

↑↑↑%

↗  
(project title)



[https://github.com/msc-creative-computing/p-comp-jasper-zheng/tree/main/week\\_final](https://github.com/msc-creative-computing/p-comp-jasper-zheng/tree/main/week_final)



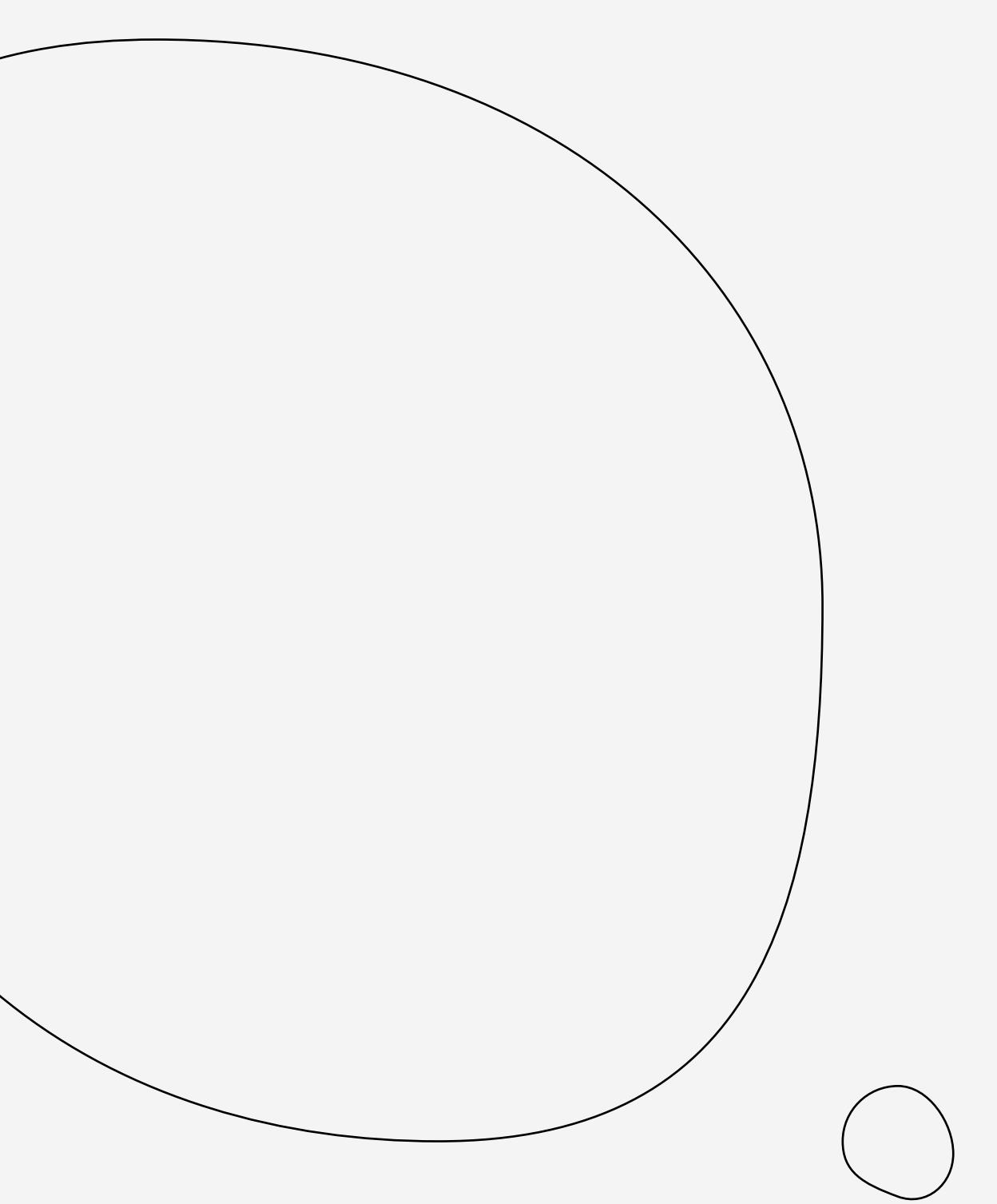
#### Objectives

# Organic Collaborator

↓  
(the nature)

↑↑↑% (up percent) is a sound installation that reveals possible interactions of plants, sound, light and humans. The assembled system is sensitive to changes in the electrostatic field, which can be triggered by either a **soft touch from humans, wind, moisturisation, or the natural turbulent inside the vessels and vines**.

