

IIT Kharagpur Section 11

Driver's Anti Sleep Alarm

Presented by Group K



» OVERVIEW

In this project, we will see the [Diver's Anti Sleep Alarm](#) using Arduino and IR sensors. This system alerts the user if he/she falls asleep at the wheel and eventually slows down the vehicle depending on the driver's response to the alarm beeps, thereby, avoiding accidents and saving lives.

This system is useful especially for people carrying out overnight duties who are bound to be deprived of sleep. The braking of the wheel in our project is just a rough exhibition by of prototype. This must be actually carries out precisely with the help of softwares to judge the speed of the car and traffic to slow down safely.

OBJECTIVE

This device can be used to reduce accidents that happen because of falling asleep while driving. Tired and drowsy people who travel long distances and people working on late night shifts can use this device to avoid accidents.



GROUP TIMELINES



Week 1

Drawing out a schematic of the project and building a temporary model from it.

Week 2

Completing the coding part and also developing some structures required for the project using applications such as 3D printing(if required) and solid works.

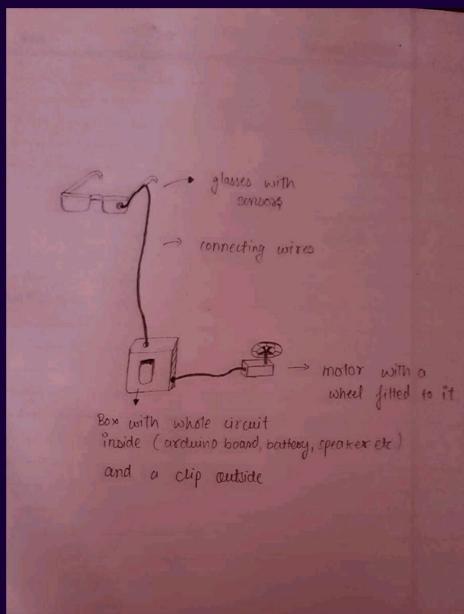
Week 3

Writing the final code assembling the hardware part and putting it into use

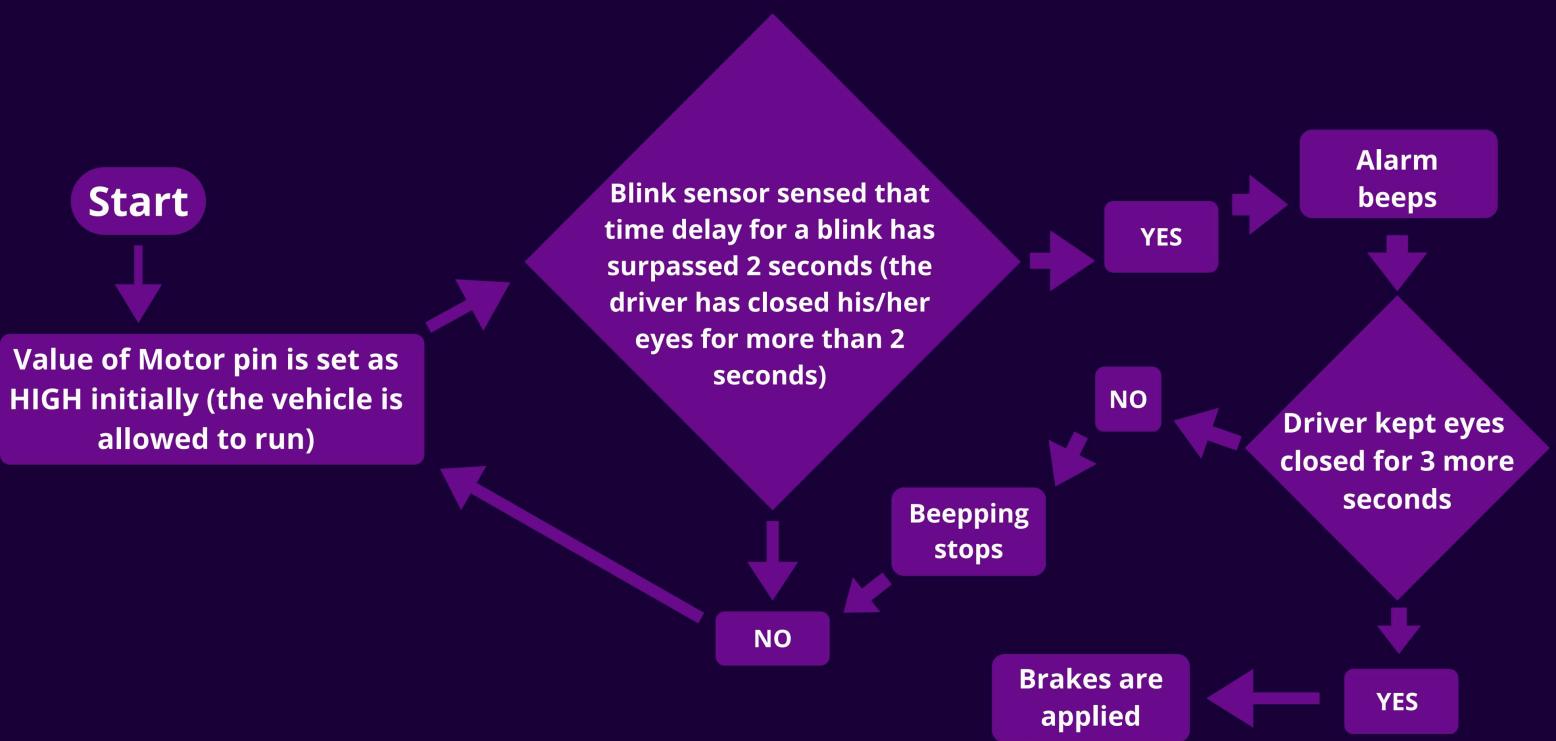
HARDWARE COMPONENTS

Sr no.	Component	Quantity	use
1	12V/1 Amp power supply Adapter	1 pc.	Supplying power
