# inter-macy

by bryan and fizah

the invisible interstice between human relationships.
personal space can be defined as the physical space
surrounding a person. how you feel when someone invades
your personal space can only be known to you. how your heart
rate reacts when someone accidentally brushes you, others
won't know. now, what happens when this intimate feelings can
be seen by others? haven't you also ever been curious to know
how someone feels when you touch them?

When we first came together to come up with a concept, we established what outcome we each would like to achieve. Bryan was interested in making wearable technology whereas Fizah wanted to look into pulse sensors. From that, we combined what we both wanted to achieve; wearable technology that reads your heart rate.
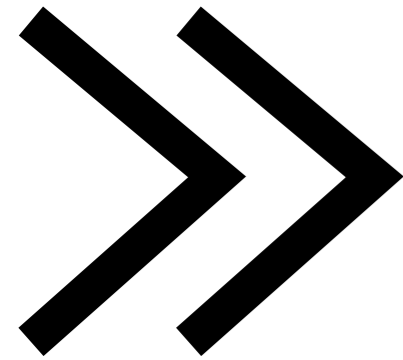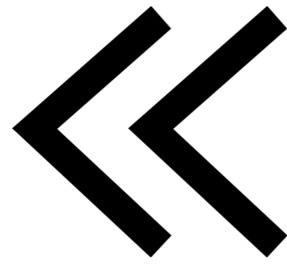
After some research and brainstorming, we decided to make a wearable glove that contains all the inputs with an LED output on a sculpture. Initially designed to be wings that participants wear, the artwork eventually evolved into a sculpture after many prototypes and testing.

concept

Centered around human relationships, the project discusses the intimate physical interactions between people and bringing out a personal, invisible nature of human beings, heart beat, out into the open.

Heart beat, even though an important function in our body, is kept hidden from the world only for us to know (unless you're in the hospital with a heart rate monitor).

The physical interaction is controlled by the use of the gloves, thus focusing the form of interaction only to the touching of hands, thus closing up the interstice between two people when they place their hands into the box.

The human-to-human relationship is then brought into question with the display of how their heart rate changes based on their physical interaction with each other.
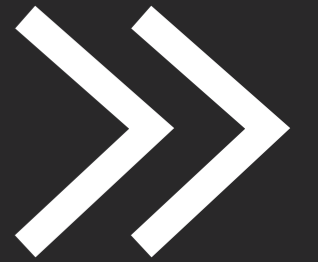
"blobby" the light sculpture

Blobby is a fuzzy little creature that is very sensitive to people. His sensitivity is attributed to his special ability to read people's emotions by listening to their heart beat. When he hears your heart beat, he glows and pulses to your heart rate. But, Blobby gets extra sensitive and starts to glow colourfully when he witness physical intimacy, especially seeing two people hold hands.

wearable technology

In order to activate Blobby, you must wear his special gloves. The glove contains a pulse sensor that reads your heart rate, photocells to read your hand movements and also, conductive fabric that senses when both hands touch.

portable

Designed to be portable, the structure of the light sculpture is kept compact and relatively small for mobility. Because of its portability, the artwork can be placed at any locations allowing it to be situated in high traffic areas where people can interact with people they know and even strangers.

heart of the city

An interactive sculpture created by Brazilian artist Anaisa Franco is a visualization of your heartbeat on a three-seat chair moulded in the shape of a human heart. The sculpture lights up in vibrant neon lights, which pulses in the rhythm of your heartbeat.

Image from: http://www.anaisafranco.com/heartofthecity

rafael lazano-hemmers's pulse series

The exhibition features 3 different artworks; *Pulse Index (2010), Pulse Tank (2008) and Pulse Room (2006);* all three making use of pulse. In Pulse Index, it records participant fingerprints as well as heart rate, which is then displayed on screen. Pulse Tank turns your heart rate into ripples on illuminated water tank. Pulse Room features hanging light bulbs which pulses to your heart rate.

