International Journal of Multidisciplinary Advent Research and Review (IJMARR)
Vol. 1, No. 2, February 2025
E-ISSN: 3049-1932
Available online at https://www.ijmarr.org/

Anti-Sleep Alarm System

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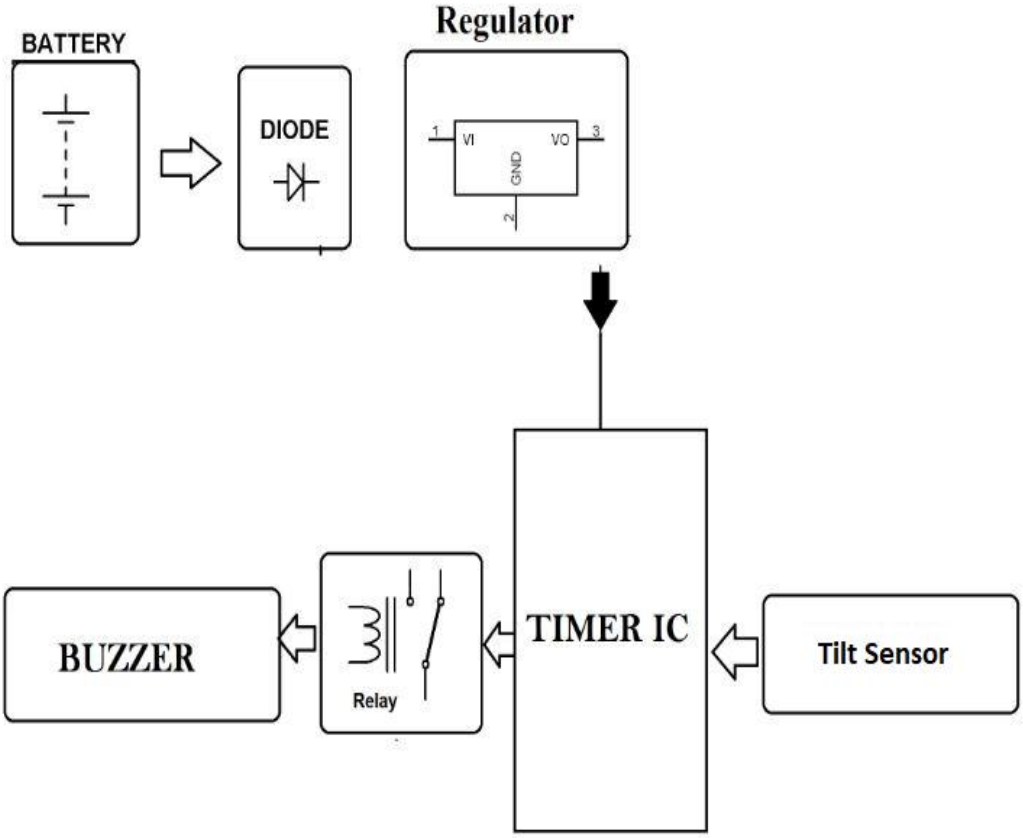
ABSTRACT
Nowadays most of the products of driver anti-sleep detection sold in the market are simply earphone making intermittent noises, which is quite annoying and inefficient. As such, there is a high demand for cheap and efficient driver sleep detection.
It is very difficult to stay active all the time due to busy schedules. Falling asleep at the wheel can lead to serious consequences, accidents, and even death. This situation is much more common than we realize and therefore it is very important to fight this problem. So, to solve this problem, we developed a sleep alarm for drivers. This system alerts the user when he falls asleep at the wheel, thus preventing accidents and saving lives. This system is handy for long- distance travelers and late-night drivers. Designed with a blink sensor, it takes safety measures a step further by designing a system to stop the vehicle when the driver\'s eyes are closed. The system is developed using Arduino microcontroller. The eye blinking sensor is connected to a microcontroller that continuously monitors the frequency of the driver\'s eye blinking. If the driver\'s blink rate falls below a certain threshold, the system warns the driver and sends a signal to the vehicle\'s control system to stop the vehicle.
Feeling sleepy while driving could cause hazardous traffic accident. However, when driving alone on highway or driving over a long period of time, drivers are inclined to bored and feel sleepy, or even fall asleep.
***Index Terms*:Traffic accident, sleep detection, noises.**

