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Drowsiness Detected For Vehicle Using Smart Glass With Eye Blink Sensor

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Abstract - For this project we use an instant blink sensor to detect the driver's drowsiness using a wearable glass. The driver should wear a blink sensor when driving for a long time should be a few seconds to see drowsiness. Blinking the eyes is a quick act of closing and opening the eyelids. Dangers of drowsiness can be controlled and prevented with the help of the blink sensor using IR radiation. Contains an IR transmitter and IR receiver. The transmitter transmits IR radiation to the eye. If eye get closed, then the output is high. If eye is open, IR receiver gets low output. This output is connected by an alarm connected to a smart glass. This module can be connected to a car braking system and can be used to reduce car speed. The alarm inside the car will sound for a while until the driver regains consciousness. If the driver is unable to control the vehicle after the specified time, it will cut off the power supply to the vehicle when applying the brakes on the vehicle.

Key Words*: *IR sensor, Arduino, LCD display, Transmitter and Receiver, Relay, DC motor.

1. INTRODUCTION

Driver drowsiness detection is a car Safety technology which helps prevent accidents caused by the driver getting drowsy. Various studies have suggested that around 20% of all road accidents are fatigue-related up to 50% on certain roads.

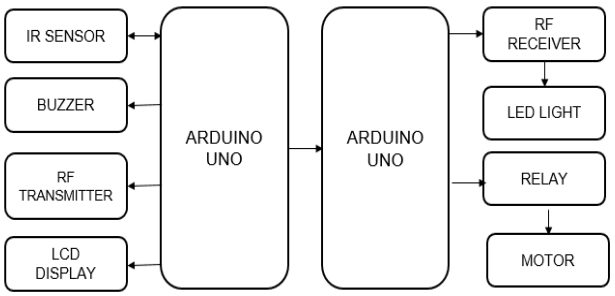
For this survey we are looking for to search number of road accidents is happened is passed by the U.S. National Highway Traffic Safety

Administration reports 40,000 injuries and 1550 deaths due to car crashes every year, 31% of which were because of driver's drowsy state while driving.

This state of mind causes the driver to lose his/her attention from the current scenario and the ability to react against various phenomena. Hence it is very much necessary to take preventive measures to detect the drowsiness of the person on road so as to prevent the road accidents caused by the drowsiness of the driver, Drowsiness with driving is a very hazardous and it is very difficult to identify.

After alcohol drowsiness is the second leading cause of the road accident .we must take awerness about this and fallow traffic rules to drive the vehicle safely. I hope in our project reduce 50% of road accident due to drowsiness

2. METHODOLOGY



The proposed smart system is divided into two parts :

- The transmitter parts consists of Arduino Uno-I ,IR sensor ,buzzer, power supply ,RF transmitter and lcd display fro displaying the drowsiness detection alert systems.
- The receiver part consists of another Arduino Uno-II , one relay module and gear motor.

We are using wearable glass. In that one side of glass fixing IR sensor continuously monitoring eye pupil and sends signal to Arduino uno-I. IR sensor has transmitter and receiver it sends IR radiation to eye pupil it reflects the rays. After reflection if output is high it takes eyelid is in closed condition and else output is low eyelid in open condition.

If IR sensor receives high output it takes driver in drowsiness then Arduino sends signal to buzzer to alarming 3 sec for try to wake up the driver.

Even though driver didn't waked up Arduino Uno-I send signal from RFtransmitter to RFreceiver which was fixed in car headrest seat. In transmitter part lcd display displaying every message. In receiver side has another controller Arduino Uno-II connect with RF receiver, The second controller sends signal to relay it cut off the supply to motor.

The LCD display intergated with the Arduino and the output delay are shown in the display.

The power supply for the Arduino by the power adapter or the mini HDMI cable.

3. DESCRIPTION OF THE COMPONENTS

IR sensor module

LCD display

Arduino UNO

RF Module

Relay

Buzzer

Dc motor

3.1. IR sensor module

An infrared (IR) sensor is an electronic device that measures and detects obstacle in surrounding environments using infrared radiation. Infrared radiation was discovered by William Herchel in 1800. IR rays can't see by human eye, because its wavelength is longer than that of visible light (though it is still on the same electromagnetic spectrum). An infrared transceiver can be used for a variety of purposes.