Image from: https://hirshhorn.si.edu/exhibitions/rafael-lozano-hemmer-pulse/

« artist references and moodboards »

Remember Me Concept Art by Fred Augis

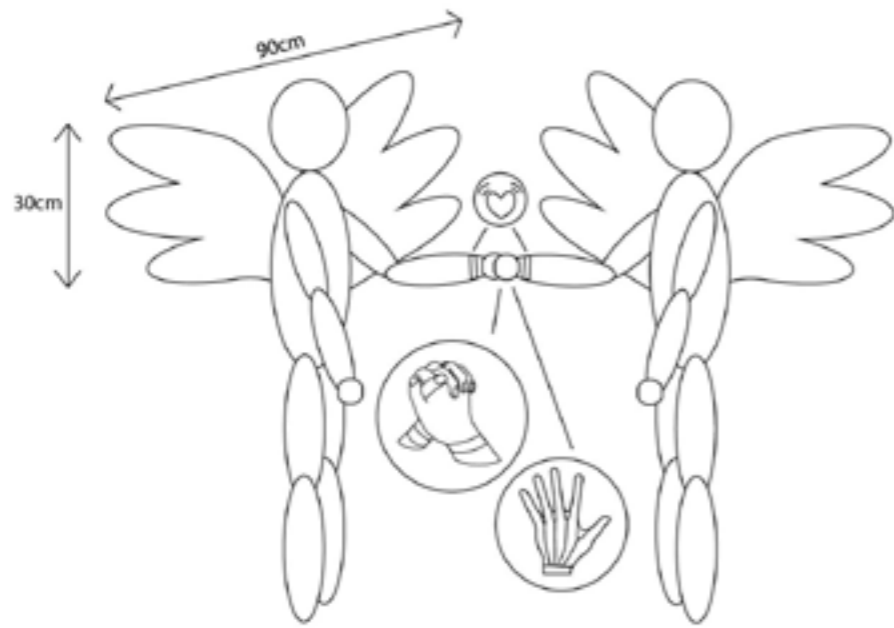Innovative Luminous Gloves

Wireless, wearable mouse

Worbla automail...

THE KOBAKANT DIY WEARABLE TECHNOLOGY DOCUMENTATION
by Plusea

Mi.Mu is a non-profit startup developing wearable...

first sketch and prototype

Our original idea was to go all out on wearable technology and thought it would be fun to create wings as the light sculpture. From the body storming exercise, we realised that wings weren't effective as participants are unable to see their own wings and that they have to turn around to see it. This negates the focus of the interaction between the two participants as they will be too focused on their own wings.

Taking into consideration that we only managed to make one set of wings for one person, we observed Syahrul, our tester, interacting with his surroundings. Hence, we had to figure out a way to control what or who he interacts with.

For a more detailed look on the body storming exercise, please visit this link: https://oss.adm.ntu.edu.sg/bleow001/body-storming/
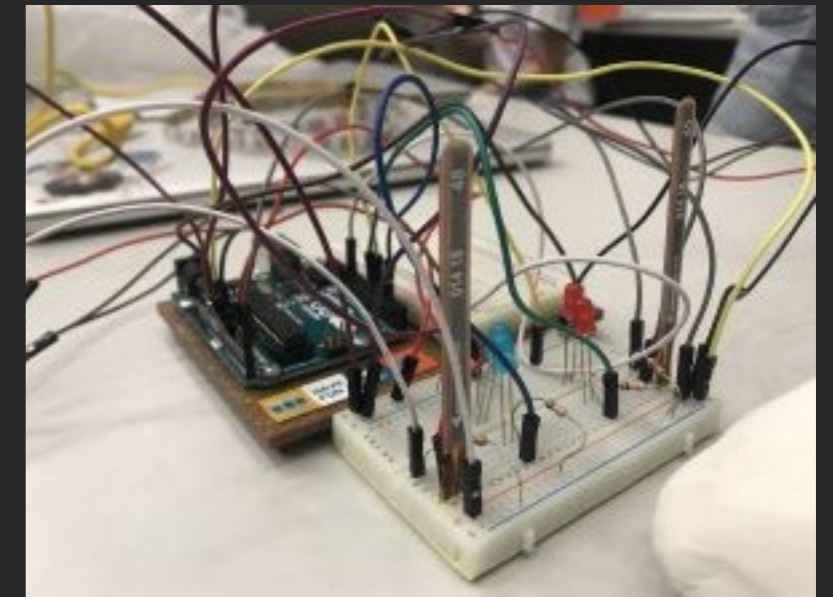

second sketch and prototype

For the mid-term review, we worked on building up the circuit and familiarizing ourselves with the inputs; pulse and flex sensor; as well as outputs; LED strips. Many trials and errors were made at this stage.