Measured changes control parameters of the digitally synthesised sound (oscillation frequencies, LFO rates, modulation index). Fluctuating light bulbs in the glass jar indicate the current level of activation of the system.



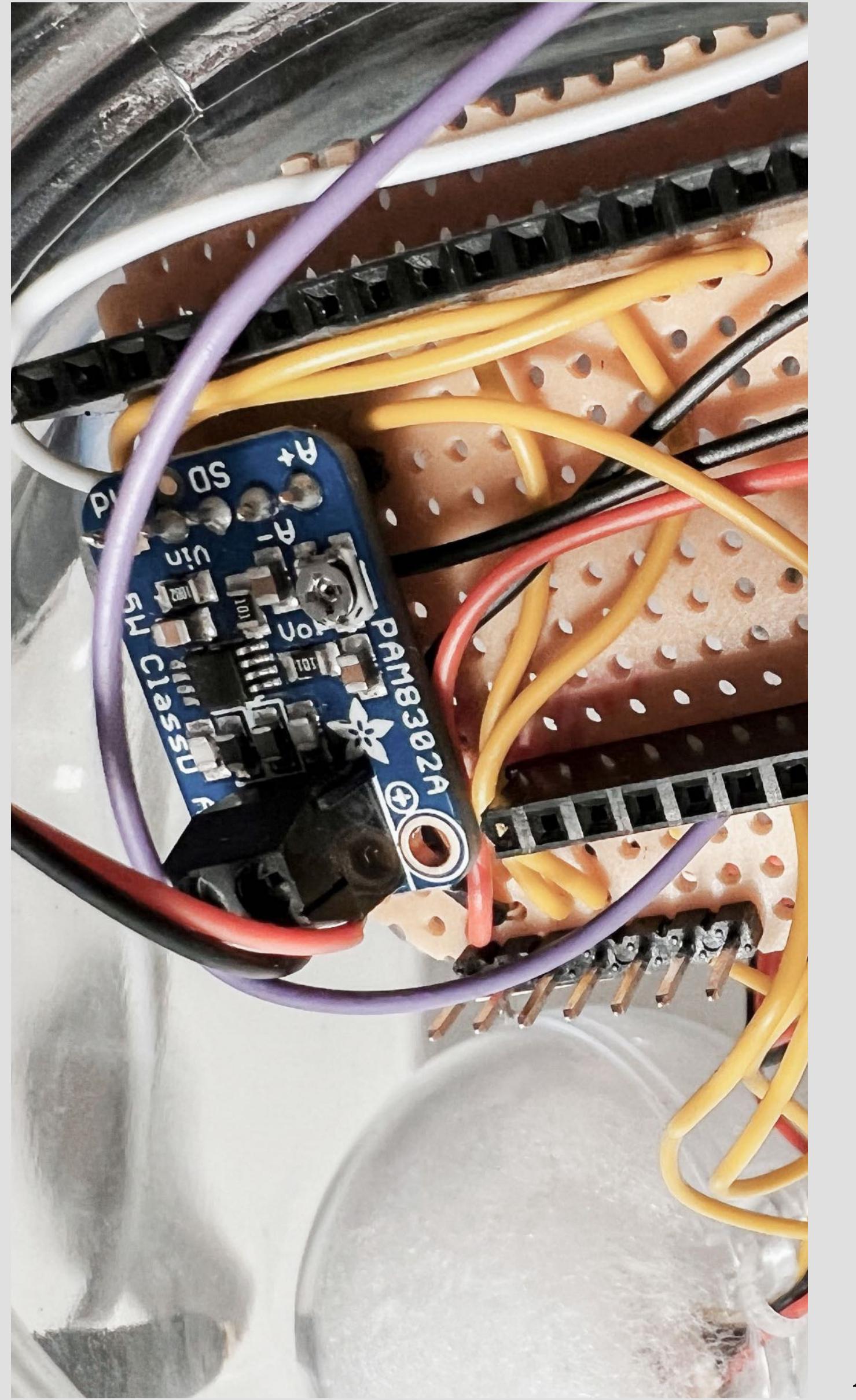
↑↑↑%  
2021, sound installation

custom plants, hand-made light blubs, glass jar, ESP32, MPR121, soil moisture sensor, photoresistor, PCBs, Mozzi library, amplifiers, speakers, alkaline batteries

