StoryLink

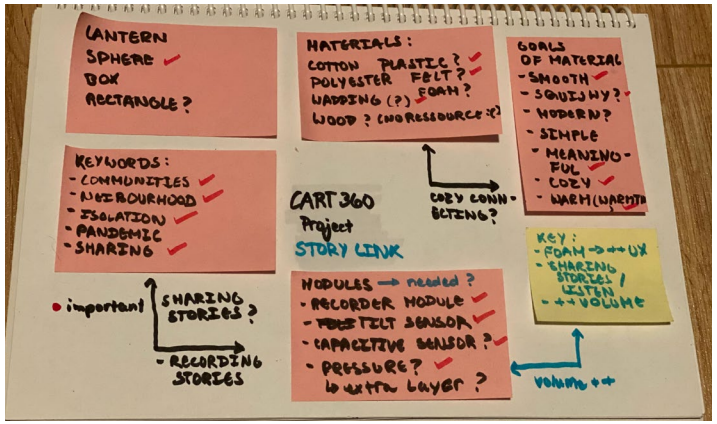
Mihaela Eftene
Computation Arts at Concordia University
mikaeftene@gmail.com
Documentation: https://github.com/mihaeftene/cart360
Website: https://emiha.com/CART360/pdfs/M_EFTENE_FinalArtifact_StoryLink.pdf

THE GOAL

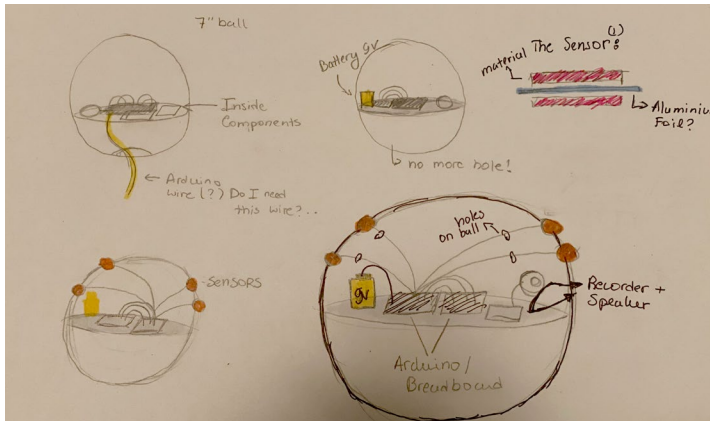
Throughout the coronavirus pandemic, isolation and loneliness have been affecting society. I wanted to explore a way to use an artifact as a bridge between members of a community in a sustainable way. Most of the world has been using paper as a way of journaling, however that method uses a lot of paper, thus encouraging logging. So my initial goal was to find a way to make journaling more sustainable while simultaneously improving the living condition of people suffering from isolation within their own community. I also wanted to prove how one can create new connections and friendship through the use of an innovative and unique artifact.

THE INTENTION

The solution I came up with is StoryLink, an artifact that through the use of electronics such as sensors and a recording module will be able to record and playback recorded story logs. It is a ball shaped tool [2] that will be shared through a community, going from a person's house to another. Each person will be able to record a short story or anecdote into the ball while also being able to listen to previously recorded stories left there by their neighbour, hopefully bringing the community together. Its recording feature grants the user an opportunity to share their feelings and vent off their emotions, similarly to what one can do on the internet, thus creating a new network of interpersonal connections within the community. This challenges the user to find new habits of journaling while being environmentally-friendly by reducing their paper usage. This can be seen in the pictorial above where brainstorming is being done [1].



[1] Brainstorming with post-its



[2] Sketches of the Ball

PROTOTYPING

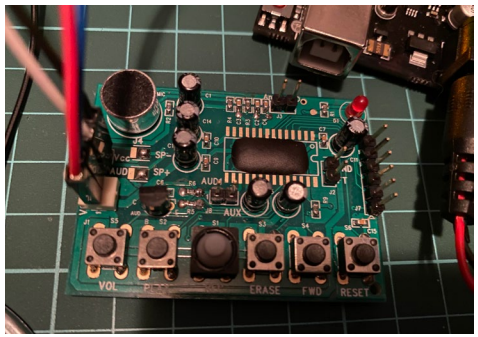
My intention was to create an artifact that would bind communities together through storytelling. The first step was to sketch and find meaningful components that would enable a user to interact with the ball through a recording module that allows the user to listen to a story stored upon the activation of a sensor, a titling sensor that once they tilt the ball to the right or left, stories from the specific side would be played and a pressure sensor that would both start and stop the playback while also amplifying the volume proportionaly to the pressure exerted. In this stage, there's a better grasp of what sensors needed to make my intention successful. The pictorial below represents all sensors used and a breakdown of each:

Recording Module
Pressing the top and bottom of the sphere with both hands would enable the recording feature. As long as the person is pressing onto the sensor, it would allow them to record their story. Once they let go, the recording mode stops. The audio data will be sent to the microcontroller which will store it into the recording module [4], unless the sensors for listening are being triggered.

