

VEHICLE ACCIDENT DETECTION AND HEARTBEAT MONITORING SYSTEM BY USING GSM AND GPS

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Abstract—Arduino based vehicle accident alert system uses GPS, GSM and accelerometer. The accelerometer detects a sudden change in the vehicle's axis and sends an alert message to your mobile phone at the GSM module accident. Emerging technologies have made our daily lives easier. Technology has its advantages and its disadvantages, as each currency has two sides. The rise of technology has increased the rate of road accidents, resulting in heavy casualties. Emergency benefits in our country raise this issue. Our project is going to solve this problem.

Keywords-Arduino, GSM, GPS, LCD, alcohol sensor

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I. INTRODUCTION

Higher demand for automobiles has increased traffic accidents and road accidents. People's lives are in grave danger. This is due to the lack of the best emergency facilities in our country. An automated alarm device has been introduced in this paper for vehicle accidents. The design transmits the primary information to the first aid center within seconds, including the accident detection system and the geographical coordinates, time and angle of the accident. This warning message was shortly sent to the rescue team, which helps save valuable lives. In the rare case of life-threatening treatment, the treatment team is also provided with a switch to end the message by saving valuable time. A warning message will be automatically sent to the rescue team and the police station in the event of an accident. The message is transmitted via the GSM module and the GPS module can detect the location of the accident. This risk can be accurately identified with both micro-electromechanical system (MEMS) sensors and vibration sensors. The angle of the car's rollover can be detected by the message through the MEMS sensor. This app provides the best solution to the poor emergency benefits provided in the most probable way for road accidents. Over the past decade, the use of automobiles has steadily improved, increasing the risk to people's lives. It is insufficient to have the benefits of urgent reasons

II. DEFINITION OF PROBLEM

Accident detection and vehicle messaging system using GSM modem to help detect risk by switch. They can be used to simply press or press the switch. The switch helps transmit signals to the Arduino controller. Arduino controllers send an alert message to the location via the GSM modem. If the person is in a minor accident, closing the message using the switch indicates that the driver's vision is not required. This is to prevent medical and police teams from wasting time. The GSM modem is like any mobile phone that has no display, keypad and speakers. It works by accepting a SIM card and subscribing to a mobile operator.

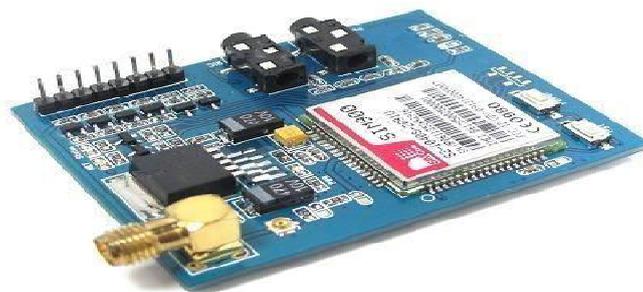
III. DESCRIPTION OF PARTS

ARDUINO:

Arduino Uno is a board of ATmega328 (data sheet) based microcontrollers. It has 14 digital input/output pins (6 of which can be used as PWM outputs), 6 analog inputs, 16 MHz porcelain resonator, USB connection, power connector, ICSP header and reset button. It has everything needed to support the microcontroller; connect it to a computer with a USB cable, or run it from AC to DC adapter or battery. This is different from all previous cards because it does not use a USB-to-FTDI serial driver chip. Instead, it has the Atmega16U2 (up to the Atmega8U2 R2 version) programmed from USB to serial converter. External power (not USB) can come from AC to DC adapter (wall-wart) or battery. The adapter can be attached by inserting a positive 2.1 mm central plug into the power plug of the board. Battery cables can be added to the Gnd and Vin pins headers of the POWER connector. The board can operate with an external supply of 6 to 20 volts. If you use more than 12V, the voltage regulator will overheat and damage the board. The recommended range is 7 to 12 volts.