2	Arduino Uno	1 pc.	Does the work of a controller
3	Eye Blink Sensor	1 pc.	Keeps track of time delay of every eye blinks of the driver
4	Jumper wires	11-13 pcs.	Connection medium
5	transistor (TP-120)	1 pc.	Relaying electrical signals about the reflection of IR light from retina to detect eye blinks. Amplifying the alarm sound.
6	Piezo buzzer	1 pc.	Serves as an alarm/buzzer.

3D MODEL



Flow Chart





People & contributions

Jaideep Singh
circuit designing and 3D modelling

Lakavath Niharika
circuit designing and 3D modelling

Pritam Mandal
coding and ppt

Susneha Saha
Hardware assembling and ppt

WEEK-2

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GROUP MEMBERS



SUSNEHA SAHA

JAIDEEP SINGH

LAKAVARTH NIHARIKA

PRITAM MANDAL

[21EC30051]

[21MA10024]

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PROJECT TIMELINE

Week 1

Drawing out a schematic of the project and building a temporary model from it.

Week 2

Finishing the coding part and also developing some structures required for the project using applications such as 3D printing(if required) and solid works.

Week 3

Writing the final code, assembling the hardware part and putting it into use

WORK STATUS

- Circuit diagram completed.
- Code is almost completed, apart from debugging of some few bugs
- All parts have arrived except one.
- Hardware assembling will be started soon after all the parts will be available.

HARDWARE COMPONENTS

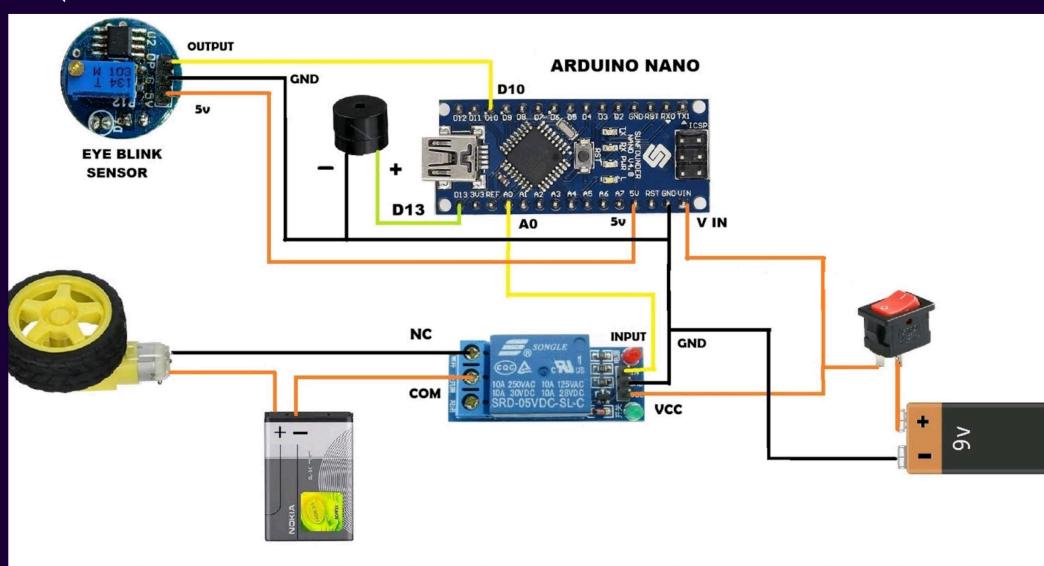
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AVAILABILITY OF COMPONENTS

