

A Technical Report on
Alcohol Detector And Engine Locking System

Social Innovation Lab

Of

II B.Tech I- Semester

in

ECE DEPARTMENT

Submitted by

R.Shashank	(21R01A04Q8)
SK.Iliyas	(21R01A04Q9)
S. yuvasree	(21R01A04R0)
T.Anil Kumar	(21R01A04R2)
Y.Likitha	(21R01A04R8)
Y.Pavani	(21R01A04R9)

Under the esteemed guidance of

Mr. C.Rama krishna

Assistant Professor



CMR INSTITUTE OF TECHNOLOGY
(UGC-AUTONOMOUS)

(Approved by AICTE, Permanently Affiliated to JNTU Hyderabad, Accredited by NBA, Accredited
by NAAC with A Grade)

Kandlakoya (V), Medchal Road, Hyderabad 501 401

2022-2023

Department of ECE

Certificate

This is to certify that the technical report entitled “**Alcohol detector and Engine locking system**” is the bonafide work done and submitted by

R.Shashank (21R01A04Q8)

SK.Iliyas (21R01A04Q9)

S. yuvasree (21R01A04R0)

T.Anil Kumar (21R01A04R2)

Y.Likitha (21R01A04R8)

Y.pavani (21R01A04R9)

towards the partial fulfillment of the requirement of Social Innovation Laboratory (SIL) of **II B. Tech I-Semester** in **ECE** is a record of bonafide work carried out by them during the period **Aug 2022 to Dec 2023**.

Guide

Mr. C. Rama Krishna

Co- Ordinator

Mr. U. Veeresh

Head of Department

Dr.k. Niranjan Reddy

INDEX

Topics		Page No
CHAPTER-I	INTRODUCTION	1
CHAPTER II	EMPATHIZE	2
CHAPTER III	DEFINE	3
CHAPTER IV	IDEATE	4
CHAPTER V	PROTOTYPE	5
CHAPTER VI	TEST	12
CONCLUSION		
REFERENCES		

1. INTRODUCTION

Alcohol Detection using Arduino with Motor Locking :

Drinking and driving is already a serious public health problem, which is likely to emerge as one of the most significant problems in near future .the system implemented by us aims at reducing the road accident in the near future due to drunken and drive.

The system detects the presence of alcohol in the vehicle and immediately locks the engine of the vehicle.

The issue is also a serious public health problem and can arise as a important hitches in near coming days. The arrangement developed targets to lower down the risk of driving and also reduce the misfortune on road in the coming days due to drunken driver.



2. EMPATHIZE

It is not uncommon to pick up the newspaper and read about a road accident. In fact, India holds the world record in the number of road accidents annually, according to a report released by the WHO in 2010. Around 1.34,000 people die every year in India on account of road accidents. The most shocking fact is that 70% of these are due to the consumption of alcohol, according to a report released in 2011.

Nowadays drinking and driving is the most common threat to their as well as others life. We cannot stop people from drinking but we can avoid these accidents by checking the person of drinking also we can put these types of small devices in vehicles to assure that no drink and drive can further take place.



3.DEFINE

Drunken driving is considered as one of the major reason of accidents in worldwide. Drivers under the influence of alcohol shows a clear failure of perception recognition and vehicle control. So, by this accident occurs.

The current investigation is to epitomize the technical work in the form of project which illustrates how human driving can be made safer so to avoid accidents and make the roads safer to drive for the driver & also the commuters.

- To prevent accident due to drunk and driving.
- Easy and efficient to test the alcohol content in the body.
- Quick and accurate results.

Helpful for police and provides and automatic safety systems for cars and other vehicles as well.



4. IDEATE

The work is developed by integrating sensors based on alcohol content detection conglomerating with Microcontroller board like Arduino, ATmega328 is more versatile in handling more functions than any other conventional microcontroller. The MQ3 module is used to detect the alcohol particle which has reasonable sensitivity range around two meters, and is suitable for any kind of vehicle. The sensor has one more unique quality that it can simply be unscrewed from the defendants. It is too compact to fit complete set up in the form of product in automobile.

