ALCO-DET

A Term Paper / Project

Report

Submitted in the partial fulfillment of the requirements forthe

award of the degree of

Bachelor of Technology

in

Department of Electronics & Communication Engineering

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Declaration

The (Term Paper/Project) Report entitled “ALCO-DET ” is a record of bonafide work of K. SRIYA, J. HEMALATHA, G. SRAVANI, Y. ANUSHA, A. ROOPA, submitted in partial fulfillment for the award of B.Tech in “Electronics and Communication Engineering” to the K L University. The results embodied in this report have not been copied from any other departments/University/Institute.

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Certificate

This is to certify that the Report entitled “ALCO-DET” is being submitted by of K Sriya, J Hemalatha, G Sravani, Y Anusha, A Roopa submitted in partial fulfillment for the award of B.Tech in “Electronics and Communication Engineering” to the K L University is a record of bonafide work carriedout under our guidance and supervision.

The results embodied in this report have not been copied from any other departments/ University/Institute.

Signature of the Co-Supervisor **Signature of the Supervisor**

Signature of the HOD **Signature of the External Examine**

Acknowledgement

It is great pleasure for me to express my gratitude to our honorable President Sri. Koneru Satyanarayana, for giving the opportunity and platform with facilities in accomplishing the project based laboratory report.
I express the sincere gratitude to our principal Dr. L. Koteshwararao for his administration towards our academic growth.

I record it as my privilege to deeply thank our pioneer DR. M Goutham, HOD-ECE for providing us the efficient faculty and facilities to make our ideas into reality.
I express my sincere thanks to our project supervisor Dr. C. Joshitha for her novel association of ideas, encouragement, appreciation and intellectual zeal which motivated us to venture this project successfully.
Finally, it is pleased to acknowledge the indebtedness to all those who devoted themselves
directly or indirectly to make this project a report success.

Abstract

Driving under the influence of alcohol is a major cause of road accidents, injuries, and fatalities worldwide. To prevent such accidents, an efficient and reliable alcohol detection system is required. In this project, we propose an alcohol detection system using breath analysis.

The proposed system consists of an alcohol sensor module, a breathalyzer, and a Node MCU. The alcohol sensor module is used to detect the presence of alcohol in the breath, and the breathalyzer is used to convert the breath alcohol content (BAC) into an electrical signal. The Node MCU processes the signal and detects the level of alcohol and warns the driver .

Contents

Chapter1: Introduction

The alcohol detection project is aimed at developing a system that can detect the presence of alcohol in a person's breath. Drink driving is one of the major causes of road accidents all over the world, according to the bureau of transportation statistics, every 2 hours three people are killed in alcohol-related highway crash also for every thirty minutes someone’s life is at risk and families are devastated. The use of alcohol impairs a person's ability to drive, operate machinery, and perform tasks that require concentration and coordination, which can lead to accidents and injuries. Therefore, alcohol detection systems are essential for ensuring public safety and preventing alcohol-related accidents.

Chapter2: Literature Survey

Several research studies have been conducted to improve the accuracy of breathalyzers, including the use of infrared spectroscopy and electrochemical sensors.

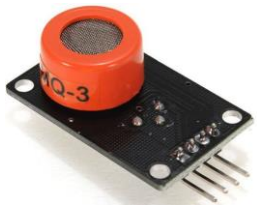
Another approach to alcohol detection is using biosensors, which detect the presence of alcohol in bodily fluids like saliva, blood, or sweat. Research studies have shown the potential of using biosensors for alcohol detection, with some studies showing the accuracy of biosensors to be comparable to breathalyzers.

A literature review published in the Journal of Breath Research in 2021 evaluated the current state of alcohol detection technologies, including breathalyzers, biosensors, and other methods like sweat analysis and eye-tracking technology. The study found that while breathalyzers are the most widely used method for alcohol detection, biosensors have shown promising results and have the potential to become a viable alternative to breathalyze.

Chapter3: Requirements

ALCOHOL Sensor-

The alcohol sensor is technically referred to as a MQ3 sensor which detects ethanol in the air. When a drunk person breathes near the alcohol sensor it detects the ethanol in his breathe and provides an output based on alcohol concentration..



DHT11-

DHT11 is a digital temperature and humidity sensor that is commonly used in electronics projects. It is a low-cost sensor that can measure temperature between 0 to 50 degrees Celsius and humidity between 20%

to 90% with an accuracy of +/- 2 degrees Celsius and +/- 5% humidity.

