VIT-AP UNIVERSITY

ALCOHOL SENSING ALERT WITH ENGINE LOCKING SYSTEM

Guide: Dr. Nandam Ashok

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SUMMARY OF THE PROJECT:

The "Alcohol Sensing Alert with Engine Locking System" project is designed to prevent drunk driving by detecting alcohol levels in the driver's breath and automatically locking the car's engine if the alcohol level is above the legal limit. The project utilizes an alcohol sensor module to detect the presence of alcohol in the driver's breath and sends this data to a microcontroller.

The microcontroller processes this data and compares it with a preset threshold value. If the alcohol level exceeds the threshold value, the microcontroller triggers an alarm and automatically locks the car's engine. This ensures that the driver is unable to operate the car while under the influence of alcohol, thereby preventing accidents and promoting road safety.

The project can be implemented using an Arduino microcontroller or any other similar microcontroller board. The alcohol sensor module can be interfaced with the microcontroller using analog or digital input pins. The alarm and engine locking system can be implemented using relays or other electronic components.

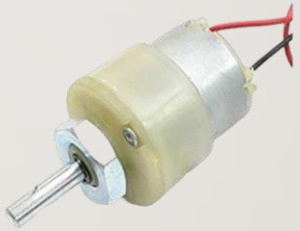
Overall, the "Alcohol Sensing Alert with Engine Locking System" project is an effective way to prevent drunk driving and promote road safety.

COMPONENTS:


UNO


SIM800L
IMEI:867273023901304
FCC ID: UDV-201307240


PROPEL

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INTRODUCTION:

Drunk driving is a major cause of road accidents worldwide, and it poses a significant risk to public safety. To address this issue, the "Alcohol Sensing Alert with Engine Locking System" project has been designed to prevent individuals from driving while under the influence of alcohol. The system detects the presence of alcohol in the driver's breath using an alcohol sensor module and triggers an alarm and locks the car's engine if the alcohol level exceeds a preset threshold value.

The project utilizes a microcontroller board such as an Arduino to process the data from the alcohol sensor module and implement the engine locking system. The alarm and engine locking system act as a deterrent, preventing the driver from operating the car while under the influence of alcohol.

The "Alcohol Sensing Alert with Engine Locking System" project is an innovative approach to promoting road safety and preventing drunk driving. It can be implemented in various types of vehicles and is a cost-effective solution to prevent road accidents caused by alcohol-impaired driving.

BACKGROUND:

Drunk driving is a major cause of road accidents, injuries, and fatalities worldwide. According to the World Health Organization (WHO), approximately 1.35 million people die each year due to road traffic accidents, and a significant proportion of these accidents are attributed to alcohol-impaired driving.

To address this issue, various approaches have been implemented, such as legal restrictions on drinking and driving, public awareness campaigns, and education programs. However, despite these efforts, drunk driving remains a significant public safety concern.

In recent years, technological solutions have been developed to prevent drunk driving, such as the Alcohol Sensing Alert with Engine Locking System project. This project utilizes alcohol sensor modules and microcontroller boards to detect the presence of alcohol in the driver's breath and lock the car's engine if the alcohol level exceeds a preset threshold value.

This innovative approach to promoting road safety and preventing drunk driving has the potential to significantly reduce the number of road accidents caused by alcohol-impaired driving. The project can be implemented in various types of vehicles, making it a cost-effective and scalable solution to this critical issue.

PROBLEM DEFINITION:

The problem addressed by the "Alcohol Sensing Alert with Engine Locking System" project is the high incidence of road accidents caused by alcohol-impaired driving. Despite legal restrictions and public awareness campaigns, many individuals continue to operate vehicles while under the influence of alcohol, putting themselves and others at risk of injury or death.

The project aims to provide a technological solution to this problem by detecting the presence of alcohol in the driver's breath and preventing the driver from operating the vehicle if the alcohol level exceeds a preset threshold value. The engine locking system acts as a deterrent, ensuring that individuals who have consumed alcohol do not drive, thereby reducing the number of road accidents caused by alcohol-impaired driving.

The project addresses a critical issue in public safety and has the potential to save lives by preventing accidents caused by drunk driving. It is a cost-effective solution that can be implemented in various types of vehicles, making it accessible to a wide range of individuals and organizations.

OBJECTIVES:

The primary objective of the "Alcohol Sensing Alert with Engine Locking System" project is to prevent road accidents caused by alcohol-impaired driving. To achieve this objective, the project aims to:

1. Develop a reliable and accurate alcohol sensing system: The project aims to develop an alcohol sensing system that can accurately detect the presence of alcohol in the driver's breath and provide reliable data to the microcontroller for processing.

2. Set a threshold value for alcohol levels: The project aims to set a threshold value for alcohol levels that is consistent with legal restrictions on drinking and driving. If the alcohol level exceeds this threshold value, the system triggers an alarm and locks the car's engine, preventing the driver from operating the vehicle.