We have provided a very effective solution to develop an intelligent system for vehicles for alcohol detection whose core is Arduino. Since sensor has fine sensitivity range around 2 meters, it can suit to any vehicle and can easily be hidden from the suspects.

1. "Alcohol detector project can be used in the various vehicles for detecting whether the driver has consumed alcohol or not .
2. This project can also be used in various companies or organizations to detect alcohol consumptions of employees. When the drunken driver enters in the vehicle alcohol sensor senses the alcohol, therefore buzzer rings and LCD displays that alcohol is detected as shown in fig.6 and ignition of vehicle automatically turns off by relay.

The legislation instead of putting more police such systems can be inbuilt in the vehicle by the vehicle manufacturers so that driver or person driving the vehicle is alert and make himself responsible.

5. PROTOTYPE

Hardware Modules :

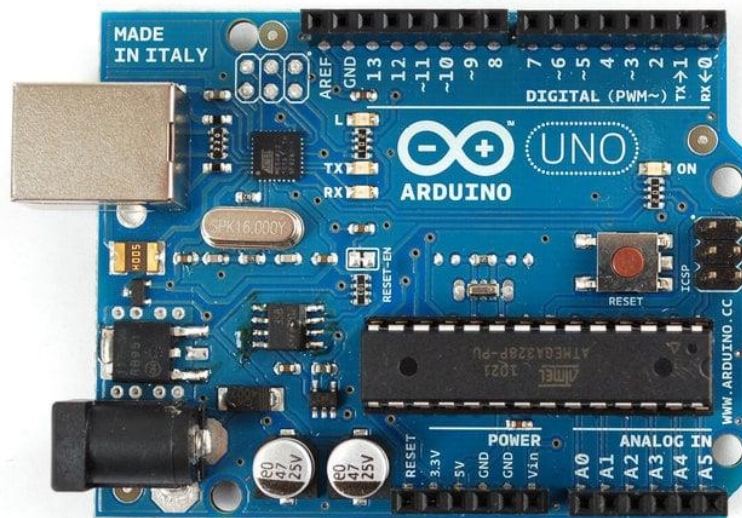
Sl.NO	Name of components	Model Make IC no.if applicabe	Price	Description
1	Breadboard		60	A breadboard is a solderless device for temporary prototype with electronics and test circuit designs.
2	Jumper Wires		5	Establish temporary connections over various components and other boards.
3	Arduino		500	Arduino is designed to make electronics more accessible to artists,designers and anyone interested in creating interactive objects or environments.
4	Motor Driver shield	L293d	200	This motor driver expansion board is designed to drive up to 4 bidirectional DC motors with individual 8-bit speed selection.
5	Alcohol Sensor	MQ3	200	It is a low-cost semiconductor sensor which can detect the presence of alcohol gases at concentrations from 0.05mgL to 10mgL.
6	DC Motor		25	A DC motor is any of a class of rotatory electrical machines that converts direct current electrical energy into mechanical energy.
7	Piezo Buzzer		20	A piezo buzzer is a type of electronic device that is used to produce tone,alarm,or sound.
8	9v Battery		20	9v power supply for motor driver.

Arduino UNO :

The Arduino UNO is a standard board of Arduino. Here UNO means 'one in Italian. It was named as UNO to label the first release of Arduino Software. It was also the first USB board released by Arduino. It is considered as the powerful board used in various projects. Arduino.cc developed the Arduino UNO board.

Arduino UNO is based on an ATmega328P microcontroller. It is easy to use compared to other boards, such as the Arduino Mega board, etc. The board consists of digital and analog Input/Output pins (1/0), shields, and other circuits.

The Arduino UNO includes 6 analog pin inputs, 14 digital pins, a USB connector, a power jack, and an ICSP (In-Circuit Serial Programming) header. It is programmed based on IDE, which stands for Integrated Development Environment. It can run on both online and offline platforms. The IDE is common to all available boards of Arduino.



