

# Alcohol and Driver Drowsiness Detection for Prevention of Accidents

<sup>1</sup>V.Santhi Priya , <sup>2</sup>P.H.Chandra Mouli

<sup>1</sup>PG Scholar, Department of ECE, VEMU Institute of Technology, P Kothakota, Andhra Pradesh, India.

<sup>2</sup>Assistant Professor, Department of ECE, VEMU Institute of Technology, P Kothakota, Andhra Pradesh, India.

**Abstract:** This system provides a unique method to curb drunken people. The system has an alcohol sensor embedded on the steering of the car. Whenever the driver starts ignition, the sensor measures the content of the alcohol in his breath and automatically switches off the car if he is drunken. In this system the sensor delivers a current with a linear relationship to the alcohol molecules from zero to very high concentration. The output of the sensor is fed to the PIC microcontroller for comparison. If the measured value reaches the threshold, relay cut off automatically and the buzzer. Accidents due to driver drowsiness can be prevented using eye blink sensors.

**Index Terms** – Arduino, buzzer, GSM, GPS, MEMS Sensors, Ultrasonic Sensor

## 1. INTRODUCTION

Now, a day's majority of the road accidents are caused by drink-driving and drowsiness. Drunken drivers will not be in stable condition and so the rash driving is the inconvenience for other users and also question of life and death. In this project we are developing an auto lock system. The input for the system is from detection sensor from alcohol breathes. The controller keeps looking for the output from these sensors. If there are any traces of the alcohol above the set limit, then the system will off the engine. Drowsiness is a state resulting in reduction of consciousness caused due to lack of sleep or fatigue. Due to drowsiness, driver loses control of the vehicle which may deviate him/her from the road and results in severe accidents. According to statistics, the major factor causing accidents is sleepiness of driver. India is a signatory to Brasilia Declaration and is committed to reduce the number of road accidents and fatalities by 50 per cent by 2020. However, over the years, with the increasing growth rate of motorization accompanied by road network expansion and urbanization, India is facing serious impacts on road safety levels. In India the total number of road accidents is increased by 2.5 per cent from 4,89,400 in 2014 to 5,01,423 in 2015. The road accident data analysis of 2015 reveals that about 1374 accidents and 400 deaths take place every day on Indian roads. Few of the major causes for this huge loss are alcohol consumption while driving and drowsiness of driver. In order to minimize this huge number of accidents, advanced driver assistance techniques can be used. For this the driver is monitored using two ways: direct and indirect. Direct monitoring technique consists of head movement; facial expressions captured using sensors like camera. Driver activities and his/her response to specific situation are included in indirect techniques for monitoring drowsiness. A series of actions performed by driver while driving involves eye activities, frequency and the amount of time for which eyes were closed, head displacement with respect to the centre of gravity assists in detecting the driver's current state.

Considering the available statistics, importance of drowsiness detection systems is unavoidable. The main objective of this paper is to design and implement a combination of hardware and software system which will detect driver's drowsiness, especially those diagnosed at the right time to alert which will result in preventing many accidents and save countless lives.

### Reason:

There is no way to determine the exact distance of automobiles travelling behind as that will be responsible for accident

1. We are not sure that we will have a safe travel to reach our destination-even a small distraction may lead to an accident
2. Drowsiness have larger role in accidents. Most of the accidents occurs due to driven inattention since they doesn't have a way to get alert
3. According to the national crime record, India bears nearly 30% of the world's total accident rates

### Man at Risk:

1. Being specific, people in ages between 18-29 is easily distracted and was responsible for many accidents in recent days
2. Men are responsible for major accident rates then women because their ratio varies gradually as 10:1
3. Adults are easily distracted since they can measure the exact distance of the vehicle of moving from and coming behind them. They feel that they are safe. But it was no so bad that it was man's attitude and when the speed increases at bit leads to major accidents.

This paper is organized as section II describes Literature review and in section III discussed about concept of vehicle tracking and Section IV describes in Proposed System methodology and Section V shows the Experimental results of proposed methods and section VI concludes the paper followed by references.