Sr no.	Component	Status
1	12V/1 Amp power supply Adapter	Arrived
2	Arduino Uno	Arrived
3	Eye Blink Sensor	Will be arriving in 7 days
4	Jumper wires	Arrived
5	transistor (TP-122)	Arrived
6	Piezo buzzer	Arrived

WORKING PROCESS

CIRCUIT
DIAGRAM





People & contributions

Jaideep Singh
circuit designing and ppt

Lakavath Niharika
circuit designing and ppt

Pritam Mandal
coding, algorithm and ppt

Susneha Saha
coding, algorithm and ppt

NEXT WEEK GOAL

- *FINAL CODE WILL BE COMPILED*
- *HARDWARE ASSEMBLING WOULD BE STARTED*



THANKS FOR WATCHING

WEEK 3

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► WEEK 3 TARGETS AND STATUS ◄

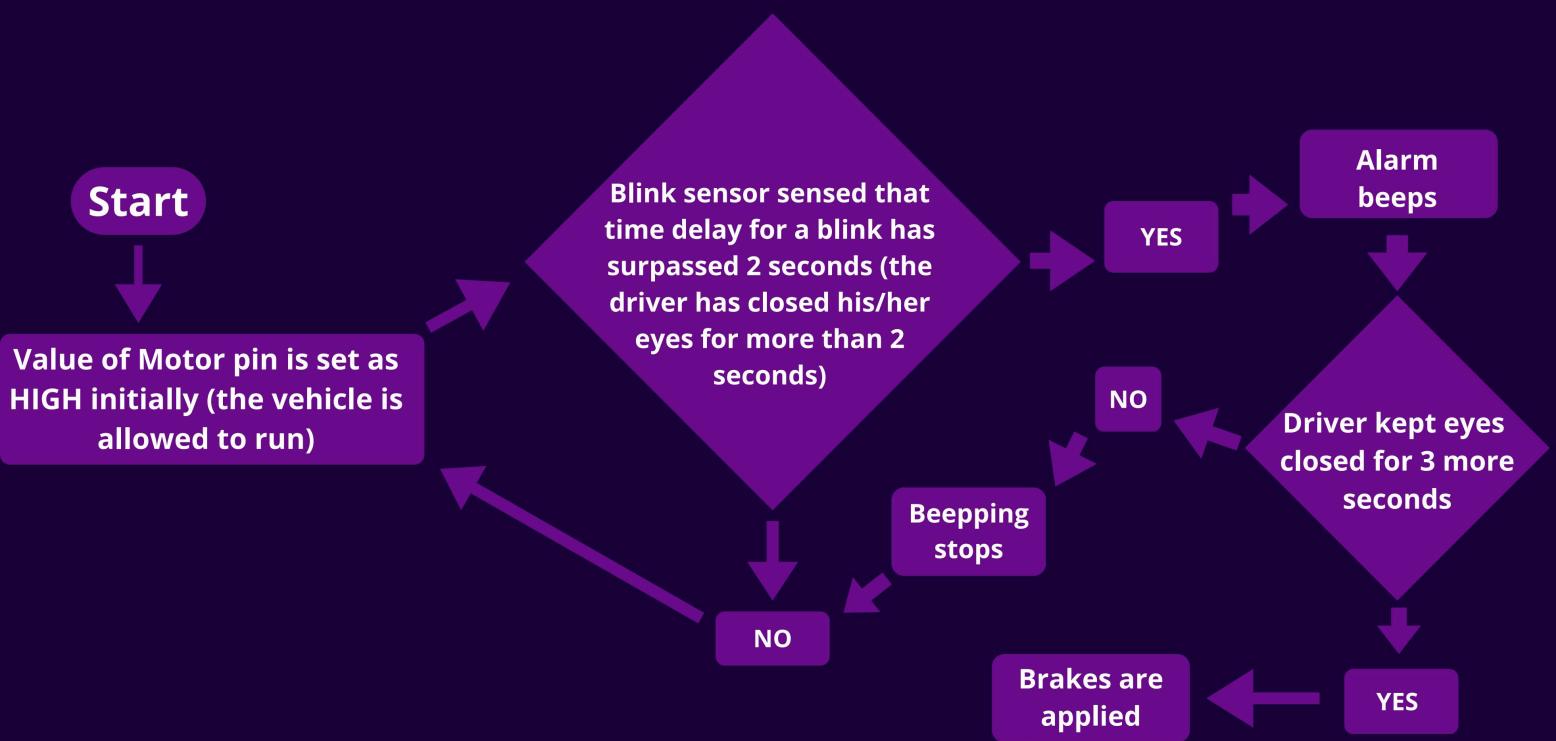
01

Debugged and optimized the code

02

Hardware assembling has been started

Pseudo-Code



Code for Arduino

```
const int blinkPin = 2;
const int motorPin = 13;
const int buzzerPin = 12;

long time;

void setup() {
  pinMode(motorPin, OUTPUT);
  pinMode(buzzerPin, OUTPUT);
  pinMode(blinkPin, INPUT);
  digitalWrite(motorPin, HIGH);
}
```

```
void loop() {

  if(!digitalRead(blinkPin)){
    time=millis();
    while(!digitalRead(blinkPin)){
      if(TimeDelay()>=2) digitalWrite(buzzerPin, HIGH);
      if(TimeDelay()>=5) digitalWrite(motorPin, LOW);
      delay(1000);
    }
  }
  else digitalWrite(buzzerPin, LOW),digitalWrite(motorPin, HIGH);
