Summary of Justification for Sleep Mask:

We chose to pursue the Sleep Mask design based on a mix of customer objectives and alternative design considerations. On our preliminary decision matrix, the sleep mask did not rank the highest on customer requirements, but we took into account the feasibility of a high-fidelity prototype, the technical expertise required, and creativity as well. Our group also discussed whether we wanted to tackle a design that would apply to a variety of situations in Lauren's life or whether we wanted to pursue an idea that targeted a specific issue. In the end we decided that we were indifferent in this regard and that the customer objectives and other design considerations were more important. Upon conducting market research for the light-up sleep mask, we found a SMART alternative, *Dreamlight* which utilizes a phone app and multiple sensors to analyze and enhance the user's sleeping habits. We discussed redesigning the sleep mask that would more specifically target Lauren's issues without being overly expensive or clunky. In short, we chose the design for which we had the most reasonable chance and legitimate plan.

Need Statement

Lauren needs a device/system to ensure her safety in dangerous situations to which she may be oblivious to because she disconnects her implants frequently for various reasons / when her implant is unavailable.

Features to Mention

- Eye Sockets
    - LED placement around the eye not directly into it
- Microphones
    - Placed on the nose
- Light-up alarm
    - Recognizes high frequencies (e.g. fire alarms / CO alarms)

Materials for Low-Fidelity Prototype

- Sleep mask
- Toilet paper cardboard roll
- 2 pipe cleaners
- Sticky notes
- 2 LEDs

Questions

- Should we consider going bluetooth-less, having it be an all-in-one system?
    - We had an idea for a dial setting that would control a timer. What is your input on this?
    - Is Bluetooth really hard to integrate for this application?
- How does Bluetooth work?
    - What hardware do we have / do we need / do you suggest we use?
    - What software do we have / do we need / do you suggest we use?

    - How can we incorporate wireless connectivity between the two devices?
- Should we look into NFC? We had the idea for tapping the sleep mask onto the phone to set the alarm.
- How dangerous would it be to light up her eyes to wake her up?
- Could the bluetooth interfere with her current device? Would that be a problem?
- Are we adding an OLED screen? If yes does this pose any threat to Lauren's health?
- What type of materials are we making the device out off
- How are we gonna fit everything into the mask?
- How to have remote power that's small? How to be rechargeable?

Design Feedback

If choosing the sounds then you have to be 100% accurate
-could say all high pitched sounds
-false-positive versus false negative
-not impossible just could be tricky
-why AI? is it a critical factor?

-Bluetooth can be done but it is not as ambitious as AI
-wake up lights are good-increase light over a half hour
-just an alarm clock-could replicate through connecting phone to this could be easy
-is the phone listening or is it something else?
-turning lights on in response to a signal you can implement that well in a small thing (and then add that to the mask)
-external listening is harder than just an alarm clock
-building something that is a switch to turn on a light, then switch to press a button independent of a raspberry pi
-start with a raspberry pi
-understand how to write code that sends a signal
-pair smoke alarm to device or phone-like connecting doorbell to phone
-could be easier than discerning different sounds
-use the phone as processor

-don't need equivalent of 60-watt bulb-it won't take much when it's so close to your eyes
-eclipse damage comes from staring at sun for so long
-not harmful for second

Research

-lookup raspberry pi zero Bluetooth
-what functions are already programmed in vs what we need to program