

## *Perceptive Sensorial*

EVERYWHERE = NOWHERE = NOW

Primary documentation:

[https://hybrid.concordia.ca/L\\_RAVELI/CART360/#](https://hybrid.concordia.ca/L_RAVELI/CART360/#)

### **The practicalities of ideation, iteration and prototype**

The main ideation was inspired by philosophical concepts by Lacan, Freud, Gilles Deleuze readings—focusing on the idea of how perception, reflection of the mirror affects the person since the early ages of their childhood. We wanted to deconstruct the concept of the mirror being static and make it more interactive, and less passive. We wanted to distort this typical human-mirror interaction by demanding information before affording the user with their reflection.

Combining movement of the mirror + LED light behind the mirror that would showcase the heart beat sensor, to make the experience more humanizing and interactive. Our project attempts to rekindle some of the magic that could occur while looking at one's own image by transcending what we expect when we look in a mirror. That is not to say that the user themselves are transcending their image, in fact the opposite is true—the use of biometric data ground the user in their bodily experience, reminding them of their physical reactions to what they are viewing. Furthermore, the use of biometric data informs the user that there is more occurring than meets the eye, forcing the user to actively consider how they feel while observing their self-image as their body's physical reaction is reflected back to them. This project will help the audience with viewing their image less passively and help users navigate their feelings, as they shift depending on the user's internal state which can reflect outwards in a manner of either mimicry, synchronization, or emotional connectedness. The user may also reflect on how their data is being used to create a new type of virtual reflection, illuminating and reconfiguring the virtual—or the individual themselves—as a continuous multiplicity.

The repetitive movement in this piece would be the mirror turning different axes (left, right, up and down), when the mirror detects the person standing and getting closer, it would stop moving and stays centered and focused to let the user access their reflection. If the person is moving, the mirror would start moving, imitating the person. To make it more of a personal

experience, we wanted to add the concept of taking biometric data by letting the LED lights behind the mirror or next to the mirror pulse on and off imitating the heart beat of a person and by using a heart beat sensor.

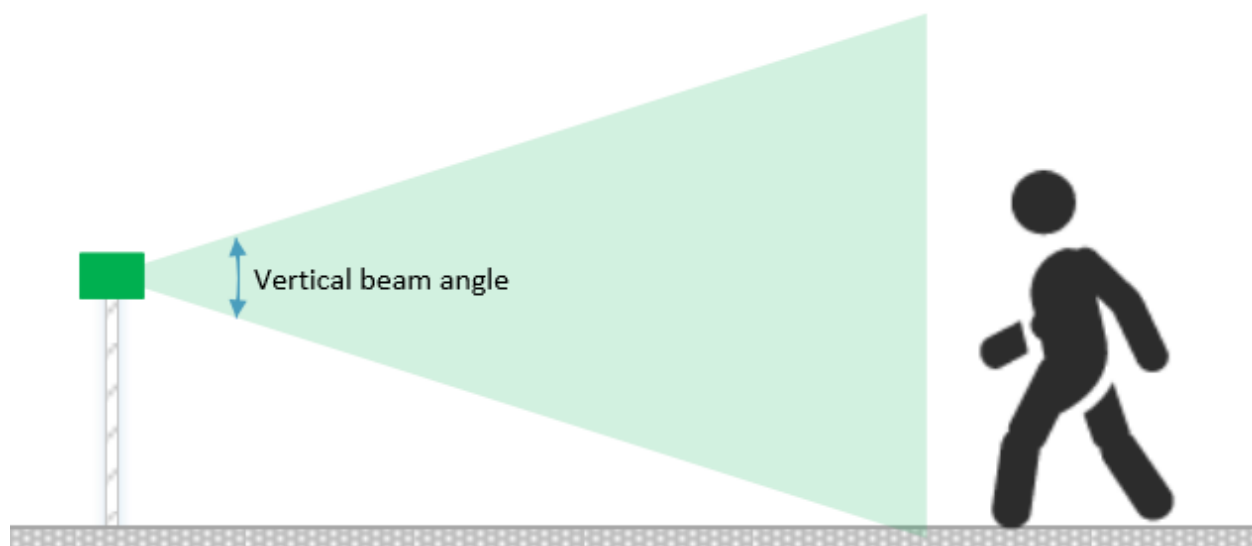
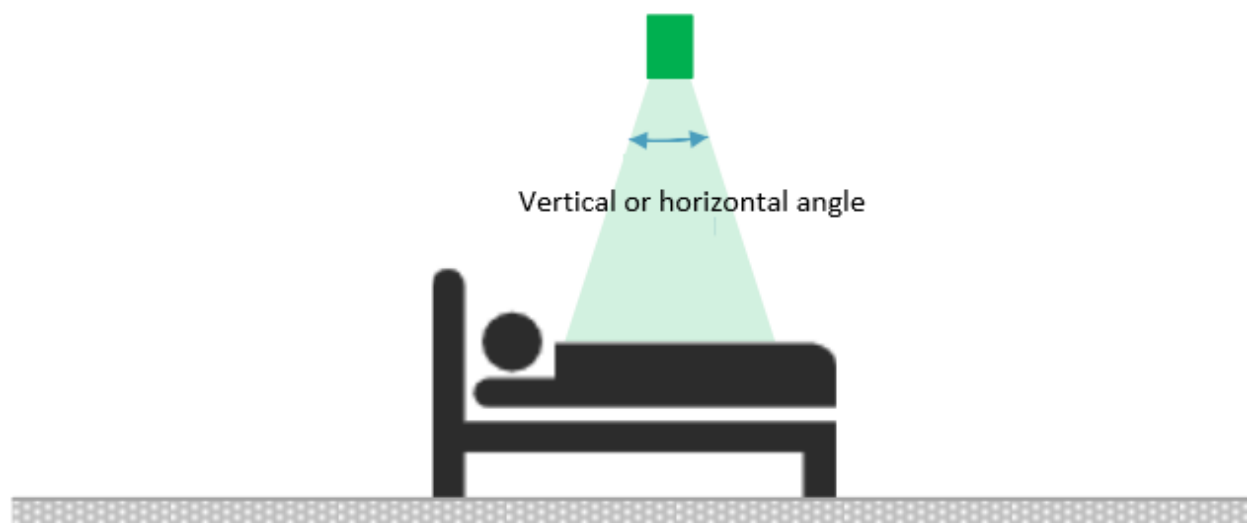
### **Technical Evaluation of Sensors and their associated Affordances**

