Cart-360
Synesthesia
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github URL:
https://github.com/dookrik/CART360/tree/master/FINAL_ASSIGNMENT_THEN

Think of a context and an environment where you would like to intervene. Where will you present your project? Who is it made for?

I think that there could be changes made in the medical and entertainment field. These could use some improvements and new ideas. I think there could be more devices made for people with sensory disabilities as they often end up outcast from certain activities. Take for example deaf people who struggle in certain environments, I feel as though there is more that we can offer for them. I think that there is quite a lot of potential in exploring how we respond to sensorial input to create new ways of perceiving our environments in ways that we may not be biologically inclined to do otherwise. As humans we are quick to adapt to our environment and this is true for sensory deprived people. Although losing a sense can make their lives a little more complicated, for those born with that disability they do not seem to struggle because they have found ways and solutions to get around their obstacle. Also maybe there is something that we can do to help improve the social implications of these people who often get left out of certain community activity simply because there are any adapted activities that cater to their needs. By creating this device I am hoping that I can bridge through the sensory differences between us and make a more enjoyable, enchanting experience. Any sense can be exchange and translated into a new language because we are human and we are excellent at adapting. I wish to present this to both sensory deprived people and the sensory abled maybe a street display like an installation where people can interact together.

Think about the kind of relationship you wish to foster between your users and the artifact or installation. How can you use your project to destabilize the users and make them reflect on themselves, their environment and society?

I think I can make people empathize with the issues or obstacles that sensory deprived people face by making them experience what it is like to be deaf or blind. If I can manage to put them in other people's shoes maybe then could I get my point across. I can display my prototype by depriving people of their sense to render them like deaf people and allow them to explore the experience of wearing my device. It will take time to adapt but I will make it logical so even if you aren't deaf you can still enjoy the added senses of the device. I think finding some sort of middle ground between the senses they can experience is also important because it will help people interact with one another in new ways. So to give the tools necessary to be able to imagine what it would be like to hear and or to give them a new way of communicating and translating sensations into ways that make metaphorical sense to them. I think that this can definitely be an eye opening experience for anyone. It is certainly unusual and cool to be able to feel sounds or taste visions, etc. I'm especially interested in sharing a synesthesia approach to this project. Being synesthetic myself I think that it could help people who have less sense, it may be unusual at first but people adapt and they thrive. This could definitely challenge the way we think about our senses for a lot of people even vision is compromised so touch would be their only way to navigate the world.

Think about the notion of empowerment. Is your artifact really helping or challenging its users in any way or is it just another psychological prosthesis?

I think that having a tool available for sensory deprived people is definitely a must and a bonus to enhance their daily lives. Having a tool that can convert your surroundings into a language that you can understand is mind opening and definitely a positive experience. Hopefully this device will change the way we perceive sensory deprived people without us treating them as less or take pity on

something that they feel they can do just as well as us. It's important to highlight how giving new tools isn’t to look down on but to give them something extra, which they are free to decide to use if they so please. It can definitely help deaf people feel more comfortable and integrated with social events that aren’t restricted to the senses that they have. I am hoping that I can empower the sensory deprived that they do not have a constraint and that there are ways to work around this. The goal is also to change the perception that sensory abled people have of sensory deprived. Our senses seem to be interchangeable and since we have five of them there is always some new kind of way that we can interact with the world and others. I believe that any sense can be changed to mean something new, they are languages of their own and if we can’t communicate through one surely there are other options. By highlighting this it will establish a middle ground between these groups of people and allow for harmonious more empathetic relations.

Think about something meaningful. What are you trying to tell us with your project?