The pulse and flex sensors were working fine on its own but when combined, it started glitching. Hence, we decided to simplify things by replacing the flex sensors with photocells instead, an easier and cheaper alternative.

When testing, what we noticed was that participants did not intuitively interacting with one another, even when both were wearing the gloves. We had to prompt them to touch each other. Thus, one of the biggest issues we face was how to ensure that our participants know that they have to interact with one another. After some discussion with the class, someone suggested limiting the hand interaction within a box which we decided to implement.

For a detailed documentation of the mid-term review, please visit this link: https://oss.adm.ntu.edu.sg/bleow001/mid-terms/
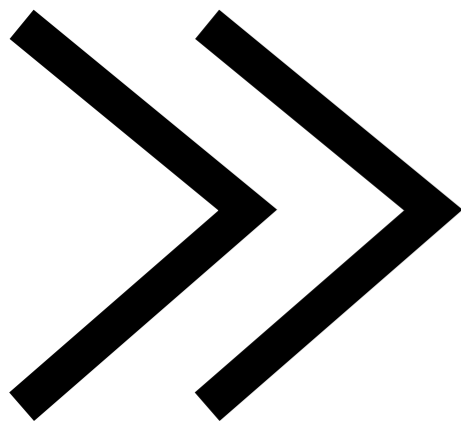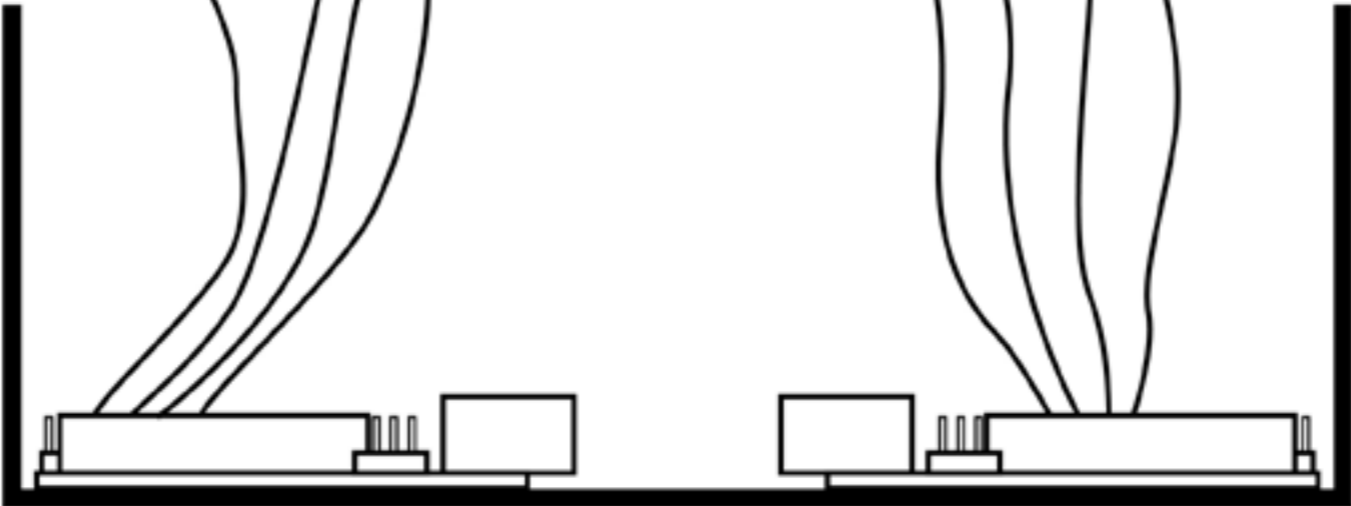
final sketch
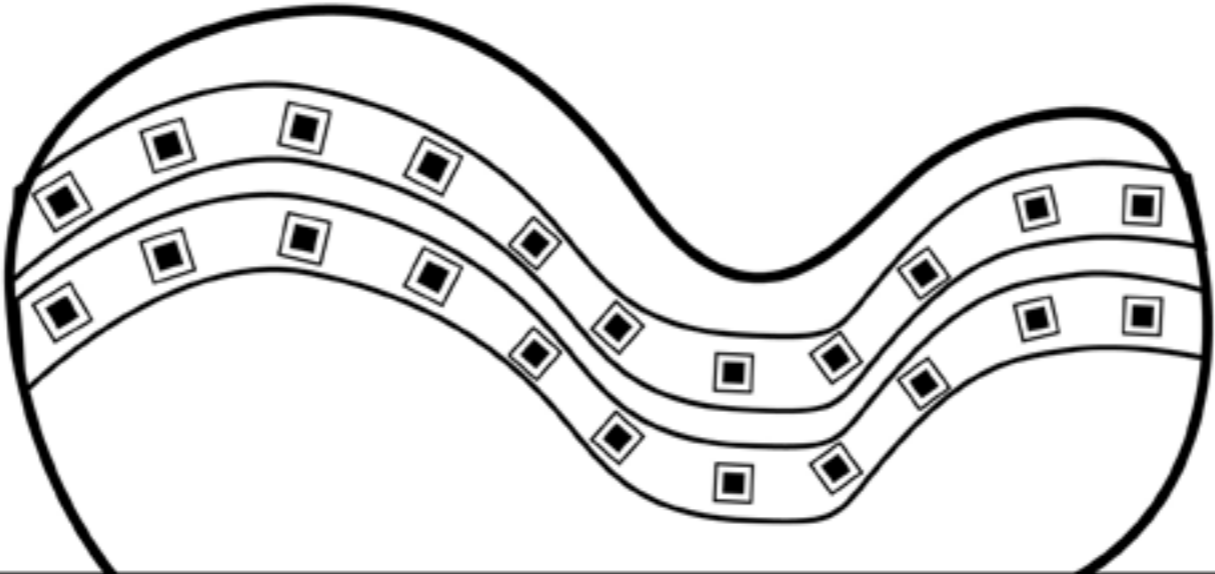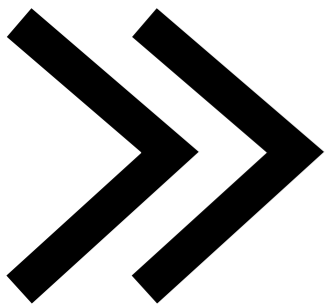
blobby

