

IoT Based Automatic Navigating Accident Vehicle On Google Map And Prevention System Using GSM Module

KAILASH CHANDRA MAURYA, RUCHITA CHAUDHARY

M. Tech Research Scholar

*Department Of Electronics And Communication Engineering,
Rameshwaram Institute Of Technology And Management Lucknow, Uttar Pradesh, INDIA.*

Abstract : India is one of the most prominent countries in the world. Day to day a lot of people lost their existence because of accidents and poor emergency facilities. According to the government of India ministry of road transport and highways transport research wing in the year 2018 report total number of road accidents 4,67,044, the total number of a person killed 1,51,417 and the total number of a person injured 4,69,418(1). Some of the rescuers face numerous troubles in contacting the injured person for delay alerts and inadequate information about the exact accident location. The advent of the Smart Phone and Internet of Things (IoT) industries have changed the way people communicate and people are using IoT as a new way of their public and private administrations. This ever-evolving technology marked the beginning of a new era affecting the lives of people and different organizations. This paper is going to play a significant job in taking care of such issues.. Whenever an accident occurs, the sensors used in it begin their work and provide the full geographic coordinates on google maps of the accident site information to the rescue team, family members and anybody we need to provide for the program. At the point when an accident occurs, a Micro Electro Mechanical System (MEMS) sensor identifies it., a Micro Electro Mechanical System (MEMS) sensor detects it. An algorithm is then implemented to process the sensor signal and to send its status to the server with complete information about the accident person causing the crash. Also, what is the reason for the accident? It is also revealed and they are also given some medical information about the passengers. The Server will forwards the details to the nearest rescue teams.

Index Terms - Accident Detection, Health Care Centre, MEMS Sensor, IoT and tracking, etc.

I. INTRODUCTION

In my country, daily many people lost their lives with accidents. Because of influence or improper communication to the safety team. According to the government of India ministry of road transport and highways transport research wing in the year 2018 report the total number of road accidents 4,67,044. Trough this paper we are attempting to settle this issue by proposing productive arrangements and diminishing the death toll however much as could be expected. In my hypothesis, fundamentally, a microcontroller is utilized for an order for output gadgets. The structure of the framework helps me to detect the accidents essentially a couple of times and transfer the snippets of data by the SMS with the help of GPS and GPRS framework to the health care center, police station and family members inside a couple of second and show the reasons of the accident in the LCD display and send reasons by SMS of the specific location. This theory saves a lot of lives and their time. Even today, it takes a lot of time in our country to detect accident vehicles and provide them safety. This application provides the best solution to the worst accidental facilities to provide for a road accident in the most probable way.

- **Vehicle Tracking Features**

It is for the most part advantage for the companies which depend on transport system. Since it can show the situation of all vehicles in genuine time, with the goal that they can make the normal data in like manner. These following system can store the entire data where the vehicle had gone, where did it stop, how much time it take at each stop and can make entire data examination. It is likewise utilized in transports and prepares, to assess how far are they, how much time it takes for them to go to a specific stop. These systems are utilized for data capture, data storage, data investigation finally data transfer.

- **Accident Alert System Features**

This system depends on new innovation, its fundamental intention is to detect an accident and alert to the control room and other location so the casualty can discover some assistance. It can detect accidents the power of the accident with no visual contact from control room. In the event that this system is embedded in each vehicle then it is straightforward what number of vehicles are associated with a specific accident and how exceptional is it. So that the assistance from control room will be as indicated by the control room and other location. The current board planned has both vehicle tracking and accident alert systems, which make it progressively important and helpful. This board alerts us from robbery and just as accident detection. This system depends on new innovation, its fundamental intention is to detect an accident and alert to the control room, so the casualty can discover some assistance. It can detect accidents the power of the accident with no visual contact from control room. In the event that this system is embedded in each vehicle then it is straightforward what number of vehicles are associated with a specific accident and how exceptional is it. So that the assistance from control room will be as indicated by the control room. The current board planned has both vehicle tracking and accident alert systems, which make it progressively important and helpful.