In this project IR sensor is used for to emit radiation to eye pupil and react depends on the input received.

The eye blink sensor is an infrared sensor. It has two section. A transmitter part and receiver part. The transmitter part continuously emits infrared waves onto the eye pupil. The receiver continuously looks for any variations in the reflected waves from eye pupil which indicates that the eye has blinked. If eye get closed, then the output is high. If eye is open, IR receiver gets low output.

3.2. LCD display

Liquid crystal shows (LCD's) have materials, which integrate the homes of each drinks and crystals. Rather than having a melting point, they have a temperature variety inside which the molecules are nearly as cellular as they might be in a liquid, however are grouped collectively in an ordered shape just like a crystal.

Crystalloids dot–matrix (alphanumeric) liquid crystal shows are to be had in TN, STN types, without or with backlight. The use of C-MOS LCD controller and driving force ICs bring about low strength consumption. These modules may be interfaced with a four-bit or eight-bit microprocessor /Micro controller. The integrated controller IC has the subsequent features:

• Correspond to excessive velocity MPU interface (2MHz)

• Eighty x eight bit show RAM (eighty Characters max)

• 9,920-bit man or woman generator ROM for a complete of 240 man or woman fonts. 208 man or woman fonts (five x eight dots) 32 man or woman fonts (five x 10 dots)

3.3. Arduino

Arduino is a prototype platform (open-source) primarily based totally on an easy-to-use hardware and software program. It includes a circuit board, which may be programed (called a microcontroller) and a ready-made software program referred to as Arduino IDE (Integrated Development Environment), that's used to write down and add the laptop code to the bodily board.

The key functions are – Arduino forums are capable of examine analog or virtual enter alerts from extraordinary sensors and flip it into an output including activating a motor, turning LED on/off, hook up with the cloud and plenty of different actions. You can manage your board features via way of means of sending a fixed of commands to the microcontroller at the board thru Arduino IDE (called importing software program).

Unlike maximum preceding programmable circuit forums, Arduino does now no longer want an additional piece of hardware (referred to as a programmer) with a purpose to load a brand new code onto the board. You can truly use a USB cable .Additionally, the Arduino IDE makes use of a simplified model of C++, making it less complicated to discover ways to program.

3.4. RF Module

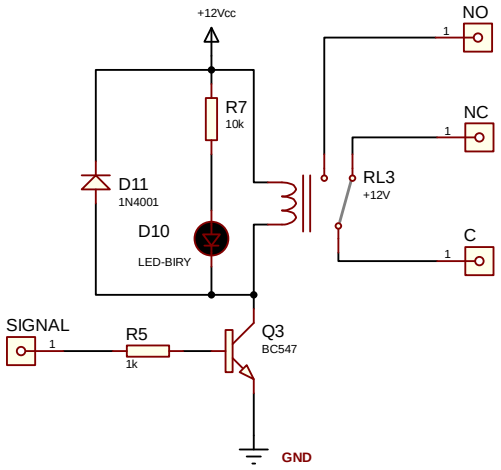
The ordinary operational variety of 433 MHz RF modules is among 50 meter to eighty meter. The operational variety of the RF module may be improved manifold with the aid of using attaching outside antennas to the RF transmitter and receiver. The transmission takes place on the charge of 1Kbps – 10Kbps.

The transmitted records is acquired with the aid of using an RF receiver working on the equal frequency as that of the transmitter. This low-price RF transmitter may be used to transmit alerts as much as a hundred meters (the antenna design, running environment, and deliver voltage will critically effect the powerful distance). It's top for a brief

distance, battery strength tool development. 433 MHz is the working frequency for transmitter and receiver pair.

3.5. Relay

Relay is one sort of electro-mechanical additives that features as a switch. The relay coil is energized through DC in order that touch switches may be opened or closed. An unmarried channel 5V relay module normally consists of a coil, and contacts like typically open (NO) and typically closed (NC). In this assignment we're the use of typically open relay related with arduino.



