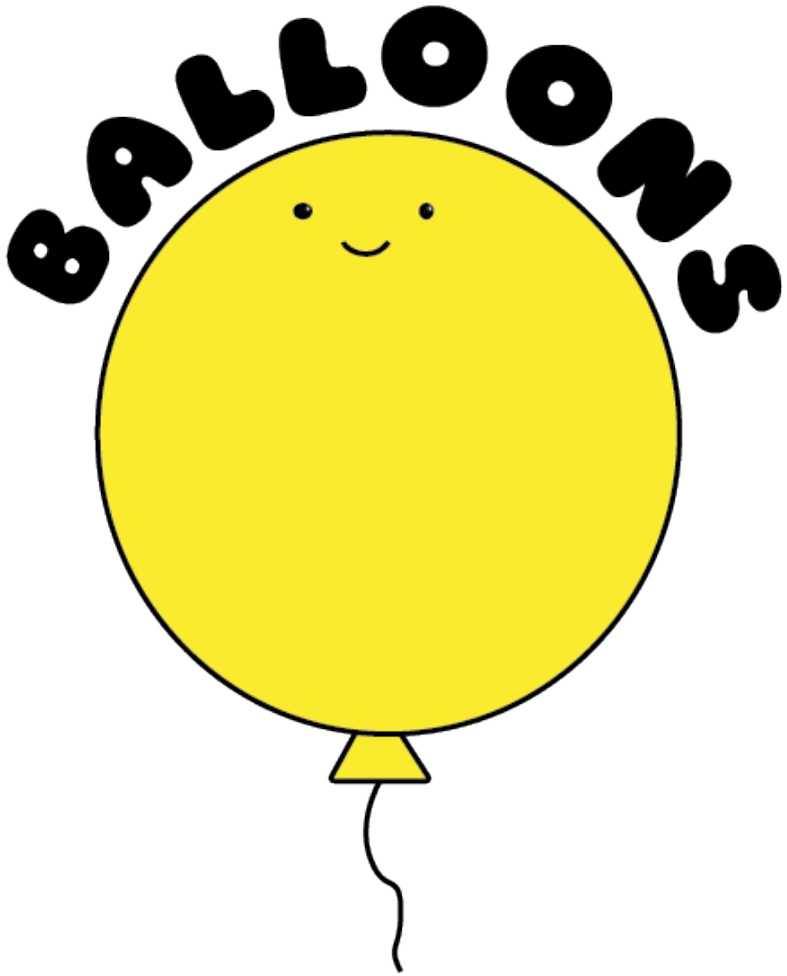
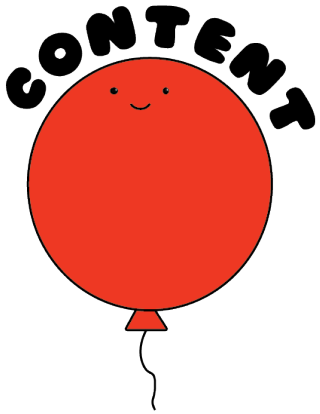
BALLOONS



