



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJIRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 13, Issue 4, April 2024

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 8.423

9940 572 462

6381 907 438

ijirset@gmail.com

www.ijirset.com

Alcohol Detection With Vehicle Controlling

Dr Abhishek Gupta¹, Akash Rawat², Akansh Kuntal³, Aish Khan⁴, Deepak Kumar Meena⁵,
Dipesh Kumar Verma⁶

Associate Professor, Department of Electrical Engineering, Swami Keshvanand Institute of
Technology Management and Gramothan, Jagatpura, Jaipur¹

UG Student, Department of Electrical Engineering, Swami Keshvanand Institute of Technology
Management & Gramothan, Ramnagariya, Jagatpura, Jaipur^{2,3,4,5,6}

ABSTRACT: This project presents the design and implementation of an alcohol detection system using Arduino technology for enhancing vehicle safety. The system utilizes an alcohol sensor to measure the concentration of alcohol in the surrounding environment. When the alcohol concentration exceeds a predefined threshold, indicating potential driver impairment. An MQ-3 sensor is connected to an Arduino Uno board which processes the data from the sensor and triggers appropriate responses depending on the alcohol concentration level. The integration of a buzzer, push button, and LED enhances the functionality of the system by providing real-time alerts and visual indications to the user. The Arduino-Based Alcohol Detection and Vehicle Control System offer a cost-effective and accessible approach to preventing drunk driving incidents. By integrating alcohol detection with vehicle control, this project contributes significantly to road safety, reducing the risk of alcohol-related accidents and making roads safer for all

INDEX TERMS: MQ-3 sensor, LED Display, Arduino, Buzzer

I. INTRODUCTION

The project comes into existence due to the inseparable habit of drinking alcohol and then driving the vehicle which is a serious offence in the eyes of law. The known section currently discourages drivers from driving when drunk so that the fine will stop them from alcohol. Any framework of drunken drivers may be a problem. Police and road safety officers are justified in that humans are innately incapable of even being present as a State within the same house and moment. The MQ-3 gas sensor requires a heating element to identify Alcohol correctly. However, placing a heating element near Alcohol might be dangerous. Thus the Sensor is built with an anti-explosion network comprised of two thin layers of stainless steel mesh, as seen in the figure below. This stainless steel mesh contains a heating element. This efficient scope of law enforcement officials inhibits each other's manual efforts. Drink drive to the edge. Consequently, an algorithm for alcohol screening is essential. This can work without time and space being confined.

II. LITERATURE REVIEW

Drunk and distracted driving have been prime reasons for road accidents. An increase in population in urban cities leads to the risk of increasing deceased cases due to road accidents. Metropolitan cities needed a preventive & scalable system to prevent the loss of life due to accidents India reported 467,044 road accidents in 2018 which is 0.5% increase from 2017 data. According to a World Health Organization of 2018, India owns 1% of the world's vehicles but accounts for 6% of the global road traffic accidents.

Many of these road accidents are recorded every year due to driving under the influence of alcohol or drugs. The driver with the car becomes the worst possible fatal weapons that get affected because of drinking and

driving as they not only harm themselves but becomes very risky to the public also on the roads The primary objective of an Alcohol Detection with Vehicle Control System is to enhance road safety by preventing individuals from operating vehicles while under the influence of alcohol The system aims to detect and deter impaired driving caused by alcohol consumption, reducing the risk of accidents and potential harm to the driver, passengers, and other road users When a driver's alcohol level exceeds a preset threshold, the system activates control mechanisms like engine immobilization, steering wheel lock, or throttle reduction to prevent the vehicle from being operated.