Jumper Wires-

Jumper wires are used to connect the various components of the whole Automatic Plant Watering System.

ESP8266-

ESP8266 is a low-cost Wi-Fi microchip that can be programmed to connect to a Wi-Fi network and communicate with other devices over the internet.

The ESP8266 can be programmed using the Arduino IDE or other programming languages like Lua, Micro Python, or C++.

LED-

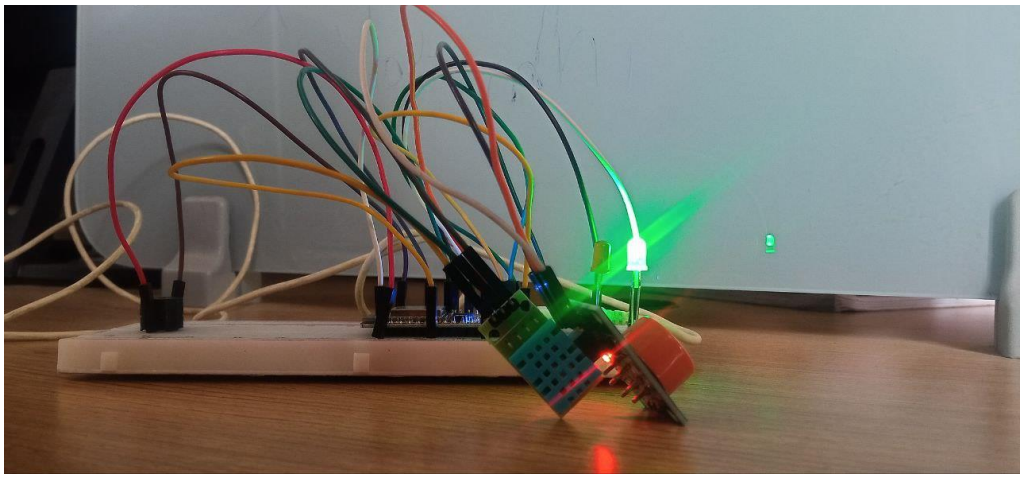
LED stands for "light-emitting diode," and it is a semiconductor device that emits light when an electric current is passed through it. LEDs are commonly used in electronic devices, lighting applications, and digital displays.

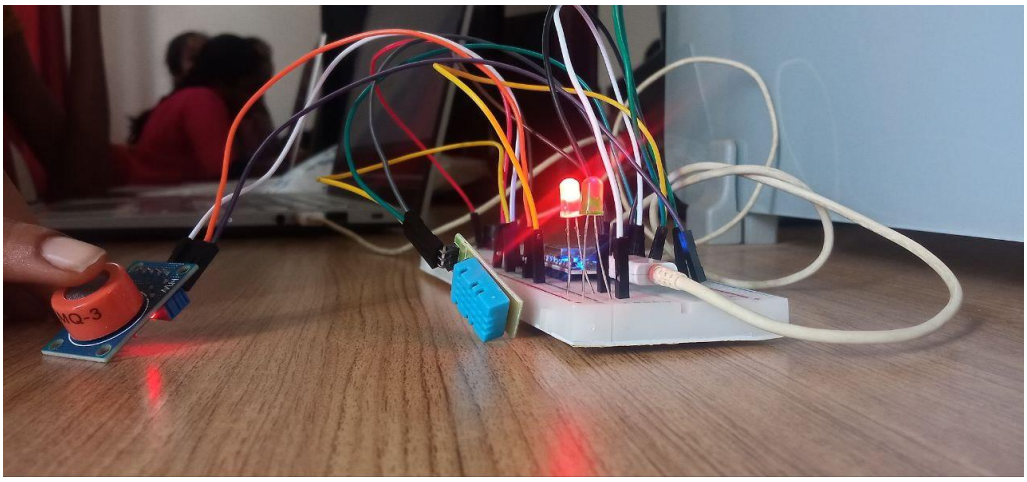
BUZZER-

A buzzer is an electronic device that produces sound when an electric current is passed through it. It is commonly used in electronic projects and devices, including alarms, timers, and notifications.