1.INTRODUCTION
Drowsy driving remains a major issue on road worldwide, and holding a substantial threat to both drivers and passengers. The consequences of driver fatigue is well-documented, with impaired reaction times and diminished cognitive abilities significantly increasing the risk of accidents measures to address this critical problem, the focus of this study is the developing of an Anti-Sleeping Alarm System aimed at enhancing driver safety. Previous research shows that alarming statistics associated with major accidents! Understanding the importance of adopting innovative solutions to reduce this risk. Old approaches, such as roadside signs and periodic breaks, have proved less effective in preventing the onset of drowsiness during extended periods of driving! Spray. Our aim to reduce the occurrence of accidents caused by drowsy driving, ultimately increasing the road safety for all with help of anti sleep alarm.is important to be aware of potential risks in road traffic, domestically and internationally, and take measures to ensure your safety and health. According to Google, about 1.35 billion people die on the world's roads every year. Worldwide, about 3,700 people die and many are seriously injured in car, bus, motorcycle, bicycle or truck accidents every day. Car accident has been recognized as one of the biggest safety problems worldwide. The Out system is designed to reduce this. Our system uses an IR sensor that emits an inferred light when the driver's eyes are open. This light is not reflected, but when the eyes are closed, the light of time is reflected back onto the person's skin. After a certain time, the reflective buzzer will start and if the driver does not open his eyes, the vehicle's backlight will turn on and the vehicle will stop automatically. This helps in reducing the risk of accidents that may happen.

2. OBJECTIVE
The goal of this project is to develop a system that can detect the sleepiness of the driver and make alarms accordingly. Accidents due to drivers falling asleep at the wheel are quite common. Maybe a long and tiring day at the office has drained your energy and all you want to does return home and sleep. Some drivers tend not to pay attention on long stretches of a boring road theyknow too well and without knowing it they doze off. We can protect our self and our passengers with this anti sleep alarm.

3.BLOCK DIAGRAM REPRESENTATION

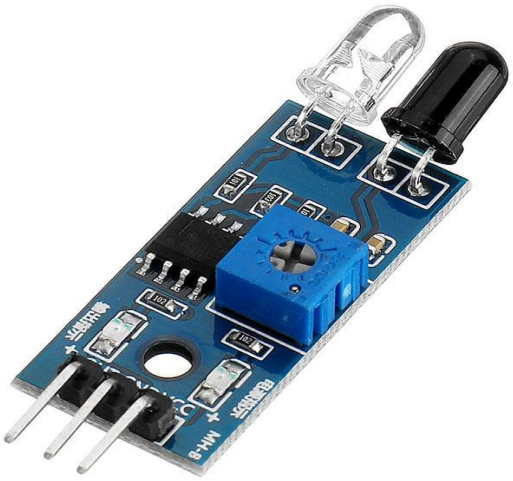


4.COMPONENTS

4.1 IR Sensor:IR sensor is an passive device that disperse light to capture a light in the atmosphere.IR sensor can measure the heat of objects and detect movement. Generally all objects within the infrared spectrum emit someform of thermal radiation. This kind of radiation is not visible by our naked eyes however infrared sensor can detect theseradiation. This types of sensor is a photodiode the photodiode is sensitive to the same wavelength of IR light emitted by the IR Led. When IR light interacts with a photodiode it give a output.There are five basic part used in a normal infrared detection system: an infrared source, a transmission source, optical part, infrared detectors or receivers and Signal processing unit is used for signal processing. Infrared lasers and Infrared LED's of specific wavelength are used as infrared sources. The three main types of media used for infrared transmission are vacuum, atmosphere, and optical fibre that are often mixed with material like steel or glass.