3.6. Buzzer

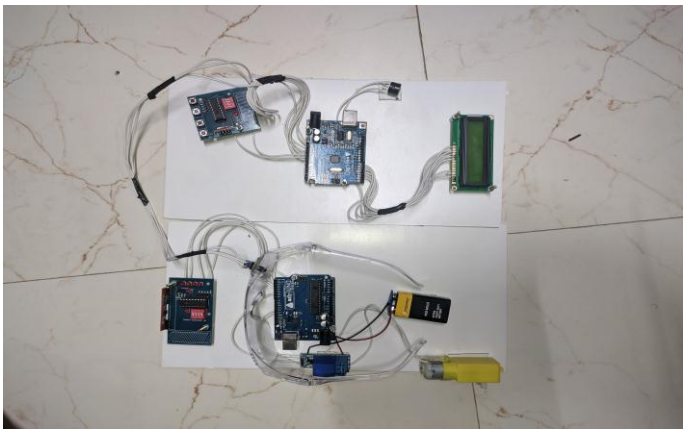
A buzzer or beeper is a signaling tool, commonly electronic, commonly utilized in automobiles, family home equipment together with a microwave oven, or sport shows. It maximum normally includes some of switches or sensors linked to a manage unit that determines if and which button became driven or a preset time has lapsed, and commonly illuminates a mild on the proper button or manage panel, and sounds a caution with inside the shape of a non-stop or intermittent humming or beeping sound. Initially this tool became primarily based totally on an electromechanical gadget which became equal to an electric powered bell without the metallic gong (which makes the ringing noise)

3.7. DC Motor

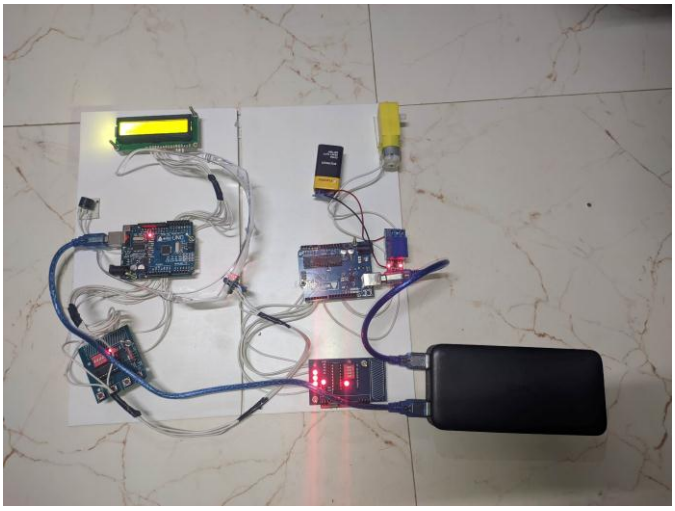
A gear motor is an all-in-one combination of a motor and gearbox. The addition of a gear for motor reduces the speed while increasing the torque output. The most important parameters in gear motors are speed (rpm), torque (lb-in) and efficiency (%).

In this paper we using a gear motor in takes 5v-12v input. In order to select the most suitable gear motor for your application you must first compute the load, speed and torque requirements for your application

4. WORKDONE



5. HARDWARE RESULT



6. CONCLUSION

Nowadays, people have become more prone to accident. So, we as an engineer need to take a few action towards this and offer the favored solution. For the protection of the human being a few automation is made. The purpose of such a model is to advance a system to detect fatigue symptoms in drivers and control the speed of vehicle to keep away from accidents. Advanced generation gives a few wish keep away from those as much as a few extent. This venture entails degree and controls eye blink the use of IR sensor. We can routinely indicating the driving force the use of buzzer and convey lower back them to awareness then gradual down the vehicle by the use of Automatic braking system, to stopping them from accident

7. FUTURE SCOPE

The above proposed gadget is designed simplest for non-specifications wearable man or woman. We wish in later days the superior generation changed the mission will

deliver the prototype usable for spec wearable man or woman also. Then the mission take selection relies upon on IR sensor simplest we need realize any other affirmation also. So in destiny the mission prototype comes with IR sensor and picture processing camera

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