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An Idea on Drowsiness Detection and Alarm System for Drivers

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ABSTRACT: It's really interesting, Let me tell you being a student it's really hard to concentrate on studies sometimes, once yawning and never wake up.But the anti-sleep alarm is the solution here we go. Its really useful a student as to fixed the alarm timing say for an interval of 30 minutes. The alarm will start beeping after 30 minutes and continues to beep until anyone reset it. Also if no one reset it , it will automatically switch off the lights and fan as it will sense that there is no one in the room or the student is in deep sleep.

KEYWORDS: Anti Sleep Alarm, Drowsiness, PCB BOARD, LED, Buzzer

I. INTRODUCTION

In this project we are going to talk about an alarm (beep beep)named Anti -Sleep Alarm. When I say Anti-Sleep Alarm, what is the first thing that come into your mind?Anti-sleep alarm is a alarm that is allotted a specific time and at the allotted time it get started and then it keep buzzing until it is reset. And you know that this circuit not only help once to save his time but also his life.We can use this anti sleep Alarm in our vehicle. It really helps people to doze off while studying or driving as it ring at a fixed interval of time .
For drivers, it is really useful .while driving it will need an optical sensor. This sensor will sense the movement of eyelids of the driver and it the eyelids are closed for a longer period of time, it buzzes off the alarm and therefore warn the driver of the can.

II. NEED OF ANTI SLEEP ALARM FOR DRIVERS

It is really useful and when it come to driving, drivers are the obvious target market for anti-sleep alarm. Now a days we heard about too many accidents. Anti-sleep alarm are really life savers. As truck drivers we know really have tight schedule they drive overnight. An alarm warn over the ear and really save one to sleep and hence accidents could be avoid.
Do you know that it could be proved really helpful to Night security guards also. Anti-sleep alarm really helps in keeping one active while studying, driving as sleepiness is really dangerous.

However , a coin always has two sides. In 2007, Australian state of Victoria ban the device due to safety issues. Anti-sleep alarm would really help travellers but to those who hit the road rather the hay . But like always it better for the driver to stop and take a nap to relax his brain -the best remedy.

III. OBJECTIVES/GOALS

- Main motive, objective or goal of the project is for developing a system which detects the sleepiness and make an alarm immediately within a duration of seconds.

- This device point outs the eye moment whether if the eye is close or open if the eye is in open state it means driver is in active state but if the eye does not show any moment,or is closed it means driver is fallen asleep and an alarm is generated by the feedback circuit used there in the form of sound so that the driver wakes up from unconsciousness state.
- For drivers the alarm rings after a duration of 15 to 20 seconds.
- With its sleep detecting capability risk of accidents can be reduced to a very high level by saving various previous lives.
- This application is of utmost importance for those people who have to travel large distance and also for people usually driving late at night hours especially drivers.
- In our project the different components that we have used perform their own function in a specific way.
  - ➢ In PCB board, their is a feedback circuit for the generation of alarm also a power supply for providing supply to the whole system.