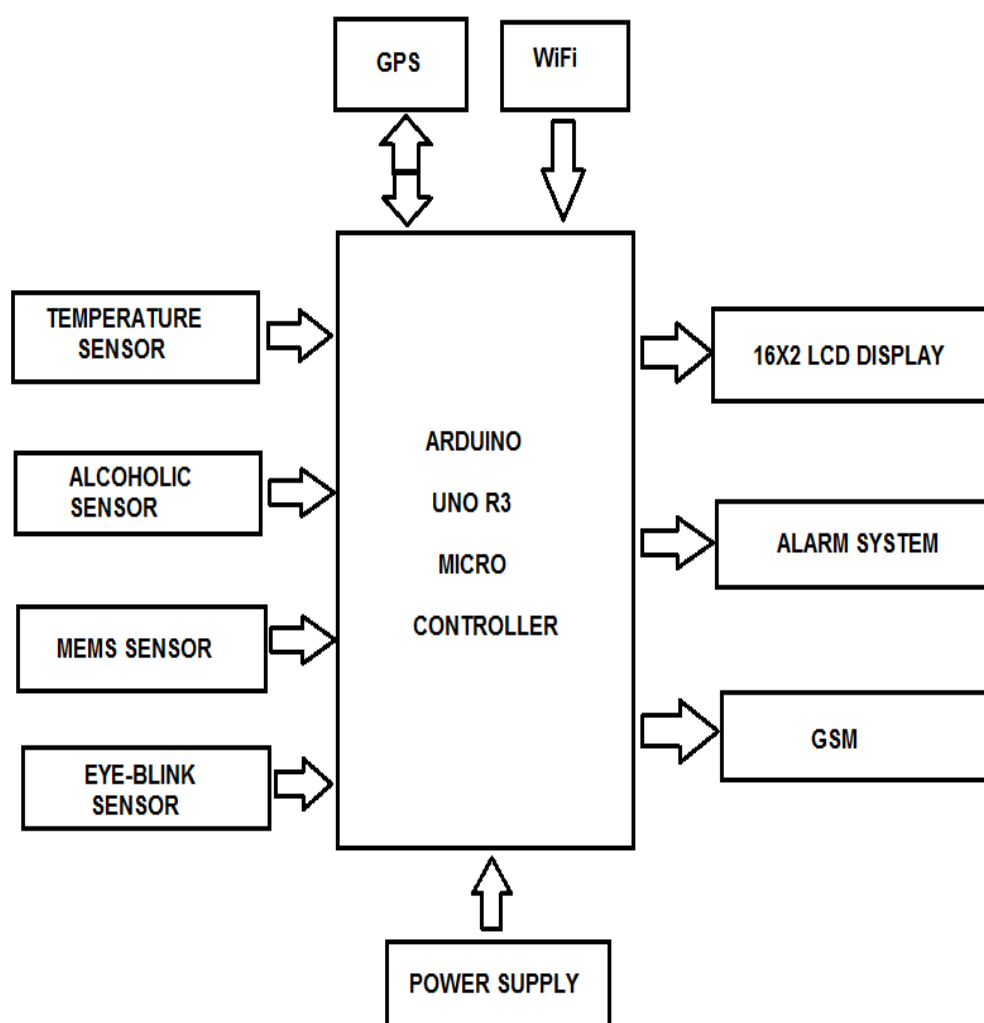
II. RELATED WORK

Using smart phones to identify road traffic accidents is not a new task. There is a complete algorithm for this system that detects accidents easily using the accelerometer as well as GPS. Even today, this system is not being used in India. Outside countries are using this system in a better way. We are also used some developed systems to develop this system and reduce the traffic accident problem in our country.

III. PROPOSED SYSTEM

This paper of ours identifies the location of the accident in which it occurred and works on the principle of tracking. The framework is on and initialization. In the event that a basic accident, for example, a scratch or a front or back of the vehicle is hit by another vehicle, then it does not provide any information nearest hospital, family member and police station. He sends information just when the accident of that vehicle is excessively, which has harmed the driver and different travellers. This is revealed by the MEMS sensor and it can facilitate connectivity to the nearest health care centre and provide medical through IoT technology.

