ANTI SLEEP ALARM FOR DRIVERS

A MINI PROJECT REPORT

Submitted by

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Organized by

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INRODUCTION:

Anti-sleep alarm is an application to keep car drivers awake. Although it was designed for car drivers, it can also be used in any other situation where you need to stay awake. The way the app works is very simple. To make it work you need to have at least Galaxy Gear 2 or Galaxy Gear S.

There are two types of anti-sleep alarms. The first type of alarm is built right into the car and uses sensors, cameras and other high-tech tricks to discern a driver's fatigue and correct the problem accordingly. The second type fits over the driver's ear and sounds an alert when the driver starts to fall asleep.

This anti sleep alarm circuit saves both time and electricity for students. It helps to prevent them from dozing off while studying, by sounding a beep at a fixed time interval, say, 30 minutes. If the student is awake during the beep, he can reset the circuit to beep in the next 30 minutes.

This glasses alerts the driver whenever he is getting into sleep while driving the vehicle. since sleeping on wheels is dangerous sometimes it may converts into fettle accidents can leads to death. so to prevent such consequences of accident we can use this gadget to alert the driver when he feels drowsiness.

The anti-sleep alarm looks for any indication that the driver's head is tipping forward: When the earpiece senses that the angle has increased from zero to, say, 15 or 30 degrees, it sounds an alarm.

COMPONENTS USED:

1) Relay

2) Piezo buzzer

3) Wires

4) 9v battery

5) Gear motor

6) Wheel

7) Arduino nano

8) SPST switch

9)Eye blink sensor

LIST THE COMPONEBTS IN DETAIL:

1) **RELAY:**

Relays are electrically operated switches that open and close the circuits by receiving electrical signals from outside sources. Relay works on the principle of electromagnetic induction. When the electromagnet is applied with some current, it induces a magnetic field around it.

Relays were first used on long telegraph lines, where a contact may be controlled by a weak signal received at an intermediate station, renewing the signal for further transmission. Small, low-voltage wire and pilot switches can be used to control high-voltage or high-current equipment. Lighting control systems.

Relays are electrically operated switches. They are used to control a circuit by a separate low-power signal or to control several circuits with one signal. Relays were first used in long distance telegraph circuits as amplifiers.

2) **PIEZO BUZZER:**

Piezo buzzers are simple devices that can generate basic beeps and tones. They work by using a piezo crystal, a special material that changes shape when voltage is applied to it. If the crystal pushes against a diaphragm, like a tiny speaker cone, it can generate a pressure wave which the human ear picks up as sound.

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It is widely used in alarms, computers, printers and other electronic products as sound devices. It is mainly divided into piezoelectric buzzer and electromagnetic buzzer, represented by the letter "H" or "HA" in the circuit.

3) GEAR MOTOR:

A gear motor is a mechanical system consisting of an electric motor and a gearbox containing a series of gears. The function of the gearbox coupled to the motor is to reduce its speed and increase its torque to do a given job at a given speed.

4) ARDUINO NANO:

The Arduino Nano is a small, complete, and breadboard-friendly board based on the ATmega328 (Arduino Nano 3. x). It has more or less the same functionality of the Arduino Duemilanove, but in a different package. It lacks only a DC power jack, and works with a Mini-B USB cable instead of a standard one.

The Arduino Nano has a number of facilities for communicating with a computer, another Arduino, or other microcontrollers. The ATmega328 provides UART TTL (5V) serial communication, which is available on digital pins 0 (RX) and 1 (TX).Arduino works in a very simple way. It uses three main things to do it's job: Inputs: Sensors and switches are connected to the controller to give it information. These are called inputs, and they can be nearly anything from on/off signals, variable voltage* signals, or communication from another controller.

Arduino Nano is a small breadboard-friendly version of Arduino UNO. It has more or less functionality of the Arduino UNO but in a small form factor. The only major differences from UNO are the lack of a DC power jack, the usage of a Mini USB port instead of a USB B port, and the USB-TTL converter chip.

5) EYE BLINK SENSOR:

Eye blink Sensor is a relatively simple sensor used to detect eye blinks. It uses a simple infrared sensor to detect if the person's eye is closed and the corresponding data received can further be processed by any logic as required for the application.