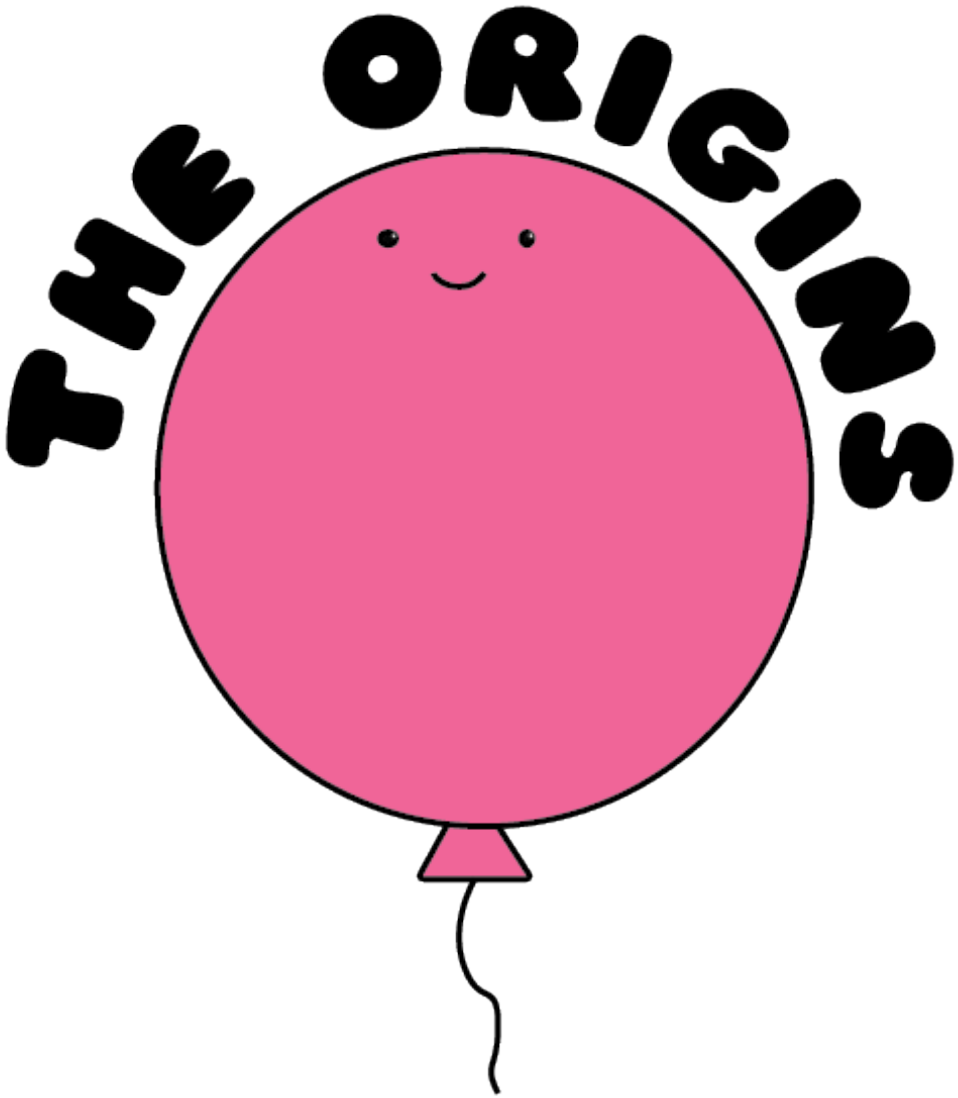
SUN JINGYI, NICOLE CHAN, SARABI EVENTIDE



Part One
The Origins

Part Two
Development

Part Three
Finalization


THE ORIGINS

Design Brief

The design brief was to create an interactive installation that employs technology. The considerations were that the installation would located be in NYU Shanghai, the installation should be temporary and portable, and people would be interacting with the project directly and watching from a distance.

Project Introduction

"Balloons" was conceptualized as a interactive installation that translates the pulling of balloon strings into a light and audio experience. The project was aimed at engaging participants of all ages, and encouraging photography.

Sun Jingyi, Sarabi Eventide, and Nicole Chan developed the idea by first analyzing highly successful projects such as the Rain Room and the Obliteration Room. Primary takeaways we developed in this initial research explorations stage were:

> What is an interaction that is both natural and universal?
>
> How can we maximize our project impact on social media?

Our group recognized the showcase event, the IMA show, attracts a wide range of visitors. Therefore, our project need to be playful enough for children and intriguing enough for adults in order to maximize the user base. At the same time, "trendability," which we define as the capacity for a project to draw attention on social media, is crucial to reach an outside audience and improve guest perception of a project.

