



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

# IJRSET

International Journal of Innovative Research in  
**SCIENCE | ENGINEERING | TECHNOLOGY**



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 13, Issue 6, June 2024

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

Impact Factor: 8.423

 9940 572 462

 6381 907 438

 [ijirset@gmail.com](mailto:ijirset@gmail.com)

 [www.ijirset.com](http://www.ijirset.com)

# IOT Based Alcohol Detection and Engine Locking System

**K. Gokul, Dr. A R Jayasudha**

II MCA Students, Department of Master of Computer Applications, Hindusthan College of Engineering and  
Technology, Coimbatore, India

Head of the Department, Department of Master of Computer Applications, Hindusthan College of Engineering and  
Technology, Coimbatore, India

**ABSTRACT:** The paper's goal is to protect human life from accidents caused by drunk driving. Alcohol detection using the Internet of Things (IOT) has been used to reduce accidents. The purpose of the project is to ascertain the person's level of intoxication. The car will stop traveling further if the alcohol sensor determines that the rider is intoxicated.

## I.INTRODUCTION

In recent years, there has been growing concern about the impact of drunk driving on road safety. Alcohol-related accidents remain a leading cause of injury and death worldwide. In response to this pressing issue, technological innovations have been developed to increase road user safety and reduce the frequency of alcohol-related accidents. One of these innovations is the alcohol detection and engine lock system. Alcohol detection and engine interlock systems are a sophisticated preventative approach to combating the dangers of drunk driving. This system integrates advanced alcohol detection technology and vehicle control mechanisms to create a comprehensive solution to ensure safe and responsible driving. The main purpose is to prevent drunk people from driving a vehicle by automatically blocking the engine's ignition. The core component of this system is the integration of a reliable alcohol detection sensor into the vehicle interior. These sensors use cutting-edge technology to analyze a driver's breath and touch to accurately measure blood alcohol concentration (BAC) in real-time. By using unobtrusive and seamless monitoring technology, the system ensures ease of use without compromising effectiveness. Alcohol detection and engine interlock systems make a significant contribution to public safety and are consistent with broader efforts to reduce traffic accidents and fatalities caused by drunk driving. Moreover, its introduction can become an important tool for law enforcement agencies and provide additional support in the task of enforcing road safety regulations. This introduction sets the stage for a more in-depth look at the components, features, and potential benefits of alcohol detection and engine interlock systems. A deeper dive into this innovative technology reveals the mechanisms behind its operation, its impact on road safety, and its potential for widespread adoption to create a safer and more responsible driving environment.

### 1.1 ELECTRONICAL GADGET:

The integration of liquor discovery and motor locking with the Web of Things (IoT) innovation upgrades the capabilities of a conventional framework by permitting real-time observing and inaccessible control. An liquor location and motor locking framework utilizing Web of Things (IoT) is an electronic contraption that points to anticipate tanked driving by recognizing liquor nearness within the driver and locking the motor in the event that liquor is recognized over a certain limit. Liquor location utilizing the Web of Things (IOT) has been utilized to decrease mischances. The reason of the venture is to discover the person's level of inebriation.

### 1.2 REVIEW:

Assess the exactness of the liquor location highlight. Evaluate whether it dependably identifies liquor levels over the lawful restrain and gives reliable readings over distinctive conditions and clients. Audit the viability of the motor locking instrument in anticipating vehicle operation when liquor is recognized. Assess its unwavering quality in avoiding unauthorized vehicle utilization and whether it can be effortlessly by passed.

### 1.3 PROBLEM DESCRIPTION:

The abuse of vehicles due to alcohol-impaired driving remains a noteworthy societal issue, contributing to a tall number of mishaps and fatalities. To address this issue, there's a require for a vigorous and proactive framework that can avoid people beneath the impact of liquor from working a vehicle. The proposed arrangement includes the integration of Liquor Discovery and Motor Locking Framework utilizing Web of Things (IoT) innovation.

