

DETECT AND ALERT SYSTEM OF VEHICLE ACCIDENTS USING ARDUINO

Dr.D. Loganathan¹ R. Krishnakanth² S. Arunkumar² L. Hariharan² G. Vigneshwaran²

ABSTRACT

Detect and Alert System of Vehicle Accidents Using Arduino is an approach for detecting and managing accidents that occur on roads. When accidents occur, the system will detect the accident and alert the registered mobile number. This helps to save the person involved in that accident. Arduino is a major component used in the system. An Android application helps users to register for receiving information about the accident. Along with these features, this project includes alcohol consumption detector and seat belt detector. Using this method we can detect and prevent the number of accidents that occur in our country.

Keywords : *Arduino, Android application.*

I INTRODUCTION

The system is used to prevent possible deaths caused by accidents by detecting and alert to the registered users. Arduino gives the idea of working to the system and transmits the commands to the circuit. The proposed system will detect the severity of an accident and give an alert message to the registered mobile number that is stored in the mobile application. Alcohol consumption is identified with the help of sensors. When alcohol consumption is identified, the vehicle will stop. When the person doesn't wear seat belt, the vehicle won't start. The seriousness of the accident is identified and a warning message is passed to the respective mobile numbers. There is also an emergency button in the

mobile application which can be used to send an emergency message to the respective mobile numbers. Whatever may be the emergency, with the help of emergency button an immediate identification of the user location is given to the respective mobile numbers.

II LITERATURE REVIEW

In previous accident detection systems, the exact location of accidents could not be easily identified. Only an alert message could be passed to the users to notify that an accident has occurred. But the accurate location of the place where the accident occurred could not be identified. In earlier methodologies, the location could be identified only with the help of latitude and longitude coordinates.

The existing systems are based on wired connectivity, in which the system should be connected to the vehicle. Sensors were also used in the earlier accident detection systems. MEMS sensor is a kind of sensor that could detect the pressure inside the vehicle and detect the angle of rotation of the car during an accident. The modules are also used to detect and send messages about the location of the accident. GSM module is used to send the location as SMS to the registered mobile number. GPS module is used to identify the latitude and longitude co-ordinates of the location.

III PROPOSED SYSTEM

The proposed system consists of power source which gives power to the entire system. Alcohol sensor is used to detect the consumption of alcohol. The Alcohol sensor is connected to the Arduino.

¹Professor, Department of Computer Science and Engineering SVS College of Engineering, Coimbatore.

²Final Year Student, Department of Computer Science and Engineering SVS College of Engineering, Coimbatore.

³Final Year Student, Department of Computer Science and Engineering SVS College of Engineering, Coimbatore.

⁴Final Year Student, Department of Computer Science and Engineering SVS College of Engineering, Coimbatore.

⁵Final Year Student, Department of Computer Science and Engineering SVS College of Engineering, Coimbatore.

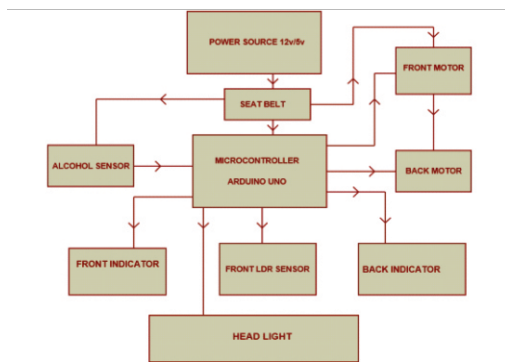


Fig.1 Proposed System

Seat belt is connected to the module so the presence of seat belt is detected. If the seat belt is not worn, the connection to the motor will be automatically switched off. The seat belt module is connected to the back motor through Arduino.

IV METHODOLOGY

A. ALCOHOL DETECTION

The detection of alcohol can be made possible with the help of Alcohol sensor. The Alcohol sensor (MQ3 sensor) is connected to the Arduino. The sensor is highly sensitive and can detect the consumption of alcohol. The sensors have their working temperature upto 50 degree Celsius. The power supply can be upto 5V. When the person consumes alcohol it becomes mixed with vapour and the vapour is used for calculating the amount of alcohol consumed.

