# Physical Prototype

Initially I wanted to build a moving sculpture using silicone. However the complexity of the material casting made me realize I wanted to use something lighter that exaggerated the movement well enough for it to be engaging and stark.

For this purpose I decided to use origami to simulate the movement. I worked through many different structures trying to get the right kind of movement, and finally settled on the highlighted one because it created maximum impact.

|  |  |
| --- | --- |
| magic ball | <https://www.youtube.com/watch?v=sH4E_JIWqtU> |
| magic circle simpler | <https://www.youtube.com/watch?v=cb0ICsjkl14> |
| octopus flasher big movey thing that is fun | <https://www.youtube.com/watch?v=tvhOFv8KAMI> |
| Tessellations | <https://www.youtube.com/watch?v=VXIVHjws15U> |

I started building the prototype with construction paper.

# Movement and visualization

To create the mechanical movement, I tried using bamboo sticks because I wanted sturdy and linear movement. However, I needed some movement along both X and Y axes, so I 3D printed joints to use with the bamboo sticks. However, this movement did not go well with what I wanted to happen, so I changed to using coiled thread.

One thread coils inside the paper origami to pull the 8 pieces together, and another is attached to two pieces on the outer vertex (on opposite ends of each other) to pull it open. Each of the threads will be attached to moving gears that coil and uncoil the inner and outer threads at the same time. The gears are then attached to the servo that moves with the breath sensor readings.

For impact, I’m going to use 5 such sculptures of varying sizes.

# Breath sensor

The breath sensor is made from conductive yarn knit in a 4’ by 12’ piece. This piece is attached to a non-elastic plastic material that forms a belt like structure to the sensor. The sensor is then strapped around the observer’s diaphragm. I’ve mapped the sensor readings to the servo’s movements.

# Materials

The materials used in the project have been varied. I’m using construction paper for the origami prototype. I will also be including organza into the sculpture to create a more surreal and fuller movement. I’m using non-breakable thread for the mechanical movement and wood/plywood for bases. I’m also using wires to create suspension structures.

# Body Capacitive Sensing

I want to incorporate the human body’s capacitive sensing to the sculpture, but this will depend on the time I have. The code for the capacitive sensor is on the github link. However, its implementation into the working model may or may not happen.

# Next steps

All of the work is still in progress and the prototype is working. However, I’ll be fine tuning the entire sculpture over the next couple of weeks to create the autoscopic experience.