IV. FUNCTIONS AND FEATURES

The system has many innovative features and functions that makes it extraordinary
These features include:
- This device has an important feature that it can be made to work during daytime as well as night hours.
- It beep and makes alarms immediately within a short duration and makes alarms when drivers feels tiredness or drowsiness and falls asleep and his head tilts forward because of unconsciousness.
- One of the important feature of Anti sleep alarm device is that it is not only fruitful for drivers driving at late night hours and can also be used by students studying late night hours during exam times and also by security guards.
- As the weight of this device is very less it can be easily carried or we can say is easily portable and is also comfortable to wear.
- **Functions of different components:**
- PCB Board acts asa monitor of other components as it collects these information and carryout some processing algorithm in order to detect whether driver is awake or not.
- Power supply is taken from vent of car which is 12V Dc. It can also give 24V Dc.
- LED are also used for flashing purpose and are connected to PCB board. Working voltage of these LEDs is 2.1V.
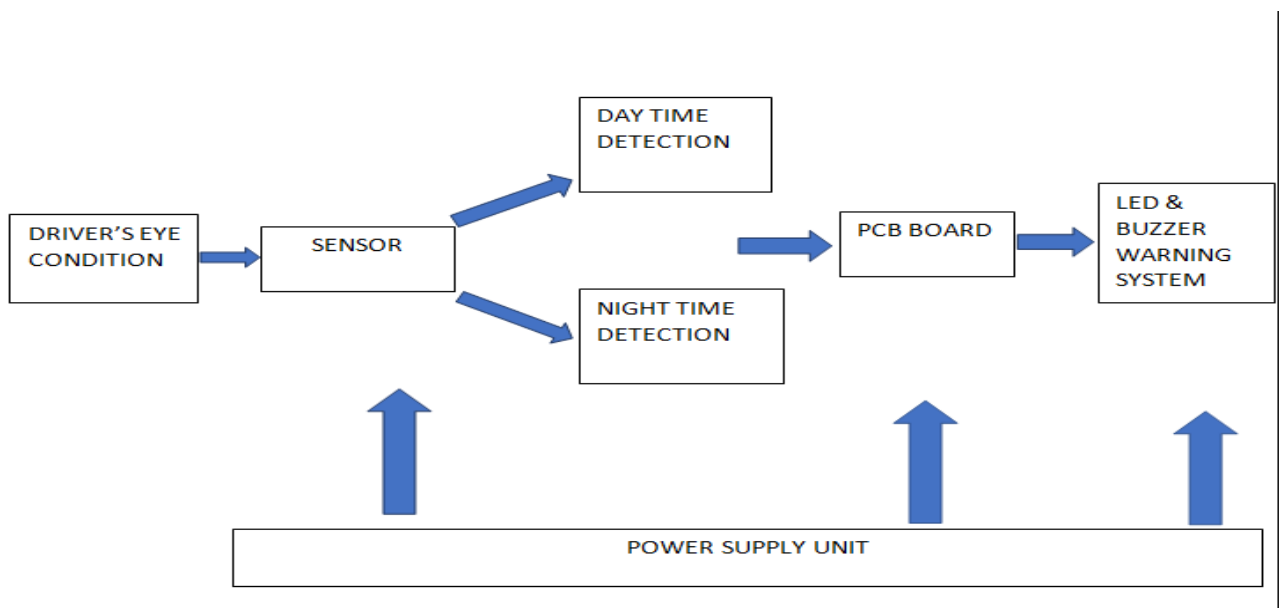
BLOCK DIAGRAM:

Fig: Block Diagram Of Anti Sleep Alarm

Following are the main components of this block diagram;

KINECT CAMERA OR "SPECTACLES":-
It has been used for monitoring the driver take image to capture face images or to detect driver's eye movement using sensor. After that, it extracts the main eye part of the person from the images of the person it has captured. Then these images are sent to the PCB Board for processing.

PCB Board :-
The PCB Board is the main processing unit. Firstly, it will send and collect information from the camera. Then it would perform some alogrithms to determine the status of the driver to see whether he/she is sleeping or not. Then it will send some signals to LED array and Buzzer to control them.

Power Supply Unit :-
For the final design , in order to make the system functional, the power source is provided by a car outlet which has typically a voltage of 12 V. Sometimes, it is also provided with 24 V DC. This voltage is also used to power up the buzzer and to light up the LED array by connecting resistors.