The Listener
If the user wants to listen to a story, all they have to do is press onto the sided sensors [5] of the ball. The data that is stored inside the recording module will be retrieved that is specific to the sensor where the story is stored.

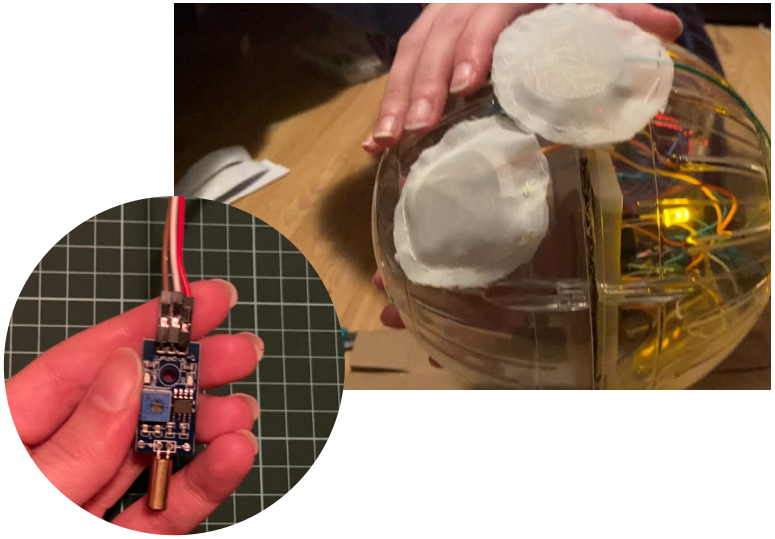
The Tilt
When the user tilts [6] the artifact either left or right, all the stories recorded by sensors on that side will be played at the same time, creating a melting pot of stories. The goal of this is to mix and match the stories of multiple people, giving the user a unique experience.

Changing Volume
In correspondence to the pressure applied onto the sensors, the user will be able to increase or decrease the volume of the audio playback [7]. This will enhance the user's experience and feel more immersed into someone else's story.

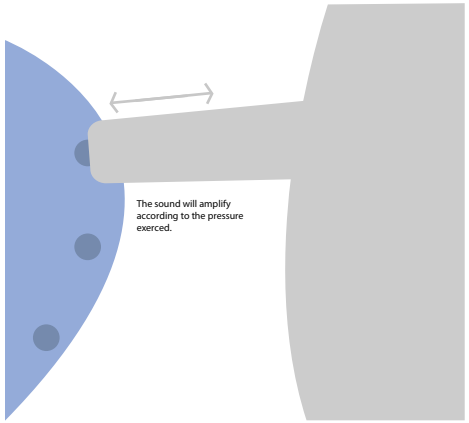


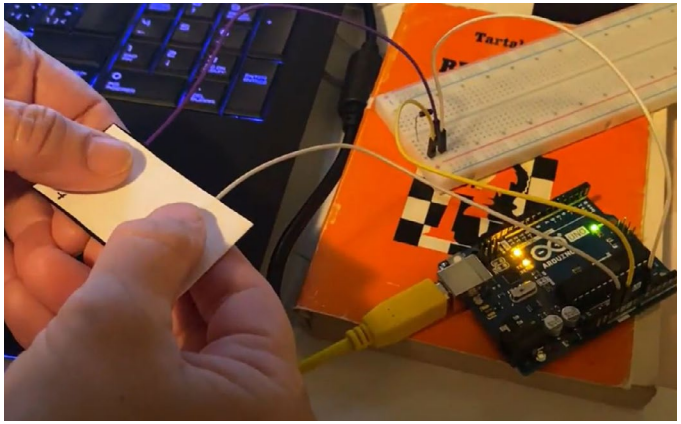
[4] Recoding Module that allows to record stories (ISD240)