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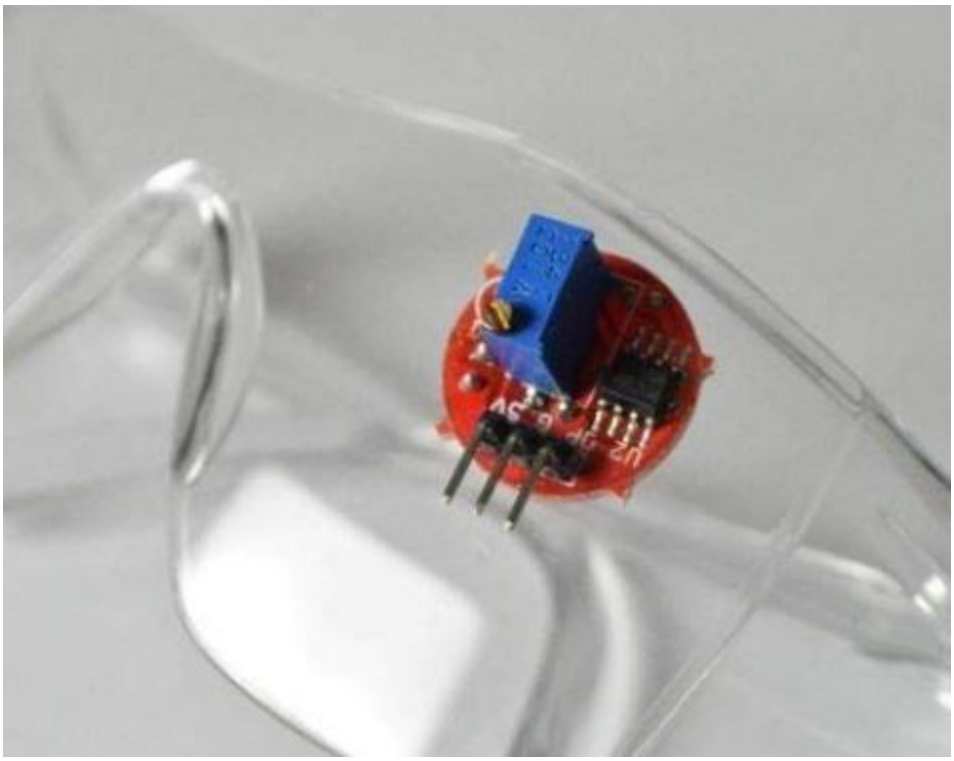
Today the main cause of road accidents is unalertness in driving, by the drivers. So, we take the help of Eye Blink Sensing system (EBS) and heart rate sensor, to alert the driver during drowsiness. So a eye tracking movement system will be helpful in alerting the drivers, during drowsiness.

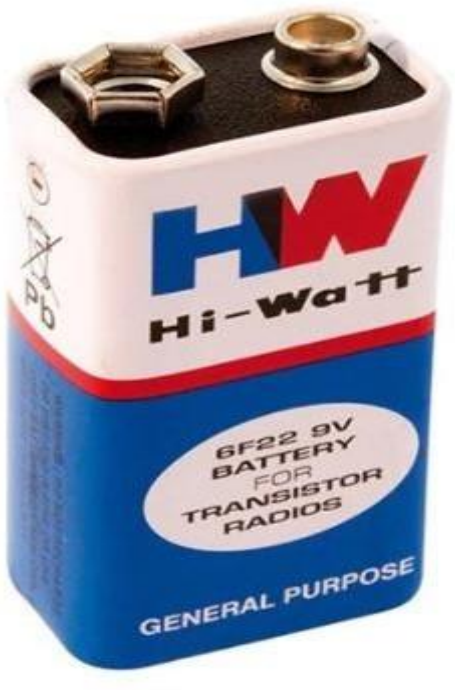


6) WIRES:

Wires are used to bear mechanical loads, often in the form of wire rope. In electricity and telecommunications signals, a "wire" can refer to an electrical cable, which can contain a "solid core" of a single wire or separate strands in stranded or braided forms.

7) BATTERY:

A battery is a device that converts chemical energy contained within its active materials directly into electric energy by means of an electrochemical oxidation-reduction (redox) reaction. This type of reaction involves the transfer of electrons from one material to another via an electric circuit.



8) WHEEL:

The wheel is one of the key components of the wheel and axle which is one of the six simple machines. Wheels, in conjunction with axles, allow heavy objects to be moved easily facilitating movement or transportation while supporting a load, or performing labor in machines.