Fig 4.1: IR Sensor

4.2 Arduino Nano: The Nano is a tiny, whole, and breadboard-friendly board established on the ATmega328P given birth to in 2008. It delivers the same connectivity and specs of the Arduino Uno board in a tinier form factor. The Arduino Nano is armed with 30 male 1/0 headers, in a DIP-30-ljke configuration, which can be



programmed utilizing the Arduino Software integrated development

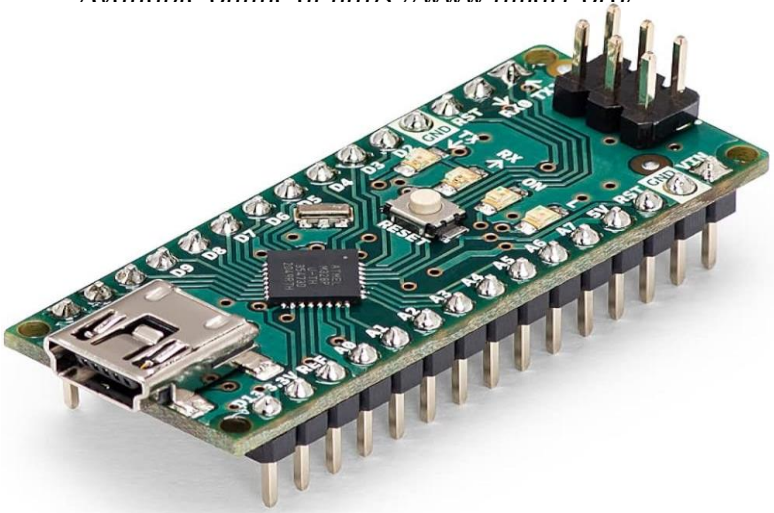


Fig4.2: Arduino Nano

environment. Offline The board can be powered through a type-B mini-USB cable or from a 9 V battery. good indeed, like a fine wine, an alternative to the mighty Arduino UNO; and is available at a lower, more affordable price point. Personally speaking, I would highly suggest opting for the Arduino Nano over the UNO as it is indeed much cheaper, more breadboard friendly.

4.3Piezo Buzzer: The piezo buzzer produces sound based on the reverses of the piezoelectric effect. The generation of pressure variation or strain by the application of electric potential across a piezoelectric material is the underlying principal. These buzzers can be use for alerting the user on the basis of input. They are also used in alarm circuits car equipment.

Fig 4.3: Piezo Buzzer

The buzzer produces a high noisy sound irrespective of the voltage variation applied to it.It contain a piezo crystals between two metallic conductors. When a potential is applied across these crystals, they pushes on one

conductor and pull on other. This continuous pull and push results in the formation of a sound wave. Most of the buzzers makes sound in the range of 2 to 4 kHz. The Redconnector is connected to Input and the Black connector is connected to Ground!

4.4 SPST Switch:SPST Single pole single throw switch is nothing but an essential two-terminal switch that help us to disconnect the one terminal to another terminal with an easy ON or OFF operation.

Fig 4.4: SPST Switch

It's a simple yet very effective tool that is widely used in various electronicapplications such as circuit control

and power distribution! Do you know how significant this kind of switch can be to your daily life? It's amazing to think about the impact of such a small device on our everyday activities. We often take for granted the convenience itprovides in controlling our appliances effortlessly. Just a flick of a switch, and voila, the lights turn on or off! That's the power of a SPST switch. So next time you use one, remember to appreciate the simplicity and functionality it offers.

4.5 Ribbon Cable: Ribbon cabling is used for data transmission and communications. It is often chosen for cable applications, where it is used as internal wiring for hard drives, CD drives, more. Ribbon cables are also commonly used as internal wiring for other electronics and appliances.

Fig 4.5: Ribbon Cable

4.6 Spectacles: The eye blink system comes with an IR sensor mounted on which the user can wear like normal glasses, shown in the picture below.Eye blink Sensor is a more simple sensor used to detect eye blinks and eyenmovement. It uses as a simple infrared sensor to detect if the person's eye is closed and the corresponding datareceived can further be processed by any logic as required for the application!!"It also help the driver from external matters such as sand, dust, wind and extreme tiny matters. Due to its light weight it appears as like that you are not wearing it .It is made up of plastic, silicon and others light weight materials. Due to high availability of frames and glass we have selected this kind of glass.

Fig 4.6: Spectacles

4.7 Power Supply: The nine-volt battery, the 9V Battery, is an electric battery supplying a nominal voltage of 9

volts. The actual voltage measures 7.2 to 9.6 volts. The battery is light weight and small in size so it can be easily fitted in a small space.