III. BLOCK DIAGRAM

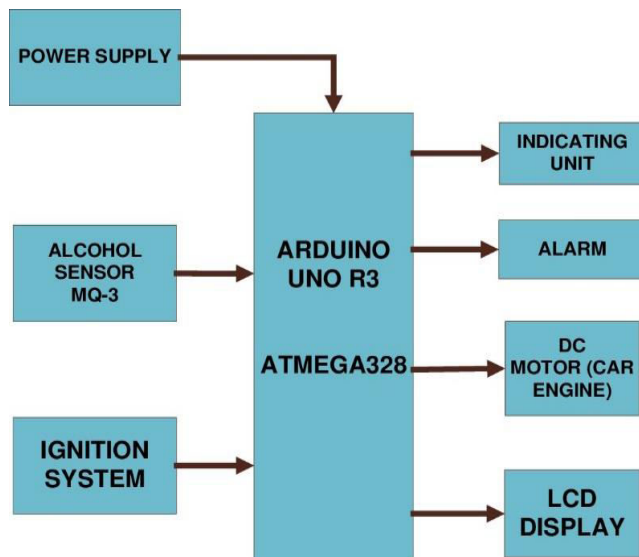


Fig.1 Block Diagram

The process in this block diagram is input, process and output that will explain more about the research development for alcohol detection using Arduino with motor locking. The first section is for the input is an Mq-3 sensor, the alcohol sensor. The detector will deliver the Arduino data if the sensor detects alcohol in the driver's breath. The Arduino then reads the data and passes it to the computer. The computer will display the data by the concentration of alcohol that the sensor detects by exhaling the driver's breath. Next, after the procedure is completed, the alcohol level data measures whether the driver is intoxicated or not. If the driver drinks too much, the liquid crystal reveals, "DRUNK!!! "The buzzer is repeatedly beeping, and the rotor is automatically locked. If the sensor does not detect alcohol, the liquid crystal shows the buzzer "NORMAL", and the rotor is not locked.

IV. ARDUINO BOARD

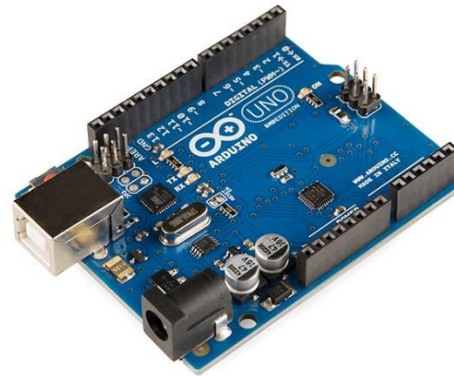


Fig. 2 Arduino UNO

Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online. You can tell your board what to do by sending a set of instructions to the microcontroller on the board. To do so you use the Arduino programming language (based on Wiring), and the Arduino Software (IDE), based on Processing.

V. ALCOHOL SENSOR (MQ3)



Fig.3 MQ 3 Sensor

The MQ3 alcohol gas sensor is a module used for detecting alcohol, CH₄, benzene, gasoline, hexane, CO, and LPG. It has a sensitive material SnO₂ for alcohol gas detection, with lower electrical conductivity in the fresh air. It is a semiconductor alcohol gas sensor that detects or monitors the presence or absence of alcohol. It is also known as chemiresistors because sensing of the sensitive material depends on the resistance change when the sensor is exposed to alcohol gas. When the sensor is pointed closer to the alcohol gas, the SnO₂ conductivity increases. The increase in sensor conductivity is directly proportional to the alcohol concentration. Therefore, the alcohol concentration is measured by any microcontroller very easily. The MQ3 alcohol gas sensor is very fast and has a high sensitivity to alcohol, smoke, and gasoline. An Alcohol detector

can be made using this alcohol sensor. Thus the sensor is very useful component in such type of system which is used in sensing air from breathe.

VI. BUZZER



Fig.4 Buzzer

An audio signal device like a beeper or buzzer may be electromechanical or piezoelectric or mechanical type. The main function of this is to convert the signal from audio to sound. Generally, it is powered through DC voltage and used in timers, alarm devices, printers, alarms, computers, etc. Based on the various designs, it can generate different sounds like alarm, music, bell & siren. This type of buzzer consumes low power and can be easily integrated into other circuits. As this is placed externally hence it can be used as musical tone oscillator also.