We bought extra sensors just in case to test with whichever one we are more comfortable to use as well as to test out which one works out the best for us!

#### **mmWave\_Radar\_Human\_Presence\_Detection\_SKU\_SEN0395**

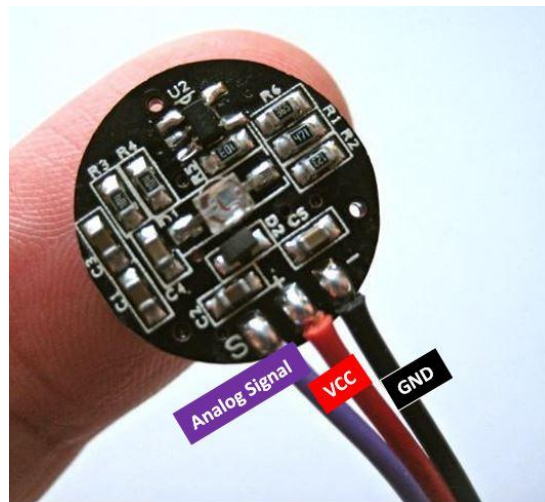
We were really excited about this sensor, however we were worried about budget wise as we might get a lot of them for this project and one was for 56 dollars. We were also worried about placement as it is not as flexible as the proximity sensor. It has to be placed in a specific way. Improper installation will affect the performance and function of the sensor. We found it complicated to understand how it works. As it has 4 parameters and each parameter consists of a distance of 15 cm. By default, when a target is detected, the delayed output time is 2.5s; after the target disappears, the delayed output time is 10s.

- The configuration parameters are selected from 0~127, as the index of the distance value in the sensing area.
- The sensing area allows configuration of 4 segments, the configuration values of the 4 segments must be configured in order from small to large, and cannot contain each other. ([https://wiki.dfrobot.com/mmWave\\_Radar\\_Human\\_Presence\\_Detection\\_SKU\\_SEN0395](https://wiki.dfrobot.com/mmWave_Radar_Human_Presence_Detection_SKU_SEN0395))



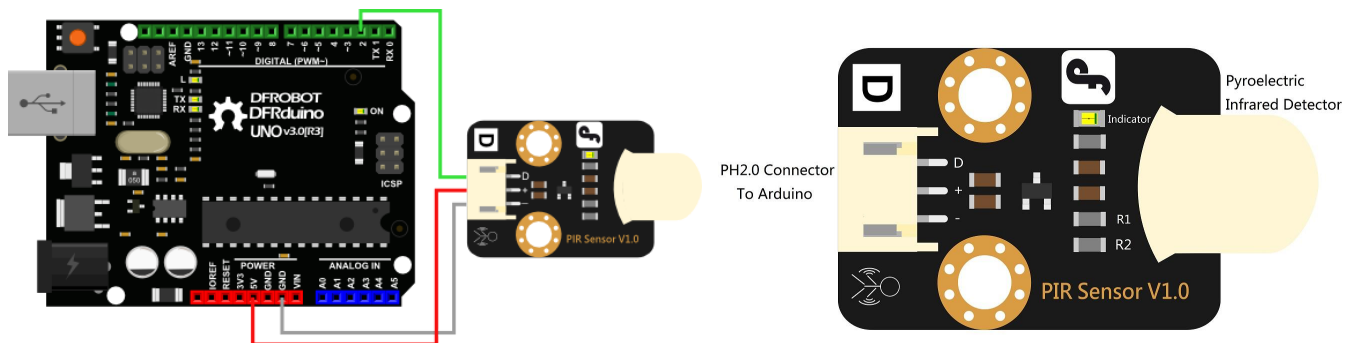
### **SENS-56 HeartBeat Sensor For Arduino Microcontrollers**

- Place finger over the heart shaped icon to read your heartbeat
- Similar to the Gravity sensor, it works on the PPG model, a finger is placed on the pulse sensor which then reflects the LED lights. The LED lights are based on the volume of blood change inside capillary vessels. We decided to go with the other sensor as it is easier to detect the heartbeat and it can be placed anywhere in the body as long as it is in touch with skin, and it also comes with a bracelet so it is either to play with and it is more interactive.



