Driver's Safety

Falling Asleep Behind the Wheel

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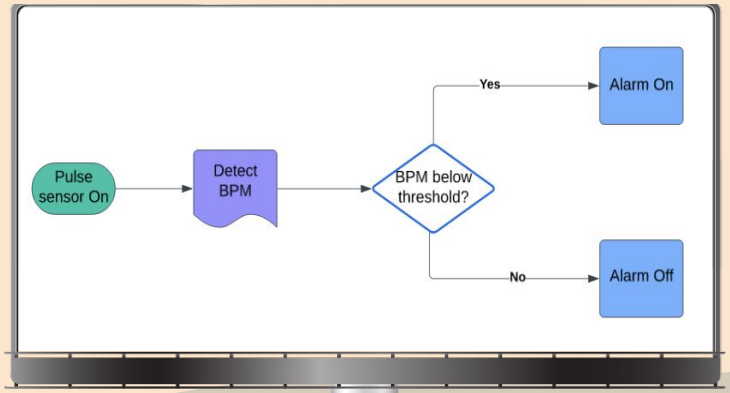
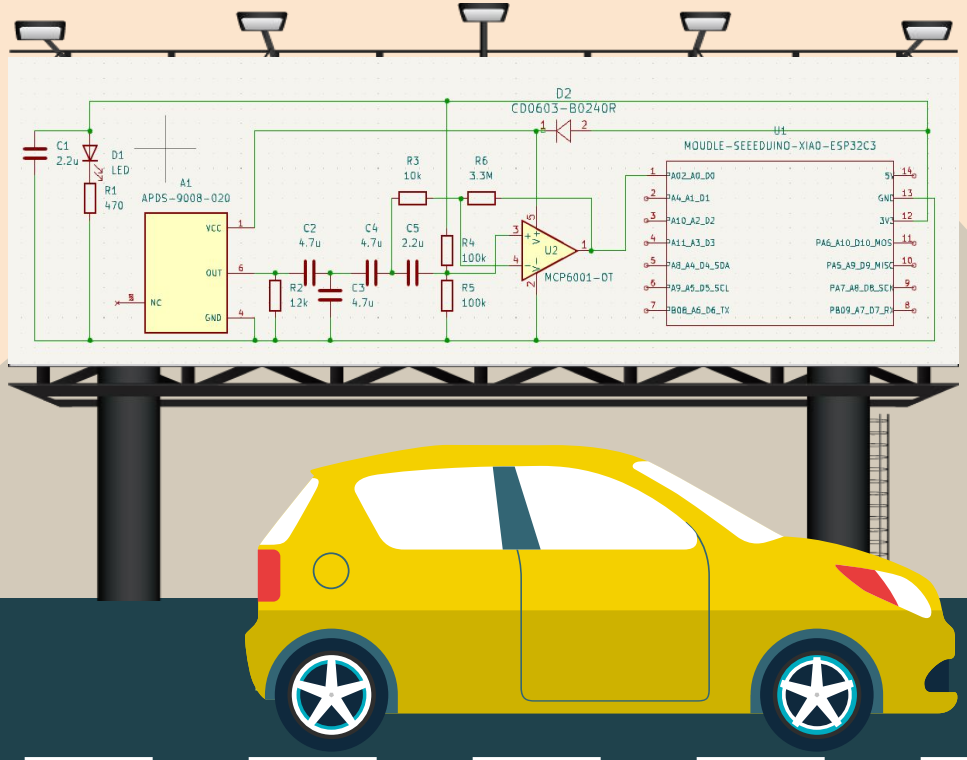
ECE 196 | 5/20/2024

Problem Definition

Drivers Falling asleep or feeling drowsy may lead to accidents which puts the driver's and others' lives in danger.

