

# AUTOMATIC VEHICLE ACCIDENT REPORTING SYSTEM: A REVIEW

Seema Kalaria<sup>1</sup>, Kuldeep<sup>2</sup>, Somya Sharma<sup>3</sup>, Shanti lal Prajapat<sup>4</sup>, Shubhanshu Paliwal<sup>5</sup>, Mohit Bhojak<sup>6</sup>

Assistant Professor<sup>1</sup>, Department of Computer Science & Engineering, AIET, Jaipur Student<sup>2,3,4,5,6</sup>,  
Department of Computer Science & Engineering, AIET, Jaipur

## Abstract

Accident has become a major threat to life. It has been estimated that about 1.5 million people lose their life due to road accidents. Seeing its severity and hazardous impact on humans, Automatic vehicle accident and reporting system has been designed. The main aim of this IOT device is to minimize the fatal incidents. Various applications like GSM Module, GPS Buzzer etc. have been utilized.

**Keyword**—GSM Module; GPS; NODE MCU ESP8266; Battery; Buzzer; Alcohol Sensor.

## I. INTRODUCTION

Excessive speed is one of the most common causes of car accidents. Many lives could have been saved if emergency services had been notified of the tragedy and arrived in time. In today's world, GPS has become an essential component of any automotive system. This lecture examines a GPS receiver's capacity to monitor a vehicle's speed, detect an accident based on the monitored speed, and report the accident location to an Alert Service Center. The GPS will monitor speed of a vehicle and compare with the previous speed in every second through a Microcontroller Unit. It will be assumed that an accident has occurred if the speed falls below the set speed. The system will then use the GSM network to relay the accident location, as determined by the GPS, as well as the time and speed. This will assist in reaching the rescue service in a timely manner, so saving a valuable human life.

Being unaware of rules and regulations on the road or knowingly ignoring them is another major cause of road accidents in India. For instance, many drivers change the lanes without giving a proper signal or without looking at the rearview mirror. Being unaware of the road signs is another reason and driving ahead despite seeing a red light are some of the other reasons for road accidents in India. Many accidents occur at the nighttime due to the riders not switching on their lights sufficiently while driving. Traffic signs have to be followed in order for the accidents to be avoided.

GSM Module; GPS; NODE MCU ESP8266; Battery; Buzzer; Alcohol Sensor are the applications that have been used in this project.

The creation of a transportation system has been the driving force behind human people achieving the highest level of civilization among all creatures on the planet. Automobiles are an important part of our daily life. We use it to get to work, stay in touch with friends and family, and deliver our packages. However, it has the potential to cause us harm and even death through accidents. One of the most essential and fundamental risk factors in driving is speed. It has an impact not just on the severity of a crash, but also on the likelihood of being engaged in one, but also increases risk of being involved in a crash. Despite the numerous efforts made by various governmental and non-governmental groups all over the world through various initiatives to raise awareness about irresponsible driving, accidents still occur on a regular basis. However, if the emergency services had received the crash report in time, many lives could have been saved. As a result, efficient automatic accident detection with automatic transmission of the accident location to emergency services is a critical requirement for saving precious human life. This seminar recommends using a GPS receiver to track a vehicle's speed, detect an accident based on the speed, and send the accident's location and time to the Alert Service using GPS data processed by a microcontroller over the GSM network. Automobiles are required to get to work, visit family and friends, and deliver goods. However, they frequently pave the path for major tragedies. According to Wikipedia, an accident is an unexpected and unintended event or circumstance that occurs without aim or need. Despite the fact that they happen regularly, road accidents are the most terrifying thing that can happen to a driver. Worst of all, we don't learn from our mistakes on the road. The majority of road users are aware of broad principles and safety procedures to take while on the road, yet accidents and crashes are caused by the road users' own irresponsibility. Accidents and crashes are primarily caused by human error.

The following are the most common causes of accidents:

1. Driving too fast 2. Impaired Driving 3. Driver Distractions 4. Red Light Jumping 5. Failure to use safety equipment such as seat belts and helmets 6. Driving in the wrong lane and overtaking

## II. METHOD

and communicate data.

In this study, we have tried to minimize the accidents by keeping certain credentials in mind. Alcohol sensor have been utilized to sense whether a person is drunk or not. The vehicle doesn't starts if the person is found to be drunk. Secondly, if any accident occurs then the message or alert is being sent to the relative or to the registered mobile number by using GSM module. The accident's coordinate location is also being sent using GPS module.

### A. GSM Module

A GSM module is a device that connects to a network via a wireless data link using GSM mobile phone technology.

Mobile phones and other equipment that communicates with the mobile telephone network use GSM modems. SIM cards are used to identify their devices on the network.