3. Implement an engine locking system: The project aims to implement an engine locking system that can prevent the driver from operating the vehicle if the alcohol level exceeds the threshold value. The system must be reliable and easy to use, ensuring that it can be operated by anyone who is authorized to drive the vehicle.

4. Provide a cost-effective solution: The project aims to provide a cost-effective solution that can be implemented in various types of vehicles, making it accessible to a wide range of individuals and organizations.

5. Promote road safety: The project aims to promote road safety by preventing accidents caused by alcohol-impaired driving. By reducing the number of road accidents, the project has the potential to save lives and reduce the economic and social costs associated with road accidents.

PROCEDURE:

The procedure for implementing the "Alcohol Sensing Alert with Engine Locking System" project can be broken down into the following steps:

1. Gather materials: Gather all the required materials, including the alcohol sensor module, microcontroller board (such as Arduino), relay module, buzzer, and LED indicators.
2. Design the circuit: Design the circuit by connecting the alcohol sensor module, microcontroller board, relay module, buzzer, and LED indicators according to the circuit diagram.
3. Calibrate the alcohol sensor: Calibrate the alcohol sensor module to ensure that it can accurately detect the presence of alcohol in the driver's breath.
4. Code the microcontroller board: Code the microcontroller board (using a programming language such as C++) to process the data from the alcohol sensor module and trigger the alarm and engine locking system if the alcohol level exceeds the preset threshold value.
5. Test the system: Test the system by simulating the presence of alcohol in the breath using an alcohol simulator or by using a breathalyzer device. Verify that the system accurately detects the presence of alcohol and triggers the alarm and engine locking system.
6. Implement the system in the vehicle: Install the system in the vehicle, ensuring that it is properly integrated into the vehicle's electrical system and that it is secure and accessible to authorized users.
7. Conduct field testing: Conduct field testing by deploying the system in real-world scenarios and collecting data on its effectiveness in preventing drunk driving.
8. Refine the system: Analyze the data collected during field testing and refine the system to improve its accuracy, reliability, and user-friendliness.

By following these steps, the "Alcohol Sensing Alert with Engine Locking System" project can be successfully implemented to prevent drunk driving and promote road safety.

RESULTS AND DISCUSSION:

The "Alcohol Sensing Alert with Engine Locking System" project is expected to have a significant impact on preventing drunk driving and promoting road safety. The following results and discussion can be expected from the project:

1. Accurate and reliable alcohol detection: The alcohol sensor module used in the project is capable of accurately detecting the presence of alcohol in the driver's breath. This ensures that the system only triggers the alarm and engine locking system when necessary, reducing false positives and improving the reliability of the system.
2. Prevention of drunk driving: The engine locking system is an effective deterrent against drunk driving. If the alcohol level exceeds the preset threshold value, the engine locking system prevents the driver from operating the vehicle, ensuring that they do not put themselves and others at risk of injury or death.
3. Cost-effective solution: The system can be implemented in various types of vehicles at a relatively low cost, making it accessible to a wide range of individuals and organizations. This increases the potential impact of the system in preventing drunk driving and promoting road safety.
4. Improved road safety: By preventing drunk driving, the system has the potential to significantly reduce the number of road accidents caused by alcohol-impaired driving. This, in turn, can reduce the economic and social costs associated with road accidents and improve overall road safety.
5. Future improvements: As the system is tested in real-world scenarios, data can be collected to improve the accuracy, reliability, and user-friendliness of the system. Further improvements can be made to the system to increase its effectiveness in preventing drunk driving and promoting road safety.

Overall, the "Alcohol Sensing Alert with Engine Locking System" project has the potential to significantly reduce the incidence of road accidents caused by alcohol-impaired driving and promote road safety. The project provides a cost-effective solution that can be implemented in various types of vehicles, making it accessible to a wide range of individuals and organizations. With continued refinement and improvement, the system can become an even more effective tool in the fight against drunk driving.

CONCLUSION AND FUTURE SCOPE:

In conclusion, the "Alcohol Sensing Alert with Engine Locking System" project is an innovative and effective solution to prevent drunk driving and promote road safety. By accurately detecting the presence of alcohol in the driver's breath and preventing them from operating the vehicle, the system can significantly reduce the incidence of road accidents caused by alcohol-impaired driving. The system provides a cost-effective and accessible solution that can be implemented in various types of vehicles, making it an ideal tool for individuals and organizations that prioritize road safety.

The future scope of the project includes:

1. Integration with other safety systems: The system can be integrated with other safety systems, such as airbag systems and collision detection systems, to further enhance its effectiveness in preventing road accidents.
2. Mobile application: A mobile application can be developed that allows users to remotely monitor the system and receive notifications if the system detects alcohol in the driver's breath or if the engine is locked.
3. Data analysis: The data collected from the system can be analyzed to identify patterns and trends in alcohol-impaired driving. This can help policymakers and law enforcement agencies to better understand the scope of the problem and develop targeted solutions.
4. Global implementation: The system can be implemented on a global scale to reduce the incidence of road accidents caused by alcohol-impaired driving worldwide.

