A project based Report on

Anti Sleep Alarm for Drivers

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ABSTRACT

With the predictions of World Health Organization(WHO) that the number of deaths due to traffic accidents will be around 2 million within less than 15 years, researchers nowadays are paying more attention to how to help in preventing traffic accidents and lower the number of occurred fatalities. The purpose of this study is an attempt to prevent traffic accidents due to fatigue or sleepiness. In this report, a portable and low cost device for prevention of accidents that happen because of sleepiness or fatigue. The proposed system consists of two main parts that detect eye blinking based on IR sensors mounted on eyewear. Depending on the reflected and absorbed IR radiation, this system detects and classifies the eye blinking into normal blinking(NB).

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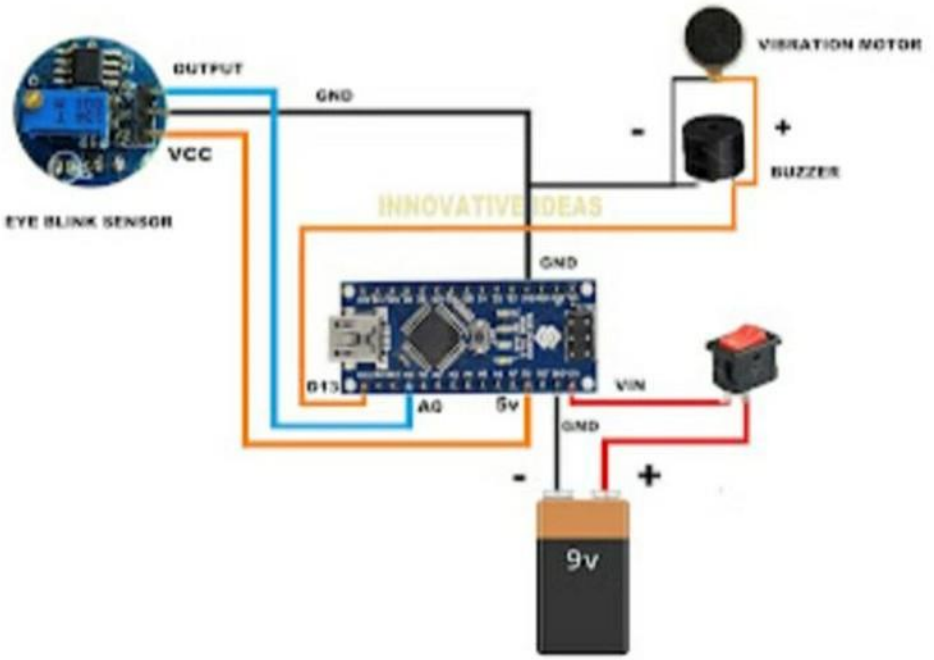
INTRODUCTION

Everyone knows about the alarms that abruptly wake us from our slumbers each morning, but have you heard of alarms that can keep us awake while we're driving? Road traffic injuries and deaths have a terrible impact on individuals, communities and countries. Drowsy driving is defined as operation of a motor vehicle while being cognitively impaired by lack of sleep. According to the National Sleep Foundation, some of the drowsy driving signs are:difficulty focusing, yawning repeatedly or rubbing eyes and trouble keeping head up. In recent years, driver drowsiness has been one of the major causes of road accidents and can lead to severe physical injuries, deaths and economic losses. Annually and worldwide, over 1.3 million people die each year on the road and 20-50 million people suffer non-fatal injuries due to road accidents. According to National Sleep Foundation surveys,half of American adults consistently report that they have driven drowsy and 20% admit that they have actually fallen asleep at the wheel in the previous year. These statistics suggest that driver drowsiness is one of the most dominant causes for car accidents, injuries, deaths and economic losses. Hence, developing a system for monitoring drivers' drowsiness and alerting the driver when he/she is not paying enough attention to the road is a fundamental way to prevent accidents to prevent traffic accidents caused by sleepy drivers,many systems have been proposed. In this report we will study that with the help of a few components we have made an anti sleep alarm. Here we use components like relay, piezo buzzer, battery, etc. When he/she falls asleep while driving then due to the piezo buzzer it will alert and the driver will wake up.

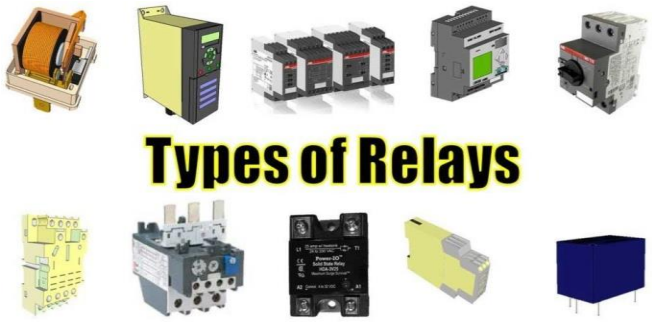
CIRCUIT DIAGRAM



COMPONENTS

Relay

Relays are electrically operated switches that open and close the circuits by receiving electrical signals from outside sources. The relays embedded in electrical products work in a similar way; they receive an electrical signal and send the signal to other equipment by turning the switch on and off.



Piezo Buzzer

In simplest terms, a piezo buzzer is a type of electronic device that's used to produce a tone, alarm or sound. It's lightweight with a simple construction, and it's typically a low-cost product.

Battery 9V

A container consisting of one or more cells, in which chemical energy is converted into electricity and used as a source of power.

Motor

A machine that converts electrical energy into mechanical energy by means of the forces exerted on a current-carrying coil placed in a magnetic field.

Arduino Uno

Arduino/Genuino Uno is a microcontroller board based on the ATmega328P. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.

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.

IR Sensor

An infrared sensor is an electronic device that emits in order to sense some aspects of the surroundings. An IR sensor can measure the heat of an object as well as detect the motion.

WORKING

To start the circuit we first click the ‘ON’ button on the SPST switch. Then the electrical supply will pass and the motor will start working because there was a loop of 9V battery. The relay will remain closed and the circuit will open. Through an IR sensor we will detect the output. Output we will get with the help of Arduino UNO. While driving if the eye will close for 5 sec then the buzzer will detect. After buzzing for 2 sec then also the eye will close so the relay will open and the circuit will close. That means the car will stop.

ADVANTAGES

While driving he/she has yawning repeatedly or rubbing eyes and trouble to keep head up. At that time the anti sleep alarm with the help of a piezo buzzer, alerts the driver and stops the car. Due to this it prevents accidents, injuries, deaths or economical losses.

APPLICATIONS

- Anti sleep alarm helps to awake a driver while driving and avoid accidents.
- Piezo buzzers are regularly used in alarms, warning devices and automobile alerts.
- Infrared sensors are mainly used in radiation and spectrum measurement, search and track systems, and thermal imaging systems.

CONCLUSION

In this project a complete driver alert system was implemented. The system is operated by a 9V DC battery. The device is small in size, has a low weight and it is user-friendly and reliable. The device detects the driver's prolonged eye blinking. Consequently, it alarma the driver and woke her/him up and stopped the car. The performance of the system can be enhanced by a smaller IR sensor with lower heating effect. This research achieves good results for the detection and analysis of prolonged eye blinking and may become a universal technique for human life saving in the future.

REFERENCE

https://www.youtube.com/watch?v=KvXQ-GPyfc4&list=LL&index=6