VELAMMAL ENGINEERING COLLEGE: CHENNAI 600 066

DEPARTMENT OF ELECTRONICS AND INSTRUMENTATION ENGINEERING

"EYE BLINK SENSOR"
Accident preventing googles

A MINI PROJECT REPORT

Submitted by

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of

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BONAFIDE CERTIFICATE

Certified that this Mini project report "EYE BLINK SENSOR" is bonafide work of **Ayushi kumari** and **Suriyapraba A,** who carried out the Mini Project under my supervision.

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ABSTRACT

This project provides the detail information on the project including details of introduction, literature survey, methodologies, study cases and future works along with supporting information's and references taken for doing the project.Accidents due to driver drowsiness can be prevented using eye blink sensors. The driver is supposed to wear the eye blink sensor frame throughout the course of driving and blink has to be for a couple of seconds to detect drowsiness. Any random changes in steering movement leads to reduction in wheel speed. The threshold of the vibration sensor can be varied and accordingly action can be taken. The outcome is that the vibrator attached to eye blink sensor's frame vibrates if the driver falls asleep.The wheel is slowed or stopped depending on the condition. The proposed system consists of two main parts that detect eye blinking based on IR sensors mounted on eyewear. Depending on the reflected andabsorbed IR radiation, this system detects and classifies the eye blinking into normal blinking(NB).

CHAPTER 1

INTRODUCTION

INTRODUCTION :

For any vehicle accidents driver's faults are the most accountable aspect to cause dangerous problem to the society. Many drivers cannot control the vehicles due to different reasons it may cause severe accidents and sometime death. For vehicle accidents various factors involved such as drunk driving, over speeding, many distractions like texting while driving, talking with others, playing with children etc. one of the important factor is sleeping on the wheel. People know the dangerous of alcohol consumption and run the vehicles but they not understand the seriousness of fatigue driving. In India, Ministry of Road Transport and Highway released a report in 2015, every day around 1,374 accidents may happen and almost 400 people deaths occur. Every hour because of vehicle accidents approximately 57 road accidents and 17 people dies. In that 54.1 percent of people are in the age group of 15 to 34 years are killed in vehicle accident. The Government of India, Ministry of Road Transport and Highway Government of India prepare a strategy to diminish the amount of motorway accidents and losses by 50 % by 2020.Globally vehicle accidents have seemed one of the major community health problems. In India almost 5 lakh road accidents happened in the year 2015. A fatigue Driver those who falls asleep at the move fails to control the vehicle, not possible to take immediate action and results in a crash so it is necessary to monitor the drowsiness of the driver to prevent accidents.

CHAPTER 2

In this chapter, the detailed discussion of the circuit connection and block diagram is explained. The figure 2.1 shows the simulation of connection of the proposed model. During operation, IR sensor is used to detect the eye blinks and on the buzzer followed by stoping the vehicle .

CIRCUIT DIAGRAM:

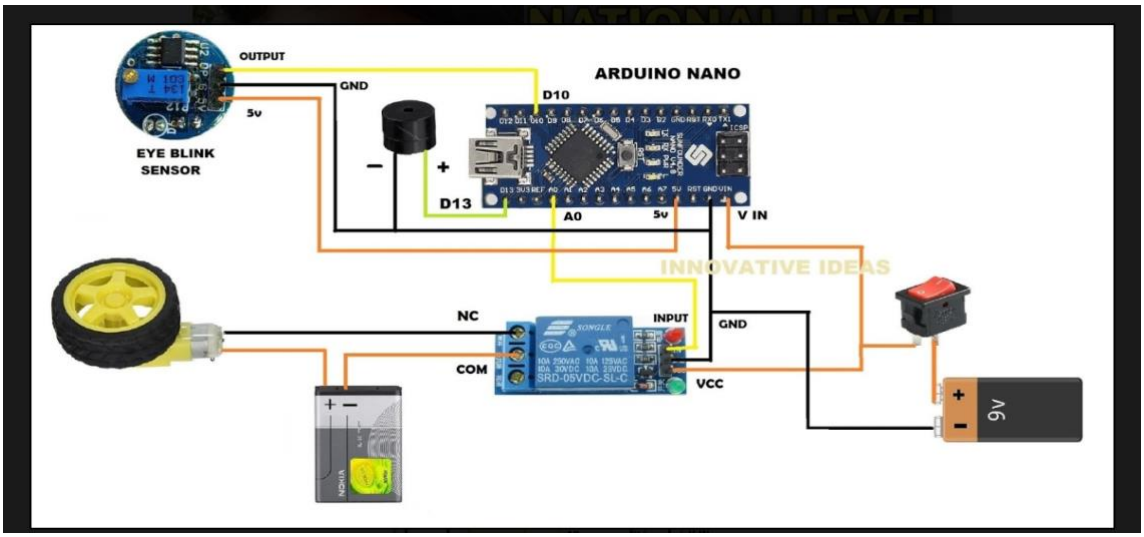

Figure 2.1 Simulation of working model

LITERATURE REVIEW:

A Non-intrusive and portable system is considered superior to these complex and expensivesystems. In this work, a user-friendly drowsiness monitoring device based on IR sensors isproposed. The system is based on directing an IR beam to the human eye using IR-emitters mounted on the driver's eyewear. When the eye is opened most of the IR radiation directed to the eye will be absorbed and the rest is going to be reflected and collected by IR receiverswhich are mounted on the same eyewear. In contrast, when

the eye is closed most of the Irradiation will be reflected and received by the IR receivers, which will convert it to a voltageproportional to the open or closed of the eye.