## 2. LITARATURE REVIEW

Now-a-days, mobile phone is used almost by all people. With internet usage are also at all. So these mobile phone also provide communication platform as they are equipped with 2G & 3G network. There are lots of cause of accident of car and they are drunkenness of driver, drowsiness of driver, unconsciousness of driver and many time what happen driver is not responsible for accident but their neighboring car behavior also have made role to enforce accident. There are also some system have been implemented to avoid the accident but that do not give

proper solution to implemented in car to avoid various accidents that they are normally being happen. For example, when driver at speed suppose 80km/h suddenly stop ignition system may leads to changes of dangerous accident.

There are several efforts, application: approaches are projected to produce security and safety just in case accident. A completely unique approach to extend the protection of road travel victimization the ideas of wireless detector network and therefore the Bluetooth protocol has been protected. It mentioned however, vehicles will type mobile ad-hoc network and exchange information perceived by the onboard sensor [3]. Platform of the robot in operation system and software system development atmosphere well-tried optimum resolution for public safety just in case of accident [2]. An honest survey of victimization personal itinerant, Microcontroller, Bluetooth and JAVA Technology has been well tried [4].

It developed integrated system to manage, management associated monitor accessories within the vehicle so as to attain the concept of an intelligence automobile with ability to uses personal mobile hand phone as a far of interface. Sensible phone-based accident detection will scale back overall traffic jam and awareness of emergency responders. This approach conjointly has been projected [5].

Presently a lot of methodologies are available in vehicles that allow vehicle protection and tracking. Airbags are one of the most mandatory elements in vehicles. Front airbags have been standard on all new cars since 1998 and light trucks since 1999. Seat belts are also available in four wheelers. Tire-pressure monitoring system (TPMS) is an electronic system designed to monitor the air pressure inside the pneumatic tires on various types of vehicles. TPMS report real time tire-pressure information to the driver of the vehicle, either via a gauge, a pictogram display, or a simple low pressure warning light. An anti-lock braking system or anti-skid braking system (ABS) is an automobile safety system that allows the wheels on a motor vehicle to maintain attractive contact with the road surface according to driver inputs

### 3. CONCEPT AND OVERVIEW

This vehicle tracking system takes input from GPS and sends it through the GSM module to desired mobile/laptop using mobile communication. Vehicle Tracking System is one of the biggest technological advancements to track the activities of the vehicle. The security system uses Global Positioning System GPS, to find the location of the monitored or tracked vehicle and then uses satellite or radio systems to send to send the coordinates and the location data to the monitoring center. At monitoring center various software's are used to plot the Vehicle on a map. In this way the Vehicle owners are able to track their vehicle on a real-time basis. Due to real-time tracking facility, vehicle tracking systems are becoming increasingly popular among owners of expensive vehicles.

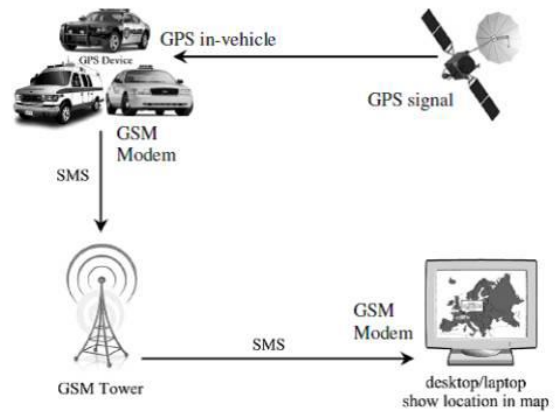


Fig. 1 Overview of vehicle tracking.