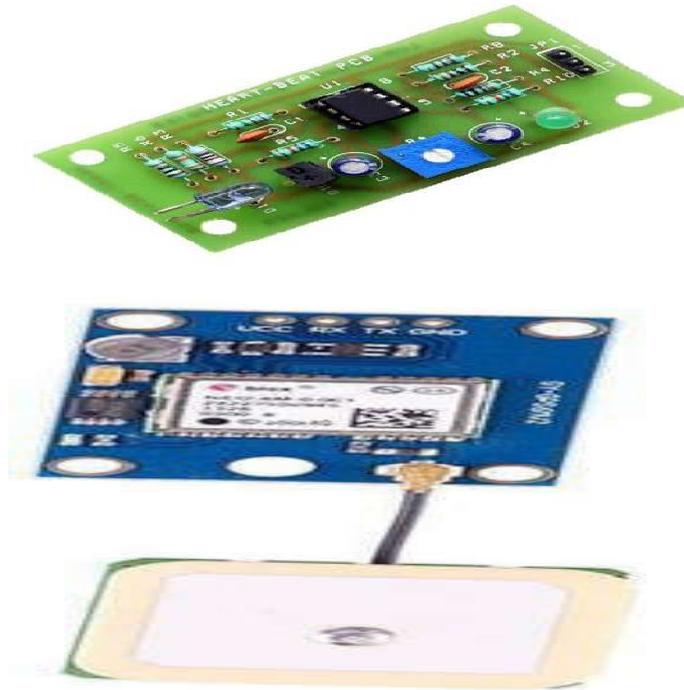
GSM – GLOBAL SYSTEM FOR MOBILE:

GSM The medium used to control and monitor transformer load from anywhere the message is sent. It has its own executive role. Through this, GSM is used to monitor and control DC motors, stepper motors, temperature sensors and solid state relays by sending a message through the GSM modem. So there is no need to waste time shipping. Therefore, it is considered the most effective communication by mobile, which is effective in industrial control, automobiles, and equipment controlled anywhere. It is very economical and cost effective; The GSM is therefore a priority for this regulatory process. So this automated system was more efficient and inexpensive and more convenient to use. Therefore, communication



GPS - GLOBAL POSITIONING SYSTEM:

Used for GPS vehicles for both surveillance and navigation. Tracking systems allow a base station to track vehicles without driving interruptions, where the navigation system helps the driver reach the destination. Whether it's a navigation system or a tracking system, the structure is at least the same. Wherever an accident occurs, the GPS system detects the vehicle's location and transmits information to a specific person via GSM alerting the person via SMS or call. The GPS module sends tracking location information in real-time and transmits a lot of data in NMEA format. There are many sentences in NMEA format. We only need one sentence. This sentence starts with \$ GPGGA and contains coordinates, time and other useful information. It is represented in the GPGA Global Positioning System Fig Learn more about reading Data NMEA sentences and GPS data.



HEART BEAT SENSOR:

The heart rate sensor has a great bright red LED and a light detector. The LED should be super bright because most of the light on the finger should be spread and detected by the detector. Now, when the heart pumps a vibration of blood through the blood vessels, the detector can reach it and it achieves a somewhat higher opacity from the finger. With each heart beat, the detector signal changes. This variation is converted into an electric pulse. This signal is triggered by an amplifier that outputs a + 5V logic level signal. Each heartbeat indicates the output of a glowing LED pulse. As shown in figs.



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ALCOHOL SENSOR:

An alcohol sensor detects the concentration of alcohol gas in the air and the analog voltage is an output reading. The sensor can provide power from 150 V to 5 V at a temperature of -10 to 50 ° C. The sensitivity range ranges from 0.04 mg / L to 4 mg / L, which is the problem with fertilizers.



MOTOR:

An electric motor is an electric motor that converts electrical energy into mechanical energy. Most electric motors operate between the magnetic field and the electric current flow of the motor to rotate the cable to produce the shaft. Electric motors can be operated directly from an existing source (DC) source, such as batteries, motor vehicles or adapters, or via an electric grid, inverter or electronic generator changing current (AC). A generator is mechanically similar to an electric motor, but vice versa, and turns the engine into electrical power.



IV. WORKING OPERATION

One-day major accidents are now occurring on the highways due to the acceleration of traffic and drivers. And in many cases family members or ambulances and police officers will not be able to find the accident information at the appropriate time. This can lead to delayed assistance which is even more important to the person suffering the accident. Our project uses GSM modems to detect auto accident vehicles and messaging systems, and to send the victim of this national problem and the accident victim to the rescue team at the right time. Designed to save lives by delivering messages. In this project we are using an Accident Detection Unit that has launched the car. For example, in the event of an accident, the car collided with another vehicle or something else, causing it to convey the message to the Arduino. Arduino is used as the central processing unit (CPU) of our project. When the Arduino switch receives a signal, it sends an instant message to the GSM modem, after which the GSM modem will start the GSM modem. In this project we have used the reset button If this accident is very common, if the car hits a wall in situations like parking, the driver will press the reset button and notify the Arduino of this system. Do not SMS but the driver will not press the reset button if the driver is not in a position to suppress the switch or if there is a really major accident and then the system will send an SMS. Here, we use the GSM modem to send SMS to family members and rescue teams, also used to indicate the buzzer because there was an accident that would sound a beep. This is how the life of the victim of the accident happened.

