IR Remote Control and Eye Blink Sensor based Implementation of Driver Drowsiness Detection

Pankti P. Bhatt, Jeegar A. Trivedi

Abstract*: Street mishaps are a typical marvel in our everyday lives. Every year these street mishaps prompted numerous passings, deadly wounds and monetary misfortunes everywhere throughout the world. India positions first in the number of street mishap passings over the 199 nations announced in the World Road Statistics, 2018 followed by China and the USA. According to the WHO Global Report on Road Safety 2018, India represents practically 11% of the mishap related passings in the World. One of the major reasons for these mishaps is the sleepiness of drivers. Accordingly, it is important to build up a strategy to recognize the driver's laziness to decrease the mishap rates. In this paper, we have proposed a recognizing, avoidance and alerting system to minimize the street mishaps which are causing due to the sleepiness of drivers using Arduino Microcontroller, Eye Blink Sensor, IR Remote Control and IR Remote Receive Module.

Keywords : 4WD Robot, Arduino Microcontroller, Buzzer, Driver Drowsiness Detection, Eye Blink Sensor, IR Remote Control, IR Remote Receive.

I. INTRODUCTION

As of late, sluggishness or drowsiness has been credited as a significant contributory factor to all the significant car crashes [1]. "Drowsy State" is a condition of powerful urge for rest or may cause because of disease [2]. The improvement of developments for recognizing or on the other hand turning away languor in the driver's seat is a significant test in the field of mishap shirking frameworks. In perspective on the hazard that Drowsiness display all over the place, techniques ought to be made for killing its belongings [3]. For defeating these arrangements of issues numerous scientists have created different arrangements which are explicit to its motivation [4]. This thought is structured dependent on Arduino Microcontroller board and aides in controlling street mishaps because of obviousness through sensors [5]. The latest technology helps to recognize and avoid the street mishaps to some level [6].

This paper implements technique to reduce the street mishaps by using hardware tools such as IR Remote Control, IR Remote Receiver Module, Eye Blink Sensor, 4WD Robot, Buzzer and Arduino Microcontroller as its main components.

In this manner, this framework gives wellbeing and careful steps which can be implemented on vehicles in parkways for decreasing casualty rate and has the accompanying bit of leeway for example to diminish death rate and to build security levels of the vehicle[7].

II. ARCHITECTURE OF THE SYSTEM

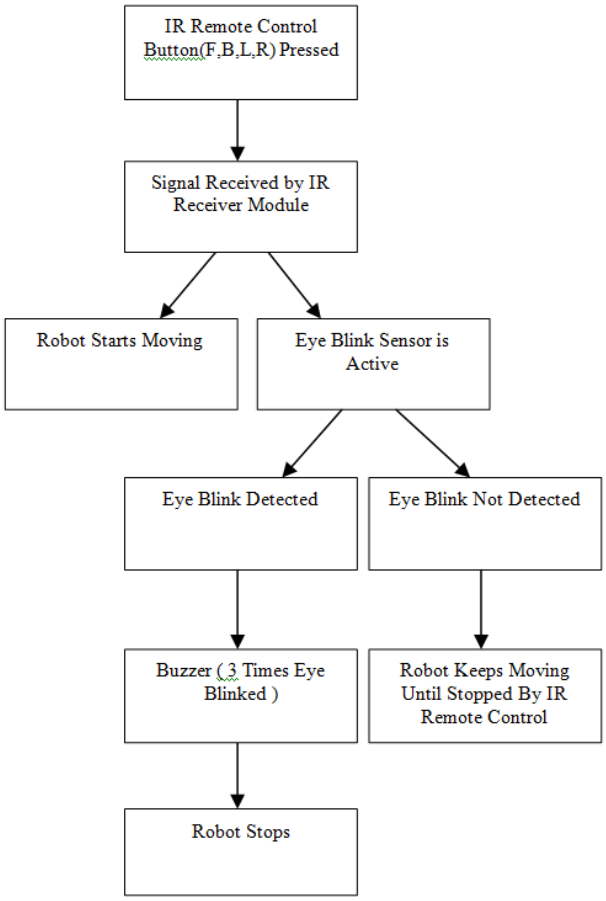

Fig. 1. Architecture of the System

III. WORKING PRINCIPLE

The Driver Drowsiness Detection uses Eye Blink Sensor, IR Remote Control and IR Remote Receiver Module for its advancements. An Arduino Microcontroller is used to achieve the pined for task. The 4WD motors are related through a motor driver IC microcontroller. The 4WD robot starts moving in forward direction on forward button press by the IR Remote Control. The signal from the IR Remote Control is transmitted and captured by the IR Remote Receiver Module.