MQ3 Alcohol Sensor :

MQ3 is one of the most commonly used sensors in the MQ sensor series. it is a Metal Oxide Semiconductor (MOS) type of sensor. Metal oxide sensors are also known as Chemiresistors, because sensing is based on the change of resistance of the sensing material when exposed to alcohol. So by placing it in a simple voltage divider network, alcohol concentrations can be detected.

MQ3 alcohol sensor works on 5V DC and draws around 800mW. It can detect Alcohol concentrations anywhere from 5 to 500 ppm.



Relay Modules:

Relay modules use low-level data signals to switch relays capable of handling loads up to 10 Amp. Ideal for devices like PIR detectors and other sensors that output low level signals that need to turn another device on or off. Great for use with Arduino and other microcontrollers. Out board LED indicators light when a relay is switched. Convenient screw terminals for relay outputs, 0.1" header for voltage and signal input. Available in 1, 2 and 4 relay configurations.



DC motor :

A DC motor is any of a class of rotary electrical motors that converts direct current (DC) electrical energy into mechanical energy. The most common types rely on the forces produced by magnetic fields. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic, to periodically change the direction of current in part of the motor. DC motors were the first form of motor widely used, as they could be powered from existing direct-current lighting power distribution systems. A DC motor's speed can be controlled over a wide range, using either a variable supply voltage or by changing the strength of current in its field windings. Small DC motors are used in tools, toys, and appliances. The universal motor can operate on direct current but is a lightweight brushed motor used for portable power tools and appliances. Larger DC motors are currently used in propulsion of electric vehicles, elevator and hoists, and in drives for steel rolling mills. The advent of photo electronics has made replacement of DC motors with AC motors possible in many applications.