}

int TimeDelay(){
  long t=millis()-time;
  t=t/1000;
  return t;
}
```

CHALLENGES FACED

- ***CODE DEBUGGING TOOK MORE TIME THAN EXPECTED***
- ***HARDWARE ASSEMBLING COULD NOT BE COMPLETED SINCE ONE COMPONENT IS YET TO ARRIVE***

WORKING OF AN EYE-BLINK SENSOR

- It consists of an IR transmitter and an IR receiver
- The IR transmitter is used to transmit the infrared rays in our eye
- The IR receiver is used to receive the reflected infrared rays from the eye
- The IR receiver constantly monitors the changes in the reflected light
- The infrared light reflected from the eye is used to determine the results
- If the eye is closed then the rays aren't reflected from the eye and the output of IR receiver is high otherwise the IR receiver output is low



WEEK 4 TARGETS

01

Hardware assembling will be done

02

Make sure that our device functions properly

03

Demonstration video will be made



People & contributions

Jaideep Singh
circuit designing and ppt

Lakavath Niharika
circuit designing and ppt

Pritam Mandal
coding, algorithm, assisting
hardware assembling and ppt

Susneha Saha
Hardware acquirement,
assembling and ppt



THANKS FOR WATCHING

WEEK-4

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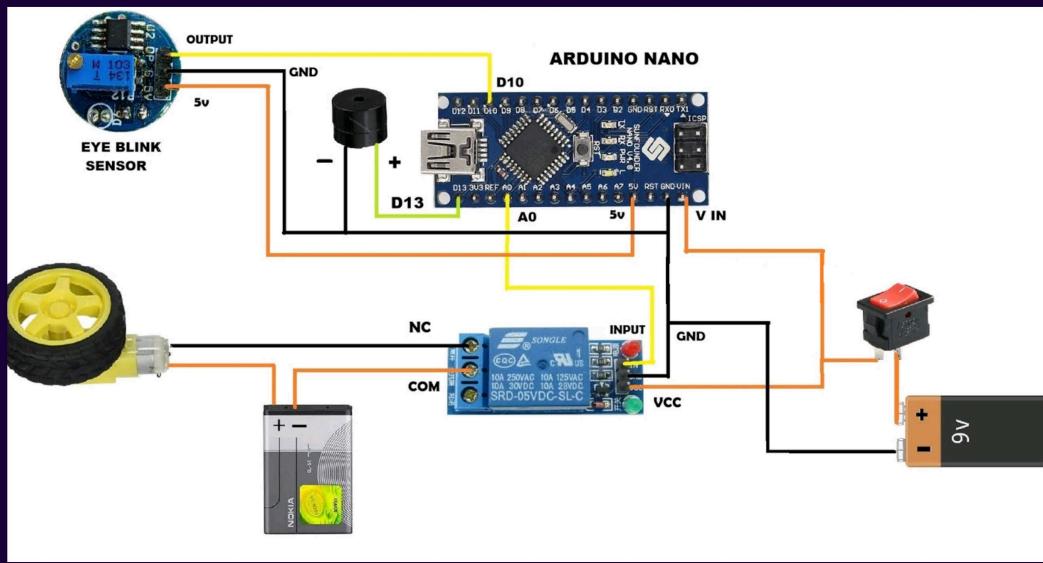