Fig 1: GSM MODULE

### B. GPS Module

The global positioning system (GPS) is a satellite-based navigation system that delivers information about location and time. Anyone with a GPS receiver can use the system for free.

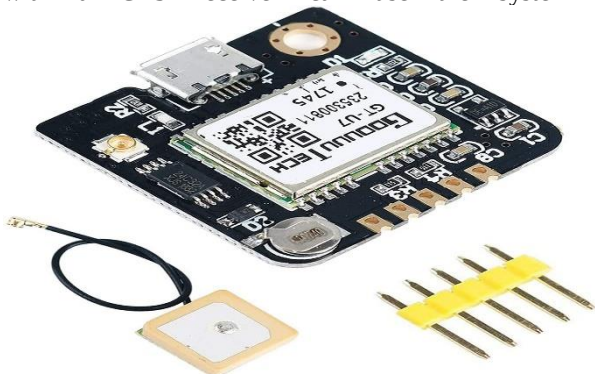


Fig 2: GPS Module

### C. Node MCU ESP8266

The node microcontroller unit is an open source software and hardware development environment centered on the ESP8266, a low-cost system on a chip. It uses the Wi-fi protocol to link things



Fig 3:MCU ESP8266

### D. Alcohol Sensor

The MQ3 sensor detects ethanol in the air and is properly known as an alcohol sensor. When a drunk individual breaths near an alcohol sensor, the sensor detects the ethanol in his breath and gives an output dependent on the amount of alcohol in his breath. More LEDs would light if the alcohol percentage was higher. If the alcohol percentage is lower, fewer LEDs will light up. As a result, you can learn about the concentration and, as a result, detect alcohol.

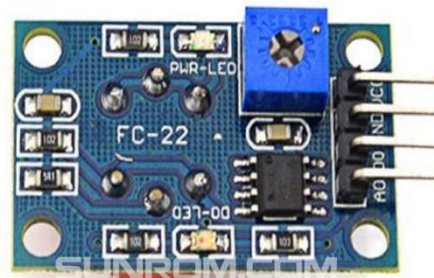


Fig 4: Alcohol Sensor

### E. Power Supply

A power supply's principal function is to convert electrical current from a spring to the proper voltage, current, and frequency for powering a load. As a result, power packs are also referred to as electrical power converters on occasion. Some power sources are stand-alone devices, while others are integrated into the chargers they use.



Fig 5:Power Supply

### F. Buzzer

A buzzer is a device that converts audio signals into sound signals. DC voltage is frequently used to power it. As a sound device, it's found in alarm clocks, laptops, printers, and other electrical equipment. It is primarily separated into two types: piezoelectric buzzer and electromagnetic buzzer, both of which are represented in the circuit by the letters "H" or "HA." The buzzer can produce a variety of sounds, including music, sirens, buzzers, alarms, and electric bells, depending on its design and intended application.



Fig 6:Buzzer

### G. Bread Board

A breadboard is a temporary solderless device for prototyping electronics and testing circuit ideas. Most electronic components in electronic circuits can be connected by slipping their leads or terminals into the holes and connecting them with wires where necessary. Underneath the breadboard are metal strips that connect the holes on the top of the board. The metal strips are arranged as shown in the illustration below. The top and bottom rows of holes are connected horizontally and split in the middle, while the remaining holes are connected vertically.



Fig 7: Bread Board

### H. LCD display

A clear liquid substance is placed between two reflective sheets in a liquid crystal display (LCD). The liquid crystal crumb aligns parallel to the glass surface when no voltage is applied to the transparent zinc anode.



Fig 8: LCD display

## III. SOFTWARE REQUIREMENT

### A. Arduino ID

A text editor for writing code, a message box, a text console, a toolbar with buttons for basic tasks, and a series of menus are all included in the Arduino Software (IDE). It connects to the Arduino hardware, allowing programmers to be uploaded and communicated with.

Arduino sketches are programmers made with the Arduino software (IDE). These sketches were made using a text editor and saved as files.

### B. VS Code

Visual Studio Code is a Microsoft-specific adaption of the Code - OSS repository, which is available as part of a standard Microsoft product license.

Visual Studio Code combines the convenience of use of a code editor with the tools required by developers to complete the edit-build-debug cycle.

## ADVANTAGES

- It avoids accident.
- It ensures safety.
- It provides the location of accident so that the person could be rescued.
- The relative would be able to see exact location.

## CONCLUSION

This project ensures the safety of an individual's life. It helps in minimizing the road accident by implementing certain constraints and restrictions that are required to be followed according to the traffic rules.

For example, the vehicle won't start if the alcohol detector finds the person drunk. These set of features ensures safety of an individual.

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