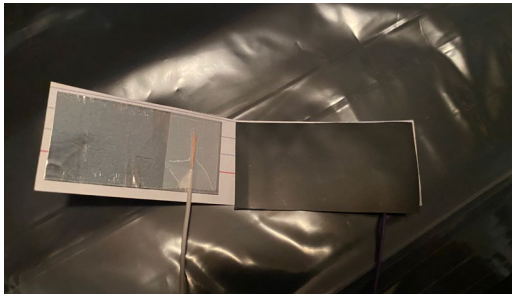
[5] User places hands onto the sensors. Example of Sensor prototyping



[6] Tilt Sensor and Finalized stages of the the tilt Interaction. Yellow LED lights upon tilt



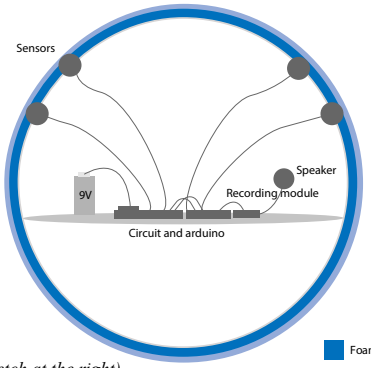




[7] The sound will be amplified according to the pressure excersed on the sensor. Pressure sensor still had to be implemented,. Removed during the final artifact because of issues with the recorder. At the right, example of inside pressure sensor (Aluminium, Velostat to make it pressure sensentive)

Prototyping - Materials

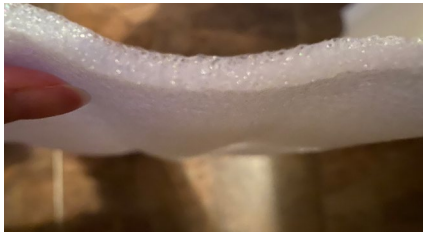
A hamster ball made out of plastic will be used as the core housing all the microcontrollers and sensors. To properly house the components, a platform made [8] out of cardboard will keep the electronics in place. Then a foam-like material will act as a protective layer that will be added onto the ball [9]. StoryLink now becomes a squishy storytelling ball that will make users feel intrigued by its presence and feel the need to interact with it. The goal of the use of materials is to make StoryLink become a cozy story ball. To complete the look, a thin material of wadding [10] will be placed on top of the protective layers. Originally, to match the concept of sustainability, the core will be made out of wood and the materials of plant-based.



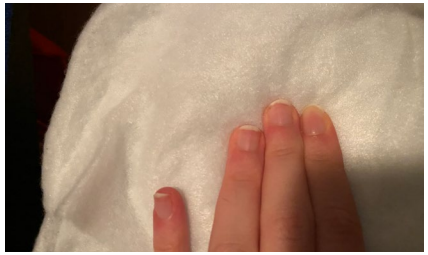
Foam Protective Layer

Surface Wadding Layer

[8] Core of StoryLink with a cardboard platform (Look at sketch at the right)