The Rain Room

The Obliteration Room

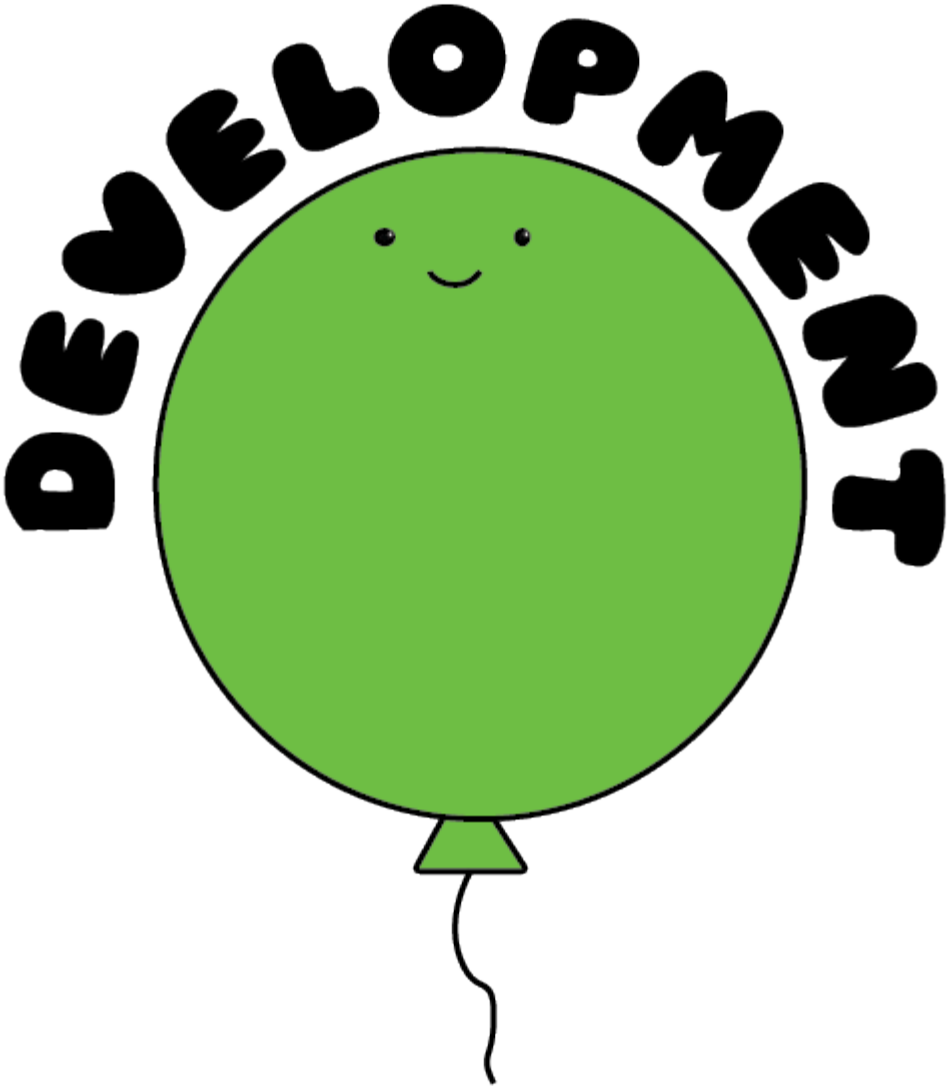
Project Introduction

Balloons are highly accessible, universally recognizable, and visually charming. They evoke a feeling of childhood. The group decided to use several, large, multicolor balloons as the trigger to activate a sequence of audio and light effects when a user pulls the strings. The interaction is very natural, and the potential to engage via photography enables the experience to last beyond the time spent physically with the installation.

Accompanying materials can be stickers, stamps, and/or balloons for guests to take as souvenirs. This level of brand consistency reinforces Balloons as a multilayered experience that users can enjoy while in front of the installation, and remember fondly after.

Early Concept Sketch by Nicole Chan

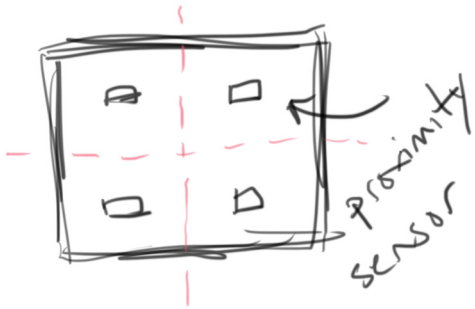
Image Inspiration and Ideation


DEVELOPMENT

Project Development

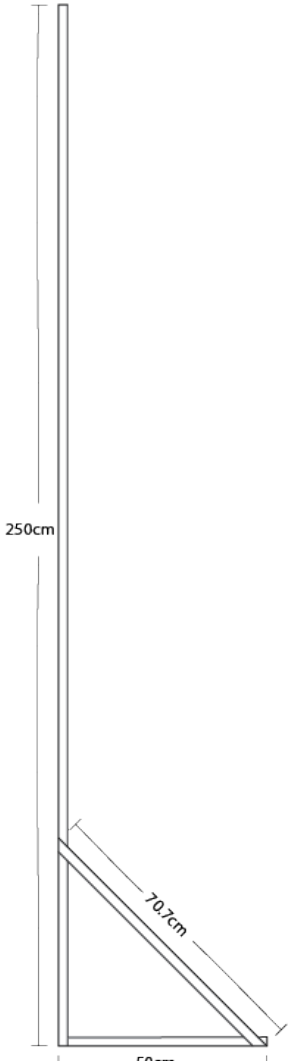
After developing the primary concept, the group reconciled differences in interpretations to decide on specific implementation. Our primary questions were where the sensors would be placed and where hardware could be hidden. We consistently placed importance on the project aesthetic, believing that a non-polished final project would detract from the magic of the experience. Some of the ideas we discussed included putting LEDs in each balloon, having the balloons without helium and hanging from the ceiling via string, having the balloons attached to the ground, and measuring the balloon's change in position via acceleration

Our final decision was to build a frame with tulle overlays. The sensors would be placed on top of the canopy facing down to remain hidden to users. The trigger would be activated when the balloons are pulled down via an Ultrasonic Range Sensor measuring distance. We reduced the output to only audio because the potential layering of music seemed more interesting.