## 4. PROPOSED METHODOLOGY AND DISCUSSIONS

Block diagram

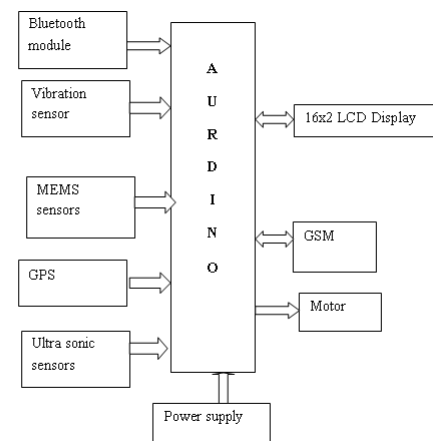


Fig 2 Proposed Block diagram

The Prototype of Alcohol and Driver Drowsiness Detection system for Prevention of Accidents and messaging using GSM and GPS modem will be made in the following steps:

1. Complete Layout of the whole setup will be drawn in the form of a block diagram.
2. The Alcohol Sensor MQ-3 detects the attentiveness of alcohol gas in the air and sends its output in the form of analog voltage to the microcontroller. The caution "alcohol detected, vehicle stopped" will be displayed on the LCD.
3. Similarly, when the driver is in drowsy state, the MEMS Accelerometer sensor detects the sleepiness of the driver based on his head/nod movements. If the level of bending is more than the threshold level, then drowsiness is detected and the vehicle will be stopped.
4. The Ultrasonic Sensor senses the occurrence of an accident and give its output to the microcontroller.
5. The GPS detects the latitude and longitudinal position of a vehicle which is sent as message through the GSM.

6. The Phone numbers, primary responders are pre-saved in the centralize database.

7. In this Project, the GPS and GSM not only gives the exact location of the vehicle when an accident has occurred, it also sends the status of the driver to the owner of the vehicle, whether he is drunken state or in drowsy condition and thus prevents accidents before it occurs to a great extent.

Mainly in this project play a vital role is following

✘ **ALCOHOL DETECTION:**

When the driver was in drunken state ,the alcohol sensor MQ-3 senses the levels of alcohol. If the concentration of alcohol is very high the ignition doesn't start and sends a message alert to the coded mobile .

✘ **GYROSENSOR (or) ACCELEROMETER:**

Gyrosensor is a type of mems sensor. when the driver is in drowsy state, the MEMS accelerometer sensor detects the sleepiness of the driver based on his head /nod movements. If the level of the bending is more than the threshold level, then drowsiness is detected and vehicle will be stopped.

❖ **ULTRASONIC SENSOR:**

It sends a sound waves to infront of the vehicle. If it detects any objects or vehicles near by it slows down the vehicle to avoid accidents.

❖ **GPS AND GSM:**

GPS was global position system if the accident was occurred it captured the latitude and longitude by means of exact position and sends to coded mobile number by means of GSM service.