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DIAGRAM



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  }
  else digitalWrite(buzzerPin, LOW),digitalWrite(motorPin, HIGH);
}

int TimeDelay(){
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  t=t/1000;
  return t;
}
```

Highlights

- **Experiencing the working with an arduino controller.**
- **Programming of an arduino controller.**
- **It was a nice experience of successfull teamwork.**

What's been left out from the plan

- **Everything that has been planned has been achieved**
- **There has been some hurdles but they were all taken care of**

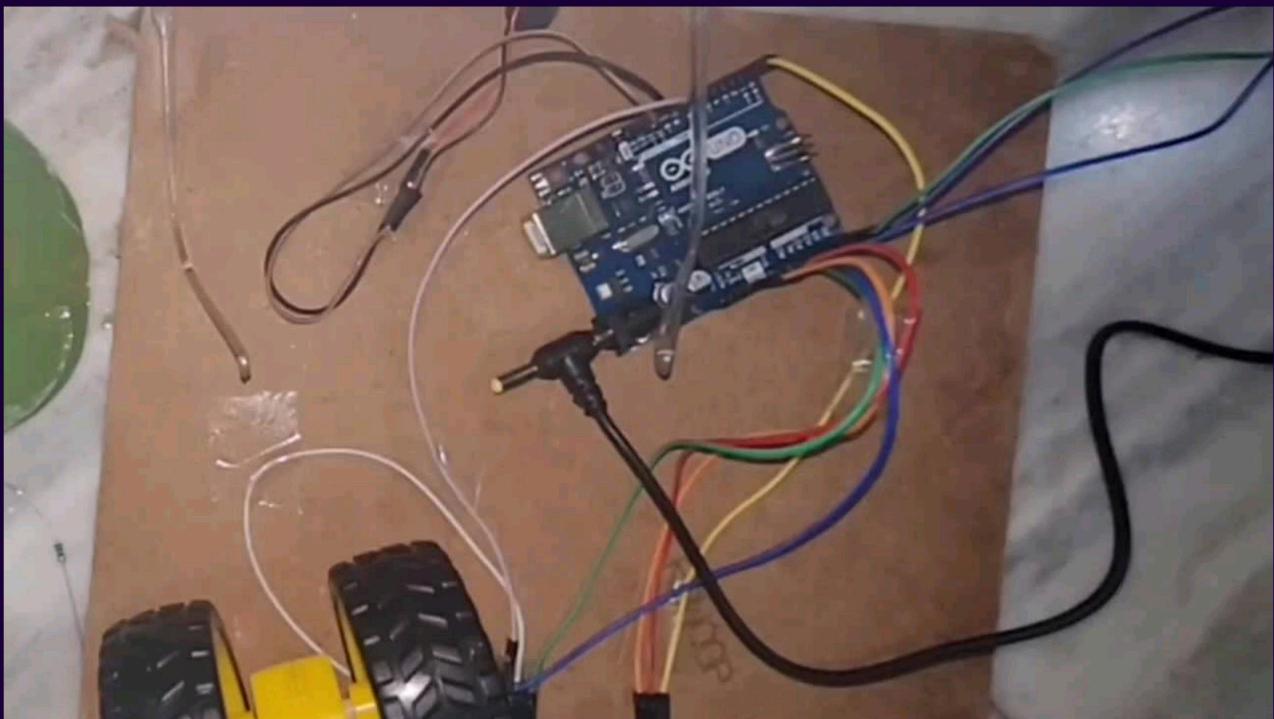
What more could've been achieved

- The slowing down of the car could have been done with a better judgement of speed and traffic with the help of more sophisticated technologies.
- Alerting other drivers about the sleepy unalert driver, by activating double blinker lights.

Contributions

- **Susneha Saha :** Ordering requisites, hardware assembling, shooting and editing video, project research, making presentation
- **Lakavath Niharika :** Circuit modelling, project research, help in ppt, supervising of demo video
- **Jaideep Singh :** Code testing, help in ppt, basic 3d modelling, assisting circuit modelling.
- **Pritam Mandal :** Code debugging and algorithm optimization, project research, making and giving presentation, assistance in hardware

Demo video





THANKS FOR WATCHING