IV. BLOCK DIAGRAM

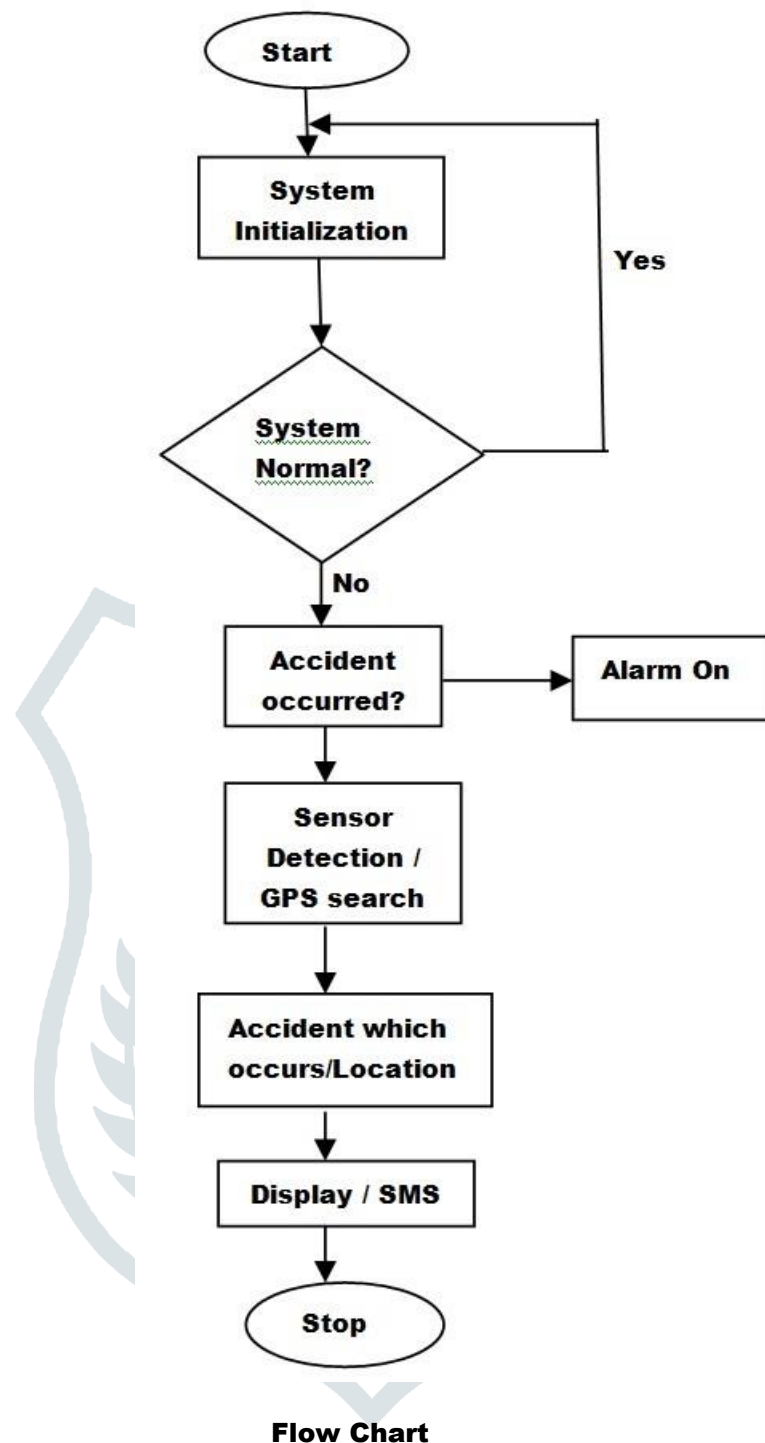


diagram

Block

In this system microcontroller is a brain of the system. All the sensors are connected as an input in the microcontroller. The temperature sensor gives input increment of temperature as same as the alcoholic sensor detects the alcoholic gases and eye blink sensor sense close of an eye to the driver and MEMS sensor sense the high vibration of the vehicle. At the point when the accident occurs then the vehicle change the direction. In which direction does the vehicle change the input microcontroller is receiving ? And with the assistance of WiFi, microcontrollers use the internet service. The microcontroller receives the internet then again the assistance of GSM and GPS module finds the specific location of the accident person and sends the location by the SMS of the family members, nearest police station and nearest health care centre. This entire procedure shows in the LCD display that the accident is caused by what? and alarm indicated when the accident occurs.

- Flow Chart For Accident Tracking



When the framework is turned on right now, the framework starts to initialize first. Then if the system is normal then it goes towards the start and as soon as the system is not normal then it goes to the subsequent stage. In the following procedure, the condition is that if the system is not normal, then it is an accident. As soon as I have an accident, of a vehicle, the microcontroller starts to show it through the input-output through the alarm. After the accident, the sensor start their work. Alcohol Sensor detects alcohol gases, temperature sensor detects high temperature inside the vehicle, and eye blink sensor detect close of eyes and microcontroller sends a location that we see in the GPS through Google Map and what has caused his accident? It shows on the display and an SMS is sent to his family members, the nearest police station and the nearest health care centre.