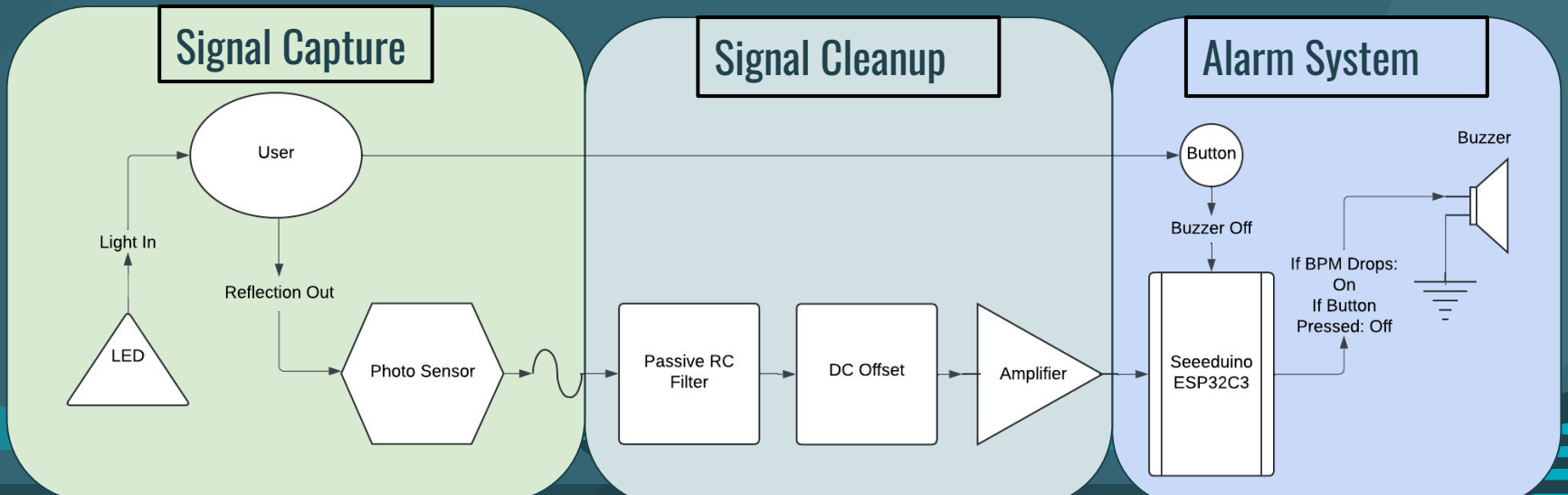
Proposed Solution





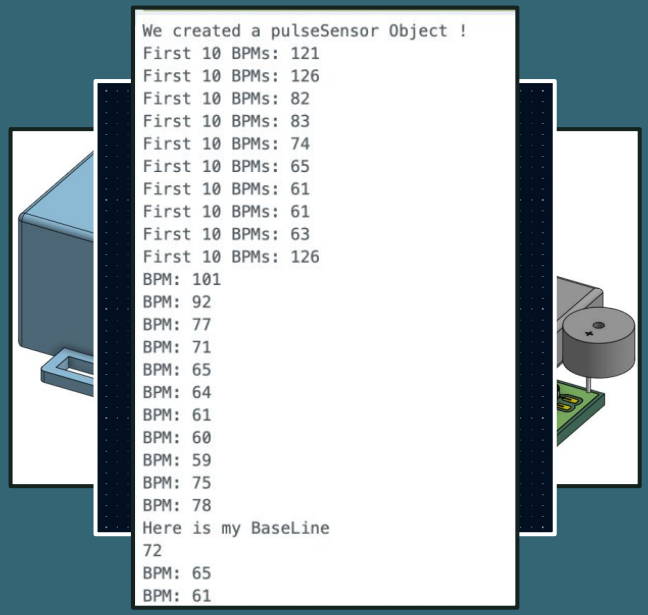
Testable Hypothesis:

We will deliver a driver pulse sensor that will be able to measure a user's heart rate. This will then get processed using an seeeduino and will alert the user if he/she is falling asleep