[9] Foam Protective Layer

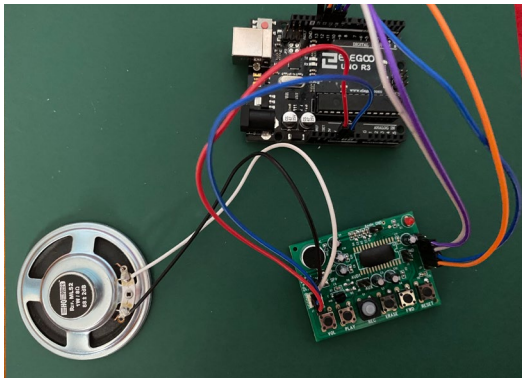


[10] Wadding placed on top of Foam

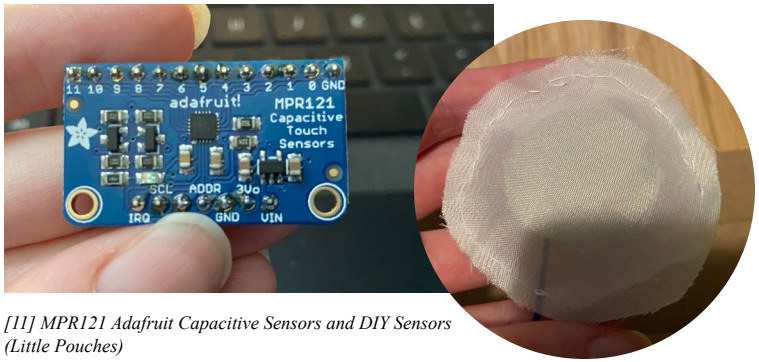
THE ARTIFACT

The intention of allowing people to record their stories and listen to others in order to connect and form communities by traveling the ball from one place to another has remained the same. For the final Artifact, DIY capacitive sensors have been made as seen in this pictorial [11]. The MPR121, a capacitive sensor from Adafruit has enabled me to control my sensors more freely than having them as independent which could become a problem eventually. The tilt [11] is enabling the user to tilt the ball and have a yellow light lighting up as a way for the ball to communicate its intention of tilting. Unfortunately, the recorder module "ISD240" [12] wasn't able to become part of the final artifact due to some ISP library deficiencies. As for the pressure sensor, the capacitive sensors were implemented, however due to the lack of a working audio device, I was unable to successfully test them. Finally, since the recording module wasn't able to be implemented, sound didn't work either so people cannot listen to their stories.

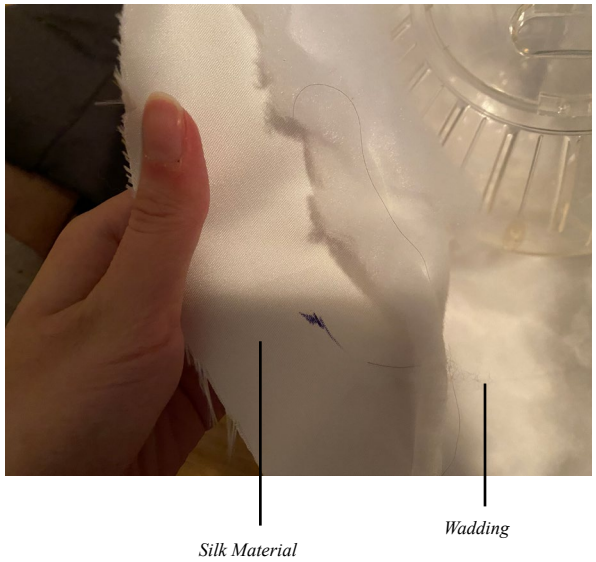
The overall experience of the artifact has changed due to the change in materials and of the design. The layer of wadding that would play the aesthetic outer layer has now become the layer inside the layer that plays the role of the foam. Also, the outer layer of the project is made out of white silk [13] and sewn vertically with thread to create some folds. The artifact is not only a ball that people can record stories with but has earned a presence in their homes as a decoration. The silk material and the thread sewn, makes it look very organic and uncanny. As we know that uncanniness / asymmetry creates curiosity in people and there's this temptation that makes people want to interact with the object. Furthermore, the pouches [14] that contain the sensors have become bumps sewn on top of the silk. This is intentional because I wanted to draw a line between the uncanniness and the meaningfulness of those stories, weight of them.



[12] Completed Circuit of the Recording Module but not able to control it programmingly due to library issue



[11] MPR121 Adafruit Capacitive Sensors and DIY Sensors (Little Pouches)