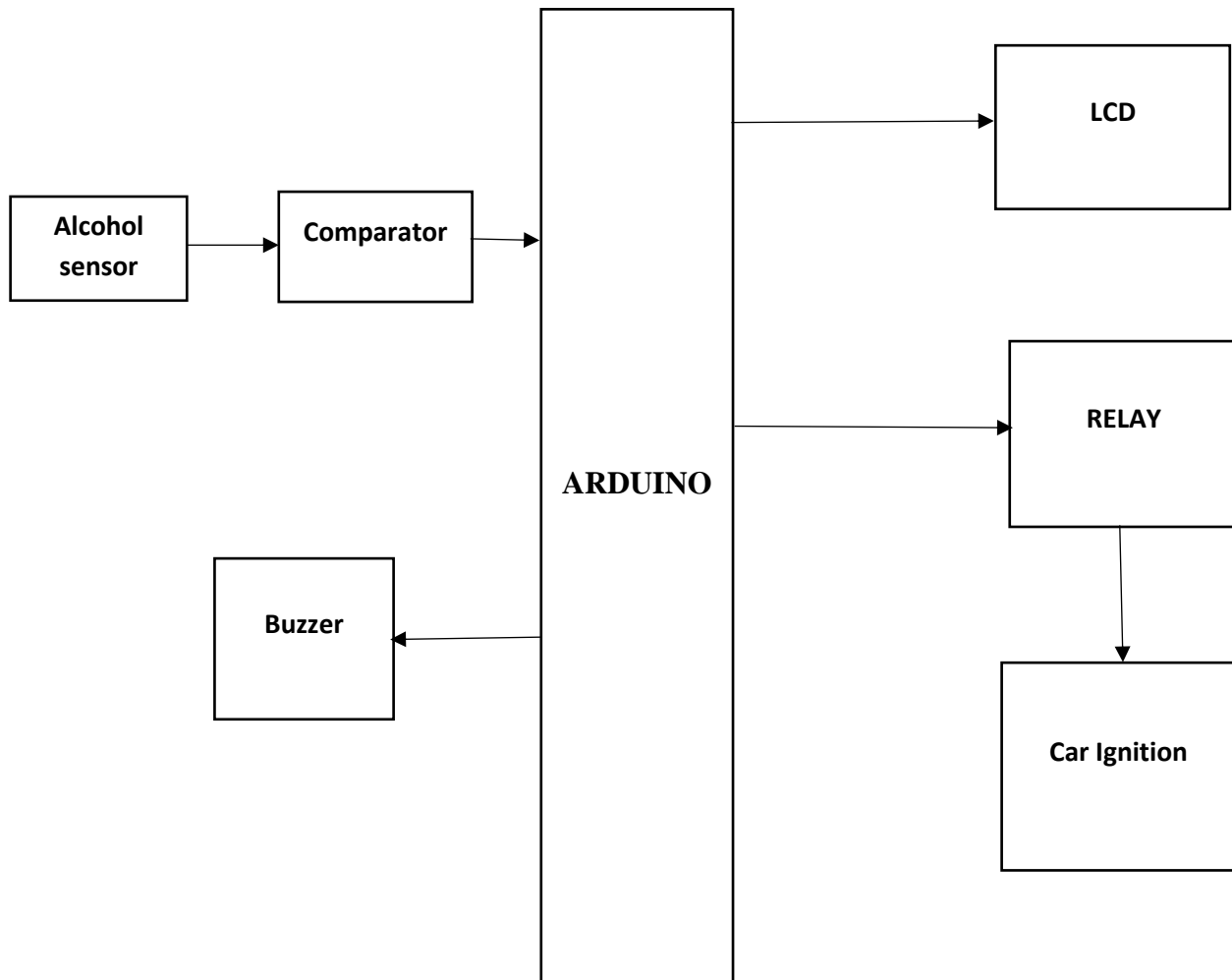


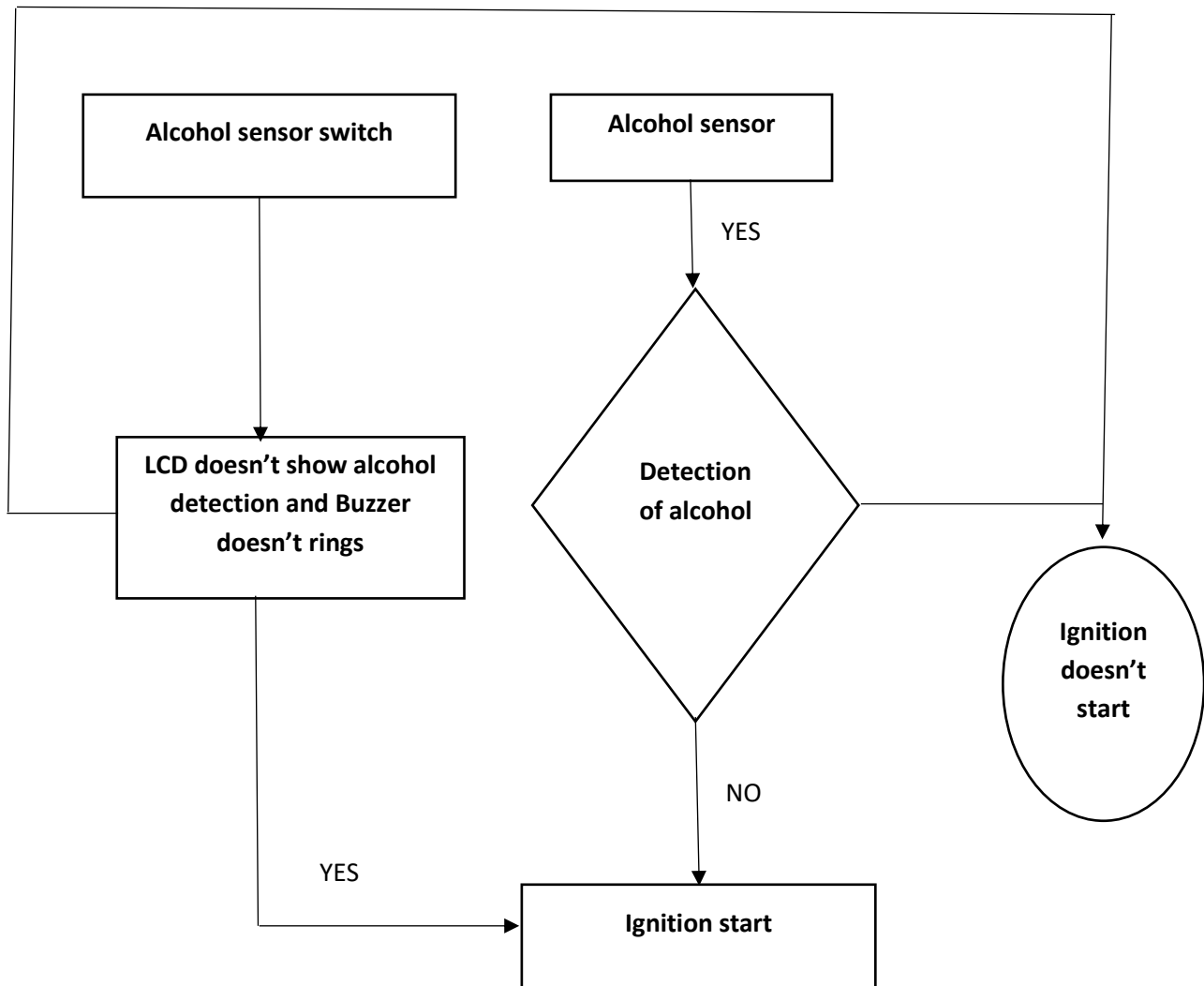
9V BATTERY :