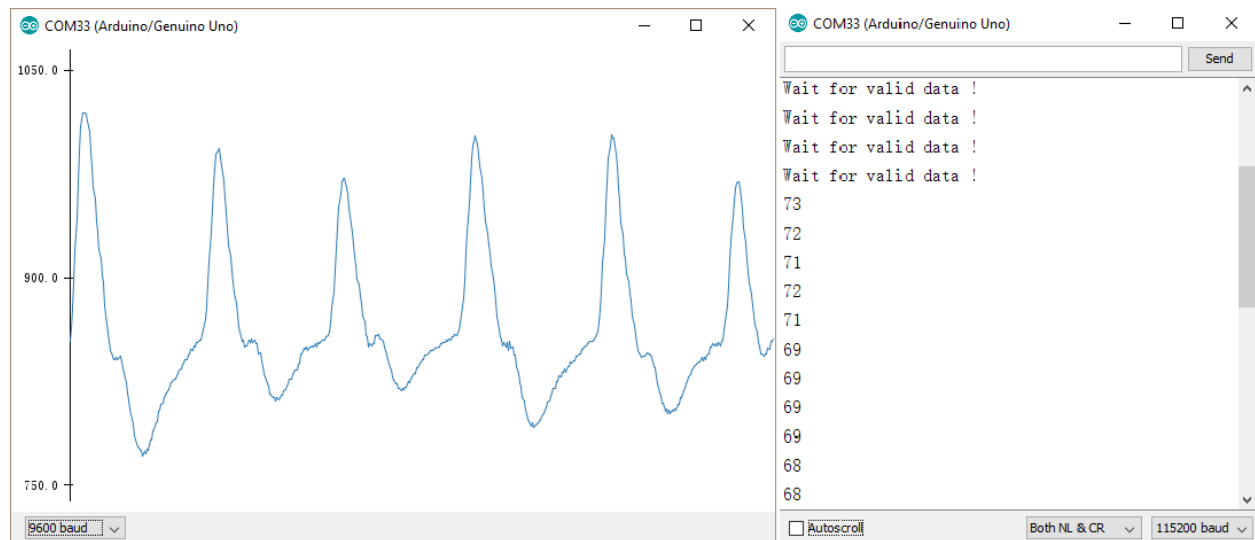
### SEN0171 Gravity: Digital PIR (Motion) Sensor For Arduino

- This sensor is used to sense motion – to detect whether a human has moved in or out of the sensor's range, and it detects up to 7m of motion, with a delay time to 2.3 seconds to 3 seconds.
- LED(When output HIGH, it will be ON)



### SEN0203 Gravity: Heart Rate Monitor Sensor for Arduino

- heart rate monitor designed for Arduino microcontrollers.
- Used to detect blood volume changing
- Pulse sensor which is developed based on PPG (PhotoPlethysmoGraphy) techniques.
- Can place it on your finger, wrist, earlobe or other areas where it has contact with skin.
- Through the serial monitor, the heart pulse is detected.
- 5V is recommended.
- Output Voltage: 0 - Vin (Analog), 0/ Vin (Digital)
- The green lights on the sensor indicate that it can detect heartbeat.



Detecting heart rate

**Has your Project’s initial intention or supposed meaning changed over the course of researching and implementing the Physical Prototype? If YES or NO – Explain why?**

Our initial idea was having a smart mirror (which is first of all hard to find) that becomes transparent once it detects someone. The user’s body temperature will inform the color temperature of the LEDs, the brightness of which will rhythmically adjust to the bpm of the user’s pulse. Without a continuous offering of both the user’s heart rate and body temperature, the mirror will refuse to engage in any interaction and will stop reflecting. After talking to Elio, it seems that this didn’t feel like interaction design, as it is not a continuous interaction with the person, it is just causing an action rather than creating a relationship between the user and the object which is what we want to do. So we decided to keep the concept of mirror, biometric data but humanizing the relationship between the user and the object by making the mirror moving imitating the human in a way until they stop which causes the mirror to stop to then give access to the mirror. Playing with the idea of “performing” in front of the mirror by applying makeup, getting ready for work for example while the mirror stays a passive and static object, we want the user to re-think their relationship with the materials they already own and easily access everywhere like mirrors which is found everywhere (homes, schools, hotels..etc) We also wanted to re-think the hand held object to affect the interaction with the mirror as we want it to be more seamless, we dedicated to incorporate a small aspect of that to the experience which is the LED lights imitating the heart beat sensor. As it is a personal intimate experience with the

object, we want it to include biometric data in some way. After working with the physical prototype, we also thought of ways in executing this work. For example, we were thinking it would be some sort of performance- the person interacting in the object will be in a dimly lit room to make it more personal and to make the LED lights contrast well with the mirror.