[13] Inside of Materials that covers the Ball and threat that makes foldings

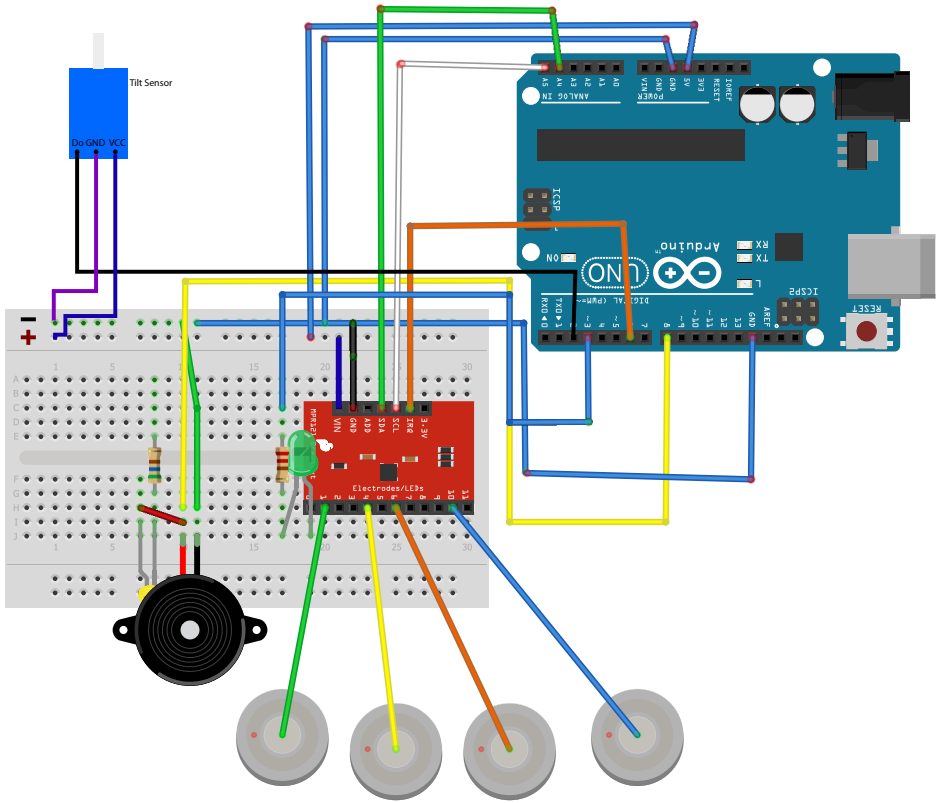
[14] Bumps that makes it look uncanny unique

OBSERVATIONS

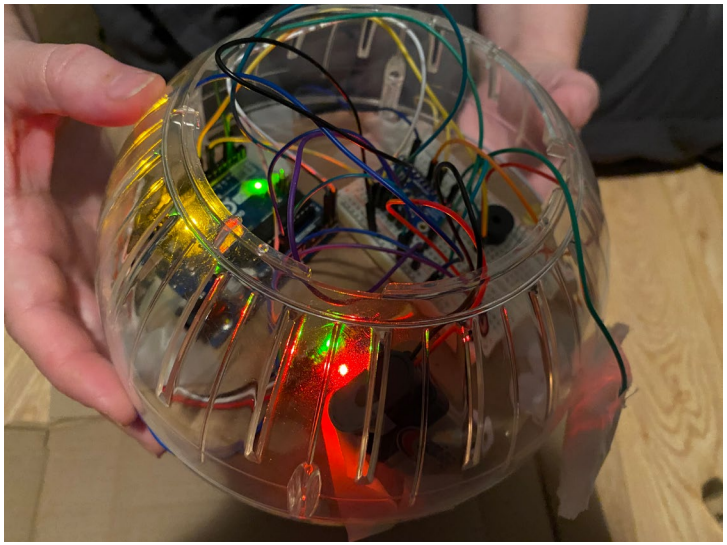
What works

The interaction that was the most successful into the final object was the tilting interaction. At the beginning of the prototype, this interaction was somehow unreliable due to different bugs of detecting tilting at the wrong time. However, changing the angle of the metallic cylinder on the tilt sensor seemed to do the trick. Adding the yellow LED that lets the user understand when the ball is tilted creates that sort of interaction / communication between the user and the ball.

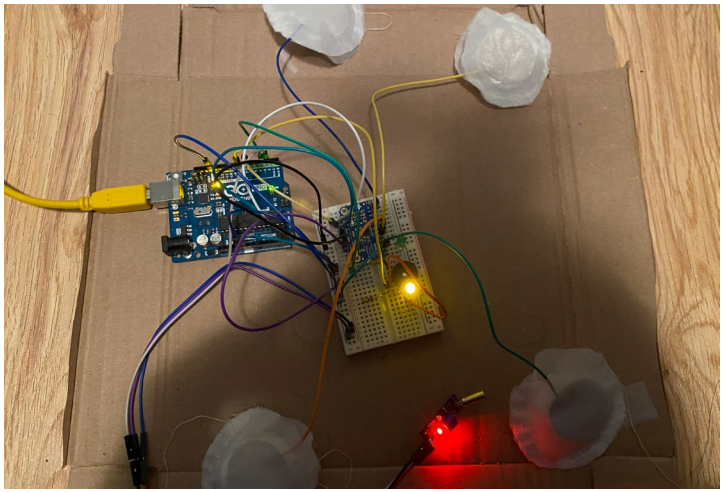
Second, the capacitive sensors worked wonderfully with the MPR121 Adafruit Capacitive sensor and library. As mentioned above, it provided more fluidity and flexibility of controlling each sensor. However, there still seems to be some ambiguity from time to time with the sensors but it still does the job.
See next pictorial for circuit [15-16].



