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Accident Detection and Messaging System using GSM and GPS Module

K. Tejesh, Assistant Professor Priya
Department of ECE, Saveetha School of Engineering
Chennai, Tamil Nadu, India,
priyaa.sse@saveetha.com

***Abstract*-With the growing population the use of cars has emerge as superfluous and this has brought about growth in the range of injuries at an alarming price. This project objectives at detecting the accident and reporting the location of coincidence to the previously coded numbers. This facilitates in a fast carrier from the ambulance and the involved individual. The GPS and GSM era is used to find the position of the car in the shape of latitude and longitude coordinates and sends it thru SMS. Piezoelectric and alcohol sensors when prompted, help in detecting the twist of fate and sending the sign to the micro controller of the system. This similarly enables in sending the message to the involved individual. This device can help groups in the condo car enterprise to keep a track of the vehicular activity through sending message at normal intervals to the authorized numbers.**

***Keywords*-GPS, GSM, Arduino, Alcohol and Piezoelectric Sensors.**

I.INTRODUCTION

We frequently stumble upon the reality that once an accident takes place the human beings close by have to manually call the ambulance which results in waste of time. Hence there is a delay for emergency offerings to arrive on the vicinity of the accident. Proposed machine makes an effort to offer the emergency centers to the victims inside the shortest time viable.

It contains an embedded system that includes GPS and GSM modules linked with an Arduino UNO. The whole set-up is set up at the front end of the automobile. An alcohol sensor is used to detect the Ethanol degree in the breath of the driving force. A piezoelectric sensor is used to detect the vibration at the time of twist of fate. Global Positioning System (GPS) is used to identify the location of the automobile. GSM is used to inform

The exact vehicular location within the form of the longitude and range coordinates to the precoded numbers the use of an SMS. GSM module offers a way communication through the usage of a SIM card. Such a module works within the identical way as a regular telephone. This software offers the most suitable strategy to terrible emergency facilities provided to the roads accidents inside the maximum feasible way.

II.METHODOLOGY

The main factors of the prototype model of automatic vehicle coincidence detection and messaging are GSM and GPS module and Arduino UNO. The working of this model might be made inside the following steps:

- An alcohol sensor is normally used as a breath tester. It senses the Ethanol content material in the driving force's breath and offers its output to the motor. If the extent of the ethanol is past the limit then motor stops (brakes) else the motor is ON.

- A piezoelectric sensor is used to experience the vibration at the time of the coincidence and supply its output to the buzzer. If any cost of vibration sensor is modified past restrict then buzzer will begin. If the buzzer is ON for greater than 10 seconds, the GPS module is triggered ON. In case of a minor accident, in which the motive force does not need any external help, he/she will be able to press the switch inside 10 seconds because of which the buzzer might be OFF and the GPS will no longer be triggered. The GPS (Global Positioning System) detects the latitude and longitudinal position of a vehicle.

- The latitudes and longitude role of the car is sent as a message thru the Global System for Mobile Communication (GSM) to the pre-stored numbers.

III. BLOCK DIAGRAM OF THE SYSTEM

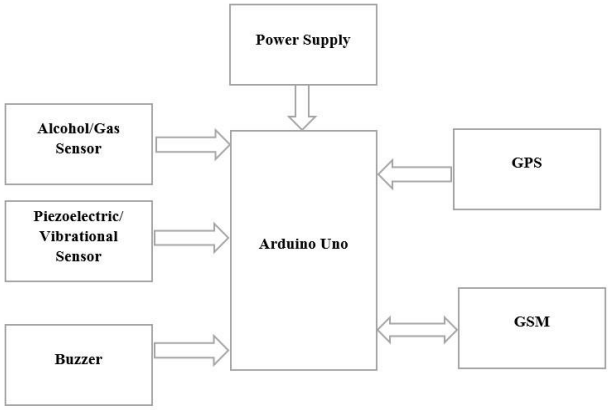

Fig. 1 Three Proposed Accident Detection System.