Chapter4: Methodology

- Esp8266's digital inputs are connected to the outputs of sensors.
- Led's are connected to d5 and d7 pins of esp8266.
- Buzzer is connected to d0 of esp8266.
- Alcohol sensor and dht sensors are interfaced.
- Code is written accordingly and interfaced with blynk iot software to send notifications and monitor the temperature, humidity and alcohol levels





Working of alcohol detection system

Code:

```
#include <SPI.h>
#include <ESP8266WiFi.h>
#include <BlynkSimpleEsp8266.h>
#include <DHT.h>
#define BLYNK_TEMPLATE_ID "TMPL-zNcs3G0"
#define BLYNK_TEMPLATE_NAME "alcodet1"
#define BLYNK_AUTH_TOKEN "AntN16YOTSETD0GFztGxxy9smFPMHZhV"

char auth[] =BLYNK_AUTH_TOKEN; //Enter the Auth code which was send by Blink

char ssid[] = "Realme C25";  //Enter your WIFI Name
char pass[] = "rupa1234@";  //Enter your WIFI Password

#define DHTPIN 2
#define DHTTYPE DHT11
const int buzzer=D0;
const int led1=D5;
const int led2=D7;

DHT dht(DHTPIN, DHTTYPE);
BlynkTimer timer;
int gasSensor;
float ac;
void sendSensor()
{
  float h = dht.readHumidity();
  float t = dht.readTemperature();

  gasSensor=analogRead(A0);
  float ac = (gasSensor / 1024.0) * 5.0 * 5.0;


  Serial.println("humidity");
  Serial.println(h);
  Serial.println("temperature:");
  Serial.println(t);
  Serial.println(ac);
  Serial.println("ppm");
  if(ac<7.9)
  {
    digitalWrite(led1,LOW);
    digitalWrite(led2,HIGH);
     tone(buzzer,800,40);
    Serial.println("Safe");
```

```
  }

  else if(ac>=7.9)
  {
     digitalWrite(led1,HIGH);
     digitalWrite(led2,LOW);
     noTone(buzzer);
     Serial.println("Warning");
     Blynk.logEvent("notification","high alcohol");
  }
  delay(1000);

  Blynk.virtualWrite(V0, ac);
  Blynk.virtualWrite(V5, h);  //V5 is for Humidity
  Blynk.virtualWrite(V6, t);  //V6 is for Temperature

}

void setup()
{
  Serial.begin(115200);
  delay(10);// See the connection status in Serial Monitor
  Serial.println();
  Serial.println();
  Serial.print("Connecting to ");
  Serial.println(ssid);

  WiFi.begin(ssid, pass);

  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(".");
  }
  Serial.println("");
  Serial.println("WiFi connected");
  Serial.println("IP address: ");
  Serial.println(WiFi.localIP());
  Blynk.begin(auth, ssid, pass);

  dht.begin();
  pinMode(led1,OUTPUT);
  pinMode(led2,OUTPUT);
  pinMode(buzzer,OUTPUT);


  timer.setInterval(1000L, sendSensor);

}
```

X

```
void loop()
{
  Blynk.run(); // Initiates Blynk
  timer.run(); // Initiates SimpleTimer



}
```

Chapter5: Theoretical Analysis

Alcohol detection can be analyzed from a theoretical perspective by considering the physical and chemical properties of alcohol and the methods used to detect it.

Alcohol, also known as ethanol, is a colorless, volatile liquid that is soluble in water and many organic solvents. It has a characteristic odor and a boiling point of 78.4 °C. Alcohol is metabolized in the liver at a rate of approximately 0.015% per hour, which means that the concentration of alcohol in the blood decreases over time after consumption.

There are several methods for detecting alcohol in the body, including breath tests, blood tests, and urine tests. Each method relies on a different mechanism for detecting alcohol.

Breath tests measure the amount of alcohol in the breath and use this measurement to estimate the concentration of alcohol in the blood. This method is based on the principle that alcohol is eliminated from the body through the lungs as well as the liver. When a person consumes alcohol, the alcohol is absorbed into the bloodstream and eventually reaches the lungs, where it can be detected by a breathalyzer device. The device works by measuring the amount of alcohol in the breath and converting it into a blood alcohol concentration (BAC) value

Chapter6: Conclusion

In conclusion, alcohol detection plays a crucial role in ensuring public safety, particularly in situations such as driving, workplace safety, and law enforcement. The detection of alcohol in the body can be achieved through several methods, including breath tests, blood tests, and urine tests, each of which has its own advantages and limitations. The theoretical analysis of alcohol detection involves understanding the physical and chemical properties of alcohol and the mechanisms used to detect it. The accuracy and reliability of different alcohol detection methods vary, and the choice of method depends on the specific application and circumstances. Overall, effective alcohol detection methods are essential for promoting responsible alcohol consumption and minimizing the risks associated with excessive alcohol consumption

Chapter7: References

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