered mobile phone in less than time. Accidents can happen at any time. The use of vehicles such as cars and bikes may grow as a result of employment, and as a result, accidents may increase. Over speeding can result in this. People are in danger of being bankrupt. Due to a lack of resources, they are at risk because of their excessive pace. The rate of accidents can't be reduced using oldest procedures. This is to lower the accidents in order to regulate them. Arduino is a micro controller board that allows you to program. Vibration sensor is used to detect the vibrations caused by accident. Fire sensor is used to detect the fire with in the surroundings or on the spot and sends the message.

Due to the expansion of the automobile industry in the twentieth century, the number of vehicles has increased tremendously. As the number of vehicles increases, so do the frequency of accidents. The technology we built intends to automatically detect an accident and notify the nearest hospital or medical services of the accident's specific location. It transmits a distress signal to the rescue team. The geographical location, time, and angle of the accident are all included in the alert message. The microcontroller receives the sensor's output. The microcontroller issues a signal. For our project, we used GPS and GSM modules. The Global Positioning System (GPS) is a satellite navigation system that determines an object's ground position. GPS is used for both tracking and navigation in this case.

GSM (Global System for Mobile Communication) is a digital, open cellular technology that transmits mobile voice and data services. The GSM system is the world's most frequently utilised cellular technology. It's also quite cost-effective and economical.



BLOCK DIAGRAM:

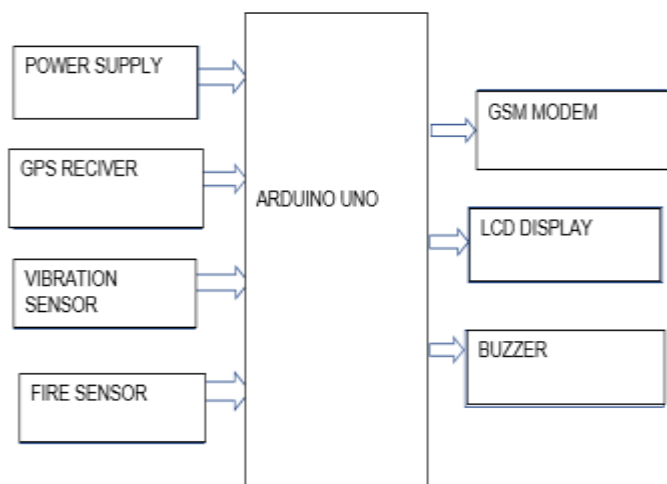


Fig: Reducing Accident By Using Wireless Communication With Fire Sensor

ARDUINO UNO

The Arduino UNO is an open-source microcontroller board designed by Arduino.cc that is based on the ATmega328P microcontroller. The Arduino is a micro controller. When an accident occurs, the main control unit detects or alerts occurs. It gathers data from vibration sensors, GPRS, and other sources. The output of GSM modules is reflected in the display system or by sending a message. Here, the vibration sensor is crucial role. The vibrations of the machine will be detected by this vibration sensor. This car serves as an accident detecting module. Arduino collects data from all other modules and displays it. GSM module is used to send the message to the recipient.

GSM MODEM

The GSM SIM900 module is preferred for communication between the GPS, GSM and the assigned mobile number. SIM900 indicates that it is a tri band device. Frequencies between 900 and 1900 MHz, such as DSC 100 MHz, EGSM 900 MHz, PCS 1900 MHz. GSM module receiving pin and GPS module transmitting pin modules are used to communicate with one another as well as the mobile phone.



GPS MODULE

To locate a point on the planet, the entire surface is divided into coordinates, which may be simply collected by a GPS module. The GPS system utilised here is SIM28ML. The location of the GPS module will be determined. vehicle and the data retrieved from the GPS receiver received via coordinates and the data received is first send to Arduino and then the data is sent to the GSM module saved the contact. The regularity is operated in the 1575.42 MHz frequency and produced. The NMEA format of the GPS module comprises data such as Real-time location.

measuring system. Fill out our contact form or call us directly: our locations page lists phone numbers and e-mail addresses for each of our locations.



LCD MODULE

An LCD module with 16x2 alphanumeric kinds is used to display the numbers, alphabets, and special characters. Using LCD pins with higher bit data lines, such as pin11,12,13, and 14 are connected to Arduino's digital pins. Pins 8,9,10 in 4bit mode, for example as illustrated below figure. The LCD's RS and E pins are connected to pins 12 and 13. Use the read/write function to perform the write operation on the LCD. The ground pin is connected.

Arduino is the controller utilised in this project, and it is used to control all of the circuit's components. Apart from the controller, the GPS module is the other significant component.



