B.Tech. Project Report

Submitted in partial fulfillment of the requirements for the

Anti Sleep Alarm For Drivers

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Certificate

This is to certify that the project entitled "**Anti Sleep Alarm For Drivers"** has been successfully completed by Pallavi, Latthika S , V Sona, Chaitra ,Fiza P of seventh semester B Tech at **Presidency University, Bengaluru** as the Internet Of Things project. The Project Report presented here is the bonafide work of the student.

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Abstract

In this paper, a Anti Sleep Alarm For Drivers is presented.

Driver fatigue and drowsiness are significant contributors to road accidents worldwide. In response to this critical issue, this project presents an innovative Internet of Things (IoT) solution – an anti-sleep alarm system designed to detect driver drowsiness and prevent potential accidents.

The system utilizes an Arduino Nano microcontroller interfaced with an eye blink sensor to continuously monitor the driver's eye movements and detect signs of drowsiness. When the sensor detects prolonged eye closures or a pattern indicating potential drowsiness, the Arduino triggers a relay that activates a piezo buzzer, alerting the driver and prompting them to regain alertness.

Components like the gear motor and wheel are integrated to ensure the system's functionality corresponds to the vehicle's movement, optimizing the alert system's response in real-time. The SPST switch serves as an on/off control, while a 9V battery powers the system for portability and easy implementation.

This project aims to contribute to road safety by providing an efficient, cost-effective, and easily deployable solution to prevent accidents caused by driver fatigue. Through IoT integration and sensor technology, the anti-sleep alarm system serves as a proactive measure to enhance driver alertness, ultimately reducing the risk of accidents due to drowsy driving.

1. COMPONENTS USED

Relay Module
Piezo buzzer
Wires
9v battery
Gear motor
Wheel
Arduino nano
Eye blink sensor

2. Features of Components used:

Relay:

Function: Acts as an electrically operated switch.

Features: Switches high-voltage circuits using a low-voltage signal.

Usage: Enables/disables the piezo buzzer based on input from the Arduino.

Piezo Buzzer:

Function: Emits a loud audible signal when activated.

Features: Generates sound by the piezoelectric effect when voltage is applied.

Usage: Alerts the driver when drowsiness is detected by the eye blink sensor.

Wires:

Function: Conducts electrical signals between components.

Features: Insulated conductors for safe and efficient signal transmission.

Usage: Connects various components of the system for proper functionality.

9V Battery:

Function: Power source for the entire system.

Features: Portable, compact, and suitable for low-power applications.

Usage: Supplies power to the Arduino Nano, sensors, and other components.

Gear Motor:

Function: Converts electrical energy into rotational motion.

Features: Provides torque and speed control for specific applications.

Usage: Likely employed to simulate vehicle movement or trigger responses linked to motion.

Wheel:

Function: Rotational component used in conjunction with the gear motor.

Features: Facilitates the translation of motion in a specific direction.

Usage: Coupled with the gear motor to mimic or sense movement for the system.

Arduino Nano:

Function: Microcontroller board for controlling and processing inputs/outputs.

Features: Compact, versatile, and programmable.

Usage: Receives input from the eye blink sensor, processes data, and triggers the alarm system.

Eye Blink Sensor:

Function: Detects and monitors eye movements, particularly blinks.

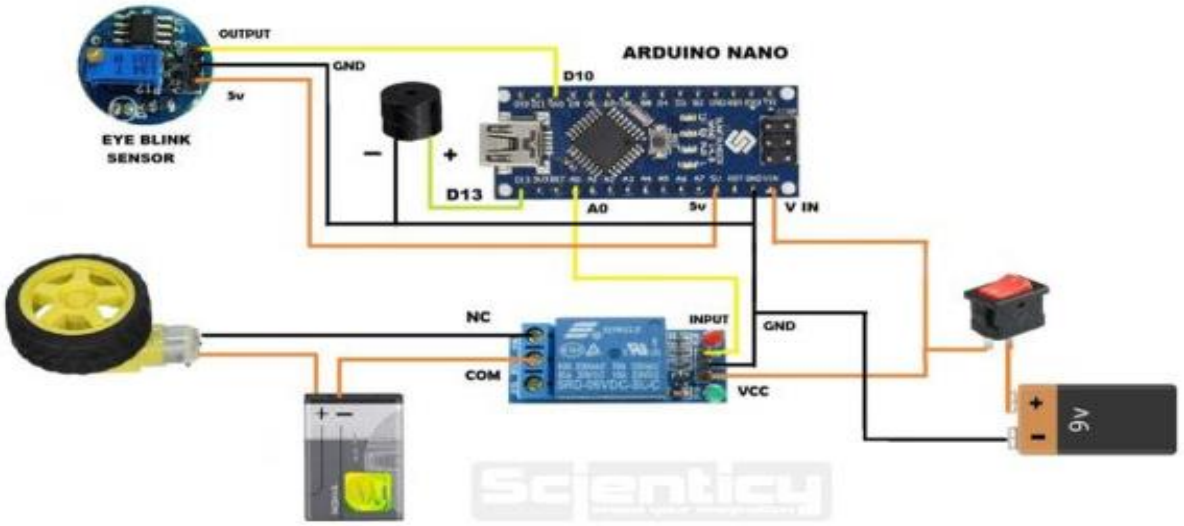
Features: Utilizes infrared light or other methods to detect eyelid closure.

