

# Accident Prevention by Using Majors of Safety and Security

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**Abstract:** This report presents the accident prevention with security and safety techniques used by using IoT. Device fixed the vehicle. The objective behind this proposed system is to scale down number of count of accidents, also avail the help to the victims of the accidents in alone place or no-man place. The person with whom accident happens is not in a condition to get someone help, the vehicle automated system will call to the nearest emergency services like police, ambulance as well as it will inform to the relative. The GSM and GPS module used to perform that operation. In this project the automated system will detect the obstacles in the road which cannot be seen by the driver or maybe it was mistakenly missed by the driver then system will detect and scale down speed of the vehicle with the help of RF or PIR sensor.

**Keywords:** Arduino ATmega328, Ultrasonic Sensor, IR Sensor, Alcohol MQ3, VSS, GSM (Global system for mobile communications), GPS.

## 1. Introduction

The accidents are big problem on road, most of the accidents are occurred by the reason of rash as well as irresponsible driving, if the drivers the vehicle irresponsibly the accident occurred and someone dies in that accident .the driver drives the vehicle after drinking is very irresponsible, the drive will lose his concentration, and the accident will happen. the accident, which are happen in the no-man area the help not available to the victim, there is system needs to call emergency services in a nearby location, which can available help to the victim. Sometimes the driver cannot see the objects or barrier in the way of the vehicle, that time smart system will identifies the obstacle, reduces the speed of vehicle, and stops. The victim cannot send or call for help at that time the smart system can inform to their relatives as well as emergency services.

## 2. Problem statement

Drunken drive is the vital cause of accidents worldwide. In the significance of alcohol driver doesn't have perception recognition and vehicle control, and in night sometimes driver who does not consume alcohol are also failed vision (having poor vision) in dark

## 3. Proposed system

IOT is continuously growing over years, which could use in developing automated analysis system to visualize and control vehicle in unclear vision to prevent from accident.

## 4. Literature survey

Herein author developed a system by combining alcohol sensor with arduinoatmega328 board. Arduino processor atmega328 is able to manage more functions than usual micro-controllers. The author designed a system implements using arduino to derive the condition of driver in running time, he tries to detecting alcohol consumption if it crosses the permissible limit then vehicle ignition system will turned off and capture present location through gps module which can then send notification to relatives and police. Herein author uses to take precaution using iot device for protection of driver from accident. A particular device is analyzing drunk state of driver and take precautions based on that analysis as speed reduction, triggering an alarm, informing traffic control, activation of autopilot. Herein author used atmega328p to communicate with vehicle machineries as well as hardware parts of device to achieve appropriate goal. She also used smoke sensor, alcohol sensor and eye sensor piezoelectric sensor for achieving his goal to contact emergency services as well as relatives of victim through GPS locator and GSM module. However, in this paper author is not used provision for obstacle sensing. The author focuses of road safety by wearing seat belt to reduce the effect of accidents to prevent driver. the significant condition of driver is monitored i.e. drunken or drowsy and alert the driver by continuously playing voice messages where system needed after analyzing the risk conditions and if driver is not following those rules then the system will send the place of vehicle with the vehicle details to the nearest police control room for taking further action by the police on the driver for safety of driver and also co-passengers. this system is monitoring and designed for two wheelers by designing smart helmet which detects the alcohol monitoring and the helmet wearied by driver or not. system provide alert message by alarm, system gives alert notification to the driver if driver stops the vehicle then alert notification will stops in 12 seconds. Suppose the driver not following this precautions on alert message the system will stops the engine of vehicle for saving driver from accident. It is monitoring drowsy state, head tilt and alcohol detection. The system will measuring the velocity and tilting position, in case the vehicle struck on something. the warning message will give to driver when the velocity of vehicle is more than defined, it will also sends the notification to the relevant peoples who are relative of the driver.