**Full Video**

<https://youtu.be/vGd-JQdAmYI>

↑↑↑% (Sound Installation)



## Components

# Digitally Synthesised Sound

The sound is real-time generated by the Mozzi library running on a microcontroller (ESP32). The output signal from the DAC is amplified by a mono D amplifier PAM8302, and then passed to a speaker.

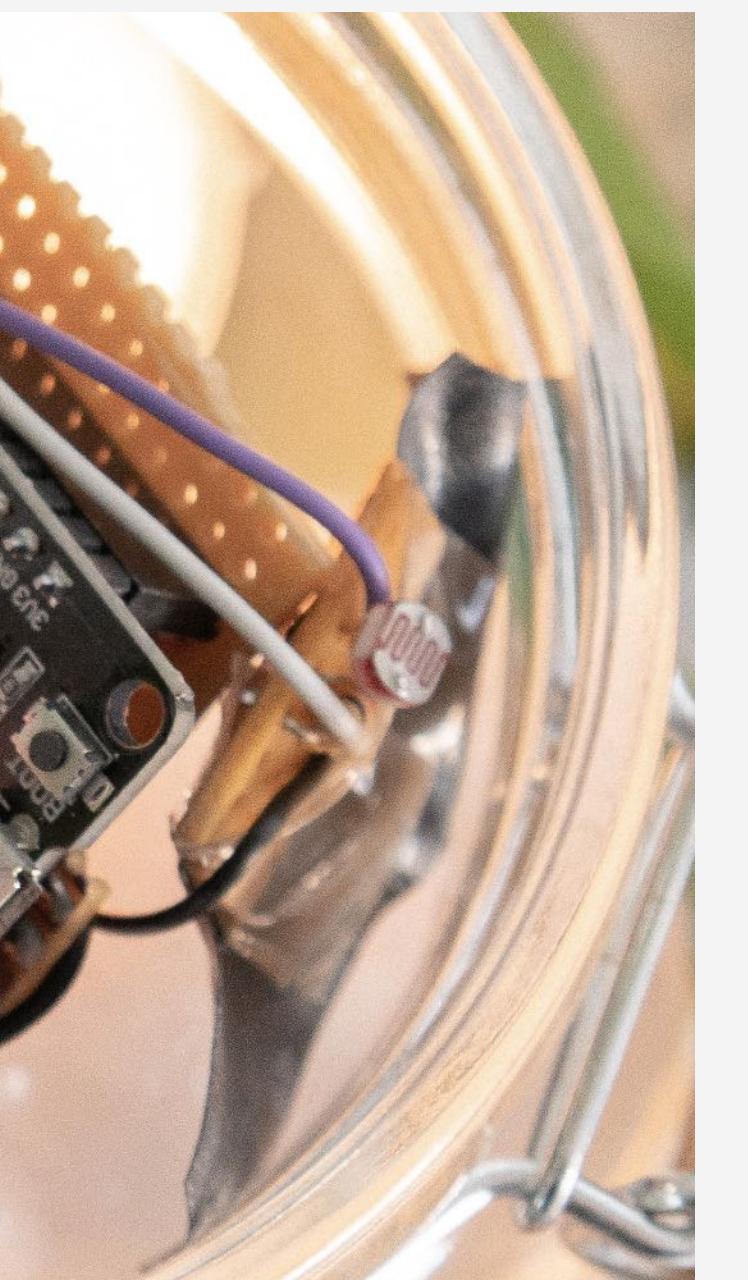
<https://github.com/sensorium/Mozzi>

There is a 4-ohm speaker installed in the jar, however, when filming the video, I used an external loudspeaker just to get better sound recordings.