The 9V battery is an extremely common battery that was first used in transistor radios. It features a rectangular prism shape that utilizes a pair of snap connectors which are located at the top of the battery. A wide array of both large and small battery manufacturers produce versions of the 9V battery. Possible chemistries of primary (non-rechargeable) 9V batteries include Alkaline, Carbon.



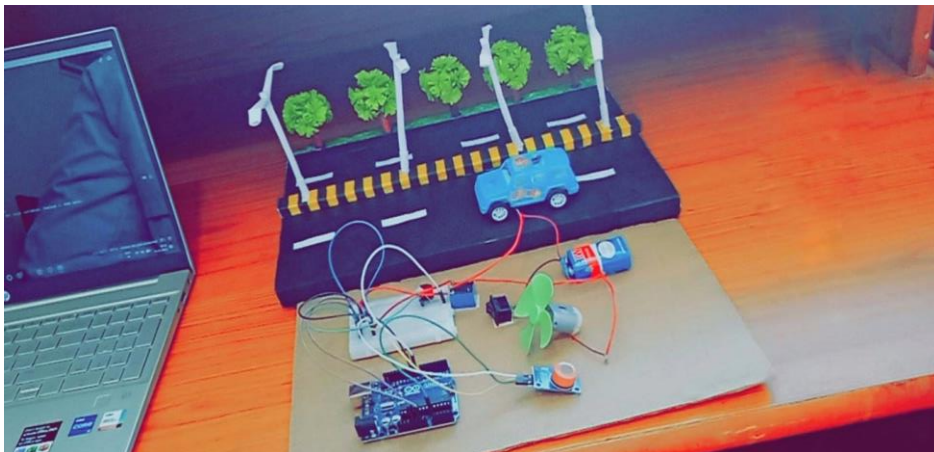
BLOCK DIAGRAM :





FLOW CHART

- The MQ3 alcohol sensor detects the alcohol and outputs the value through A0 pin of the Arduino. (printing the value to keep a note of it)
- The L293D IC helps in controlling the DC motor and requires 9V input voltage.
- The enable and direction pin are being controlled by pin 9, pin 8 and pin 7 of the Arduino.
- Pin 8 and 7 will drive when they have different voltage level. Initially, we set pin 8 as HIGH and pin 7 as LOW. When both are LOW, the DC motor stops.
- Whenever the sensor detects alcohol above given threshold and the pin 8 and pin 7 are both set to LOW and hence DC motor stops.
- Eventually, we will generate sound through piezo buzzer by making use of pin 12 and passing a wave using tone() function.