9) SPST SWITCH:

The simplest form of a switch is an SPST switch. An SPST switch embraces a basic "ON/OFF" control of a single circuit and consists of two terminals that serve as electrical connection points. Power the switch "ON" to establish a connection between the two terminals.

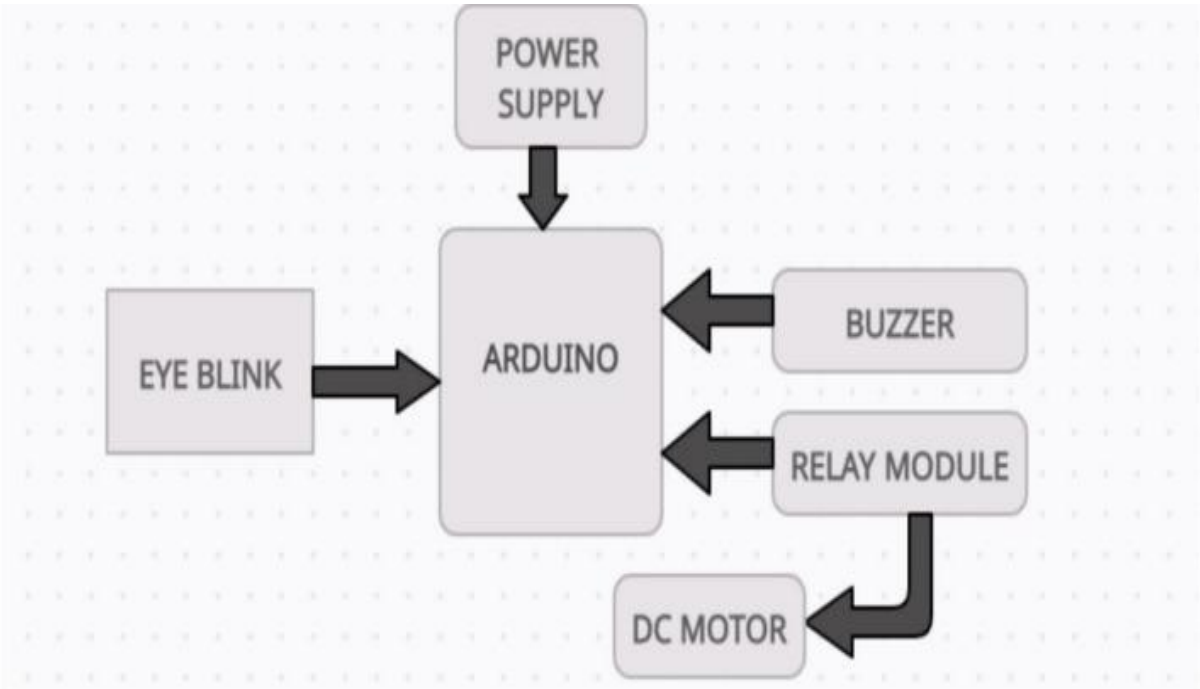
CODE:

```
#define Relay 13
#define buzzer A0
static const int sensorPin = 10;                // sensor input pin
int SensorStatePrevious = LOW;                  // previous state of the sensor

unsigned long minSensorDuration = 3000; // Time we wait before the sensor active as long
unsigned long minSensorDuration2 = 6000;
unsigned long SensorLongMillis;                 // Time in ms when the sensor was active
bool SensorStateLongTime = false;               // True if it is a long active

const int intervalSensor = 50;                  // Time between two readings sensor state
unsigned long previousSensorMillis;             // Timestamp of the latest reading

unsigned long SensorOutDuration;                // Time the sensor is active in ms

//// GENERAL ////

unsigned long currentMillis;        // Variabele to store the number of milleseconds since the Arduino has started

void setup() {
  Serial.begin(9600);               // Initialise the serial monitor

  pinMode(sensorPin, INPUT);        // set sensorPin as input
  Serial.println("Press button");
  pinMode(Relay,OUTPUT);
  pinMode(buzzer,OUTPUT);
}
```