Alarming system :-
This is composed of 4 to 6 LED and a buzzer. The buzzer is used to work under 4V to 7V DC with a 2.4KHz alarming sound. The maximum current that can be draw from the alarming system is 1.2A.
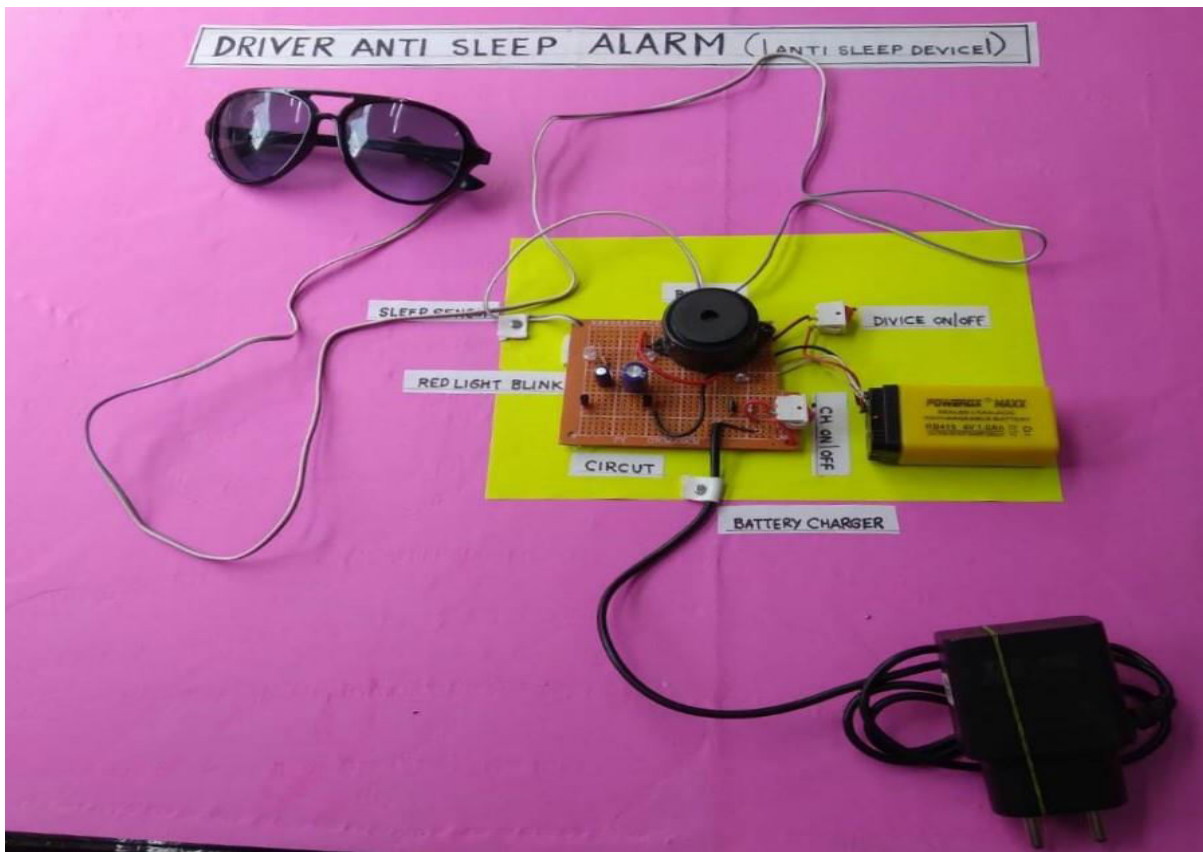

Fig : Anti Sleep Alarm For Drivers

APPLICATIONS OF ANTI SLEEP ALARM:
Following are the main applications of Anti Sleep Alarm;
- During late night studies, students generally fall asleep. Thus, Anti sleep alarm prevents them from sleeping.
- It can also be used for car drivers in long driving by producing a beep sound whenever they tend to fall asleep and by this way it can reduces the risk of accidents.

- Anti sleep alarm can be used by connecting systems that switches off the appliances if the alarm is not reset.

WHAT TO DO NEXT:

In future we will add some new feature so that we can operate it more accurately, efficiently and smoothly

- We are thinking of using OpenGL to control the frame rate more accurately:
- With help of OpenGL technology the image will be captured more accurately and quality of image will also be increased.
- In the existing project the pictures captured by web cam do not have good quality at night and the sleep detection algorithm does not work properly. Thus, in future work of this project we will focus on getting higher accuracy at night and we will also focus on   Sleep Detection Algorithm so that it will work more accurately.
- **I**n this project the programming language used is C++, and we are not getting as much efficiency as we expected. But in the future we are of thinking of using parallel programming techniques such as CUDA so that the code run faster than   existing project. Due to faster running of code sleep detection algorithm will process more efficiently and accurately.
- We are also thinking of using bash script to enable our program to auto start after booting.

V. CONCLUSION

At the end we will conclude that;

As for the software part, we are fulfilling our goal successfully.

The detections are working effectively and accurately both during daytime and night. It will benefit many like student, night drivers, night watchman etc.