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OBJECTIVES:

- The main objective of this project is to develop a device that can detect the driver's Drowsiness.
- In order to detect the drowsiness we decided to use a single mmethod.
- The process is to use the IR sensor and check if the eye is open or close.
- The output from this method is given as input to the Arduino UNO that uses Arduinolanguage and an overall system is developed.
- If the eye is closed then the buzzer would be activated.

LIST OF HARDWARE COMPONENTS USED:

Arduino UNO

IR Sensor

Gear motor and wheel

Buzzer

Wires

Glasses

Power supply

9v battery

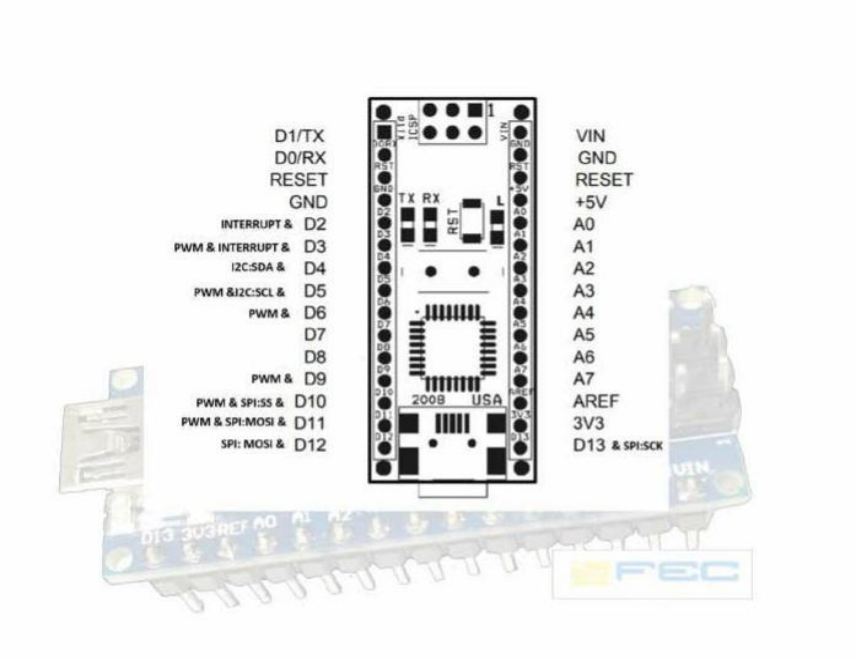
Relay module

INTRODUCTION TO COMPONENTS:

ARDUINO UNO:

Arduino nano differ from other Arduino as it very small so it suitable for small sized projects and it supports breadboards so it can be plugged with other components in only onebreadboard.

ARDUINO NANO PIN CONFIGURATION :



GEARMOTOR

A gear motor is an electrical device which can push or rotate an object with great precision. It rotates an object at some specific angles or distance. It is just made up of

simple motor which run through gear mechanism which shown in figure 2.

Gearmotor

Here the gear motor is used to rotate the  wheel .

9V BATTERY

A 9V battery is used to drive the components connected to Arduino board which is shown here in figure

9V Battery

RELAY MODULE :

A 5v relay is an automatic switch that is commonly used in an automatic control circuit and to control a high-current using a low-current signal. The input voltage of the relay signal ranges from 0 to 5V.

CHAPTER 3

SOFTWARE

3.1 SOFTWARE USED

3.1.1. ARDUINO UNO

The application programmed is developed using Arduino IDE and Processing software. The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS X, and Linux. This software can be used with any Arduino board.

3.1.2. IDE (Integrated Development Environment)

Processing is an open source programming language and integrated development

environment (IDE) built for the electronic arts, new media art, and visual design communities with the purpose of teaching the fundamentals of computer programming in a visual context, and to serve as the foundation for electronic sketchbooks.

CHAPTER 4

RESULTS AND DISCUSSION

The prototype and working model of the proposed idea is given below .