IV. HARDWARE COMPONENTS AND DESIGN

1. Arduino UNO

Arduino Uno is a micro-controller board primarily based at the ATmega328P. It has 14 virtual input/output pins, out of which 6 may be used as PWM outputs, 6 analog inputs, a sixteen MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button [7]. The Arduino Uno may be powered via the USB connection or with an outside energy Supply[1]. The energy supply is selected robotically. The board can operate on an outside supply of 6 to 20 volts thought The encouraged variety is 7 to twelve volts. Three, five, 6, 9, 10, and eleven. Provide 8-bit PWM output with the analogWrite() characteristic. External (non-USB) power can come both from an AC-to-DC adapter (wall-wart) or battery. The adapter can be connected by means of plugging a 2.1mm center-high-quality plug into the board's strength jack. Leads from a battery can be inserted inside the Gnd and Vin pin headers of the POWER connector.

2. Alcohol Sensor

Alcohol sensing element generally used as a region of the breathalyses or breath tester for the detection of fermentation alcohol within the human breath.MQ-3 fuel sensor has high sensitivity and fast response time to alcohol and has desirable resistance to disturb of fuel, smoke and vapour. Sensitive cloth of MQ-3 is SnO2, which with decrease conductivity in smooth air. Mainly vapour. Sensitive fabric of MQ-3 is SnO2, which with decrease conductivity in easy air. Mainly or. A easy interface may be a zero-three.3V ADC

3. Vibration Sensor

In this project piezoelectric sensor is used as a vibration sensor. A piezoelectric sensor is a device that uses the piezoelectric impact, to degree adjustments in pressure, acceleration, temperature, strain, or force by changing them to an electrical charge.

4. Buzzer

The buzzer used is 1-8S LiPo Battery Voltage Tester Low Volt Alarm Buzzer and LED. It is used for checking out 1-8S Lipo/Li-ion/LiMn/Li-Fe. The Voltage Detection Precision is +/- 0.01V. The Unit Voltage Display Range: 0.5~4.5V. The 1S Test Mode Voltage Range: 3.7~30V and there is a Low voltage alarm mode for two-8S. The Alarm Set Value Range is OFF~2.7~3.8V.

5. GPS Module

The GPS used on this assignment is NEO6mv2.The NEO-6 module collection is an own family of stand-alone GPS receivers providing the excessive performance u-blox 6 positioning engine. These flexible and price powerful receivers provide numerous connectivity engine. These bendy and cost effective receivers offer numerous connectivity deal for battery operated mobile devices with very strict price and area constraints. The 50-channel u-blox 6 positioning engine boasts a Time-To-First-Fix0 (TTFF) of underneath 1 2nd [4].The dedicated acquisition engine, with 2 million correctors, is capable of huge parallel time/frequency space searches, permitting it to find satellites right away. Innovative design and technology suppresses jamming resources and mitigates multi-path consequences, giving NEO-6 GPS receivers first rate navigation overall performance even in the maximum challenging environments. The Supply Voltage is 2.7 to a 3.6V. The Supply present day is 67 am of antennas on this GPS i.e. Passive and energetic antenna.

6. GSM Module

Most cutting-edge cellular networks employ the GSM technology for communication functions. In this task we are the use of SIM800 module which goes within the frequency band of 800MHz.

V. ALGORITHM

Step 1: Start
Step 2: Vehicle starts off evolved and the alcohol sensor receives brought on.
Step 3: If value is greater than 0.3 than give up else goto step four.
Step 4: Vehicle continues if strain detected fee is smaller the 'zero'.
Step five: If strain detected fee is greater than '0' than buzzer activates for 10 seconds.
Step 6: If buzzer became off in 10 seconds then cease else goto step three.
Step 7: GPS detects the exact place on of the car
Step 8: Send textual content message to the pre-saved numbers.
Step 9: Stop.