led strips

covered box

hand 1
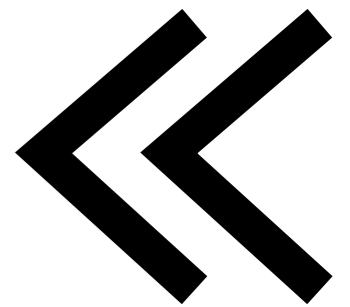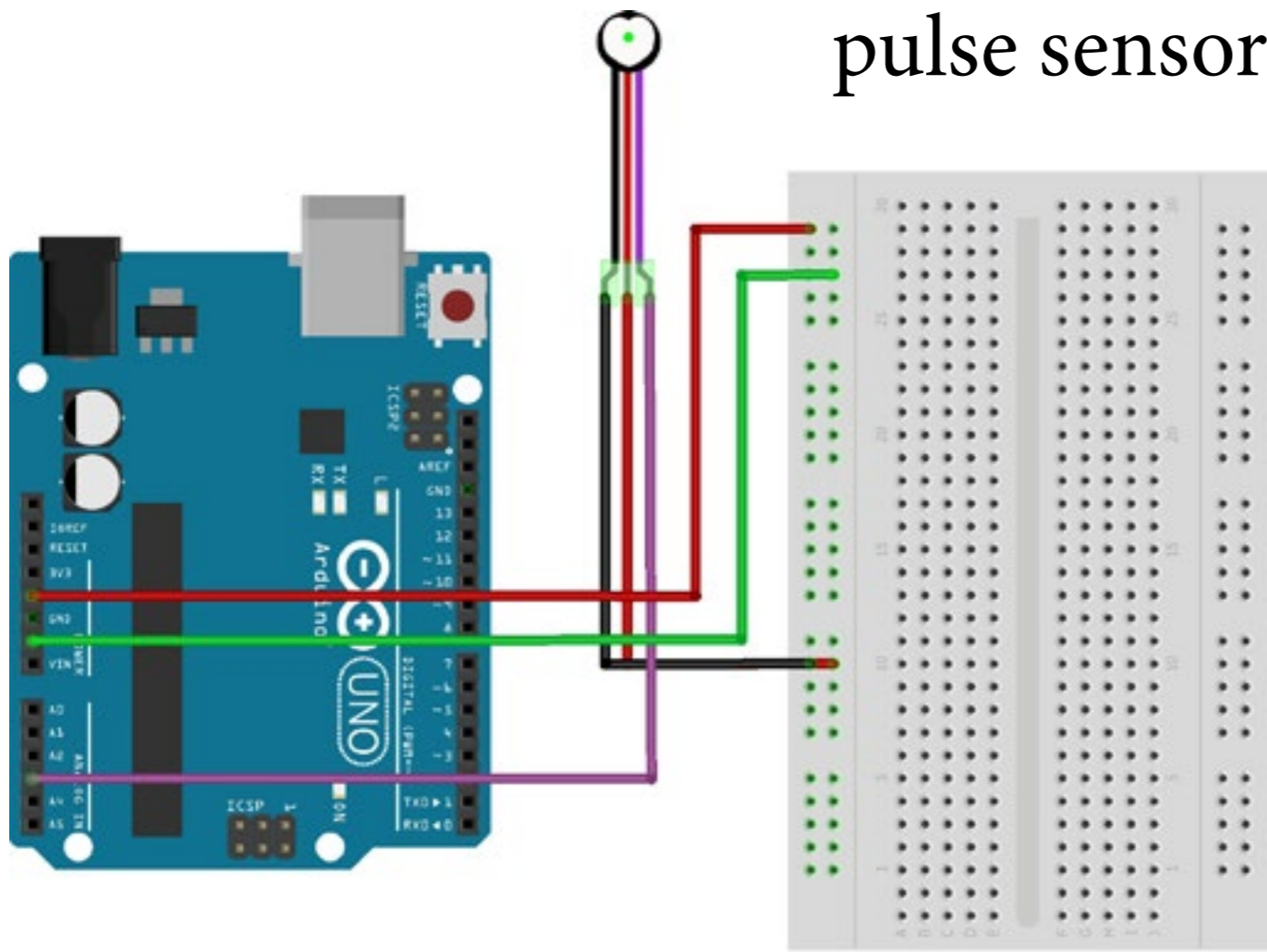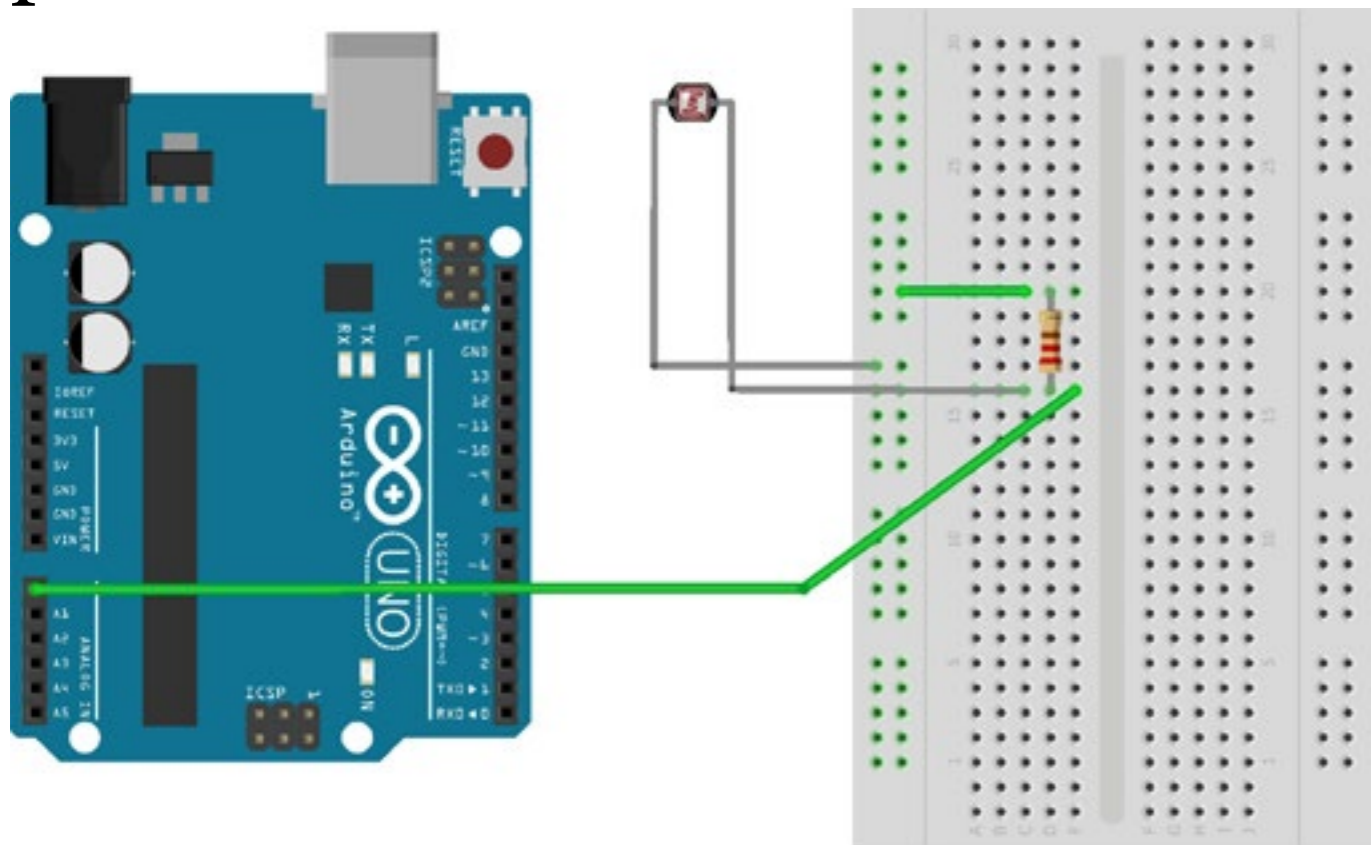