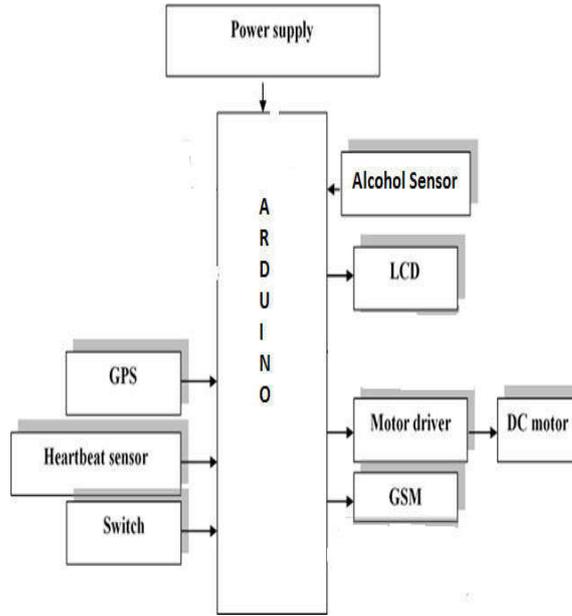
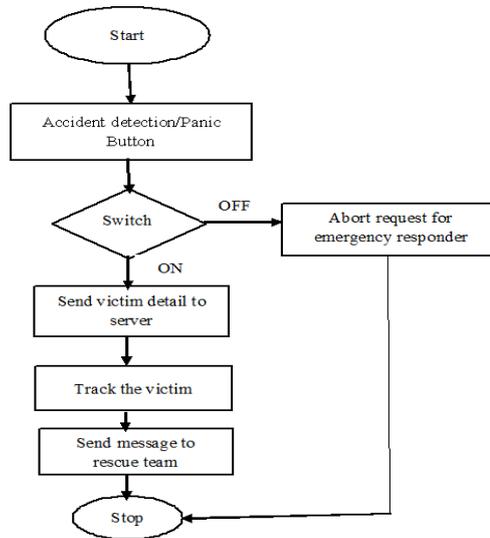


Fig : Block Diagram

FLOW CHART

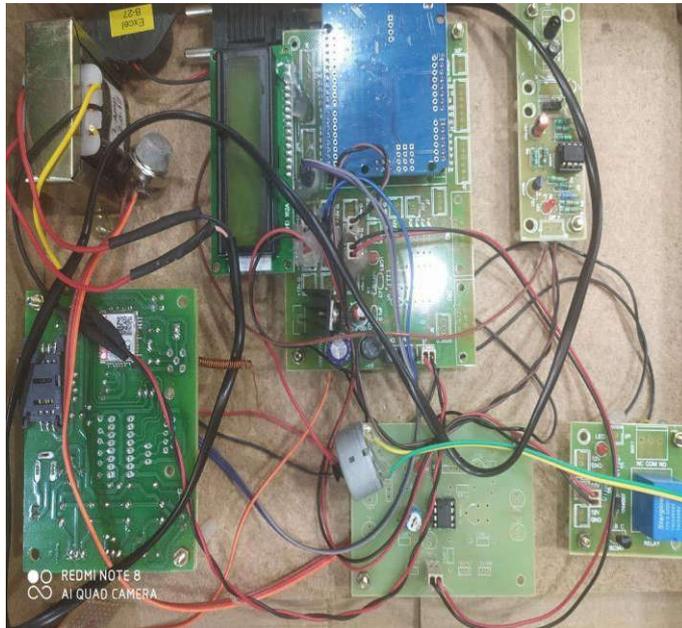


V. ADVANTAGES

- The monitor the accident.
- To save the people in a right time. Cost is less in this system.
- The message will be send to the respective persons or rescue team.
- It shows the position in which the accident has been occurred.

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VI.RESULTS



VII.CONCLUSION AND FUTURE WORK

The system offers a low-cost, transportable and small-scale design. It has Accelerometer Sensors, GPS and The GSM which interfaces to reduce accidents and lead to accidents. As a result, it will shorten the search time for locations. This device is very useful for innovative crashes and overnight accidents as it reduces the probability of such an accident to reduce the main purpose of the accident system. This system will playan important role in everyday life in the future.

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