6.Test

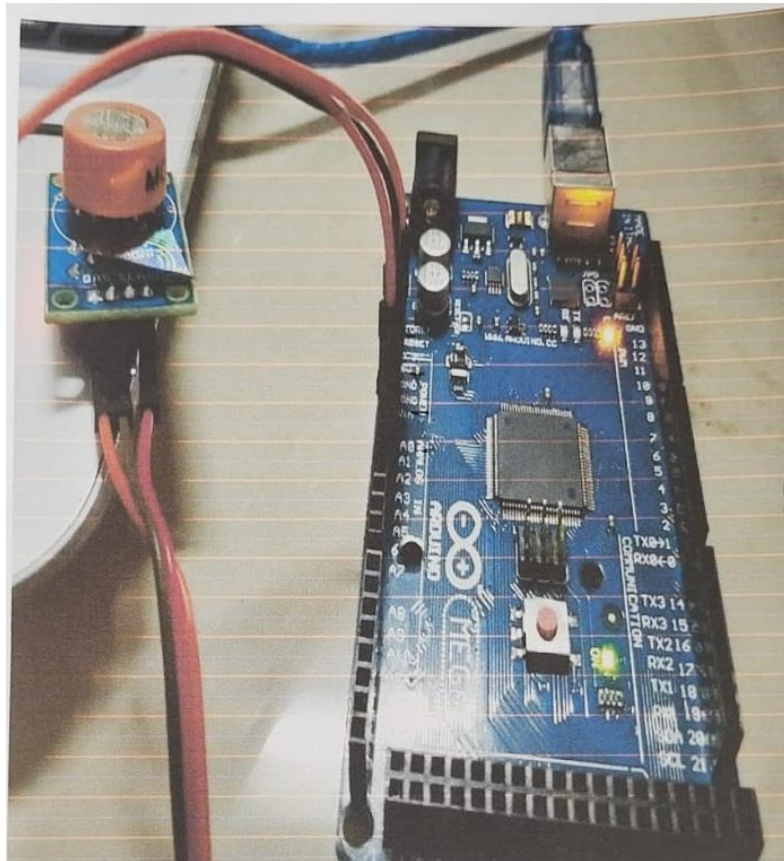
1. To prevent accident due to drink and driving
- 2.Easy and efficient to test the alcohol content in the body.
3. Quick and accurate results.
4. Helpful for police and provides and automatic safety systems for cars and other vehicles as well

When the drunken driver enters in the vehicle alcohol sensor senses the alcohol, therefore buzzer rings and ignition of vehicle automatically turns off by relay. So, by this the purpose of our project succeeds.

We have provided a very effective solution to develop an intelligent system for vehicles for alcohol detection whose core is Arduino. Since sensor has fine sensitivity range around 2 meters, it can suit to any vehicle and can easily be hidden from the suspects. The whole system has also an advantage of small volume and more reliability. As the growing public perception is that vehicle safety is more important, advances in public safety is gaining acceptance than in the past. Future scope of this system is to control the accidents causes due to alcohol consumption. This system improves the safety of human being. And hence providing the effective development in the automobile industry regarding to reduce the accidents cause due to alcohol.

The legislation instead of putting more police such systems can be inbuilt in the vehicle by the vehicle manufacturers so that driver or person driving the vehicle is alert and make himself responsible.

As many projects this is still in prototype phase and it has many drawbacks and has to improve a lot. There is a certain amount of alcohol content in Sanitizers and Perfumes the Sensor may also detect the alcohol content in those and automatically turns off the ignition automatically. This may cause users a many problems and the sensor has to be cleaned regularly as it may contain contents of previous detection. As days goes on and more tests and user reviews may tell us what are the problems with this and this may get resolved and evolve as final product and launched in market.



Testing

Conclusion :

In this project we have developed a real time model that can automatically lock the engine when a drunken driver tries to drive a car. Now-a-days car accidents are mostly seen due to drunk and drive. So ,By fitting this alcohol sensor into the car, we can save guard the life of the driver and also the remaining passengers.

REFERENCE :

- https://en.wikipedia.org/wiki/Arduino_Uno
- https://www.researchgate.net/figure/Flowchart-of-the-entire-system_fig1_324314274