## 5. Technologies related to accident preventive smart vehicle

### A. Ultrasonic sensor

Ultrasonic sensor makes use of high frequency ultrasonic waves to detect any movement within limited space. The range of frequencies between 25 khz and 75 khz, which are the inaudible to human ears. These frequencies are hit the obstacles in a frequent area .ultrasonic sensor used for measuring distance by using ultrasonic waves. An ultrasonic sensor emits ultrasonic waves for the emitter .these waves hit the obstacles and receive wave back from obstacle. Ultrasonic sensor measure distance up to the obstacle by measuring time between emission and reception.



Fig. 1. Ultrasonic sensor

## 6. Application of ultrasonic sensor

- Distance measurement
- Ultrasonic sensor in motion detection

### A. Alcohol detecting sensor (mq3)

An mq135 sensor detects the alcohol gas in the environment and output reading of analogue voltage. The sensor can activate at temperatures ranging from -10 to 50° c with a power supply is less than 150 ma to 5v. The sensing range is from 0.04 mg/l to 4 mg/l, which is acceptable for breathalyses. The mq-135 gas sensor senses the gases like ammonia no2, o2, alcohols, aromatic compounds, sulphide and smoke. The boost converter of the chip mq-3 gas sensor is pt1301. The operating voltage of this gas sensor is from 2.5v to 5.0v. The mq-3 gas sensor has a lower conductivity to clean the air as a gas sensing material. In the atmosphere, we can find polluting gases, but the conductivity of gas sensor increases as the concentration of polluting gas increases. Mq135 gas sensor can be implementation to detect the breath, c6h6, steam and other injurious gases. It has potential to detect different dangerous gases. The mq135 gas sensor has low cost to purchase. The image of the mq135 sensor is shown in below.



Fig. 2. Alcohol detecting sensor

## 7. Application of alcohol detecting sensor

- Air quality monitor
- Detection of harmful gases
- Domestic air pollution detection
- Industrial pollution detection
- Portable air pollution detection

### A. GSM module

The GSM module uses net by cell phones provides a less cost, long area scope, wireless interaction channel for practice that need link rather than large data rates. The rules of conduct used by GSM modems for installation and command is based on the Hayes at-control set. The GSM modem particular control are modify to the services provide by a gsm modem like: text messaging, calling a given phone number, deleting memory locations etc.

*Applications:* machinery like industrial refrigerators and freezers, HVAC, vending machines, vehicle service etc.



Fig. 3. GSM module

### B. GPS module

The GPS is a position based satellite navigation system that provides place and time information in all weather conditions, anywhere on or near the earth where there is a no blocking line of sight to four or more GPS satellites. The system provides critical capabilities to military, civil and commercial users around the world. It is maintained by the USA government and is freely accessible to anyone with a GPS receiver.



Fig. 4. GPS module

## 8. Applications

Maps, including streets maps, displayed in human readable format via text or in a graphical format turn-by turn navigation directions to a human in charge of a vehicle or vessel via text or speech. Directions fed directly to an autonomous vehicle such as a robotic probe. Traffic congestion maps (depicting either historical or real time data) and suggested alternative directions.

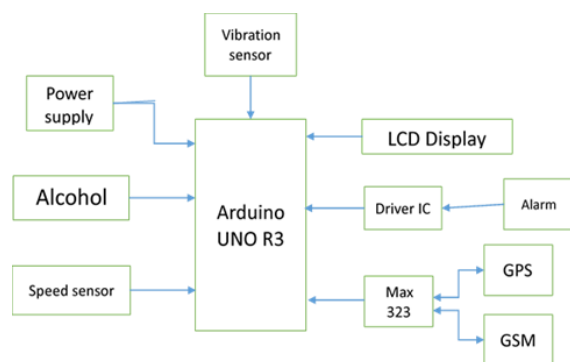


Fig. 5. Architecture diagram

### 9. Conclusion

Therefore, our survey concludes that using such sensors as mentioned above we can create many useful application for security, automation and many other fields. Here we conclude that the smart car system used that alcohol detecting sensor mq3 for detecting the alcohol in blood and obstacle detection using ir and ultrasonic sensor.

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