I am trying to raise awareness to the causes of people with sensory deficiencies. I think that society as a whole can be quite mean and even condescending to these being by underestimating their other abilities. My device will not be so straightforward, the goal is to enhance the senses that they already have to simulate another or to even out the playing fields so to speak. I am making some kind of wearable tech that will utilise input from their environment and transform it into a sense that they do have in a way that, when combined with one another can achieve a new way of ‘’seeing’’. These glasses are made for deaf people so that they can experience sound through color and warmth as well as tactile output such as vibration to recreate certain frequencies. I think the objective is to really play around with the sensorial world and to use them in combination to mimic and replace other in a metaphorical or technical sense.

Similar project research:

wearable:

There is a device out there that allows deaf people the experience to read what other people are saying. This is an add-on that someone would attach to a pair a glasses and in turn would project words onto the glass, enabling the user to read sounds visually. This gives real time closed captioning for people who are hearing impaired. Theirs is still in their prototyping stage but the technology seems to be similar to the google glasses. This device is similar in ethics to my own by allowing deaf people to understand people by providing them with captions of what they are saying. This is well and all but I can assume that it comes with quite its problems especially in this multilingual world. The device would have to constantly adapt the the changing human lingo not to mention how annoying it would be with people exhibiting accents. It would be embarrassing to come across mistranslated words. Mine on the other hand does not attempt to describe what people are saying since many deaf people can read people's lips this concepts seems redundant. With the use of colors and vibrations, creating a sense of 3d mine would only allow the user to be aware of sounds of certain amplitude which are happening in real time around them. It will be basic but complex enough to allow the user to learn what colors mean depending on what they are faced with and to notify them of which direction the sound is coming from by providing vibrations around their skull. I think their device diminishes the capabilities of people with sensory deficiencies. They are capable of much more that we think they can and it is important to give them the respect they deserve.

Source:
https://www.smithsonianmag.com/innovation/teen-inventors-create-live-closed-captioning-glasses-deaf-180957155/

embedded wearables:
The cybernetic eye. This is an advanced technology and I don't expect to be able to recreate this but there is a device that is implanted in the skull that translates colour into frequencies. This device is found on a man called Neil Harbisson. He uses this device which acts as an eyes to read the different colours and processing it into a certain set of frequencies into his skull. He can even hear ultraviolet which is an

interesting skill considering that certain UV rays are actually dangerous. This is a man who has learned to uses this device and effectively made it part of his being. He and the device are one, this is amazing and shows how anything language can be learned including the sensory languages that most of us take for granted. This device is significant to my project because it utilises the same principals of synesthesia and incorporating different senses to fill in the task of other and the effects are often times successful and quite surprising. There seems to be quite a market in successfully transforming or enhancing a sensory organ to perform another task. In my case my device would be out putting colors and frequency combine to create a language that the user can eventually learn and interpret with ease as they become used to it. I don't think that I can compete with the medical aspect of this cybernetic eye but I can definitely create an interface that one can learn and use to their advantage. The idea is to give a tool for people who need it and can learn to use it to enhance or enable them to perform certain tasks.