Concept sketch by Nicole Chan

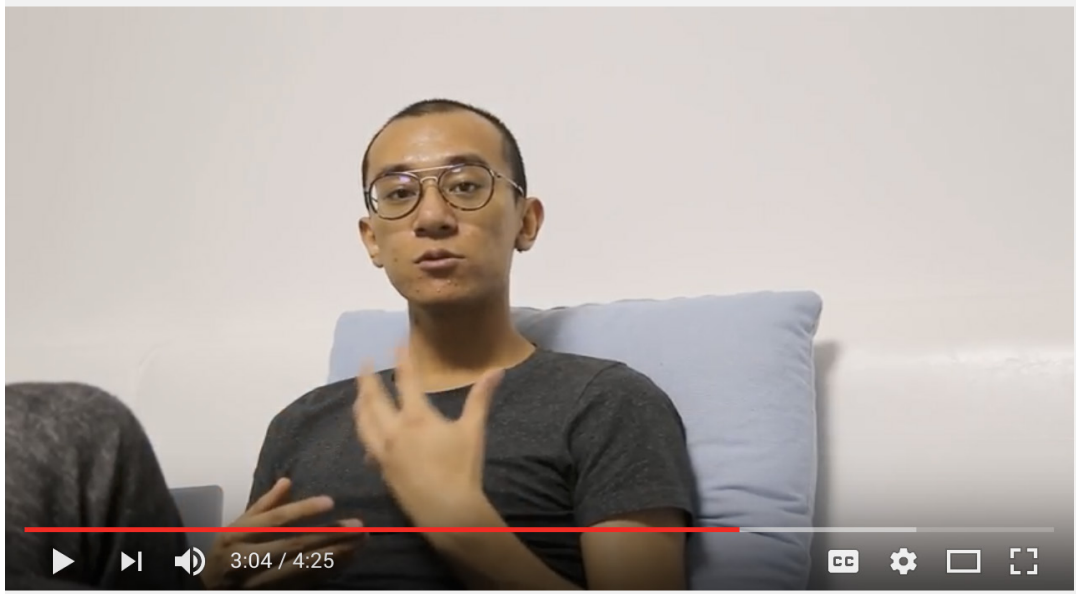
Image inspiration



Pole dimensions by Sun Jingyi

Interviews with Potential Users

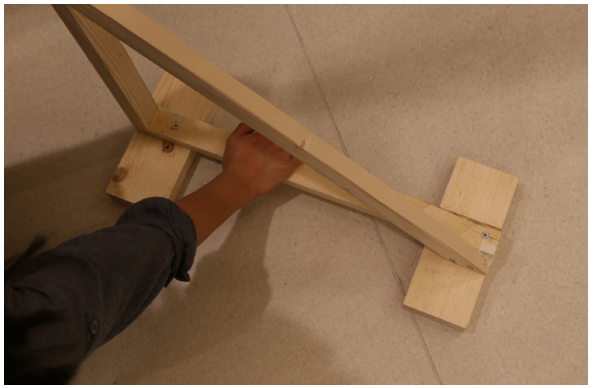
Nicole interviewed potential users. Roman and Sabrina, two NYU Shanghai students, were asked about their previous experiences with interactive installations, what made the experiences memorable, and what makes an interactive installation successful. They both commented on the importance of clarity and simplicity.



Frame Construction and Adaptation

We began constructing the frame. After making the initial cut we gathered user feedback on the pole height. We compared Sun Jingyi (165cm) and Rewant Prakash (185cm) to gauge what height best allowed *Balloons* to be accessible for people of all heights. While constructing, IMA fellow Jiwon Shin got a splinter from handling the wood. After this, we decided to sand all the pieces to make the frame as safe as possible.

After constructing all the pieces, stability remained a problem. We added feet to the polls for increased surface contact, and then used books to weigh down the base.