### 1.4 GOAL:

The objective of an Liquor Location and Motor Locking Framework utilizing Web of Things (IoT) is to improve street security by leveraging progressed innovation to identify liquor disability in drivers and take preventive activity to repress vehicle operation when liquor concentration surpasses a predefined limit. Create a framework that utilizes dependable and exact liquor location sensors to precisely degree blood liquor concentration (BAC) levels within the driver's breath. 9 Execute a real-time observing framework that ceaselessly analyzes liquor concentration information and gives immediate criticism. Utilize IoT network to empower consistent communication between the liquor location framework and a centralized server or cloud stage. Coordinated a secure motor locking instrument that anticipates the vehicle from beginning in case the liquor concentration outperforms the predefined edge

### 1.5 PERSPECTIVE:

Future solar street lights should be able to work to other smart city systems including trash management, traffic signals, and public safety systems. Through integration, these systems will operate more effectively and efficiently and use less energy.

## II. SYSTEM SPECIFICATION

### 2.1 HARDWARE REQUIREMENTS:

- Processor - IntelCorei3Processor
- Hard Disk - 500GB
- RAM - 4GB
- Mouse – Optical
- Microcontroller - Arduino UNO

### 2.2 SOFTWARE REQUIRMENTS:

- Object system - Windows 10
- IDE – Arduino

## III. PROJECT DESCRIPTION

### 3.1 BLOCK DIAGRAM:

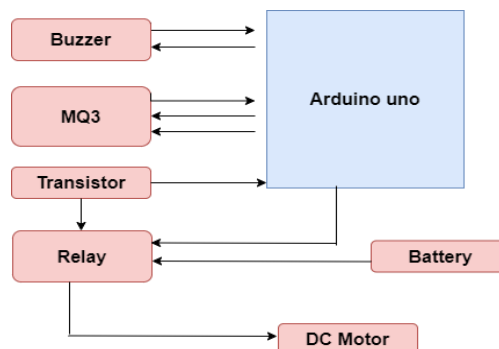


Figure 3.1-Block diagram

### 3.2 BLOCK EXPLANATION:

#### 3.2.1 ARDUINO UNO:

The Arduino UNO may be a standard board of Arduino. Here UNO implies 'one' in Italian. It was named as UNO to name the primary discharge of Arduino Computer program. It was too the to begin with USB board discharged by Arduino. It is considered as the capable board utilized in different ventures. Arduino.cc created the Arduino UNO board. Arduino UNO is 22 based on an ATmega328P microcontroller. It is simple to utilize compared to other sheets, such as the Arduino Mega board, etc. The board comprises of computerized and analog Input /Yield pins (I/O), shields, and other circuits. The Arduino UNO incorporates 6 analog stick inputs, 14 advanced pins, a USB connector, a control jack, and an ICSP (In-Circuit Serial Programming) header. It is modified based on IDE, which stands for Coordinates Improvement Environment. It can run on both online and offline stages.



Figure 3.2.1-Node MCU

#### 3.2.2 BOARD ARCHITECTURE:

Create frameworks that give real-time checking of the driver's liquor levels and driving behavior. In expansion to locking the motor when liquor is identified, these frameworks can send cautions to assigned contacts or specialists, empowering convenient interven. Use an liquor sensor module such as the MQ-3 or MQ-135. This module identifies the nearness of liquor vapor within the discuss. Select an appropriate Arduino board just like the Arduino Uno or Arduino Nano. The board will serve as the most controller for the framework, handling sensor information and controlling the motor locking component. Utilize a hand-off module to control the motor locking component. The hand-off acts as a switch to cut off control to the motor when vital. Ensure a steady power supply for the Arduino board and other components. This will be accomplished employing a battery or a directed control connector. Legitimately wire all components together, interfacing them to the fitting pins on the Arduino board. Utilize jumper wires or a breadboard for simple prototyping and testing.