V. HARDWARE SPECIFICATIONS

1. Microcontroller

Arduino UNO R3 microcontroller is the brain of the system. Microcontroller utilized as a channel of the system and All sensors and modules are associated with one another. Arduino Uno R3 is a microcontroller dependent on 8-bit ATmega 328P microcontroller. Together with ATmega328P, Arduino Uno R3 microcontroller has 14 digital input/output pins, 6 can be utilized as PWN outputs, 6 simple input sticks, a USB connection, a Power barrel jack, an ICSP header, and a reset button. It takes a shot at a 5volt force supply.



Arduino UNO R3

2. GSM Module

GSM stands for the Global system for mobile communication, SIM800 is Tri-band GSM and GPRS engine that takes a shot at various frequencies like that EGSM 900 MHz, DCS 1800MHz, and PCS 1900 MHz . SIM800 features GPRS multi slots class10 and class 8 and this module supports the GPRS coding scheme 1st,2nd,3rd, and 4th.In this system GSM Module utilized distinctly for the sending SMS and internet connectivity Our family member, health care center and nearest police station.



GSM &GPRS

3. GPS Module

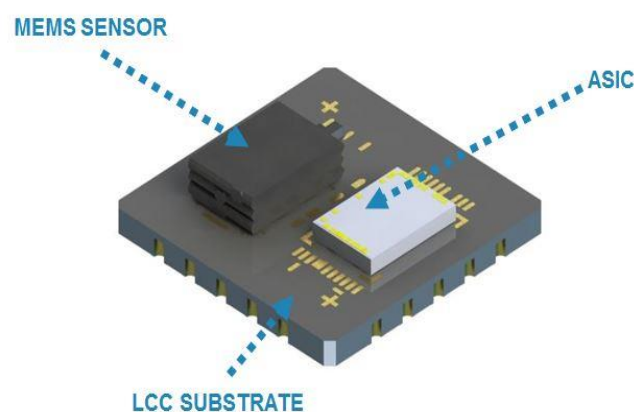
GPS represents Global Positioning System by which anybody can generally get the position information anyplace on the planet.GPS receiver tracks the signals from several number of satellites, how does gps convert these kind of signals into a position that can be used for navigation? These mathematical process is called trilateration. We use GPS systems to find the exact location of the accidental person with the help of latitude and longitude.

4. WiFi Module

In the Internet of Things (IoT) , Wi-Fi is a main part of the solution. This unit is legitimate enough ready handling and capacity ability that permits it to be coordinated with the sensors and other application unequivocal gadgets through its GPIOs with insignificant advancement forthright and negligible stacking during run time. Its high level of on-chip reconciliation considers insignificant outer hardware, including the front end module, is intended to possess negligible PCB zone. The ESP8266 arrangements APSD for VoIP cases and Bluetooth concurrence limits. sIn this system, we use the WiFi module to provide internet service to the microcontroller. Through the internet, we find the location of a crashed vehicle and the passengers sitting in it.

5. MEMS Sensor

The term MEMS stands for micro-electro-mechanical systems. These are a lot of devices, and the characterization of this device should be possible by their scaled down size and the planning mode. The structuring of these sensors should be possible with the few micrometers to millimeters. MEMS are low-cost, and high exactness inertial sensors and these are utilized to convey an extended scope of industrial applications. This sensor utilizes a chip-based technology. These sensors are utilized to recognize just as consider the external stimulus like pressure, after that it acts to the pressure which is estimated pressure with the assistance of some mechanical activities. The best examples of this fundamentally incorporate rotating of a motor for compensating the Pressure change.



MEMS Sensor

6. Alcoholic Sensor

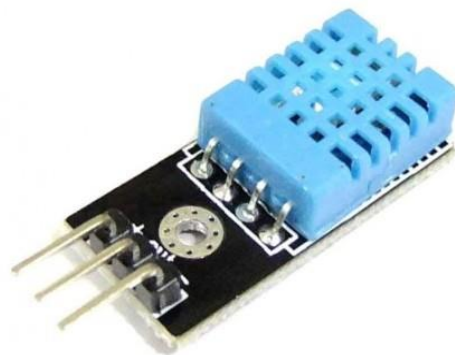
This module is made by utilizing Alcohol Gas Sensor MQ3. This sensor is a low-cost semiconductor sensor which can detect the presence of alcohol gases. It has a high affectability to alcohol and has great resistance to disturbances because of smoke, fume, and gasoline(6,7). We utilized this sensor in the upper piece of the vehicle and the range of this sensor is 25 to 500 ppm which is extremely less. We set the range of this sensor above 200mg/dl. This is the reason we are utilizing alcoholic sensors in light of the fact that in our nation individuals drive with high alcohol rate and cause an accident, this sensor attempts somewhat to stop them.