Progression of pole construction with user feedback, sanding, and stabilization efforts

Frame Construction and Adaptation

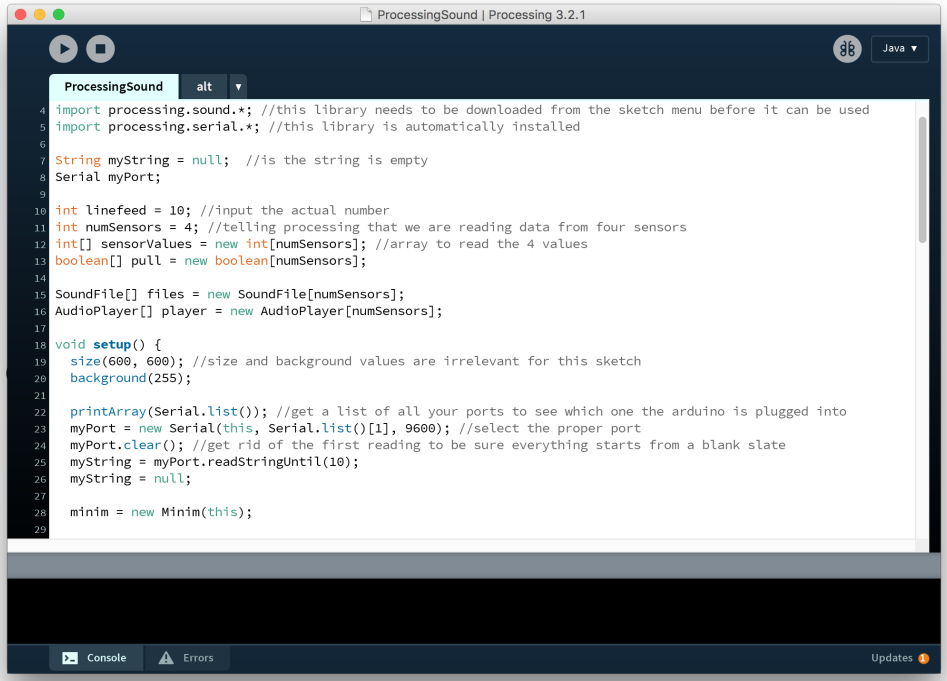
Adding fabric to the frame added complications. Sarabi purchased 15 meters of white tulle. It became quickly evident the material was too sheer to hide the frame and books. We made a design decision to use a more opaque material rather than only relying on tulle, because that alternative would a significant increase in the amount of tulle needed. At that time we also realized the fabric weight caused the poles to bend inward, so we began construction of a top frame so the enclosure would retain its shape. The frame provided assistance in hiding the hardware as well.

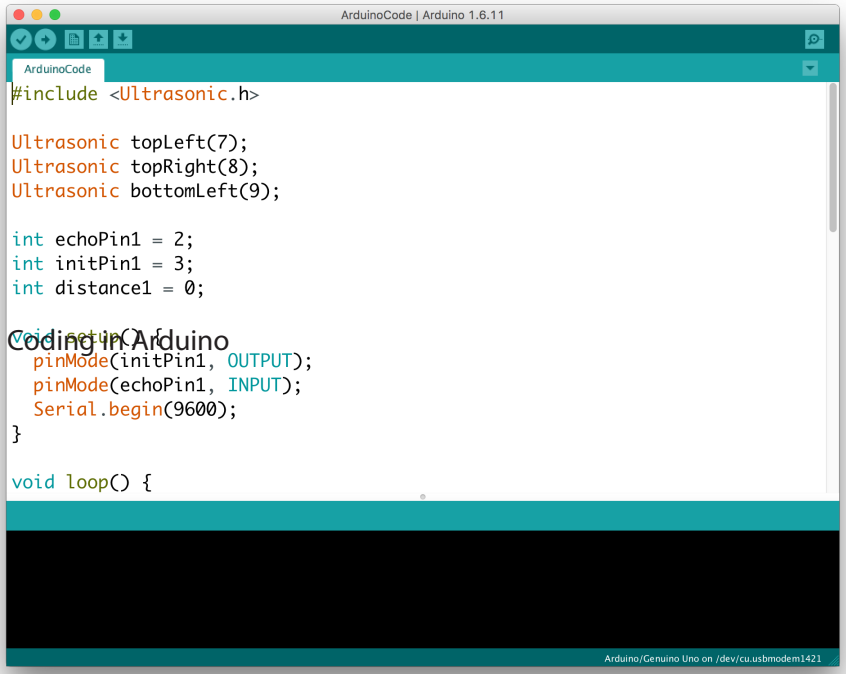
Frame Construction and Adaptation

The layer of tulle with hardware was nailed to the top frame. A layer of opaque white fabric was layered on top, and then slit on the sides to improve the installation aesthetic as well as hide the poles. We wrapped this side fabric around the poles and hid the base supports. Extra opaque material was necessary to conceal the entire base. Finally, tulle was used as decoration and to better conceal the base. A back layer of opaque material was nailed to the back frame to hide the wires hanging from the back. The amount of opaque material was insufficient so we used remaining tulle to trim the edges as functional decoration.