VII. LIQUID CRYSTAL DISPLAY



Fig. 5 LCD Display

LCD (Liquid Crystal Display) screen is an electronic display module and find a wide range of applications. A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits. These modules are preferred over seven segments and other multi segment LEDs. The reasons being: LCDs are

economical; easily programmable; have no limitation of displaying special & even custom characters (unlike in seven segments), animations and so on.

A 16x2 LCD means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. This LCD has two registers, namely, Command and Data. Xtensa LX106

VIII. SYSTEM FLOW CHART

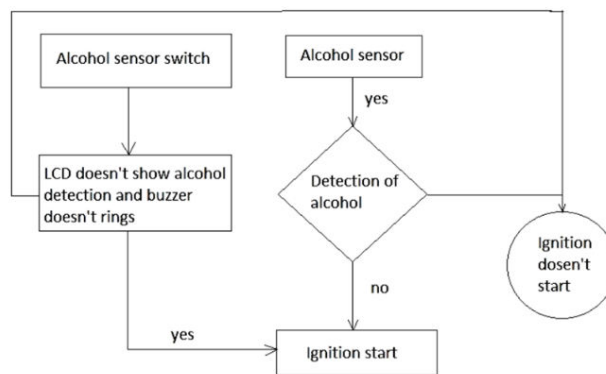


Fig. 6 System flow chart

System flow chart of the system wherein when alcohol sensor detect the presence of alcohol the ignition will start simultaneously the LCD panel will show the presence of alcohol and buzzer will start ringing. In the absence of alcohol content detection the ignition will start and the buzzer will be silent. This sensor is commonly used in weather-station projects and for keeping tabs on internal device environmental in larger projects.

IX. CIRCUIT DIAGRAM

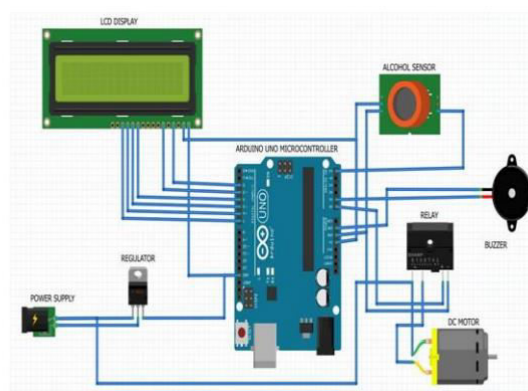


Fig.7 Circuit Diagram

X . DESCRIPTION

- The circuit outline comprises the parts Arduino UNO microcontroller, controller, DC engine, transfer, liquor sensor, power source, bell and LCD show.
- The 12V force supply associated with controller. The controller managed steady 5V stockpile to regulator.
- Arduino UNO regulator to control the entire circuit. Its associated with LCD, Relay, liquor sensor, signal.
- Relay initiated the DC engine. It has four pins. Yield pin associated with regulator. Negative will be associated with GND. 12V associated with load supply. Transfer initiated by 5V inventory from regulator.
- Buzzer has two pins. Yield pin associated with regulator. Negative will be associated with GND.
- Alcohol sensor has 3 pins. Supply in us associated with 5v.GND pin is associated with ground. Yield pin is associated with regulator simple pin.