Meanwhile the Eye Blink Sensor activates and looks for any blinking of eye. If eye blinks three times then the motor stops and driver is alerted by ringing buzzer.

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If eye doesn't blink then the 4WD robot continues moving. The programming is done in Arduino software IDE

IV. SCREENS

A. Eye Blink Sensor

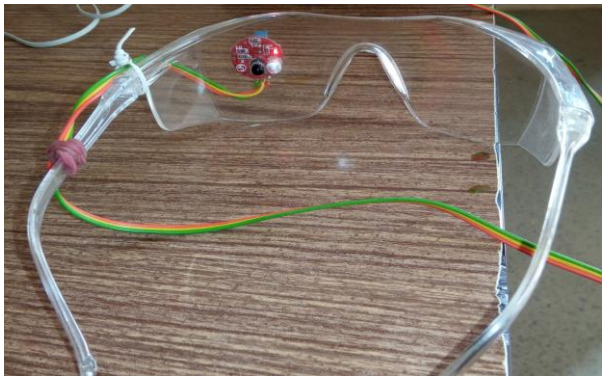

Fig. 2. Eye Blink Sensor is active

B. IR Remote Receiver

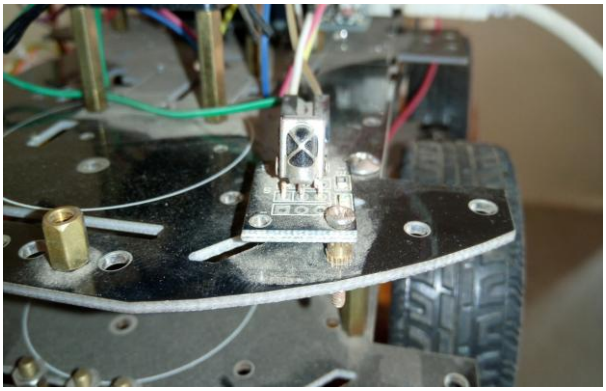

Fig. 3. IR Remote Receiver Module

C. IR Remote Controller & IR Receiver

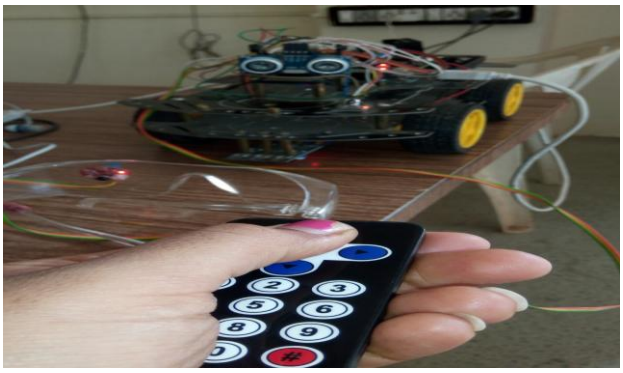

Fig. 4. IR Remote Controller & IR Receiving Module receiving Signal

D. Buzzer

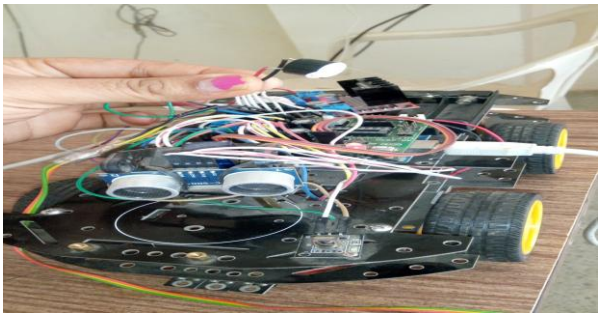

Fig. 5. Buzzer

V. RESULTS

In IR Remote control there are total 4 buttons used i.e. forward, backward, left and right.

Firstly, to make the robot run in forward direction, forward button is pressed. As the forward button is pressed, the signal from the IR remote control is received by the IR Receiver Module. As the IR Receiver Module receives the signal it directs through the Arduino microcontroller and makes the 4WD robot move in forward direction. Meanwhile it also activates the Eye blink sensor.

Eye Blink Sensor searches for any blinking of the eye. The continuous sensor data value is appending. If the sensor data value comes less than 150 threshold value then the Eye Blink Sensor detects Eye Blink else it appends any arbitrary data value.

In Figure 6 it shows that if Eye Blink Sensor finds eye blinking three times than the driver is alarmed by the buzzer ringing three times and the 4WD robot stops moving.