Coding with Arduino and Processing

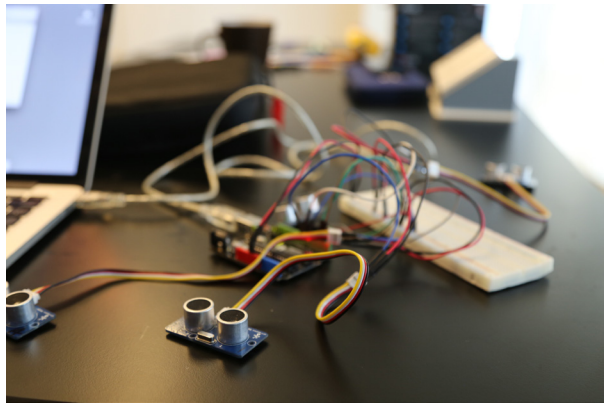
The sensors were placed on top of the canopy facing down. We used serial communication in order to control the audio in Processing using the Minum library and sound library. We used Ultrasonic Rangers and HCSR04 sensors.

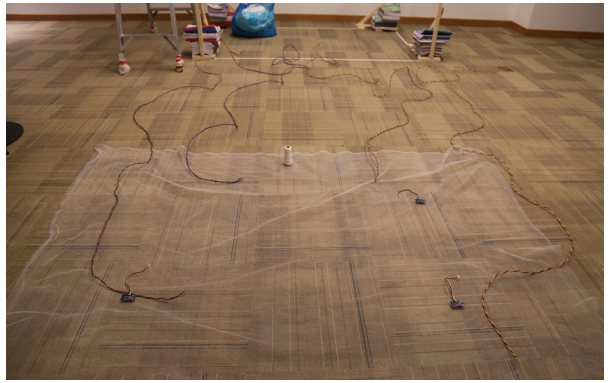


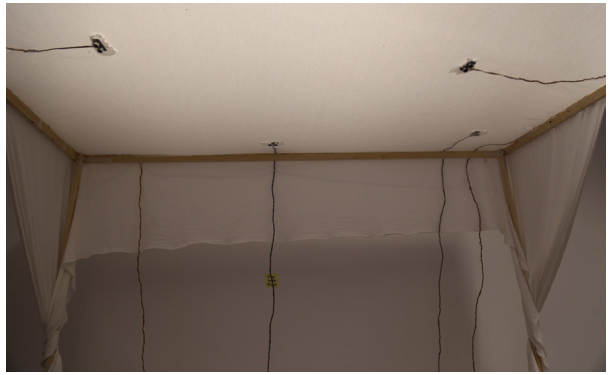


Coding in Arduino

Hardware

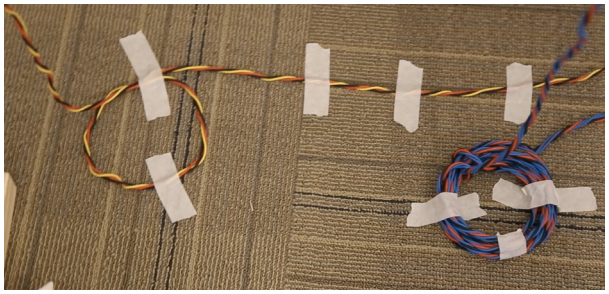


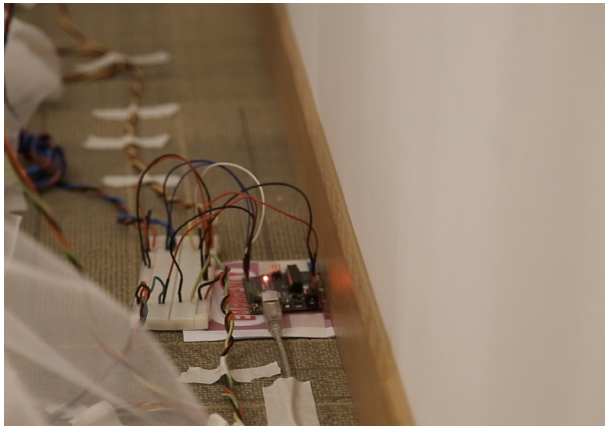




Progression of hardware on frame

The sensors were sewn to small pieces of white fabric, and then sewn to a layer of measured tulle. Accompanying wires were couched to the tulle as well. The wires had been previously spun in order to maximize organization, and were then sewn alongside the frame then over the back. The wires were hidden by a piece of white cloth that created a back wall to our frame. All the wires, the arduino, and computer remain hidden in back of the installation.