Alcoholic sensor

7. Temperature Sensor

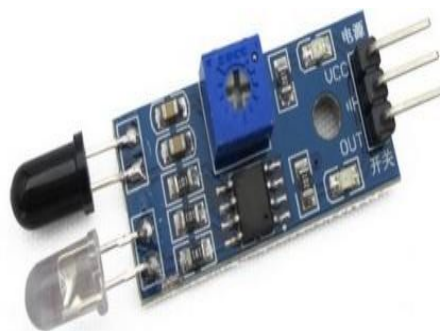
DHT11 is a evaporation and Temperature Sensor, which generates measured digital output. DHT11 can interact with any microcontroller like Arduino, Raspberry Pi, etc. and get instantaneous results. DHT11 is a very low-cost humidity and temperature sensor that provides reliability and long term stability(8). This temperature sensor can be mounted near the engine of individuals. Its operating range -30 to +120°C and the temperature range of the engine of the vehicle is about 100°C and as he goes above this range. The alarm starts to become indicative. The use of temperature sensors, in this paper, we can save from the fire caused by sudden high-temperature of the vehicle.



Temperature sensor

8. Eyeblink sensor

This Eye Blink sensor is based on IR. The Variation Across the eyes will differ as per eye blink. If the eye is closed means the output is high otherwise the output is low(9). Is the eye closing or opening? To know this, use the sensor. This output is given to the logic circuit then the alarm is indicated. This can be used for the project involves controlling accidents due to the senseless or paralyzed through Eye blink.



Eye Blink Sensor

VI. CONCLUSION

The proposed system is related to handling the accident and describing its correct location. Arduino UNO R3 microcontroller is the fundamental piece of the framework which helps in transferring the information to various devices in the framework. Impact sensor will be activated when the accident occurs and the information of the accident is transferred to the registered mobile number through the GSM module. Using the GPS module system the location can be sent through the navigating system to cover the latitude and longitude coordinates over the area. The accident can be detected by an impact sensor which is used as a main module in the system.

VII. FUTURE SCOPE

The proposed system is related to detecting accidents and providing them emergency service and in this system, temporary treatment can also be provided to the passenger with the help of a server and those sensors can also alert us before an accident.

VIII. ADVANTAGE

- 1- In this paper, we get to know the location of the accident and the accident of which person?
- 2- The main point is that in this paper we have used alcoholic and eyeblink sensors. By using which we can control our vehicle from being an accident and we can tell his information to the register office and its family member.

IX. REFERENCES

1. government of India ministry of road transport and highways transport research wing.
2. Sri Krishna Chaitanya Varma, Poornesh, Tarun Varma, Harsha, "Automatic Vehicle Accident Detection And Messaging System Using GPS and GSM Modems", International Journal of Scientific & Engineering Research, Volume 4, Issue 8, August 2016.
3. Mrs. Manasi Patil, Aanchal Rawat, Prateek Singh, Srishti Dixit, "Accident Detection and Ambulance Control using Intelligent Traffic Control System" International Journal of Engineering Trends and Technology(IJETT), Volume34, Number, 8 April 2016
4. Ms.MehaSoman, Shruthi, Sangeetha, Ramya, Ramyalakshmi, "IOT based automatic vehicle accident tracking down and salvage system using gsm" International Research Journal of Engineering and Technology (IRJET) Volume: 05 Issue: 03 Mar-2018
5. Vikas Desai, Design and Implementation of GSM and GPS Based Vehicle Accident Detection System, IIIT, Vol 01, Issue 03, pp.1-4,2013.
6. <https://www.embeddedworks.net/products/wlan/>
7. <https://www.sunrom.com/p/alcohol-sensor-module-mq3>
8. <https://components101.com/sensors/mq-3-alcohol-gas-sensor>
9. <https://www.sunelectronics.co.in/DHT11%20-%20Temperature%20and%20Humidity%20Sensor%20Module>
10. https://www.nskelectronics.com/eye_blink_sensor.html