[15] Circuit inside the Ball (Tilt and touch sensors). Please note that the MPR121 is from Adafruit. This was the only one that I could find. VIN was added



[16] Workable circuit inside the ball (Same as the Fritzing sketch circuit)



[17] Circuit Spread out

What does not work

What did not work at all was the "ISD240" recorder module. Throughout this project, I've learned that recording modules seems quite ambiguous and sometimes unreliable when you get to connect to an Arduino. Certain methods such as ISP Library have been tried out but did not work. As much as I wanted to give the final artifact that recording feature, soldering wires onto the board with an unreliable soldering iron was a bit risky and did not want to destroy the board. A second thing that did not work was the pressure sensor that allows the user to amplify the volume of the audio in the story. That part was connected to the recording module, so if there's no audio it cannot be tested. Finally as mentioned below, the sensors were supposed to play stories. Although I did not have the recording module anymore, an SD card and sound Module would allow me to store music files and perhaps bring the final artifact a step closer to the envisioned project. However, those were out of my bounds. For the design there was lot of ambiguities when mounting the sensors onto the ball [17]. The vision that I had of the ball was a bit more refined but the material itself was quite hard to manipulate. Also, the capacitive sensors shouldn't touch one another and there was a certain limit on the freedom for placement for the sensors.

To place the sensors, we had to cut onto the material and run it over the hole to postion it. Sometimes, the wires or pouches would fall out and had to be put back. To sewn back the holes was challenging and some werent able to be fixed [18]. The top part of the sphere was removed and a bridge was added to faciliate the access to the wires in case of issues [18].

Material Experience

This whole entire story of lacking components and having issues with the recorder made me take a new approach and apply that new look to my prototype as an uncanny, asymmetrical, organic artifact. Due to the LEDs inside, the material needed to be much thinner to accommodate the yellow and green LEDs. The pouches of the sensors have been modified to allow easy access and erase certain ambiguities. For example, to give that voluminous shape and make it nice to the touch, the conductive material has been placed on top of it which will act as the sensor. Then, pouches made out of curtains like material have been housing the whole pounch [18].This makes the ball more interesting to the user and allows a nicer experience to touch.

[17] Ball ready to be dressed up

[18] Uncleaned Ball

Fulfill intended experience?
A part of me is certainly disappointed that the recorder did not work since a lot of interactions were attached to it. This artifact does not give the full experience due to the missing components. However, it was certainly a nice experience building it and did make me think how I should handle future prototypes.

Interaction design goals
The design interaction goals remain the same. Upon touching the top part, the user will be able to record himself. To bring awareness to the user that they are in the record mode, a green LED has been added as a way to enable communication between the ball and the user [19]. To listen to a story, the user will be pressing onto one of the sensors to listen to someone's story. If the user wants to amplify the audio of the story, they can press harder accordingly to how much they want to increase or decrease the loudness of the sound. Finally, the tilt part that an LED has added allows the ball to tell the user that they are tilting it which would trigger sound from the specific stories side that are being tilted [20]. For the final artifact, the overlapping interaction was removed because I thought that tilting does the job already.

[19] The ball is communicating that is ready to record

[20] The ball is communicating that is being tilted

Pressing onto the sensor to play a story

For the Future
In a nutshell, this artifact has been a big challenge yet a very intuitive experience. What I would like to improve is perhaps adding more interactions and fluidity to each one of the interactions. In my opinion I do not see this as an artifact but rather as work of progress that still needs to be worked on. The recording module is certainly something that needs to be figured out to allow the following experience to the user and to listen to their stories. In terms of these current materials that I'm using this does not fulfill my sustainability concept so that would have to be changed. Overall, there's still work that needs to be done but a good beginning towards an artifact that could bridge the loneliness of people within communities.

REFERENCES

Tilt Sensor
https://www.youtube.com/watch?v=46Z-6MVxKnc

Recorder Module (Part Of Code) - Library
https://github.com/georgepatterson/ISD17xx

MPR121 Library
https://github.com/adafruit/Adafruit_MPR121

DIY Sensor References Inspiration

https://youtu.be/SLRYX879Py0

https://youtu.be/aXS2b1hlyGA

https://cdn-shop.adafruit.com/datasheets/HandcraftingSensors.pdf