# Light Bulbs

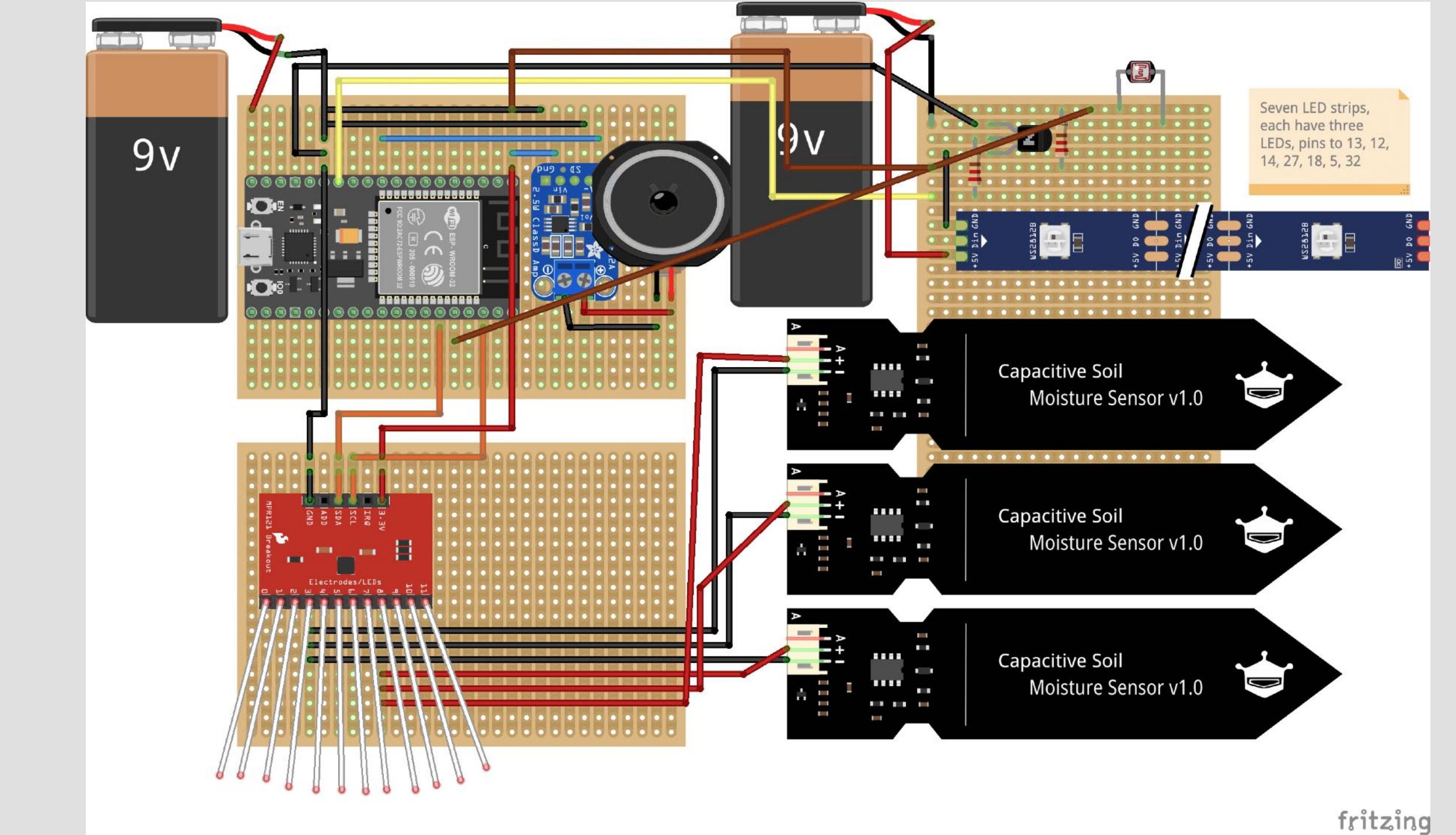


Seven hand-made light bulbs each consist of a strip with three LEDs, a control circuit on a custom PCB board, and some cotton.