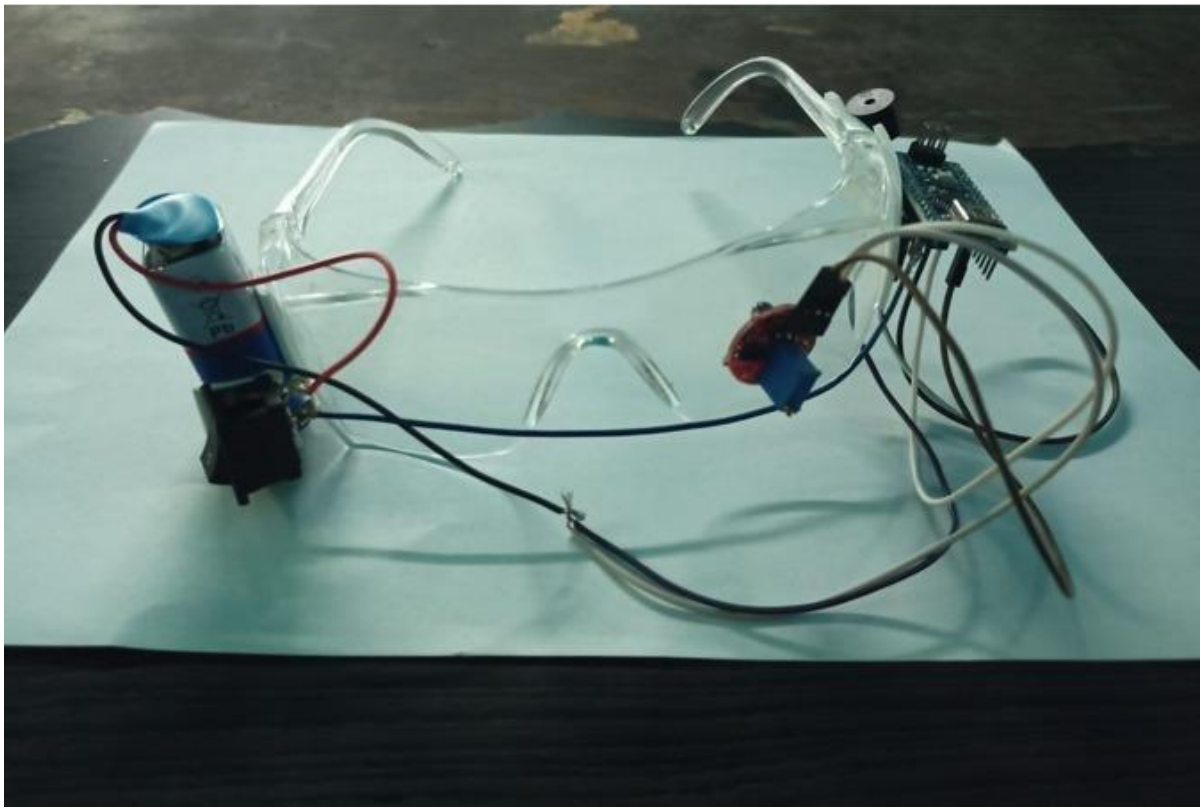
```
// Function for reading the sensor state
void readSensorState() {

  // If the difference in time between the previous reading is larger than intervalsensor
  if(currentMillis - previousSensorMillis > intervalSensor) {

    // Read the digital value of the sensor (LOW/HIGH)
    int SensorState = digitalRead(sensorPin);

    // If the button has been active AND
    // If the sensor wasn't activated before AND
    // IF there was not already a measurement running to determine how long the sensor has been activated
    if (SensorState == LOW && SensorStatePrevious == HIGH && !SensorStateLongTime) {
      SensorLongMillis = currentMillis;
      SensorStatePrevious = LOW;

      Serial.println("Button pressed");
    }
    // Calculate how long the sensor has been activated
   SensorOutDuration = currentMillis - SensorLongMillis;
    // If the button is active AND
    // If there is no measurement running to determine how long the sensor is active AND
    // If the time the sensor has been activated is larger or equal to the time needed for a long active
    if (SensorState == LOW && !SensorStateLongTime && SensorOutDuration >= minSensorDuration) {
      SensorStateLongTime = true;
      digitalWrite(Relay,HIGH);
      Serial.println("Button long pressed");
}
```

```
   if (SensorState == LOW && SensorStateLongTime && SensorOutDuration >=
minSensorDuration2) {
    SensorStateLongTime = true;
     digitalWrite(buzzer,HIGH);
     delay(1000);
     Serial.println("Button long pressed");
   }
   // If the sensor is released AND
   // If the sensor was activated before
   if (SensorState == HIGH && SensorStatePrevious == LOW) {
     SensorStatePrevious = HIGH;
     SensorStateLongTime = false;
     digitalWrite(Relay,LOW);
     digitalWrite(buzzer,LOW);
     Serial.println("Button released");

   }

   // store the current timestamp in previousSensorMillis
  previousSensorMillis = currentMillis;

 }

}

void loop() {

 currentMillis = millis();    // store the current time
 readSensorState();          // read the sensor state
}
```