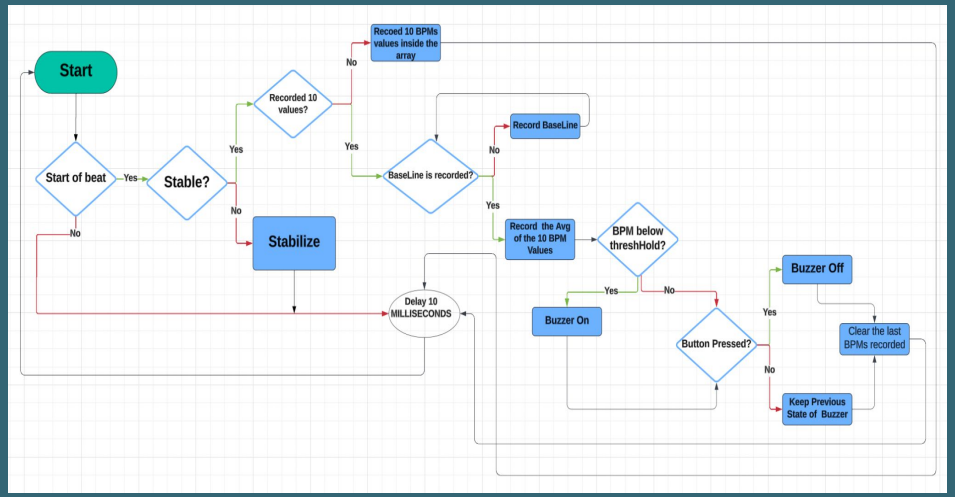


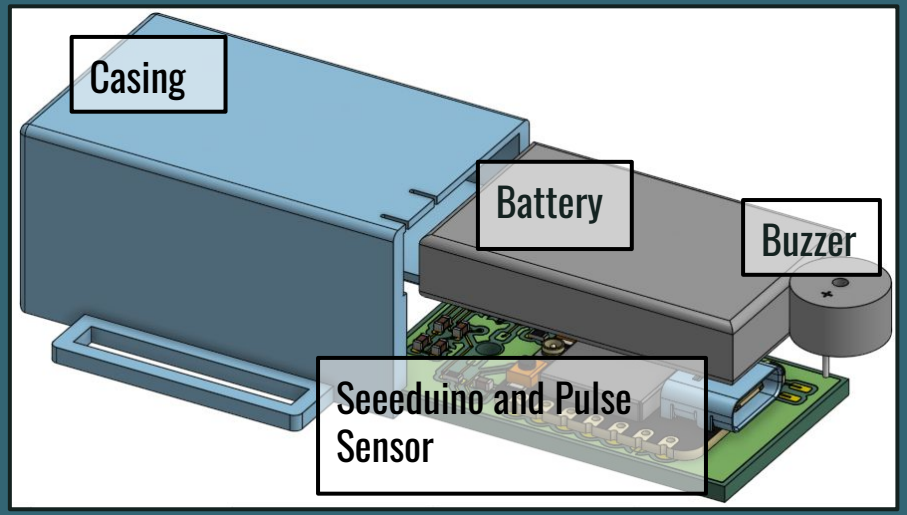
ECE 196 Final Project Milestones

Wednesday Week 5	Pulse Sensor Prototype testing with alarm
Friday Week 6	PCB and 3D printed shield Design
Wednesday Week 8	Finalized Model and Wearable device
Friday Week 9	Finalized Adjusments and Rigorous Testing