Source:
https://www.ted.com/talks/neil_harbisson_i_listen_to_color#t-583401

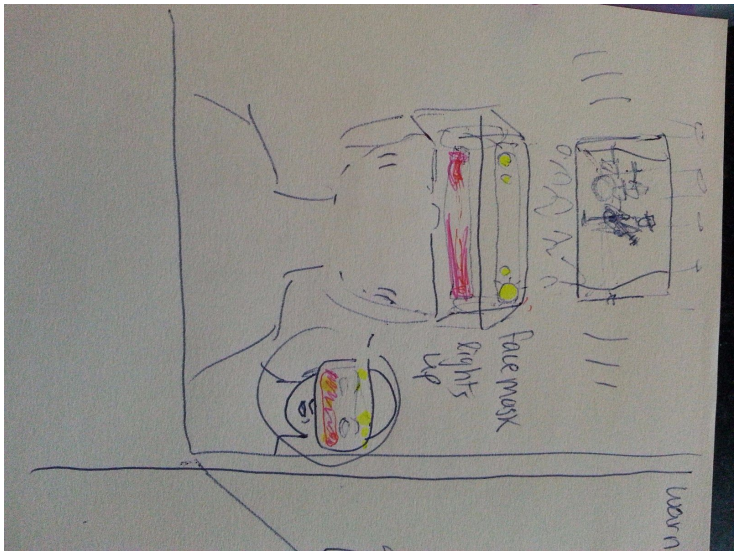
Portable utility device:
There is a product that existed since 2007 called tooth tunes toothbrush. This is an interesting device that uses sonic vibrations to simulate frequencies. This toothbrush can play a variety of songs which come out not only comprehensible but clearly to the user. allows the user to feel the vibration that one would normally feel in an electric toothbrush and convert it into sound via vibrations which resonates through their teeth, their jaw and into their inner ear. The result is a crisp sound that travels directly into the person’s skull. Although this toothbrush is not directly meant to target people with sensory disabilities it does highlight an important aspect of the different uses of of senses. I think I can do something similar without the need of inserting anything into anyone’s mouth. This way my product will be hygienic, reusable and compatible for all. My product will be interesting not only for its ability to recreate frequencies through physical vibrations but to allow detect from which angle the frequency will be coming from. This will effectively create a surround sound

ambiance. There is a lot of potential in using touch as a sensory communicator because most people have nerve endings in there skin. It is effective for deaf and blind people in recreating an atmosphere for a sense that they are lacking. It can even be, in the future, some sort of embeddable device that would go under the surface of the skin allowing for a closer contact to the jaw bone… Or maybe even something that replaces wisdom teeth, a commonly removed bone.

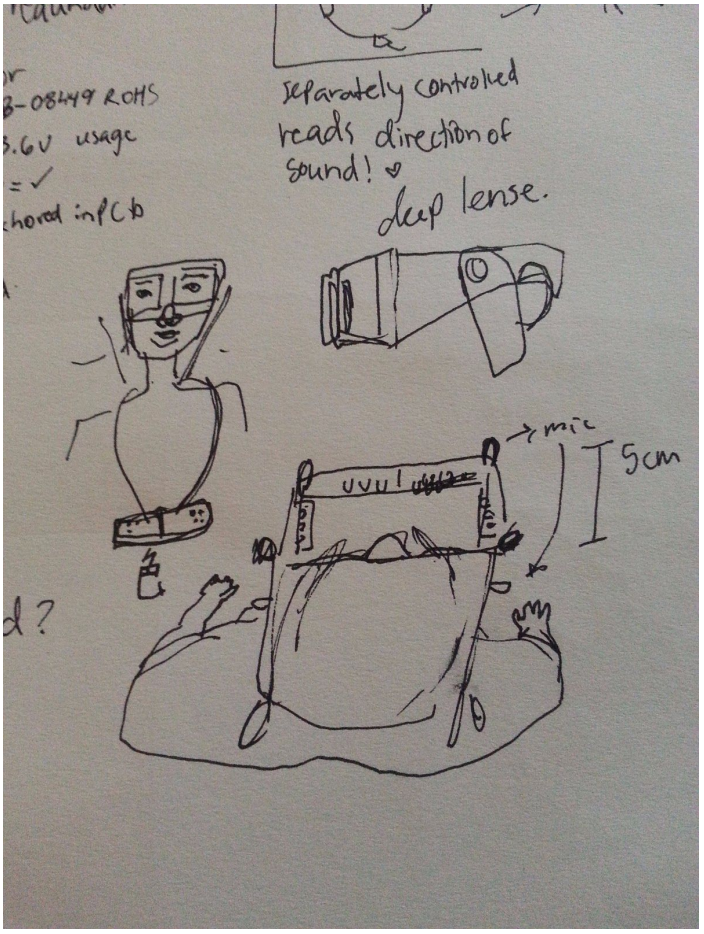
source:
http://www.dentistryiq.com/articles/2012/10/new-tooth-tunes-music-in-your-mouth.html

Warning device for street roamers.