BLOCK DIAGRAM



CIRCUIT IMAGE:



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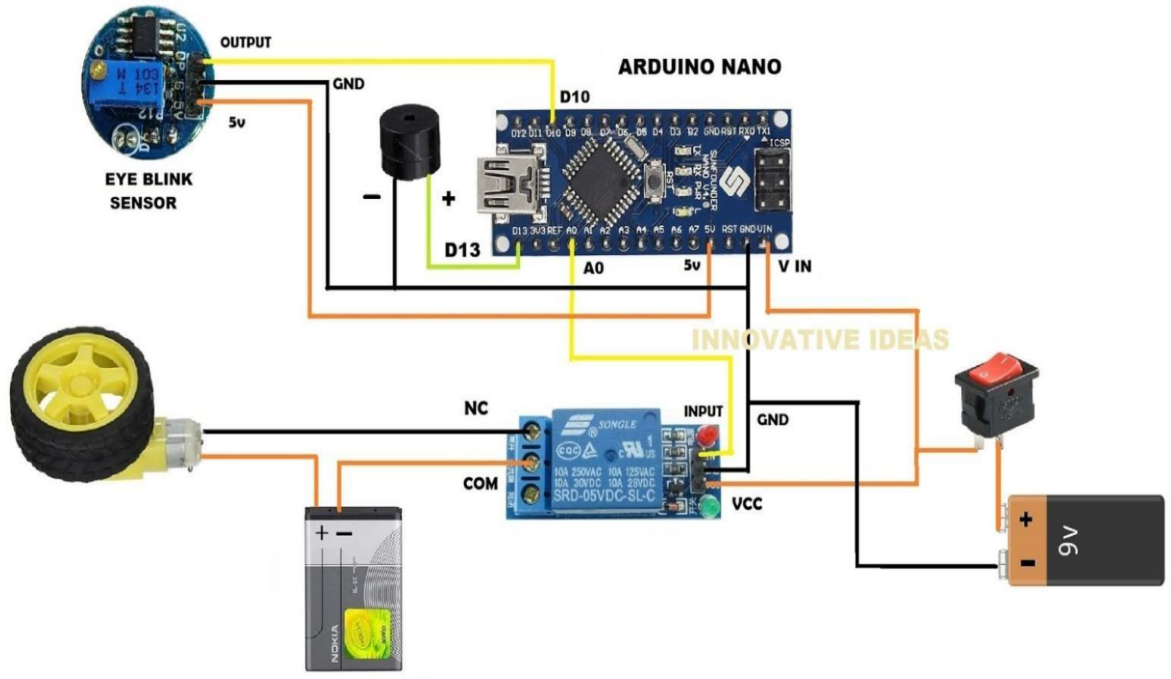

WORKING:

This glasses alerts the driver whenever he is getting into sleep while driving the vehicle. since sleeping on wheels is dangerous sometimes it may converts into fettle accidents can leads to death. so to prevent such consequences of accident we can use this gadget to alert the driver when he feels drowsiness. This system alerts the user if he/she falls asleep at the wheel thereby, avoiding accidents and saving lives.

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There are two types of anti-sleep alarms. The first type of alarm is built right into the car and uses sensors, cameras and other high-tech tricks to discern a driver's fatigue and correct the problem accordingly. The second type fits over the driver's ear and sounds an alert when the driver starts to fall asleep.

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CONCLUTION:

People are increasingly exposed to dangers today. Therefore, we need to take action against this as an engineerand have the solution we need. Any automation is designed to protect a person. Such a model is tasked withdeveloping a system for diagnosing and controlling the speed of vehicles to prevent accidents. To some extent,modern technology offers some hope of stopping these. This paper includes monitoring the blink of an eye withthe help of an IR sensor. On this device the output of the sensor is provided for comparison with ARDUINO.When the value reaches the set level, the buzzer automatically vibrates, the LED glows, and the car stopsautomatically when the eye blink sensor receives a signal from the transmission component.