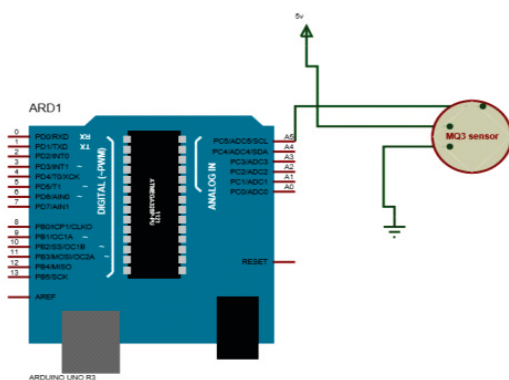


Fig. 2 Alcohol Detection Circuit

The amount of alcohol present can be calculated with the help of voltage, which is considered as output

reading for the circuit. The MQ3 sensor consists of LED which shows the presence of alcohol. A green light shows the presence of alcohol and a red light shows the absence of alcohol. The intensity of the green light shows the concentration of alcohol consumed by the person. The sensitivity adjustment in the alcohol sensor is used to manage the detection of alcohol based on its concentration. By adjusting this, the amount of alcohol detected can be adjusted. The Alcohol sensor is connected with the power supply upto +5V.

B. LM3915 BAR GRAPH LED INDICATOR

In the present design we use the popular LM3915 bar graph LED circuit for detecting the alcohol level from the MQ-3 sensor. The working of the alcohol/ethanol detector meter is very straight forward. When the MQ-3 sensor detects the presence of alcohol molecules, the voltage at its output pin begins rising. Depending on the concentration of the alcohol or ethanol, the output voltage keeps rising and stabilizes at the highest detected level.

This rise in potential is captured by the input pin#5 of the LM3915 circuit and is appropriately interpreted by sequentially illuminating the attached 10 LED bar-graph meter. The voltage level shows the consumption level of alcohol.

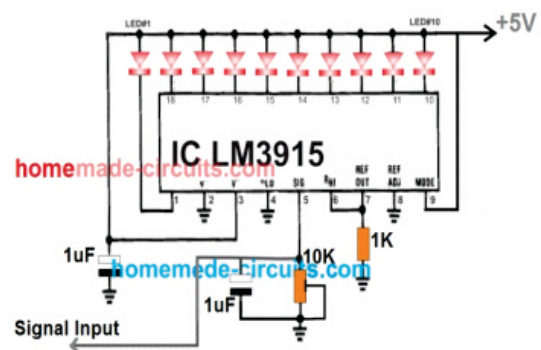


Fig 3 LM3915 Bar Graph Indicator

V CONCLUSION

The modules are connected to the Arduino along with the sensors. The mobile application is created with the

programming language Java. The mobile application contains registered mobile numbers which send the alert messages when accidents occur. After detecting the consumption of alcohol, the system sends an alert message to the registered user. The concentration of the alcohol is detected with the help of Alcohol sensor. The output of the circuit is based on voltage levels which show the amount of alcohol consumed. The level of voltage is proportional to the amount of alcohol consumed. The alcohol sensor can detect alcohol upto 500ppm in the air. Based on the peak of voltage levels, we can detect the presence of alcohol inside the vehicle. By using this, the amount of alcohol consumed by a person can also be detected.

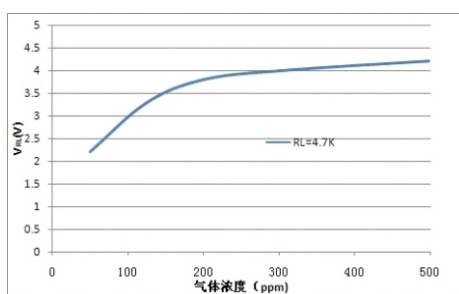


Fig 4 Voltage vs Alcohol

The measurement of alcohol is detected by using voltage is represented in the Fig 4.

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