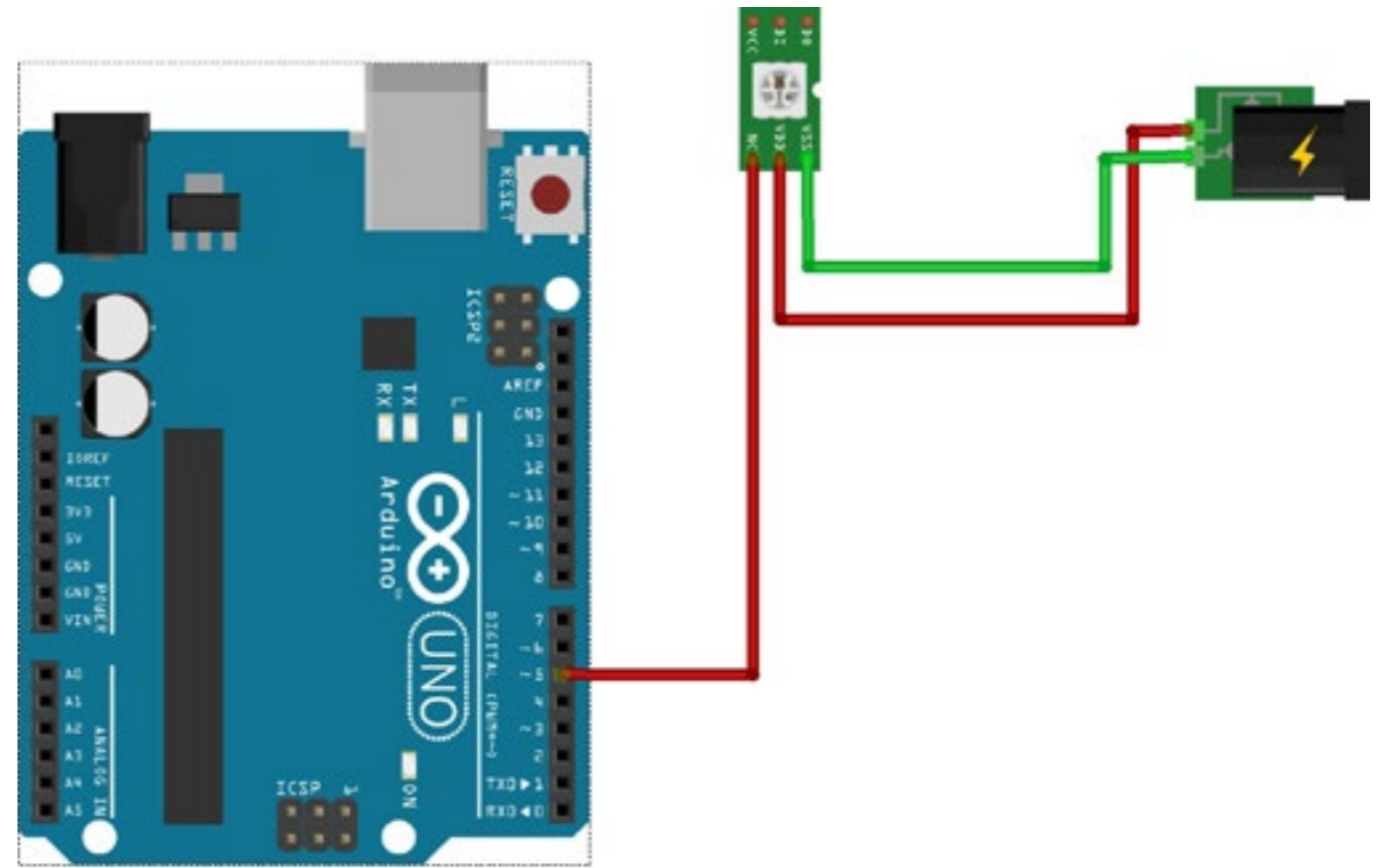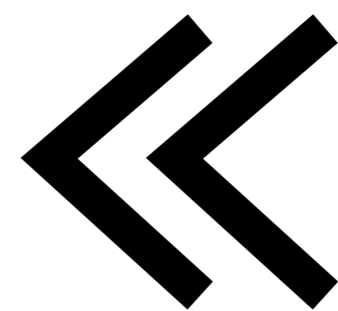
hand 2