Hardware behind the installation

Branding Inspiration and Development

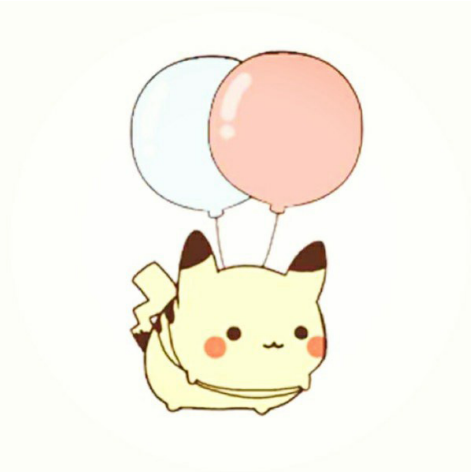
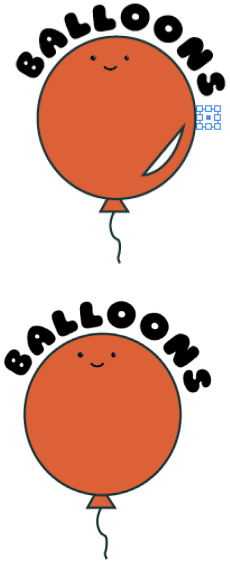
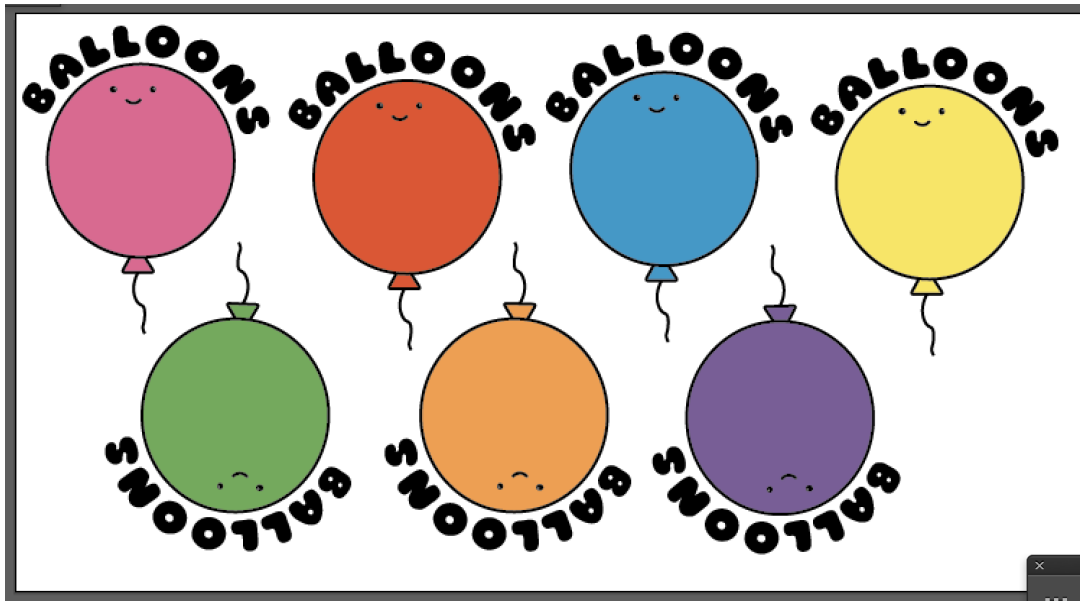