## 5. EXPERIMENTAL RESULTS

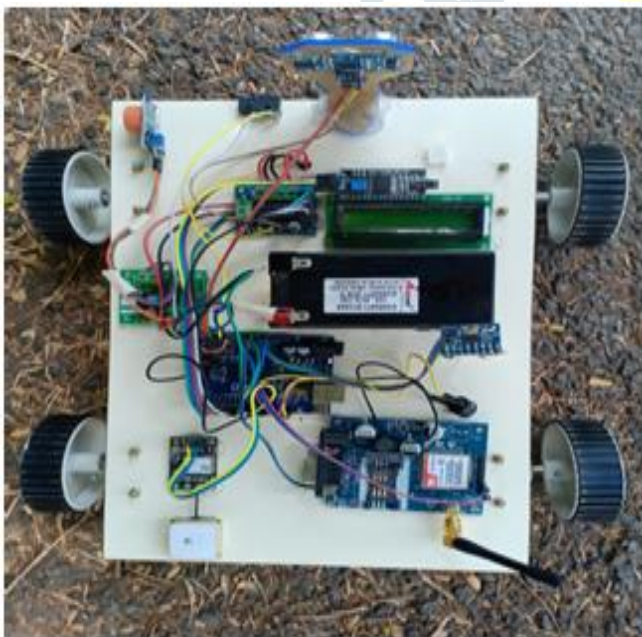


Fig 3. Prototype model for proposed system

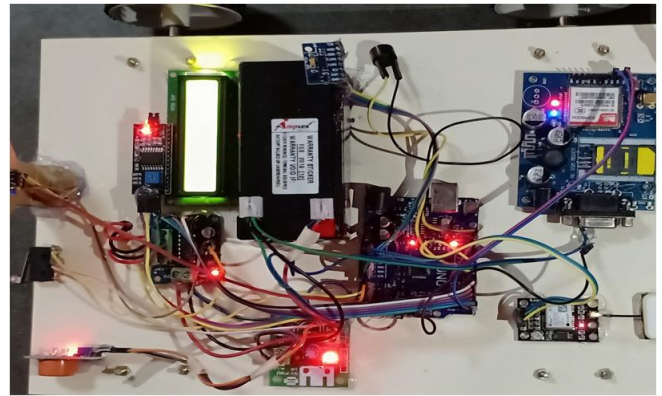


Fig 4: working model



Fig 5: network searching by GPS



Fig 6: vehicle speed detected about 100KMP

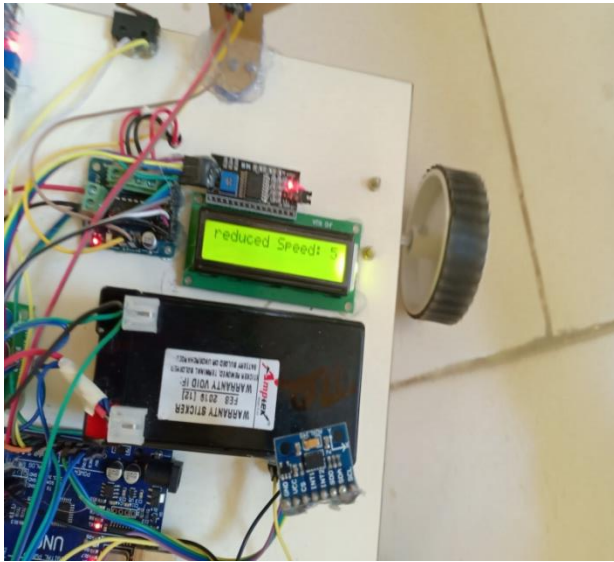


Fig 7: reduced speed after alerting

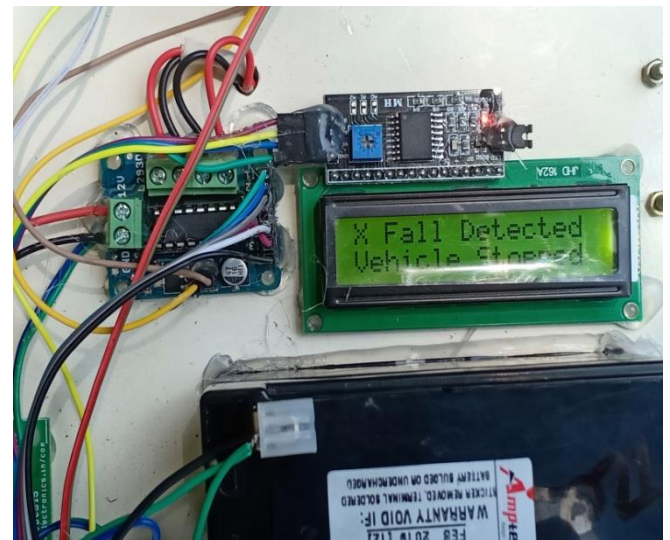


Fig 10: X Fall detected

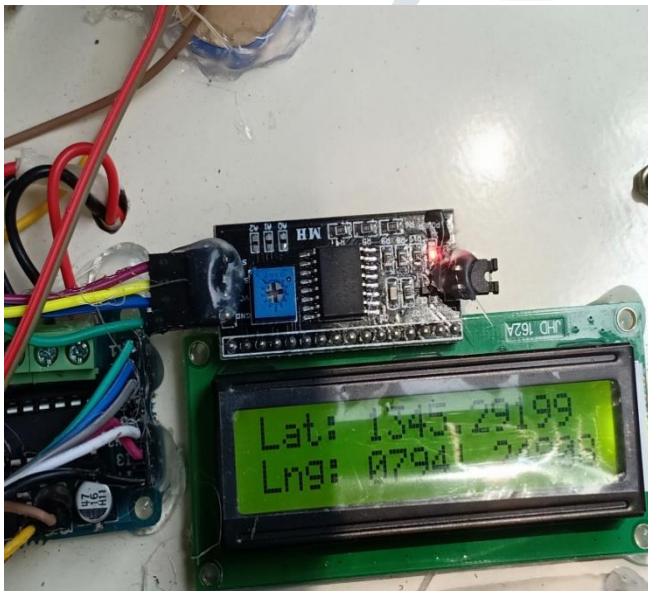


Fig 8: longitude and latitude values displayed of vehicle

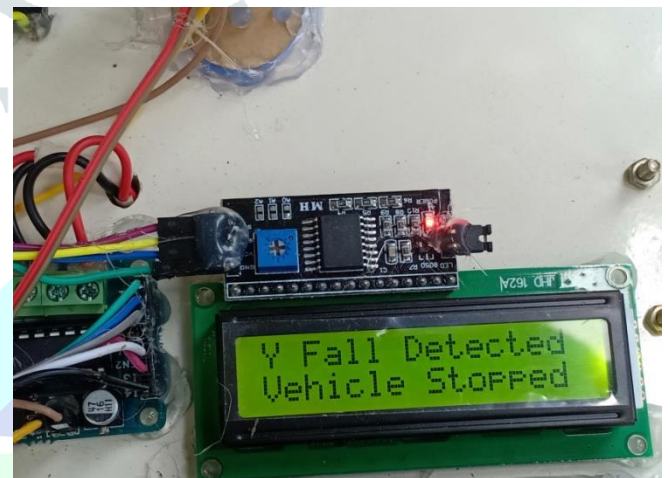


Fig 11: Y Fall detected

## 6. CONCLUSION

In this project we proposed and implement the accident avoidance system. Using this system we may avoid many accidents happened due to the following system .The system comprises, very low cost components such as ultrasonic sensor, LCD .Accidents constitute huge public health problems: Man- made disaster. The situation going to be worse unless prevention strategies are adopted. This system might have many advantage such as, Use the knows the distance about following vehicle