Fig 4.7: Power Supply

This kind of battery is not a long lasting battery so we have too change it time to time additionally it requires a switch pin for connection. Here, we use a 9v battery for the power supply to executing the working process.

5.WORKING

5.1Circuit Diagram

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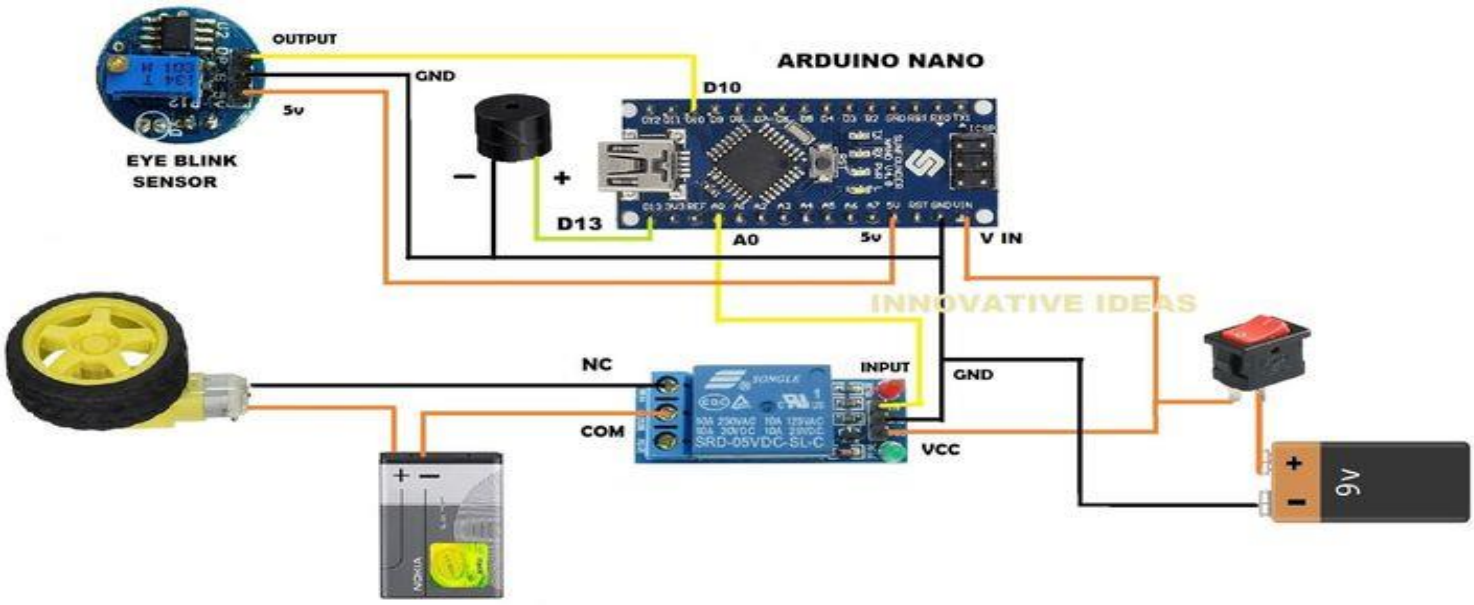


Fig 5.1: Circuit Diagram of Anty Sleep Alarm System

5.2Working:

