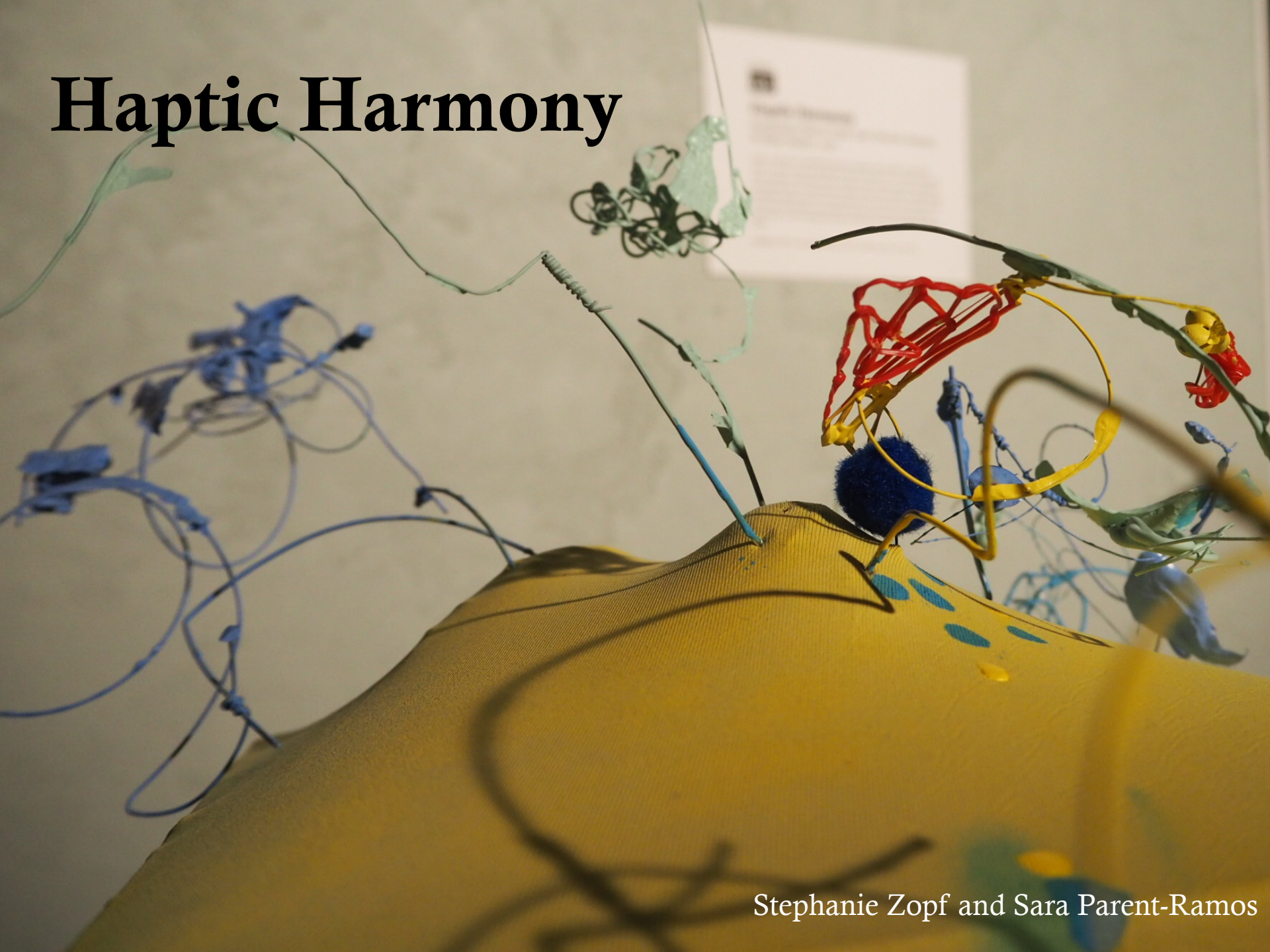
Haptic Harmony



Stephanie Zopf and Sara Parent-Ramos

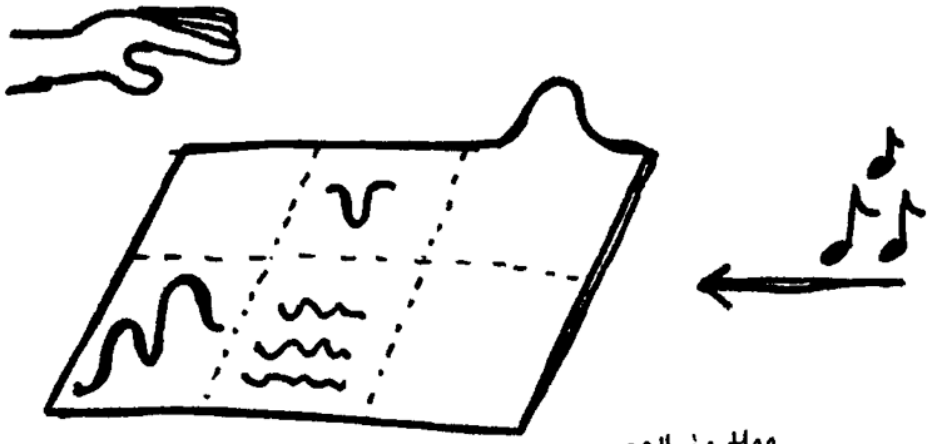
Overview

- Inspiration
- Initial idea
- Obstacles
- How it works
  - Code-wise
  - Material construction
- Physical construction
- Initial user study
- Final product

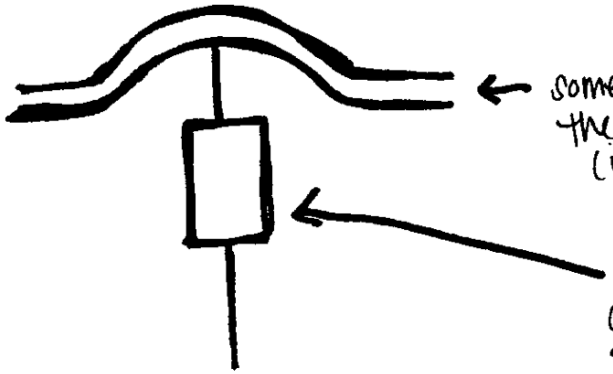
Inspiration: *Feeling the music*

Photo credit: Browar, K and Ory, D. *NYC Dance Project*

Initial idea



Each cell in the array is a physical speaker



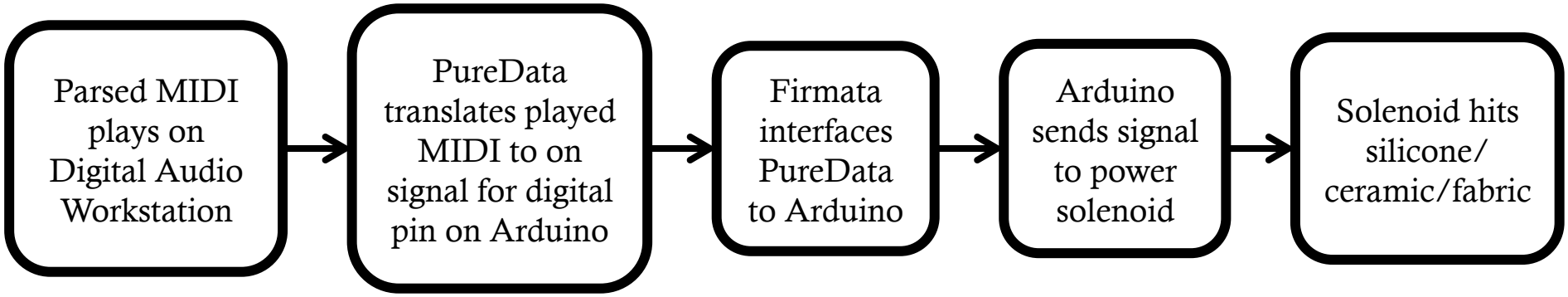
some kind of material that the audience can interact with (i.e, Fabric, squishy rubber, hair)

some kind of actuator that can translate the audio electrical signal to a physical effect.
(e.g voice coils: translate electricity to magnetic field which then causes physical motion)

Obstacles

- Voice coil actuators = $$$$
- Understanding how to do multichannel audio output
- PureData learning curve

How it works


Parsed MIDI plays on Digital Audio Workstation
PureData translates played MIDI to on signal for digital pin on Arduino
Firmata interfaces PureData to Arduino
Arduino sends signal to power solenoid
Solenoid hits silicone/ ceramic/fabric