Usage: Continuously monitors the driver's blink patterns to identify signs of drowsiness.

3. **STEPS:**

1. **Gather Components:**
   Collect all necessary components listed in your project, ensuring they are in working condition.

2. **Design Circuitry:**
   Plan and design the circuit layout considering the connections between the Arduino Nano, eye blink sensor, relay, piezo buzzer, SPST switch, and power source (9V battery)



3. **Connect Components:**

   Establish connections according to the circuit design using wires, ensuring proper polarity and secure connections.

4. **Code the Arduino Nano:**

   Write the code to interface with the eye blink sensor, analysing its output and triggering actions based on detected drowsiness patterns.Program the Arduino to control the relay, activating the piezo buzzer upon detecting signs of drowsiness.

```
int eye=5;

int buzzer=4;

int relay=6;

int led=3;
```

```
 int count=0;
 boolean state = true;


void setup() {
  // put your setup code here, to run once:
  Serial.begin(9600);
pinMode(eye,INPUT);
pinMode(buzzer,OUTPUT);
pinMode(relay,OUTPUT);
pinMode(led,OUTPUT);
}
void loop() {
  // put your main code here, to run repeatedly:
int ey=digitalRead(eye);
Serial.println(ey);
delay(500);
if (ey==0){
   digitalWrite(buzzer,HIGH);
   digitalWrite(relay,LOW);
      digitalWrite(led,HIGH);
  }
 else
 {
  digitalWrite(buzzer,LOW);
  digitalWrite(relay,HIGH);
   digitalWrite(led,LOW);
  }
 }
```

5. **Power Supply Setup:**

   Connect the 9V battery to power the Arduino Nano and other components. Ensure proper voltage regulation and stability.

6. **Test the System:**

   Power on the setup and test individual components to verify functionality.

   Verify that the eye blink sensor detects blinks and triggers the desired response in the Arduino Nano.

   Check if the relay activates the piezo buzzer as intended upon detection of drowsiness.

7. **Integrate Motion Component (Gear Motor and Wheel):**

   Integrate the gear motor and wheel to simulate or sense vehicle movement, enhancing the system's response accuracy.

   Ensure the system responds appropriately concerning motion-related triggers.

8. **Adjust and Fine-Tune:**

   Calibrate the sensitivity of the eye blink sensor and adjust code parameters if needed to optimize performance.

   Test the system in various conditions to ensure reliability and accuracy in detecting drowsiness.

9. **Assembly and Mounting:**

   Arrange components in a suitable housing or mount them securely within the vehicle, considering practicality and accessibility for the driver.

10. **Final Testing and Refinement:**

    Conduct thorough testing of the complete system in real-world scenarios.

    Make any necessary adjustments or refinements to improve functionality, sensitivity, or user-friendliness.

4. Conclusion

In conclusion, the implementation of an IoT-based anti-sleep alarm system presents a proactive solution to mitigate the dangers of drowsy driving. Through the integration of an eye blink sensor, Arduino Nano, and relay-controlled piezo buzzer, this project aims to enhance road safety by detecting and alerting drivers to potential drowsiness.

By leveraging technology to monitor and respond to driver fatigue, this system offers a cost-effective and scalable approach to prevent accidents, prioritizing not only the safety of drivers but also the well-being of passengers and pedestrians. Continued advancements in such IoT applications hold promising prospects for a safer and more vigilant driving environment.