### *Future Scope*

Further this system can be implemented by using sound sensor, in order to make it more accurate and efficient to detect an accident. This is extended with alcoholic detection also. If the person took alcohol that is driving then the vehicle will be stopped immediately by giving alarm. This can also be developed by interconnecting camera to the controller module that takes the photograph of the accident spot makes tracking easier.

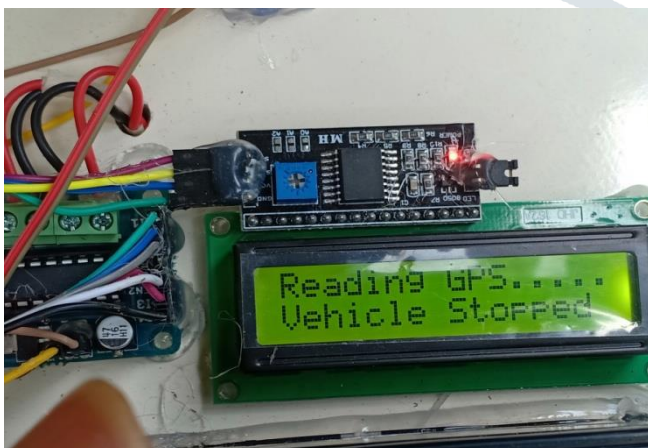


Fig 9: reading GPS

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## ABOUT AUTHORS



1. Ms V.Santhi Priya received B.Tech degree from Department of ECE in Sreenivasa Institute of Technology and Management Studies, Chittoor, Chittoor Dist, A.P, and India and Pursuing M.Tech in Embedded Systems from VEMU Institute of Technology, P.Kothakota Chittoor Dist, A.P, and India. Her interested subjects are Embedded Systems.



2. Mr. P.H. Chandra Mouli received B.Tech degree from Department of Electronics & Communication Engineering from BIT Institute Of Technology, Hindupur and M.Tech Degree from Swetha Institute of Technology and Science, Tirupati.

Currently working as an Assistant professor in Department of ECE in VEMU Institute of Technology, P.Kothakota Chittoor Dist, A.P, and India. His interested areas are MPMC, Wireless Communications etc.