Image inspiration

Image inspiration

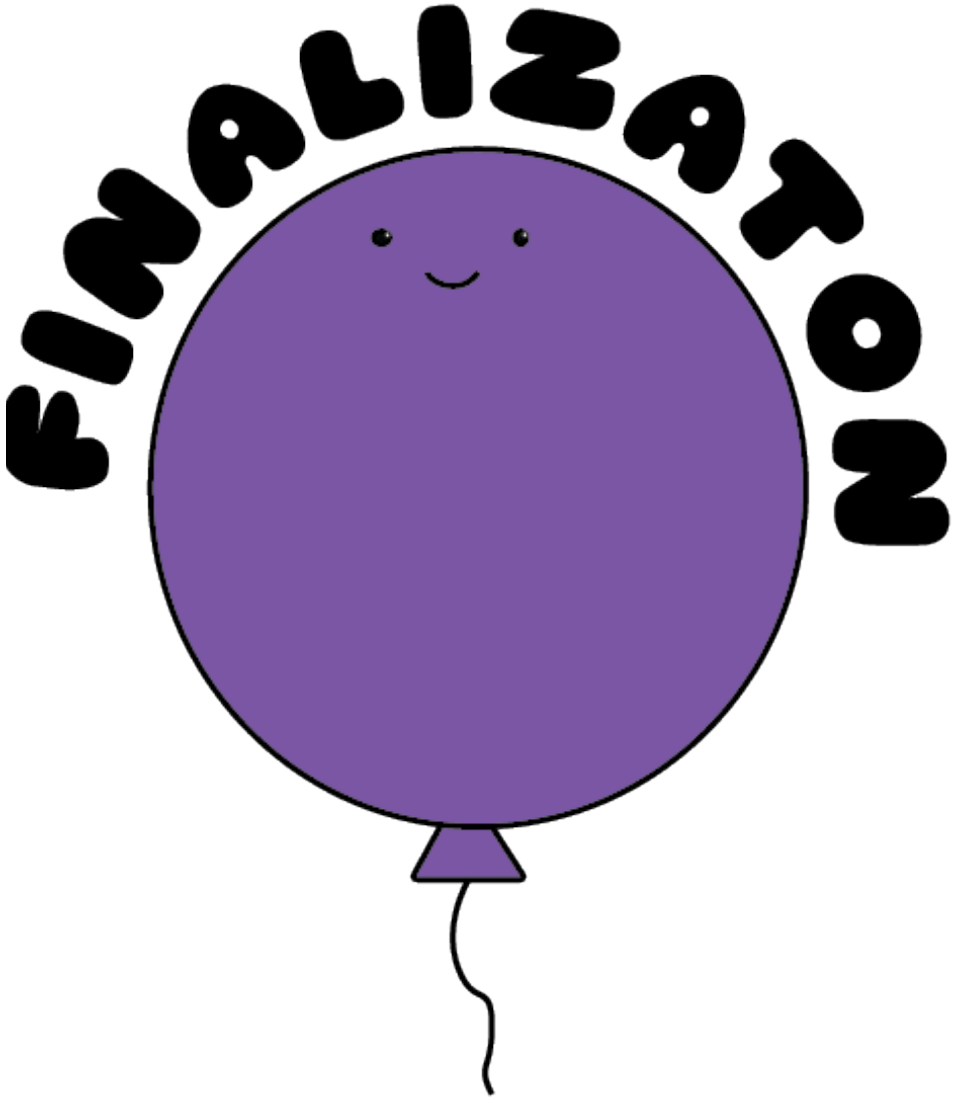


Design progression



Color testing

Printed stickers


FINALIZATON

Final Photos

Disguised pole and books

Wires from sensor hanging over back of frame

Balloons fill the canopy

Suggestions and Next Steps

After presenting our final prototype, we realized there are several areas that can be improved for future, larger scale, or more permanent versions. The audio selection received many comments, and it would be worth exploring different genres of music that are more compatible with each other. Another possibility is to slightly alter the project so that only one audio track plays, and pulling different balloons could introduce different instruments or control other audio effects. The current introduction of audio in the project is done with a pause/play function, and can be improved using a loop function so there is a more gradual fade effect. We note that adding an overhang of fabric would great help keep the balloons stay within the enclosure. The top frame's edge currently provides limited assistance with this issue. From the fabrication stages, sewing the sensors to the opaque, thicker fabric and then overlaying tulle on top would have been significantly faster, easier, and more stable. Having more balloons in the enclosure has a better visual, and improves the sensor accuracy. Tying the balloons into groups, which we later did, also helps improve the likelihood that there will be a balloon over the sensor at all times. More minor design alterations can be using larger balloons, using a thicker ribbon as string to make the experience more novel.

Balloons

INTM-SHU 236

Topics in Art & Design Interactive Installation

Nicole Chan nicolechan@nyu.edu

Sun Jingyi sun.jingyi@nyu.edu

Sarabi Eventide sarabi.n.eventide@nyu.edu

We would like to thank our professor Eric Hagan for all of his support and instruction; our classmates for both critiquing work and encouraging us to consider different possibilities; and all of the outside members of the community who took time to contribute to our work. Thank you.