XI. RESULTS & DISCUSSION

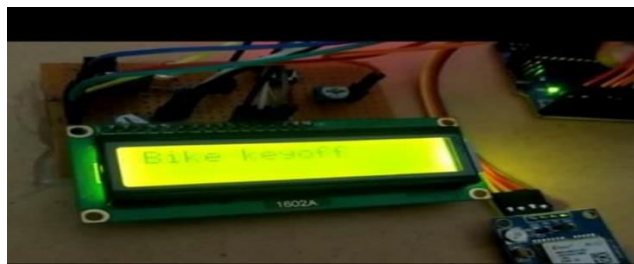


Fig.8 when alcohol level is sensed and more than the threshold value

The alcohol sensor first senses the presence of alcohol content present closely in the atmosphere and then it will go to Arduino board where it is compared with preset voltage. The comparator output goes to the LCD interface to display the presence of alcohol and at the same time buzzer will sound and the ignition will be turned off by operating relay

XII. SUMMERY AND CONCLUSION

The work helps in reducing the road fatalities due to alcohol consumption and rash driving. By installing such device, the ignition of the vehicle is also controlled i.e. the vehicle doesn't start if the driver consumes alcohol and the speed of the driver is continuously supervised and by sending alerts to authorities while crossing the limit promotes the road safety not only to the people driving but also the pedestrians. Thus the work reduces the road fatalities caused by two major reasons which are alcohol consumption and rash driving.

The primary objective of an Alcohol Detection with Vehicle Control System is to enhance road safety by preventing individuals from operating vehicles while under the influence of alcohol

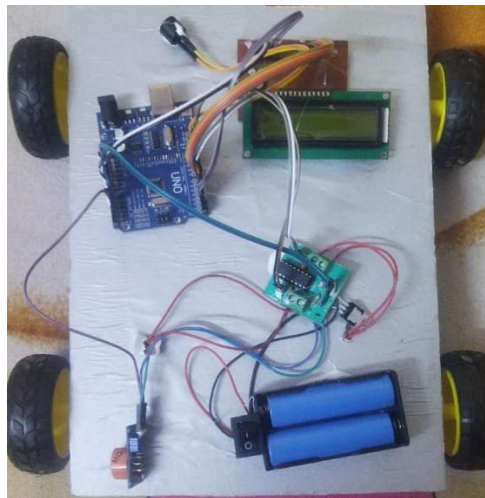


Fig. 9 Hardware Circuit

REFERENCES

- 1.Mandalkar RB, Pandore RN, Shinde MB, Godse VD. Alcohol Detection and Accident Avoidance using Locking with Tracking. International Journal of Advanced Research in Computer Science and Management Studies. 2015; 3(9): 142-147.
2. Geeta BS, Marur DR. Smart Drunken Driver Detection and Speed Monitoring System for Vehicles. International Journal of Advanced Technology inEngineering and Science. 2015; 3(3):67-74.
3. Prashanth KP, Padiyar K, Naveen KPH, Kumar KS. Road Accident Avoiding System using Drunken Sensing Technique. International Journal of Engineering Research and Technology. 2014; 3(10): 818-823.
4. Shah S, Nawgaje DD. ARM Based Drunk Driver Identification with Tracking System. International Journal of Modern Trends in Engineering and Research. 2016; 3(4): 302-307.
5. Bindu JH, Reddy GA, Anoosha P, Vinolini KAV. Programmed Engine Locking System by Automatically Detecting Drunken Drivers. International Journal of Innovative Research in Science, Engineering and Technology. 2015; 4(11):11344-11348.
- 6.Bolla R. Bruchi, R. Davoli, F. Cucchiatti, F. Energy efficiency in the future inmerset; a survey of existing approaches and trends in energy-aware fixed network infrastructures. IEEE Commam, Saty. Tutor 13(2), 225-244 (2011)
- 7.Wei, M. Patadia, S., Kammen, D.M. Putting renewahles and energy efficiency thr wurk: how mary jobs can the clean energy industry generate in the US? Energy Policy 38(2), 919-931(2010)
- 8.Kneifel, J. Life-cycle carbon and cost analysis of energy efficiency measures in new Commercial buildings. Energy Build 42(3), 333-340 (20



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 9940 572 462  6381 907 438  ijirset@gmail.com



www.ijirset.com

Scan to save the contact details