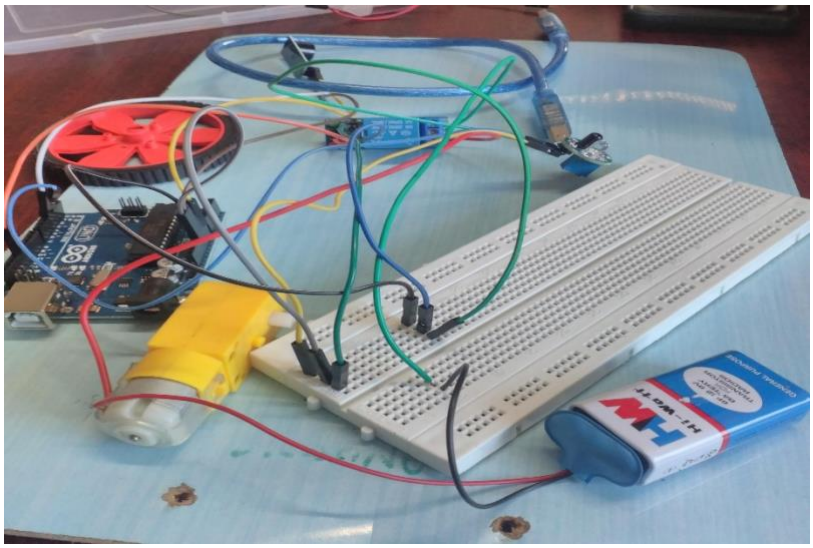


Figure 4.1 Prototype model

APPENDIX

Arduino code: (Programming Code)

```
#define Relay 13
#define buzzer A0
static const int sensorPin = 10;
int SensorStatePrevious = LOW;
unsigned long minSensorDuration = 3000;
unsigned long minSensorDuration2 = 6000;
unsigned long SensorLongMillis;
bool SensorStateLongTime = false;
const int intervalSensor = 50;
unsigned long previousSensorMillis;
unsigned long SensorOutDuration;
unsigned long currentMillis;
void setup() {
  Serial.begin(9600);
 pinMode(sensorPin, INPUT);
  Serial.println("Press button");
  pinMode(Relay,OUTPUT);
  pinMode(buzzer,OUTPUT);
}
void readSensorState() {
  if(currentMillis - previousSensorMillis > intervalSensor) {
    int SensorState = digitalRead(sensorPin);
    if (SensorState == LOW && SensorStatePrevious == HIGH &&
!SensorStateLongTime) {
     SensorLongMillis = currentMillis;
       SensorStatePrevious = LOW;

      Serial.println("Button pressed");
    }
   SensorOutDuration = currentMillis - SensorLongMillis;
    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 (SensorState == HIGH && SensorStatePrevious == LOW) {
      SensorStatePrevious = HIGH;
      SensorStateLongTime = false;
      digitalWrite(Relay,LOW);
      digitalWrite(buzzer,LOW);
      Serial.println("Button released");
    }
   previousSensorMillis = currentMillis;

  }

}

void loop() {

  currentMillis = millis();
  readSensorState();

}
```

REFERENCES

[1]#Youtube #google #quora

[2] Belhassen AkroutWalid Mahdi, ―A Blinking Measurement Method for Driver Drowsiness Detection‖, Springer, Proceedings of the 8th International Conference on Computer Recognition Systems CORES, pp 651-660, 2013.

[3] Ji Hyun Yang, Zhi-Hong Mao, Member, IEEE, Louis Tijerina, Tom Pilutti, Joseph F. Coughlin, and Eric Feron, ―Detection of Driver Fatigue Caused by Sleep Deprivation‖, IEEE TRANSACTIONS ON SYSTEMS, MAN, AND CYBERNETICS—PART A: SYSTEMS AND HUMANS, VOL. 39, NO. 4, JULY 2009.

[4] Antoine Picot, Sylvie Charbonnier, Alice Caplier, ―On-Line Detection of Drowsiness Using Brain and Visual Information‖, Published in: IEEE Transactions on Systems, Man, and Cybernetics - Part A: Systems and Humans (Volume: 42, Issue: 3) Page(s): 764 – 775, May 2012.

[5] Satori Hachisuka, Kenji Ishida, Takeshi Enya, Masayoshi Kamijo, ―Facial Expression Measurement for Detecting Driver Drowsiness‖, springer, International Conference on Engineering Psychology and Cognitive Ergonomics. EPCE 2011: Engineering Psychology and Cognitive Ergonomics pp 135-144, 2011.

[6] Ines Teyeb, Olfa Jemai, Mourad Zaied, Chokri Ben Amar, ―A Drowsy Driver Detection System Based on a New Method of Head Posture Estimation‖, springer. International Conference on

Intelligent Data Engineering and Automated Learning. IDEAL 2014: Intelligent Data Engineering and Automated Learning – IDEAL 2014 pp 362-369, 2014.

[7] Nawal Alioua, Aouatif Amine, Mohammed Rziza, Driss Aboutajdine, ―Driver's Fatigue and Drowsiness Detection to Reduce Traffic Accidents on Road‖, springer. International Conference on Computer Analysis of Images and Patterns, CAIP: