MARRI LAXMAN REDDY GROUP OF INSTITUTIONS
MLR INSTITUTE OF TECHNOLOGY
(AUTONOMOUS)

ARDUINO BASED ACCIDENT PREVENTION SYSTEM USING EYE BLINK SENSOR

PROJECT REPORT

BY :

20R21A0566 - B.MAHESH

20R21A0567 - B.MADHAVIMANOHARI

20R21A0571 - D.RITHVIK

20R210574 - G.SRIHITHA

ABSTARCT

This paper aims to create a framework to keep the humans safe and secure through critical activity. When we run in an ignorance we cannot take care of our own. If we make all vehicles with an automatic safety system that gives the driver a high level of protection, an alarm will also be issued.

The device has an installed a eye blink sensor. Once the driver has started feeling the drowsiness, the sensors automatically detect the blink of an eye. The blink of an eye is calculated by IR sensor. On this device the output of the sensor is provided through Buzzer connected to ARDUINO. And finally the Buzzer gives an alarm sound.

INTRODUCTION

Accidents may be varying in different position and it can be done through sleepiness or third party.

To avoid these types of accidents we introduce the alert system by using IR sensor.It checks whether the person is closing his eyes or not.if he closes his eyes then the buzzer sounds by that sound the person will be able alert .

EXISTING SYSTEM

- Drowsiness is main thing to simulate whether the accident happened due to the driver asleep. Each and every second number of accidents happened due to driver drowsiness/speed of the vehicle. Drowsiness detection system can identified through non-intrusive machines and the kit having camera that was fixed to record your head movements to detect the asleep.
- When the vehicle met with any accident the sensor will detect the vibration depending upon the crashes. Then the vibration will sends to microcontroller/ chip to find the location of the accident. The main purpose of the chip is used to find the latitude and longitude of the accident by using GPS.
- GPS will helps to send an alert message to the ambulance which is located nearest to the accident. The ambulance immediately finds the location by using Google Maps and rescues the accidents.

Drawbacks:

- Less expensive
- Face detection is not more accurate
- It is complex to use

PROPOSED SYSTEM

- Arduino based Accident prevention system using Eye blink sensor aims to create a framework to keep the car safe and examines the detection of various collisions and reduction of such a system.

- The device has an installed a eye blink sensor. If the driver keep the spectacles when he is driving then the IR sensor detects whether the person is closing his eyes if the person is closing his eyes then the Buzzer sound occurs to alert the person.

Advantages of Proposed System

- Intelligent and safe transportation
- Accident can be avoided
- Cost Reduction
- Eye blink sensor is used to detect the eye movement.

LITERATURE SURVEY

Many researchers studied the accident detection system. Aishwarya S.R maintained an IoT-based motor vehicle accident prevention and detection system for night drivers. This paper contains a Blink Eye Monitoring System (EBM) which alerts the subject in times of distress.

[1] Sadhana B has explained the intelligent safety of a motorcycle helmet using a raspberry pi and an open CV. The idea comes from knowing that there have been more fatal road accidents over the years. This project is designed to introduce safety systems so that the motorcycle can wear the helmet properly.

[2] Sarika R. Gujar described an advanced Embedding System of vehicle accident detection and detection system. The main goal of this system is to first locate the crash site and call the emergency services. Detection of a car accident is possible with the help of sensors. GPS and GSM module help to locate the vehicle.

[3] Shailesh Bhavthankar explained Wireless System for Detecting and Reporting Vehicle Accidents Using Accelerometer and GPS. In this paper, an Accelerometer sensor is used to Vol-7 Issue-3 2021 IJARIIE-ISSN(O)-2395-4396 14136 www.ijariie.com 22 detect an accident and GPS provides the location of the vehicle. In the event of any accident, the system will send an automated message to the pre-registered number such as a family member or emergency medical services via GSM.

[4] Jagdish A.Patel explained a Raspberry Pi based smart home. This paper aims to design a basic home automation application on Raspberry Pi via Interfacing camera as a security purpose and the algorithm for the same is implemented in development in python environment which is like the basic programming environment on provided by Raspberry Pi

COMPONENTS

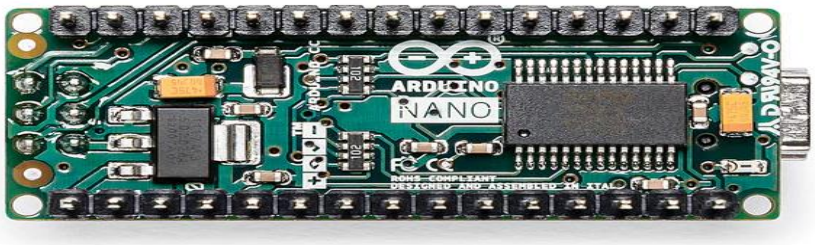
HARDWARE COMPONENTS:

1. IR Sensor

   It illuminates the eye with infrared light and monitors the changes in the reflected light

2. Arduino Nano

   Arduino boards are able to Read inouts – light on a sensor, a finger on a button and turn it into an output.



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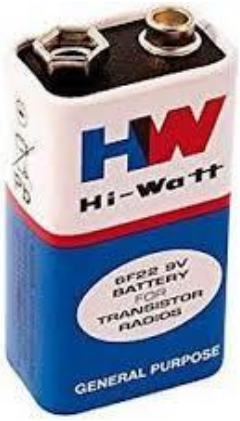
3. Jumper wires

4. Buzzer

The Piezoelectric sound modules work on the concept of conversion using natural piezoelectric ceramic oscillation

5. 9v battery

The Piezoelectric sound modules work on the concept of conversion using natural piezoelectric ceramic oscillation



6. Cap

7. Switch

An electrical component that can disconnect or connect the conducting path.

SOFTWARE COMPONENT

1.ARDUINO IDE

SWOT ANALYSIS

STRENGTH:

1. Saves lives
2. Non-invasive in nature

WEAKNESS:

1. The condition like microsleeping in straight highways cannot be detected.

   The driving style of the current driver needs to be learned

OPPURTUNITY:

1. This works best for the patients admitted in the hospital suffering with coma

THREATS:

1. Damage of Circuit leads to Short Circuit.
2. Should be kept away from little kids.

IMPLEMENTATION

sketch_jun13a | Arduino 1.8.19

File Edit Sketch Tools Help

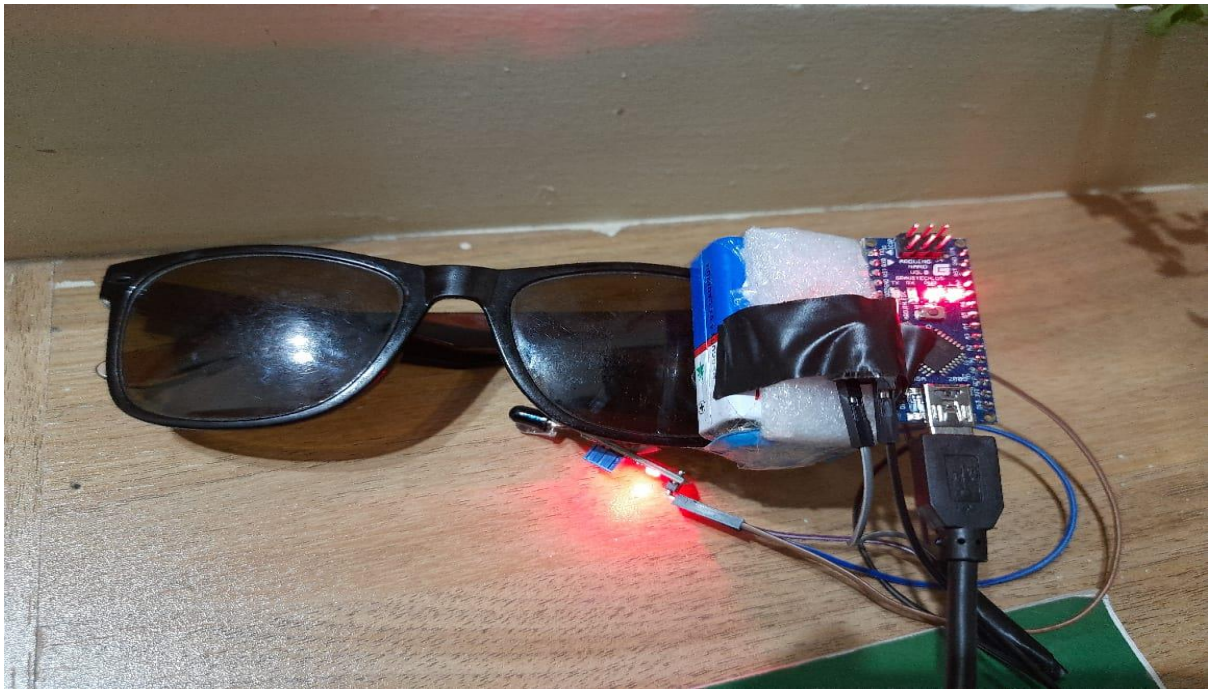
sketch_jun13a

```
#define SENSE A0
void setup()
{
  pinMode(SENSE, INPUT);
  pinMode(2,OUTPUT);
  pinMode(LED_BUILTIN, OUTPUT);
}
void loop()
{
  if(digitalRead(SENSE))
  {
    digitalWrite(LED_BUILTIN, LOW);
    pinMode(2,LOW);
  }
  else
  {
    digitalWrite(LED_BUILTIN, HIGH);
    pinMode(2, HIGH);
  }
}
```

Done compiling.

```
Sketch uses 914 bytes (2%) of program storage space. Maximum is 30720 bytes.
Global variables use 9 bytes (0%) of dynamic memory, leaving 2039 bytes for local variables. Maximum is 2048 bytes.
```

RESULT



CONCLUSION

FUTURE SCOPE OF OUR PROJECT:

In future, this system can be extended to more applications. Driver's drowsiness can result to lack of control of the vehicle and leads to accidents. If driver feels drowsy driver can't control the vehicle, when the driver wakes. We can prevent this kind of accidents by using the braking system. The accidents can happened due to asleep state the driver is prevented using automatic breaking system by using eye blink sensor. The asleep can be sensed by the eye blink sensor and the blinking frequency is measured. If the driver is drowsy, then the system will give buzzer alert to driver and the speed of the vehicle is reduced. To improve the rescue assistance in the accident spot, image processing can be used more effectively in order to determine the environmental factor with the exact location using GPS. This provides the latitude and longitude information about vehicle location through GSM. Vibration sensors are also fixed to measure the damage of the vehicle.

Based on the frequency values, the damage condition of the vehicle is measured. If a vehicle has met accident, vibration sensor gives signal to the system and image is sent to the hospital server. Based on this ambulance rescue will be sent to defined location.