For student it will save both time and electricity. And It will prevents him/her from dozing off while studying.
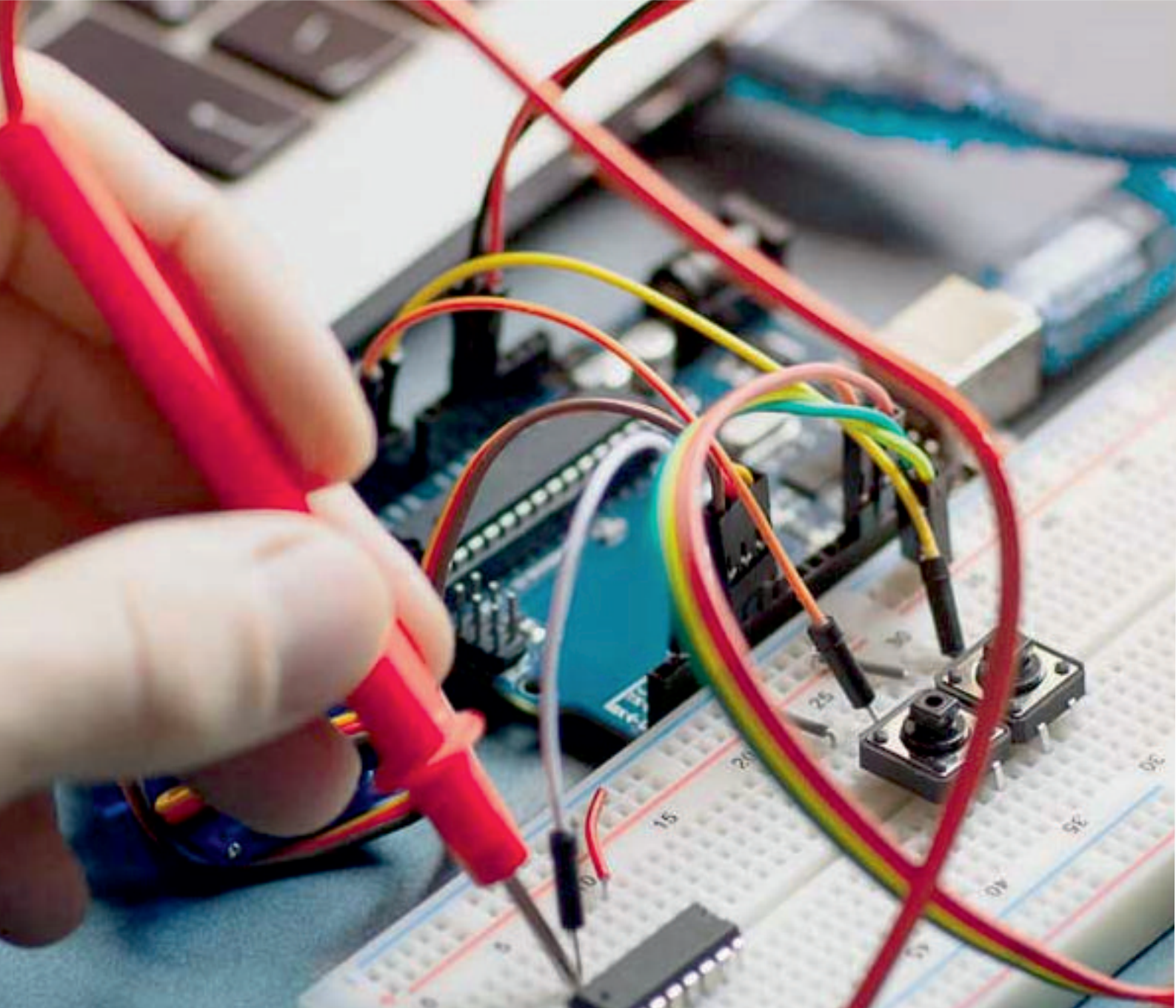
By the concept of driver, it will prevent him/her from dozing off, and   lots of accidents will be prevented from happening. And bye use of this technology many important lives will be saved.

At the End we will say that the overall success of project is not meant for one person but it's team work, every member is credited equally.

Each part is indispensable and every team member made the great dedication on the completion of this design project.

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