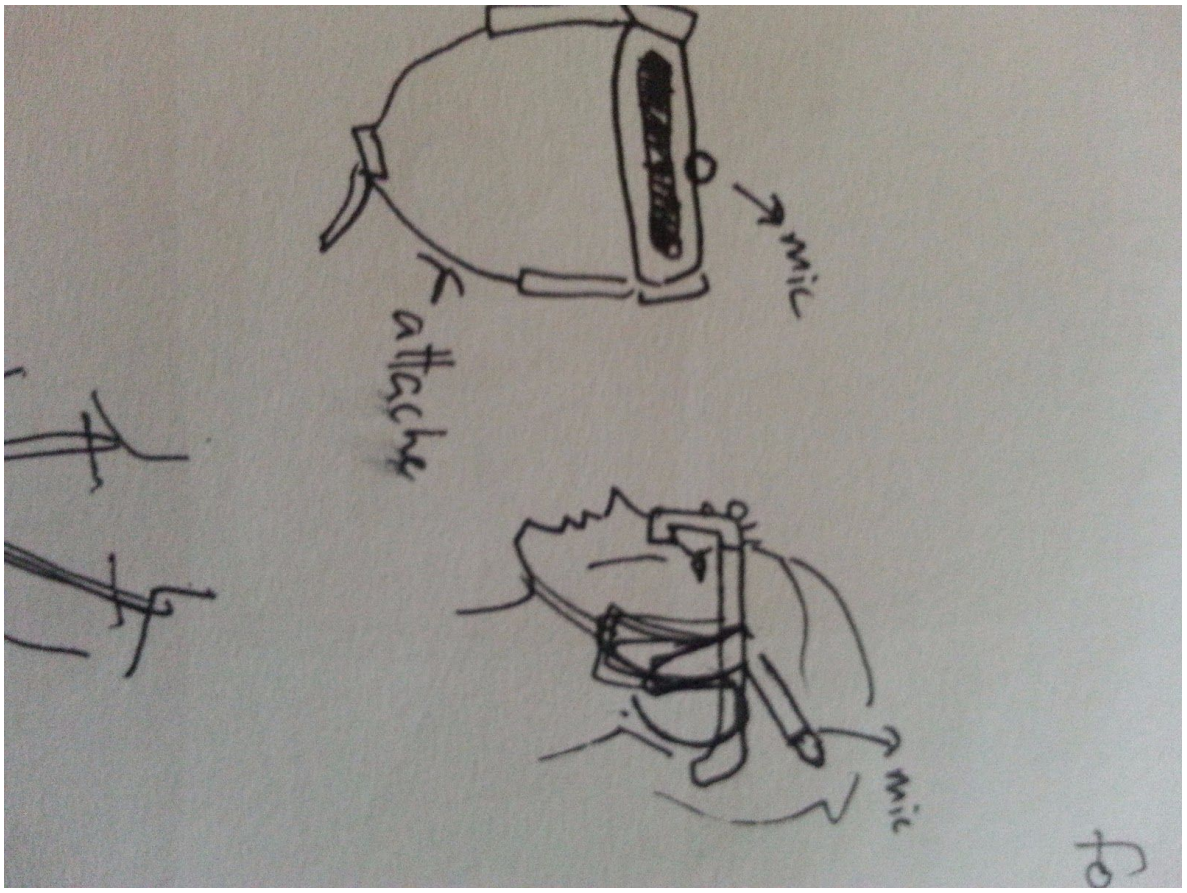
Echo location device.



Color response to a concert.