VI. FLOW CHART

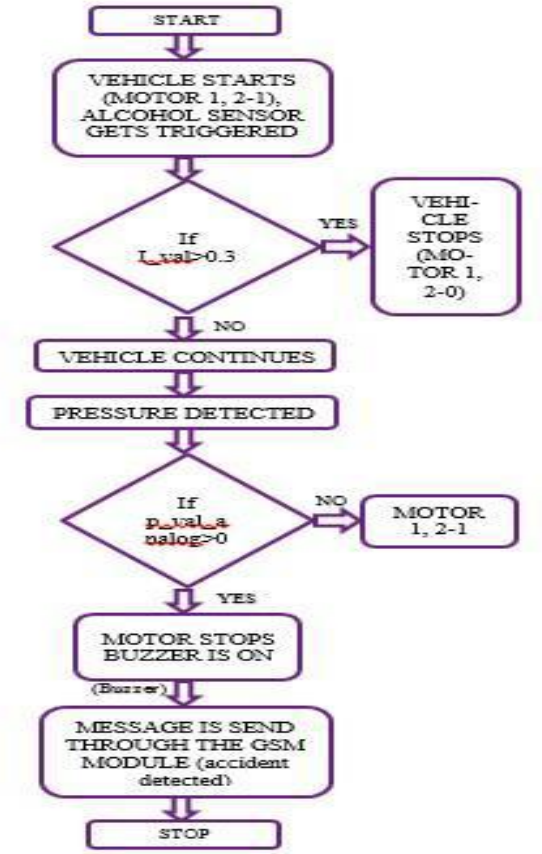

Figure 2 Flowchart of Proposed Model.

VII.RESULT

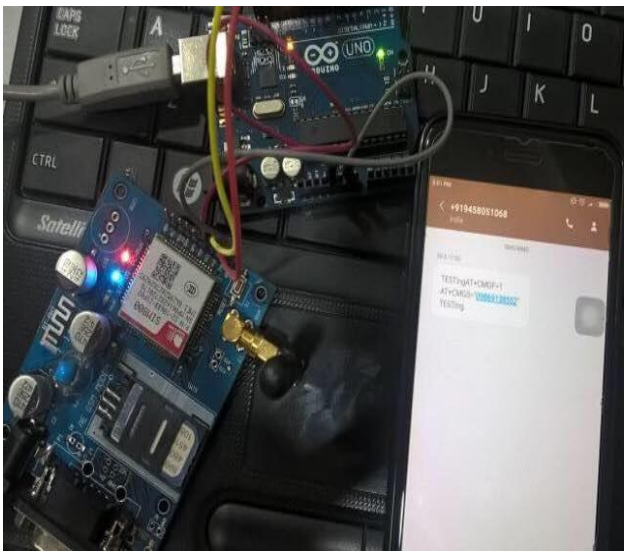

Fig. 3 Interfacing of GSM with Arduino.

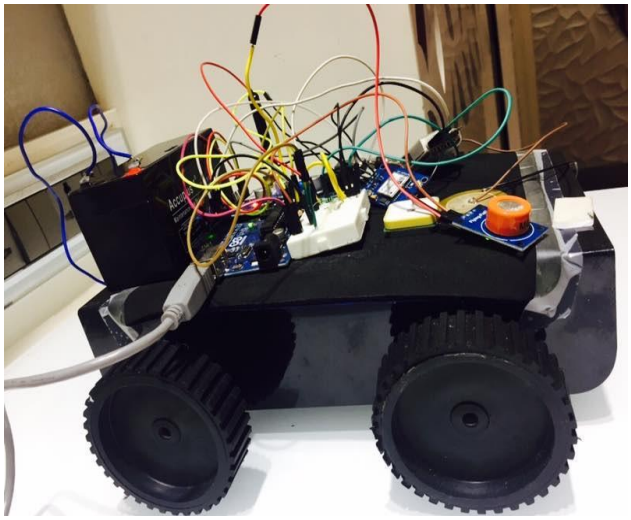

Fig. 4 Final System Model.

CONCLUSION

The proposed version for twist of fate detection machine can prove to be an important resource in constructing clever shipping systems in close to destiny if carried out nicely. In this numerous sensors are located which indicates prevalence of an coincidence just like vibration sensor, alcohol sensor. If variety of that sensor increases beyond particular variety then buzzer will get "on" for ten seconds and motive force can't forestall the buzzer inside ten seconds then it's going to detect as an accident and a message will ship to formerly saved numbers with co-ordinates of that region.

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