How it works

Parsed MIDI plays on Digital Audio Workstation

Solenoid hits silicone/ ceramic/fabric

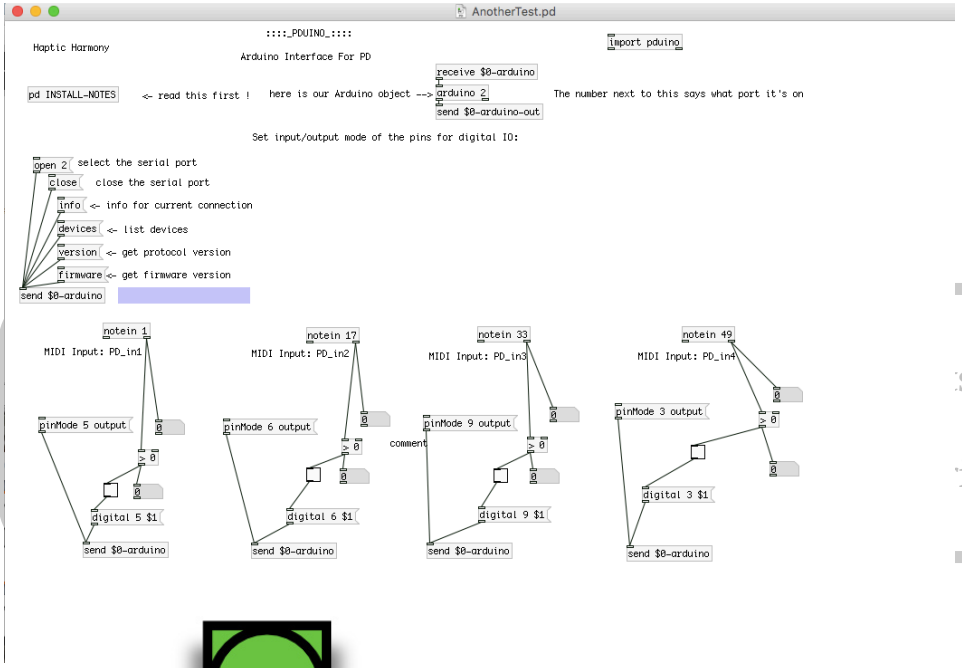
musescore

ARDOUR

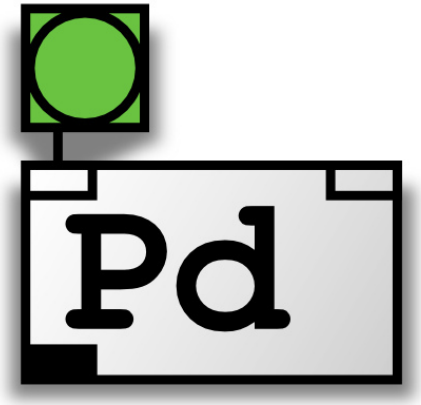
How it works

Parsed MIDI plays on Digital Audio Workstation

PureData translates played MIDI to on signal for digital pin on Arduino



MIDI Monitor



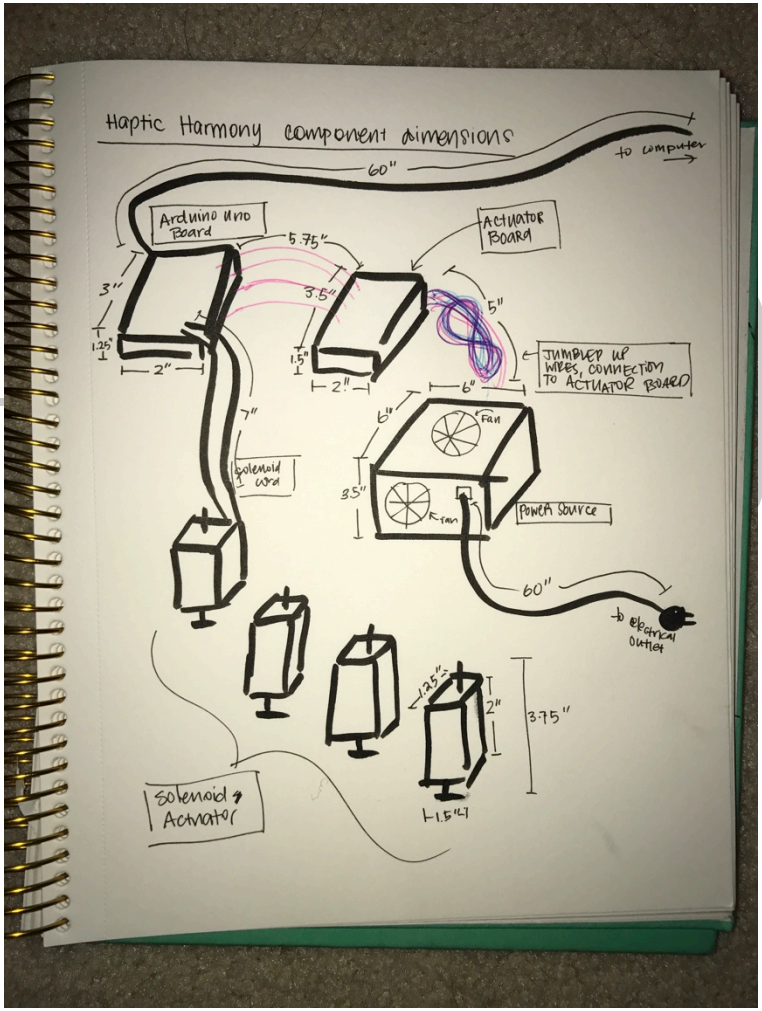
PureData

How it works

Parsed MIDI plays on Digital Audio Workstation → PureData translates played MIDI to on signal for digital pin on Arduino → **Firmata interfaces PureData