arduino 1

arduino 2

final artwork

pulse sensor

photocell

led strip

circuit diagram

conductive fabric

connected to
conductive fabric

connected to
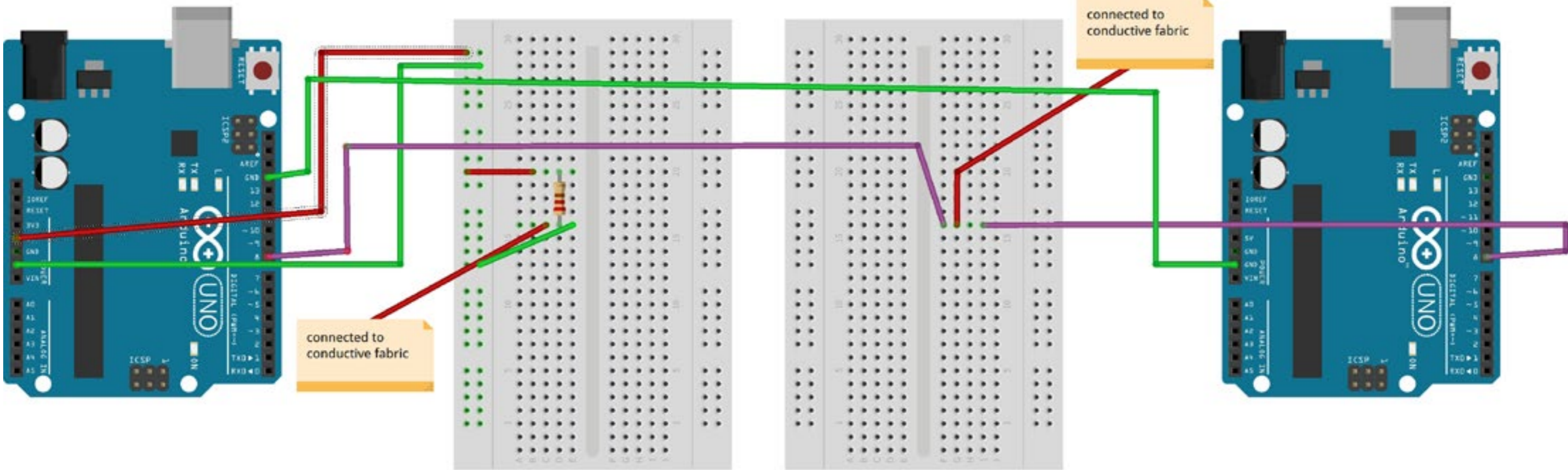conductive fabric

fritzing

>> interfaces

As an interactive installation, our viewers are essentially our participants. Without them, the artwork will remain at a standstill with no variability to the artwork. When placed into the context of the Continuum of Interactivity, we will place our artwork in the third quarter towards interactive rather than passive. Our participants have somewhat of a "control", we use the term control loosely because you really can't control your heart rate all the time right? Nonetheless, our participants interaction with the artwork by putting on the gloves and being able to witness the visualization of their heart rate creates an interactive experience.

In terms of interface, one of our struggles was how do we make our participants take that leap of faith to put on our gloves and also, making it easy for them to take it on and off. Naturally, when people come across a new interface, they tend to tread carefully. From our experience during the testing, participants got scared when they see wires hanging around, afraid of breaking something. Thus, we had to ensure proper cable management and coverage so that participants are willing to take that leap of faith.

However, we struggled with finding the right gloves. With many wires and sensors attached to the glove, it makes it very fragile. Finding the right material that ensures the wires and sensors remain intact while making it easy to put on and take off and also tight enough for the pulse sensor to detect your heart rate, was tedious. If we were given an opportunity to continue this project, we hope to design a glove that can meet all this condition.

>> reflections

bryan
@bananaleow
(in charge of coding and circuit)

Initially, we had a space too broad for any meaningful interaction within our artwork. What really helped us is when we limited the interaction which made the interaction and intention clearer. I think its how we want to limit everything else but the interaction that makes a project interested. I also learnt that anything that requires wearing is risky and that participants usually don't approach such works. As that is the basis of our concept, we cant change that, but can only encourage people to try. I learnt that in making wearables, we need to make it easier for users to get in and get out so they don't feel like they will break something. Overall, the lessons on interactivity (especially when the class do a discussion together) opened my eyes a lot.

In terms of software, I really familiarised myself with Arduino a lot through this project. It is the most intensive Arduino coding and wiring I've ever done (and I thought it was supposed to be simple but it is not!) We also encountered a lot of obstacle in building as the Arduino always glitches for no reason when too many things are connected. However, we managed to solve the problems which was good. I am grateful for such opportunities to learn so much.

fizah
@fakepizza_
(in charge of circuit and final documentation)

Even though this wasn't my first time working with Arduino, it was the first time creating a project with it. Thankfully, being used to Processing did help in understanding how to work with Arduino. To be honest, I'm not exactly the best in coding, so it was a bit of a struggle for me. Thankfully, with Bryan around, he managed to figure out the foundation of the code and I was able to learn from it. I would consider myself to be pretty weak at coding, so over the summer holidays, I'll do my best to improve. Hopefully, in the future, I will also be able to code from scratch.

One thing I learned from working on Inter-macy is how important prototyping is. Perspective can change after going through prototyping and letting people figure out how to work it without instructions. As a designer, we think this is how we envision people would react, but sometimes, that might not be the case. Understanding user perspective who aren't aware of how your project works is important. Thus, to relay your intended message across seamlessly, creating an interface that is user-friendly and easy to understand is important.
Other than that, I think I learned alot from the Continuum of Interactivity and understanding the different forms of interaction. It has helped to design our artwork, ensuring that our artwork is not too passive. Overall, it has been a really fulfilling project, even though, tedious. During the presentation, it felt really heartwarming to hear participants say that the artwork invoked certain emotions. As a designer who hopes to create social or environmental related pieces, it meant a lot to me that my message was sent.

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inter-macy is an interactive artwork created by Bryan Leow and Norafizah Normin for the School of Art, Design and Media's Interactive 1 module taught by Ng Wen Lei. It is a play on the words interstice and intimacy.