Overall, the "Alcohol Sensing Alert with Engine Locking System" project has the potential to significantly reduce the incidence of road accidents caused by alcohol-impaired driving and promote road safety. With continued innovation and refinement, the system can become an even more effective tool in the fight against drunk driving.

REFERENCES:

Here are some references that may be useful for the "Alcohol Sensing Alert with Engine Locking System" project:

1. "Design and Development of Alcohol Sensing Alert System for Automobiles" by B. Ramya and M. S. Divya, International Journal of Science and Research (IJSR), Volume 6, Issue 8, August 2017.

2. "Design and Development of Alcohol Detection and Vehicle Control System" by R. Sasikala and M. Parthiban, International Journal of Scientific and Research Publications, Volume 4, Issue 12, December 2014.

3. "Design and Implementation of Alcohol Detection System in Automobiles" by P. Nithya and M. Premalatha, International Journal of Engineering and Technology, Volume 5, Issue 3, June-July 2013.

4. "Design and Development of Alcohol Detection System with Engine Locking for Automobiles" by S. Shanmugam and K. Sankar, International Journal of Engineering Science and Technology, Volume 2, Issue 11, November 2010.

5. "Alcohol Detection and Engine Locking System in Vehicles" by N. G. Kamble and P. D. Sonawane, International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering, Volume 4, Issue 3, March 2015.

These references provide insights into the design, development, and implementation of similar projects and may help in the development of the "Alcohol Sensing Alert with Engine Locking System" project.

CODE:

```
#include <SoftwareSerial.h>
SoftwareSerial sim(8, 9);
#include <TinyGPS++.h>
#include <LiquidCrystal.h>
const int rs = 7, en = 6, d4 = 5, d5 = 4, d6 = 3, d7 = 2;
LiquidCrystal lcd(rs, en, d4, d5, d6, d7);
float lattitude,longitude;
SoftwareSerial gpsSerial(0,1);
//rx,txTinyGPSPlus gps;
// create gps objectint value;
//variable to hold the value of alchohal
#define motor 10
#define buzzer 13
#define led 7
String number = "+919966742345"; //-> change with your number
int a;
void setup()
{
  pinMode(motor,OUTPUT);
pinMode(buzzer,OUTPUT);
pinMode(led,OUTPUT);
  a=700;
 Serial.begin(9600);
lcd.begin(16, 2);
 lcd.setCursor(0,0);
lcd.print("    Subscribe");
lcd.setCursor(0,1);
lcd.print(" AEROTECH INDIA");
 sim.begin(9600);
 gpsSerial.begin(9600);
// connect gps sensor  delay(6000);
 lcd.clear();
}
void loop()
 {
value=analogRead(A0);
//reading value from arduino analog pin which is recieving value from sensor pinlcd.setCursor(0,0);
   // setting cursor on lcd,s 0th row and 0th columnlcd.print("value of alcohol");
  // writing string on lcdlcd.setCursor(0,1);
// setting cursor on 0th column of 1st row lcd.print(value);  //printing value on lcddelay(100);
  //waiting  for 100 milli second  digitalWrite(motor, HIGH);digitalWrite(buzzer, LOW);
 digitalWrite(led, LOW);
  if (value > a)
{ SendMessage();
    }
 }
void SendMessage(){
   digitalWrite(motor, LOW);
     digitalWrite(buzzer, HIGH);
   boolean newData = false;
  for (unsigned long start = millis(); millis() - start < 2000;)
     {
     while (gpsSerial.available() > 0)
      {
        if (gps.encode(gpsSerial.read()))
                {newData = true;}
     }
   }
```

```
 if(newData)
{
  Serial.print("Latitude= ");
   Serial.print(gps.location.lat(), 6);
  Serial.print(" Longitude= ");
    Serial.println(gps.location.lng(), 6);
  newData = false;
delay(300);
 ///*    sim.println("AT+CMGF=1");
   delay(200);
  sim.println("AT+CMGS=\"" + number + "\"\r");
 delay(200);
  sim.print("http://maps.google.com/maps?q=loc:");    sim.print(gps.location.lat(), 6);
  sim.print(",");
  sim.print(gps.location.lng(), 6);
   delay(100);
sim.println((char)26);
//ascii code for ctrl-26
//sim800.println((char)26);
 //ascii code for ctrl-26    delay(200);
 Serial.println("GPS Location SMS Sent Successfully.");     lcd.clear();
 lcd.setCursor(0,0);
 lcd.print("Sending ... ");
   lcd.setCursor(0,1);
   lcd.print("Your Location");
 delay(5000);
 lcd.clear();
 delay(200);
 digitalWrite(buzzer, LOW);
  //*/    while(1)
  {
 digitalWrite(led, HIGH);
    delay(500);
  digitalWrite(led, LOW);
  digitalWrite(buzzer, HIGH);
    delay(500);
 digitalWrite(buzzer, LOW);
  lcd.setCursor(0,0);
  lcd.print("  High Alcohal  ");
 lcd.setCursor(0,1);
  lcd.print(" Engine  Locked ");
}
}
}
```