to Arduino** → Arduino sends signal to power solenoid → Solenoid hits silicone/ ceramic/fabric

How it works

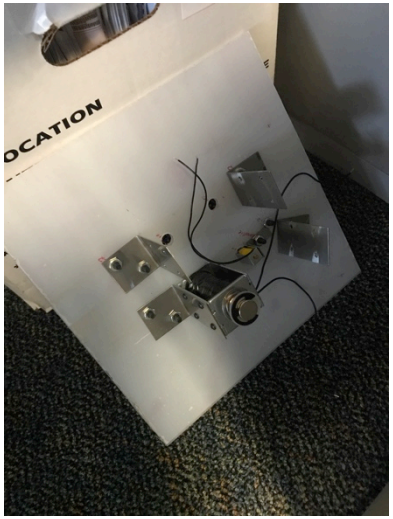
Parsed MIDI plays on Digital Audio Workstation

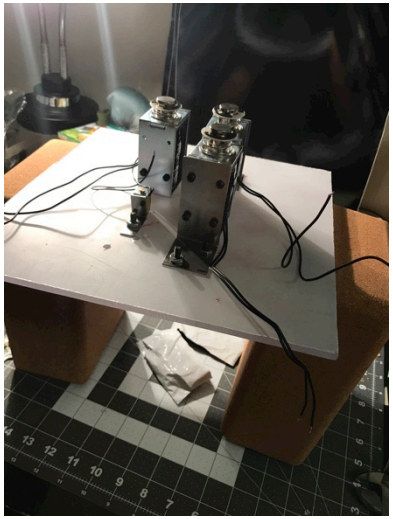


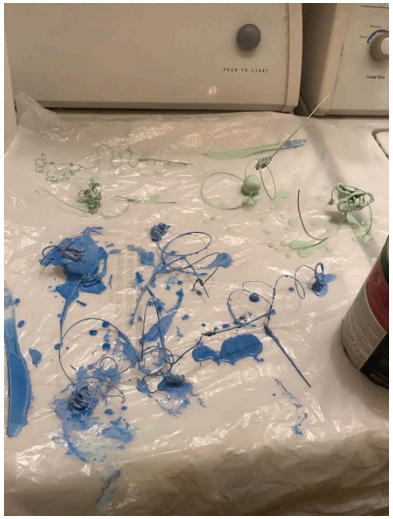
Arduino sends signal to power solenoid

Solenoid hits silicone/ ceramic/fabric

Physical construction







Many thanks to Blair Butler for helping to design and fabricate the solenoid actuator holder platform

Performing initial user studies

Click for video!

Final product

Click for video!