#### 3.2.3 MQ-3 ALCOHOL SENSOR:

The MQ-3 sensor works on the guideline of chemical resistance. Contact with liquor vapor changes the resistance of the sensor. This alter in resistance is measured and can be utilized to identify the nearness of liquor. The MQ-3 sensor is exceedingly delicate to liquor vapor, making it appropriate for applications such as breathalyzers and liquor discovery frameworks. Calibration is basic to get precise readings from the sensor. To decide the essential resistance esteem, the sensor must be calibrated in a clean air environment. The sensor encompasses a built-in warming component that must be fueled for the sensor to function. This warming component guarantees that the sensor works at an ideal temperature and gives precise readings. The MQ-3 sensor gives an analog voltage yield that changes depending on the concentration of liquor vapor within the discuss. This yield can be examined by a microcontroller or other estimation gadget. A few adaptations of the MQ-3 sensor have a computerized yield module that gives a tall or moo flag depending on the discovery of liquor. This rearranges the association to the microcontroller.



#### 3.2.4 RELAY:

Hand-off module is an electronic gadget that comprises of one or more transfers (electromagnetic switches)

and is utilized to control high-power gadgets or apparatuses with low-power microcontrollers or advanced signals. Transfers give electrical segregation between the low voltage control circuit and the high-voltage stack circuit, making them pivotal for meddle with gadgets that work at distinctive voltage levels.



### 3.3 DC MOTOR:

DC (coordinate current) engine is an electro-mechanical gadget that changes over electrical vitality into mechanical vitality. DC engines are broadly utilized in different applications, extending from family apparatuses to mechanical apparatus. The essential operation of a DC engine includes the interaction between attractive areas and electric streams to produce rotational movement.



### 3.4 CIRCUIT DIAGRAM:

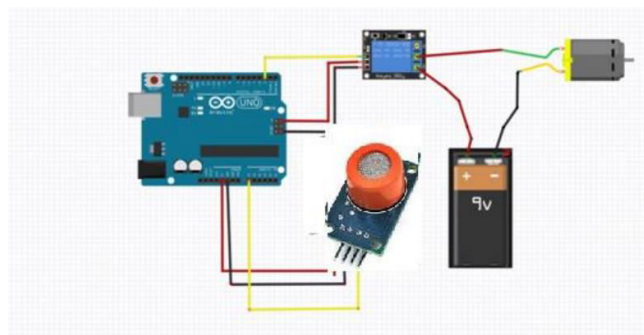


Figure 3.4 -CIRCUIT DIAGRAM

## IV. IMPLEMENTATION AND RESULT ANALYSIS

### 4.1 STEPS TO CONNECT:

#### Connect the MQ-3 sensor to the Arduino Uno:

- Interface the sensor's VCC to 5V on the Arduino.
- Interface the sensor's GND to GND on the Arduino.
- Interface the sensor's A0 to a A0 stick on the Arduino

#### Connect the Relay Module to the Arduino Uno:

- Interface the transfer module's VCC to 5V on the Arduino.
- Interface the transfer module's GND to GND on the Arduino
- Interface the hand-off module's IN to a computerized stick on the Arduino

#### Connect the Fan(AS DC MOTOR) to the Relay Module:

- **Interface** the fan to the **transfer** module. The **hand-off** module **ordinarily** has three **associations**: Common (COM), **Ordinarily** Open (NO), and **Ordinarily** Closed (NC). **Interface** the fan to COM and NO.

#### **Connect the 9V Battery:**

- Connect the battery clip's positive (red) wire to Vin on the Arduino
- Connect the battery clip's negative

### **V. RESULT ANALYSIS**

As of the final information overhaul in January 2022, there are a assortment of liquor location and motor interlock frameworks on the showcase, and investigate and advancement in this field is always advancing. Be that as it may, it does not have the capacity to supply real-time information or particular comes about or upgrades on person items or frameworks. The viability of liquor location and motor interlock frameworks may shift depending on variables such as discovery innovation exactness, framework unwavering quality, client acknowledgment, and lawful contemplations. A few start interlocks and liquor location frameworks have been utilized for numerous a long time, particularly as portion of court-ordered programs for individuals sentenced of driving beneath the impact (DUI).