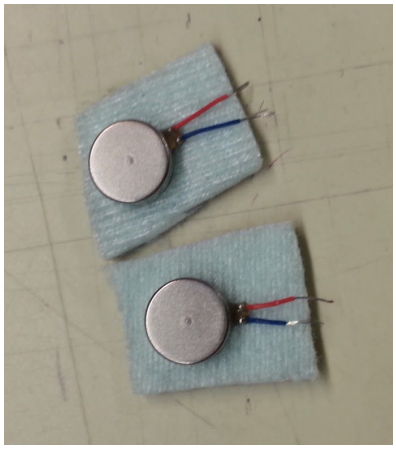


Early prototype.



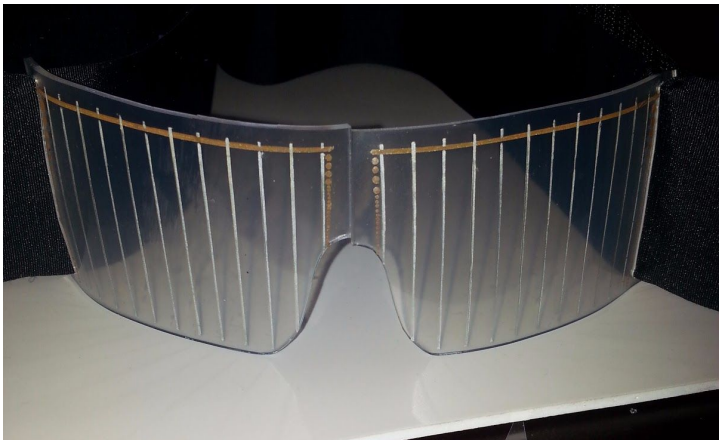
Basic look of the device.

Documentation images process:



Added padding and made the structure sturdy by soldering wires and glueing them to the fabric.

Failed got a waxy appearance...

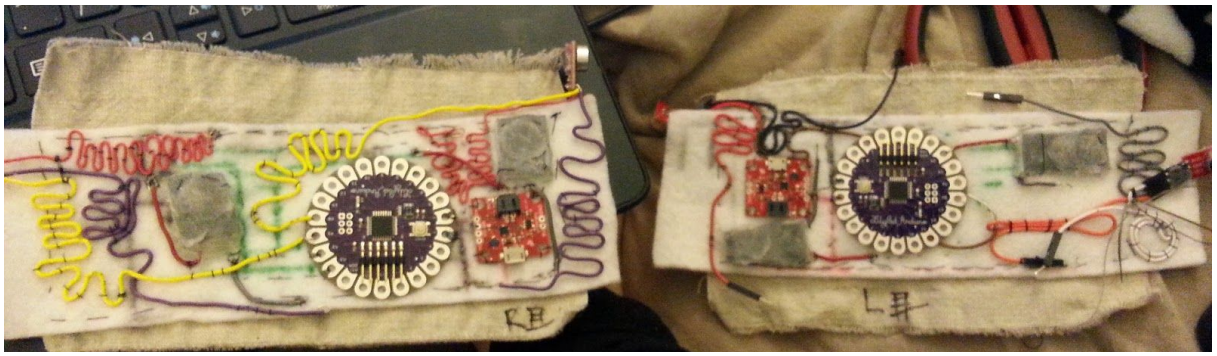


Success!