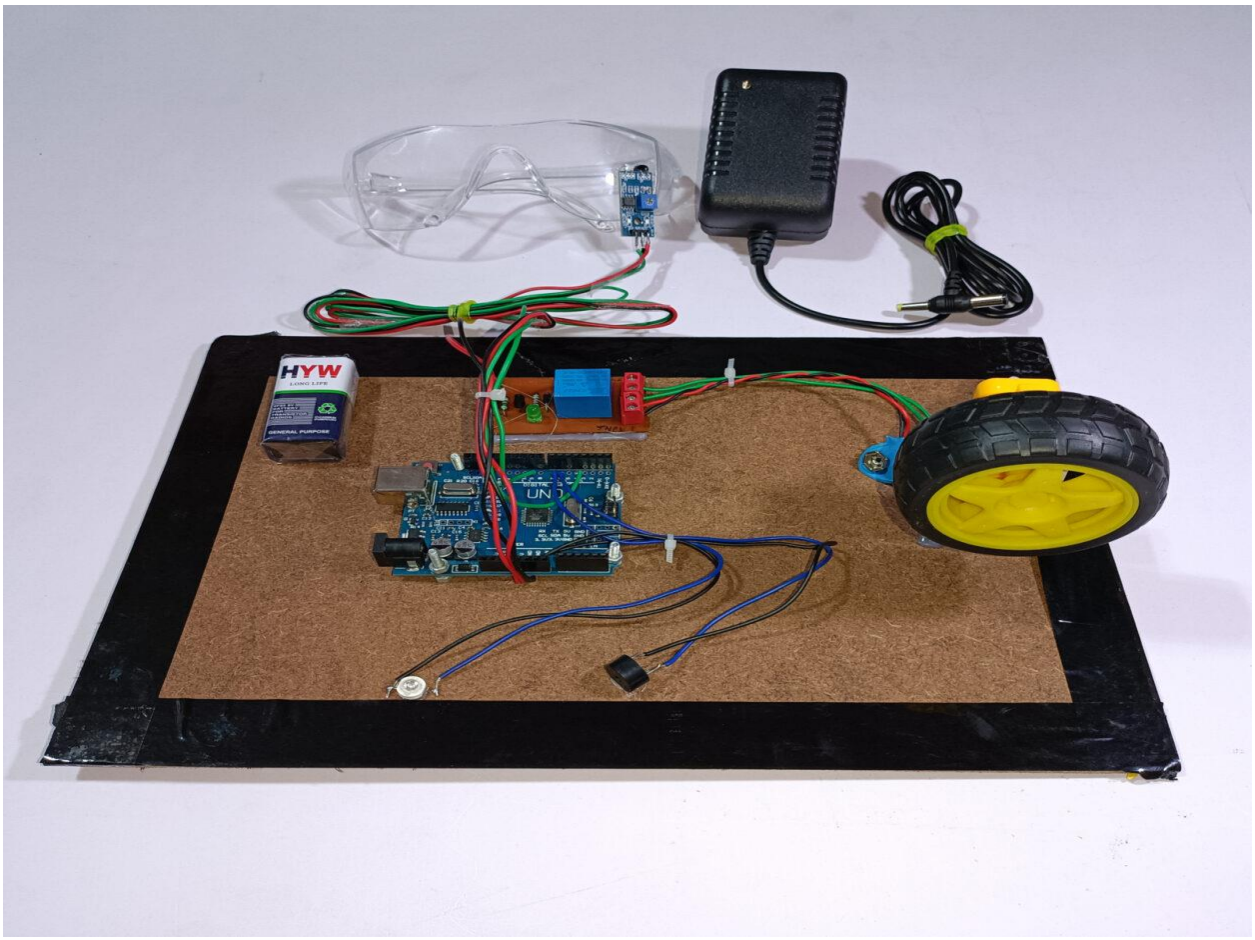
Everyone knows about the alarms that abruptly wakeus from our slumbers each morning, but have you heard of alarms that can keep us awake while we're driving? Anti-sleep alarms do more than simply startle and annoy drivers – they can save them from fender benders or worse by alerting them if they start to nod off behind the wheel. There are two types of anti-sleep alarms. The first type of alarm is built right into the car and uses sensors, cameras and other high-tech tricks to discern a driver's fatigue and correct the problem accordingly. The second type fits over the driver's ear and sounds an alert when the driver starts to fall asleep. While the in-car alarm systems are a recently developed feature that can add thousands of dollars to a car's sticker price, the over-the-ear alarm is both cheap and readily available. Drivers can find these for $10 to $20 under brand names like Nap Zapper, No Nap, and Doze Alert. Let's start with the simplest anti-sleep alarm system, the over-the-ear gadget. This lightweight plastic device has an arm that slips over one ear, like some telephone earpieces or portable headphones do. Once it's on, a sensor inside the case measures the angle from a perpendicular perspective. If the driver is looking straight ahead – as he or she should – the alarm measures the angle at zero degrees.is important to be aware of potential risks in road traffic, domestically and internationally, and take measures to ensure your safety and health. According to Google, about 1.35 billion people die on the world's roads every year. Worldwide, about 3,700 people die and many are seriously injured in car, bus, motorcycle, bicycle or truck accidents every day. Car accident has been recognized as one of the biggest safety problems worldwide. The Out system is designed to reduce this. Our system uses an IR sensor that emits an inferred light when the driver's eyes are open. This light is not reflected, but when the eyes are closed, the light of time is reflected back onto the person's skin. After a certain time, the reflective buzzer will start and if the driver does not open his eyes, the vehicle's backlight will turn on and the vehicle will stop automatically. This helps in reducing the risk of accidents that may happen.Arduino Processing: The Arduino Uno continuously processes sensor data. It controls the output of the proximity sensor and the reading of the accelerometer or piezoelectric sensor. If it detects that the driver's eyes are closed or there are noticeable head movements that indicate drowsiness, the Arduino will trigger an alarm.