### **VI. FUTURE ENHANCEMENT**

Utilize more progressed and exact sensors for liquor discovery, such as infrared spectroscopy or electrochemical sensors. These sensors can identify liquor nearness with higher exactness and unwavering quality, decreasing wrong positives and negatives. Create frameworks that give real-time checking of the driver's liquor levels and driving behaviour. In expansion to locking the motor when liquor is recognized, these frameworks can send cautions to assigned contacts or specialists, empowering opportune mediation.

### **VII. RESULTS**

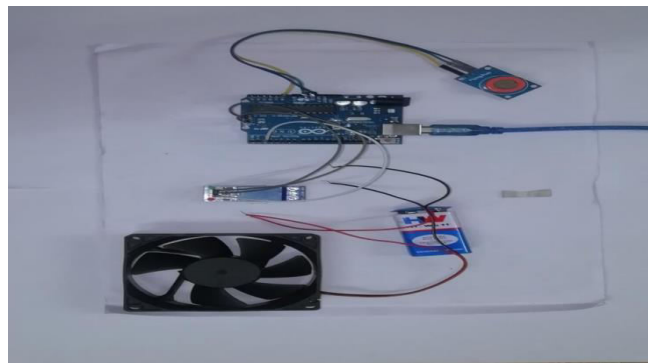


Figure 7.1 – connection mechanism

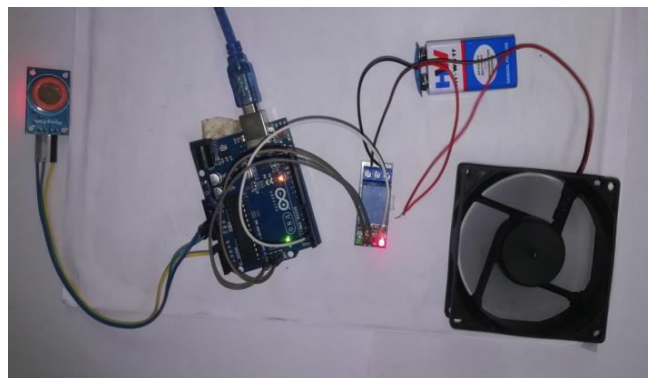


Figure 7.2 – working mechanism

#### **REFERENCES**

1. Dr. Pravin Shukla, Utkarsha Srivastava, Sridhar Singh, Rishabh Tripathi, Rakesh Raushan Sharma, “Automatic Engine Locking System Through Alcohol Detection”, May 2020, International Journal of Engineering Research & Technology (IJERT), Vol. 9, Issue 05.
2. Sudharsana Vijayan, Vineed T Govind, Merin Mathews, Simna Surendran, Muhammed Sabah M E, April 2014, “ALCOHOL DETECTION USING SMART HELMET SYSTEM”, International Journal of Emerging Technology in Computer Science & Electronics (IJETCSE), Volume 8, Issue 1.
3. R. Kumudham, Jessica Valentina, Ragavi.B, Lakshmi.R, “Automatic Alcohol Detection and Engine locking System using ARDUINO NANO”, JASC: Journal of Applied Science and Computations, ISSN NO: 1076-5131.
4. Navarro, M. A. Diño, E. Josen, R. Anacan, and R. D. Cruz, “Iris Recognition Pattern Using Wavelet Transform for the Design of an Alcohol Detection System for Car Users,” 7th International Conference on Intelligent Systems, Modelling, and Simulation (ISMS), Bangkok, 2016. Bangkok, 2016, pp. 15–19.
5. Driver Authentication and Accident Avoidance System for Vehicles, Mahivya M. and Kathiravan S., Department of ECE, Kalaignar Karunanidhi Institute of Technology [Smart Computing Review, vol. 5, no. 1, February 2015].



INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 9940 572 462  6381 907 438  [ijirset@gmail.com](mailto:ijirset@gmail.com)



[www.ijirset.com](http://www.ijirset.com)

Scan to save the contact details