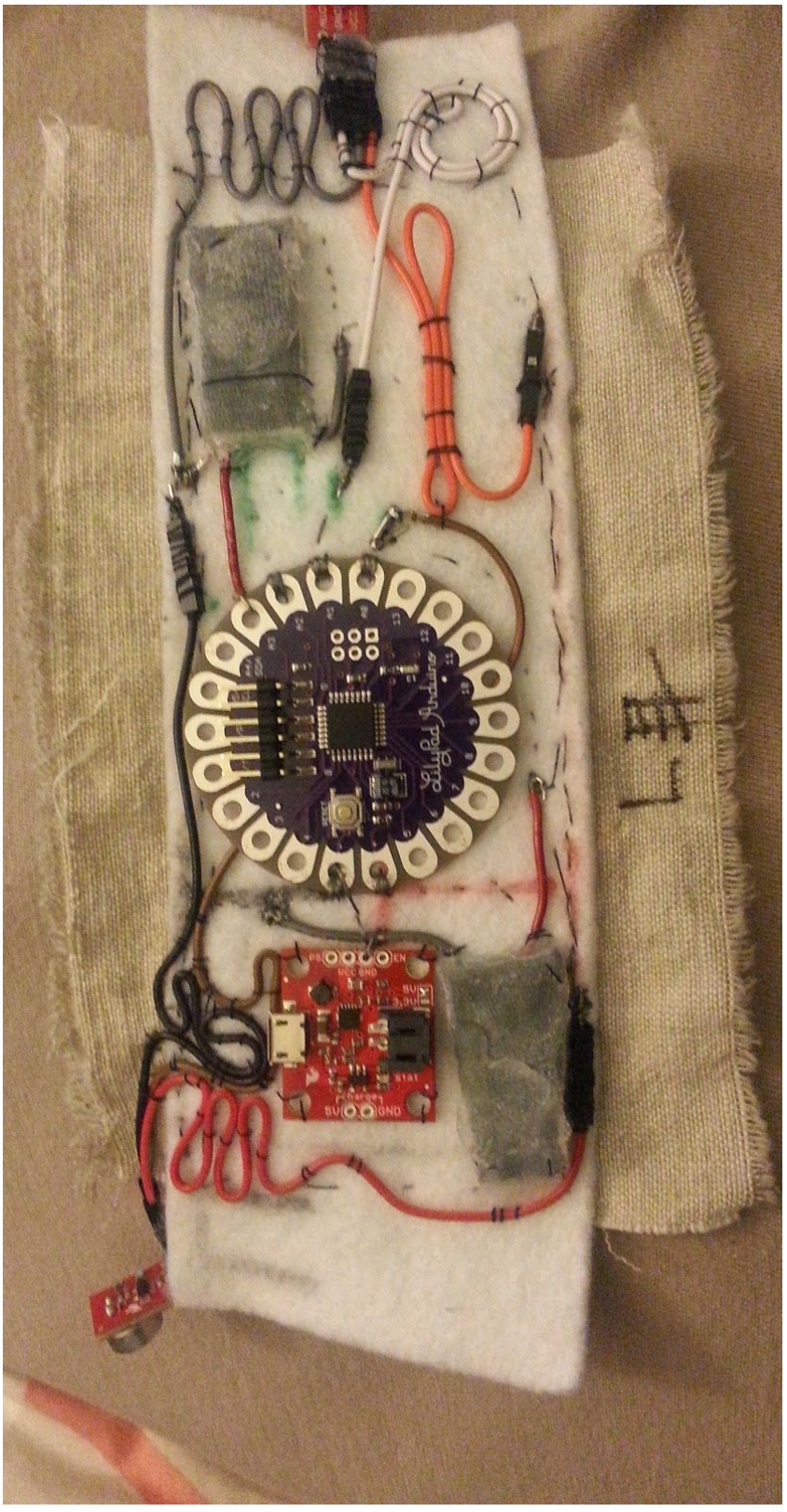
Epoxy resin mould fail:
I wanted to create a periferal vision by moulding my plastic , but I did not have the technology to properly make a mould and my attempts failed. I turned instead to shrinking plastic that I cut shaped and drew on. My first try resulted in one foggy lens but I was successful on my second try.

I create a plastic casing to protect my 3.7 1000mA batteries from puncture or heat(considering that it will be on the face).

Circuit diagram:


RH
LH


A2
A3
+



Final:

When I tried to sew on my final piece I had a short circuit maybe some wires were touching…. So the video shown is the one that was working in class.

The device maps out the loudness of the sound and outputs them as color and the vibration motor are sensitive to the frequencies and vibrate to the loudness as well.

With the piece that I showcased in class I fixed a circuit issue and got both of my led strips working in sync to my vibration motors.