VIBRATION SENSOR

Vibration sensors detect vibration using piezoelectric accelerometers. They're utilised to quantify varying accelerations or speeds as well as regular vibrations. Repair professionals employ sensors to predict machine maintenance, minimise total costs, and improve machine efficiency. Process control systems, aerial navigation, and undersea applications are examples of applications where vibration sensors are used. The frequency ranges between 0.2 and 2500 Hz. These sensors can operate at temperatures ranging from -50°C to +85°C. We would gladly assist you in selecting the most appropriate vibration sensor or



BUZZER

A buzzer is a device that converts audio signals into sound signals. DC voltage is frequently used to power it. It is frequently employed as a sound device in alarm clocks, computers, printers, and other electronic equipment. It is primarily separated into piezoelectric and electromagnetic buzzers, which are represented in the circuit by the letters "H" or "HA." The buzzer can produce a variety of sounds, including music, sirens, buzzers, alarms, and electric bells, depending on its design and intended application.



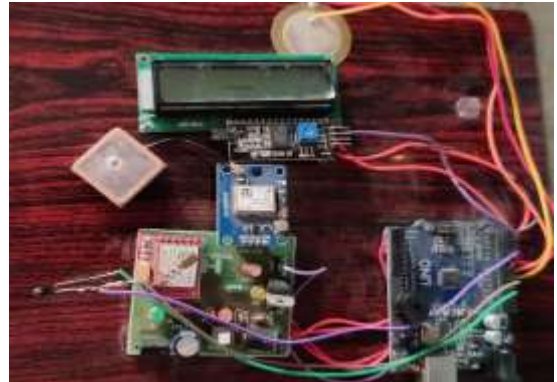
FIRE SENSOR

A flame detector is a sensor that detects and responds to the presence of a flame or fire, making flame detection possible. Because of the processes used to detect the flame, a flame detector can frequently respond faster and more accurately than a smoke or heat detector.

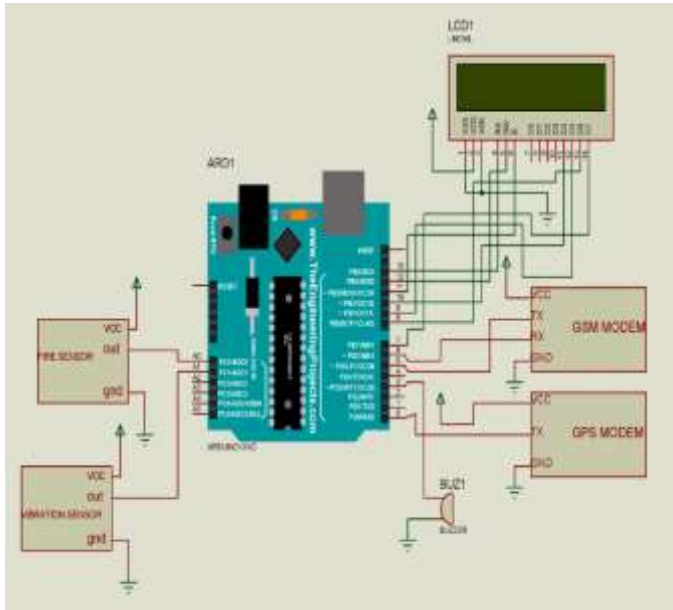


gathered and sent to the via SMS to a well-respected individual. Fire sensor output is connected to Arduino.

OUTPUT:



CIRCUIT DIAGRAM:



RESULT

The Arduino is the system's brain, assisting in the transmission of messages to various components. When an accident occurs, the vibration sensor will be engaged and the data is sent to the registered phone number through the GSM module. The location can be sent using GPS to cover the geographical area with a tracking system over the region coordinates. Here it detects two types of accidents normal accidents and fire accidents.

Arduino is the controller utilised in this project, and it is used to control all of the circuit's components. Apart from the controller, the GPS module is the other significant component.

The GSM module is utilised as a receiver. To obtain the GSM and vehicle GPS module coordinates are used will send the user the received coordinates through SMS. An LCD is utilised to display information and notification of status or coordinates. When someone is driving, after the automobile was involved in a collision, the vibrations of the vibration sensor detects the car. And the sensor detects the vehicle serves as an accident detection module that sends the data to the information to the microcontroller as well as the location of the microcontroller a vehicle. The GPS module receives the vehicle and sends the car's coordinates to the GSM module. The information obtained is sent to the Arduino Uno. The information received the coordinates' data is



Fig: result

These types of messages are come to the register mobile number. ACCIDENT DETECTED AND FIRE ACCIDENT DETECTED with link showing the accident's location. If we click the link we can know the

accident's spot.

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CONCLUSION

The suggested system is concerned with accident detection and alerting. The Arduino is the system's brain, assisting in the transmission of messages to various components. When an accident occurs, the vibration sensor will be engaged and the data is sent to the registered phone number through the GSM module. The location can be sent using GPS to cover the geographical area with a tracking system over the region coordinates. The vibration sensor is a key component of the system. The fire sensor is going to detect fire in near by areas or at the spot and alerting with message.

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FUTURE SCOPE

The technology is extremely effective at detecting fires and other types of hazards. It's an accident notification system. We can also do this with a Raspberry Pi. We can also include a live camera. We can prevent numerous accidents and save millions of lives if we identify living beings crossing in front of the vehicle.

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