Milestones and Problems





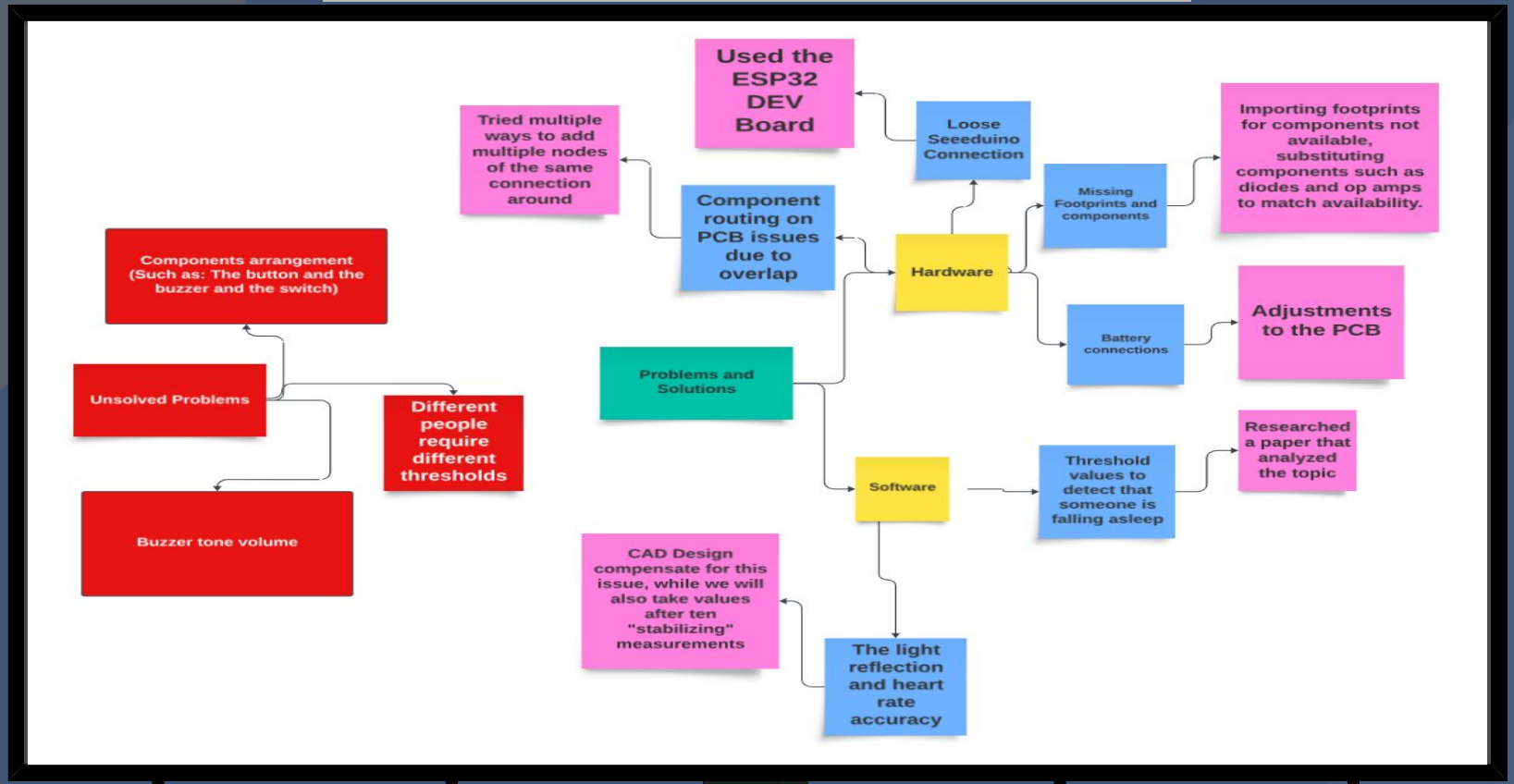
Code Technical Challenges

- The activity of the user when wearing the device might affect the baseline.
- Choosing the specific threshold of the user.

CAD Technical Challenges

- Placement of Buttons and Switch
- Preventing Sensor Interference
- Current Buzzer Limitation

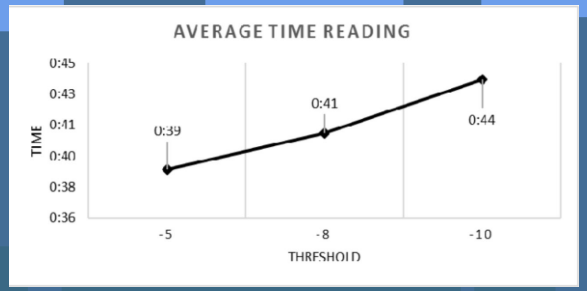
Milestones and Problems



Resources

Drowsiness BPM Research

Heart Beat Based Drowsiness Detection System for Driver

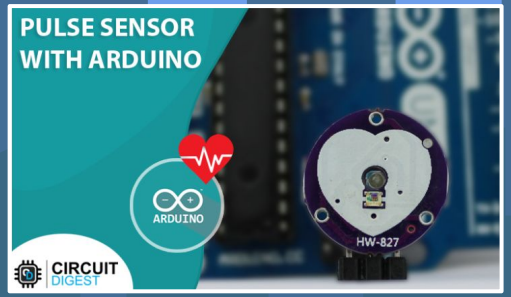


Threshold

- Presents Research on Sleeping detection
- Gave us threshold values for prototyping the system

Pulse Sensor for Arduino

How Pulse Sensor Works and Interfacing it with Arduino (circuitdigest.com)



Device Composition

- Describes How Pulse Sensing Works
- Explains How to Implement the Circuit
- Provides a Device & Code for Prototyping

Ming

Thank You!

TA

- Helped us with major parts of our project
- Answered all of our questions
- #Raise for Ming

- **Feedback**
  What did you like/dislike?
  What would you add/remove?

- **Consumer Awareness**
  Would you be comfortable using this device?

- **Expectations**
  What would you expect to gain by using a device like this one?

- **Tone**
  How would you react to a sudden noise while driving?
  Is it worthwhile to make the noise level manually adjustable?