Alarm Activation: When the Arduino detects that the driver is sleeping, it will activate an alarm mechanism, such as a buzzer or piezo speaker, to alert the driver. Depending on the model, the alarm may be a loud sound, flashing lights, or both.

Driver Alert: The alert continues until the driver indicating that they are now awake and alert.

Power Supply: The system can be powered by a 9V battery.

Connected Component :



7.FUTURE SCOPE & CONCLUSION

7.1Future Scope:

Anti Sleep Alarm System: Reducing Road Accidents Though the prototype model worked very with remarkable output, the real life situations is going to be way more challenging and demanding. This system is an attempt to help in decreasing and/or prevent road accidents that happen due to drivers' drowsiness. It can be added to every high-end manufacturing cars to prevent accidents, Sleepiness detection is Efficient and alarms will generate only when demanded (while in asleep). Due to portable size it can be used in different application. With any given constraints of performance, cost, and reshuffling, thereevolutionarydesign of this ground-breaking innovation is set to revolutionize driver safety across all industries.

7.2Conclusion:

In conclusion, an anti-sleep alarm system for drivers is a technology that has the potential to improve road safety and reduce the number of accidents and fatalities on the roads. By alerting drivers when they are becoming drowsy, the system can help to keep them awake and alert at the wheel, reducing the risk of accidents due to fatigue. There are several potential ethical considerations that should be considered when developing and implementing an anti-sleep alarm system for drivers, including the potential impact on individual privacy, the potential for the system to create an expectation that drivers should always be alert and awake while driving, and the potential for the system to be used as a tool for monitoring and controlling the behavior of drivers. A sustainability plan is also important for ensuring that the system is developed and implemented in a way that is environmentally, socially, and economically sustainable. This might involve designing the system to be as energy efficient and environmentally friendly as possible, considering the impact of the system on the wellbeing

and safety of drivers, and identifying long-term funding sources and a financially sustainable business model. In summary, anti-drowsiness warning systems for drivers can have a positive impact on society by improving road safety and reducing the number of accidents and fatalities on our roads. However, it is important to carefully consider the ethical and sustainable aspects of the system to ensure that it is developed and implemented responsibly and sustainably.

The endgame of this assignment is to shape a gadget that can precisely discover somnolent driving and sound off alerts likewise, which aspires to thwart the drivers from soporific driving and forge a more secure driving environs. The venture was executed by an IR sensor. This process spots the weariness in swiftly. This technique which can differentiate regular eye blink and drowsiness can obstruct the driver from setting foot into the domain of slumber while driving. At any time a driver dozes off owing to weariness, the noisemaker consistently kickstarts beeping until the driver returns to their typical posture. Balance The crowning purpose of the system is to avert the motorway calamity, where the values gauged in life. It is used to avoid the accidents. It is way more-efficient and really simple to use. The Devices pretty useful especially for people who travel long distance and Drive late at night!"

8.APPLICATION

• Anti-sleep alarm can be used in many ways according to our needs.

• It can be used by students while studying late at night. It is a usual phenomenon that students tend to sleep while studying but it can be hazardous sometimes like during exam. I such cases an anti-sleep alarm can be used.

• Further it can be expanded by connecting systems that switches off the appliances if the alarm is not reset. In the field of driving it can be expanded by adding voice mails or warning signs in the car whose driver has fallen asleep to warn other car drivers that proximity of such a car should be avoided.

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