In Figure 7 it shows that Eye Blink Sensor does not find any eye blinking and the 4WD robot keeps on moving until any another button is pressed from the IR Remote Control, Also the continuous Sensor Value can be seen.

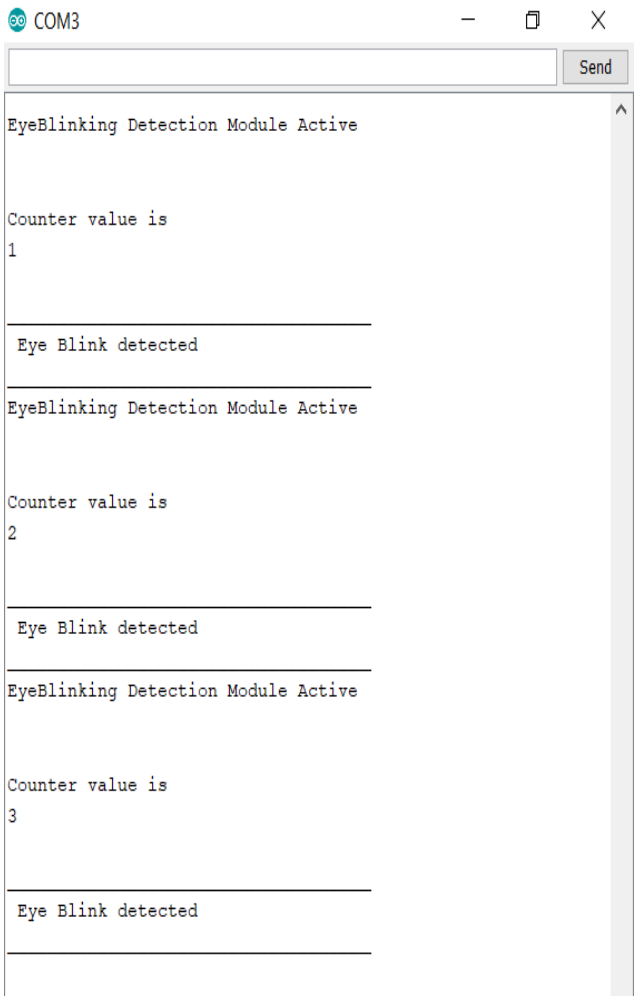

Fig. 6. Eye Blink Detected

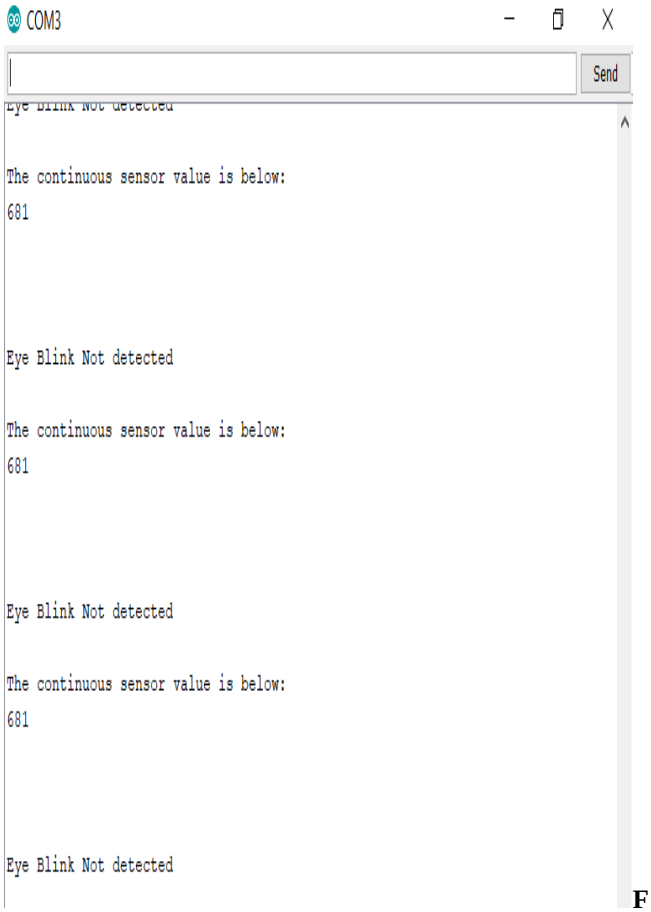

Fig. 7. Eye Blink Not Detected

VI. CONCLUSION

Monitoring and recognizing the mishaps play a definitive job in forestalling or limiting the quantity of vehicle mishaps. In this paper we have proposed a low cost, adaptable, qualitative, user safety and security system. This work presents structure of a lower power implanted framework. Furthermore, it is blended with sensors to forestall the street mishaps.

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