An LDR sticks to the edge of the jar manages to sense whether the lid is closed.

# Schematic



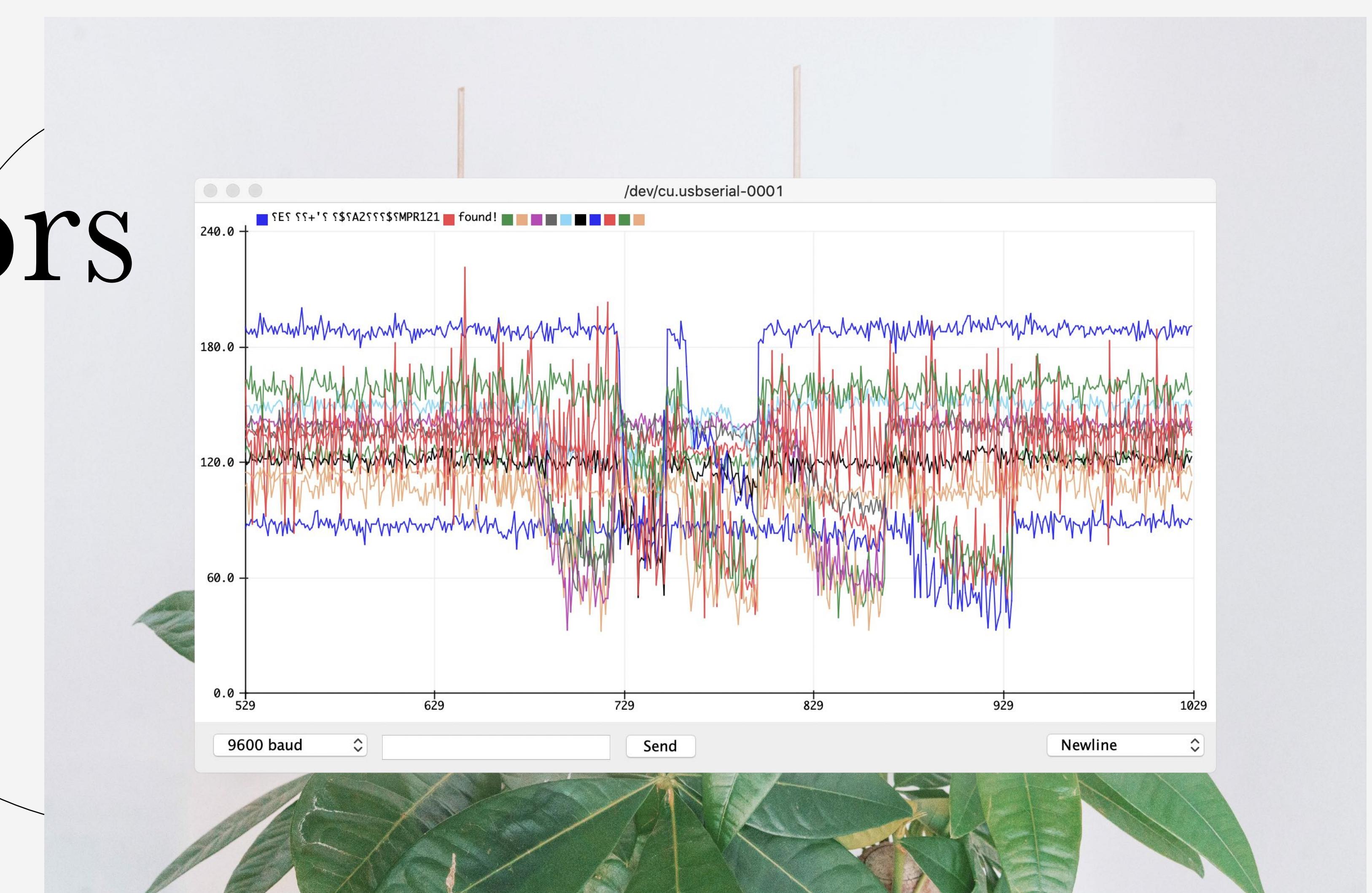
The system requires two 9v alkaline batteries (one for the light bulbs, one for the microcontroller).

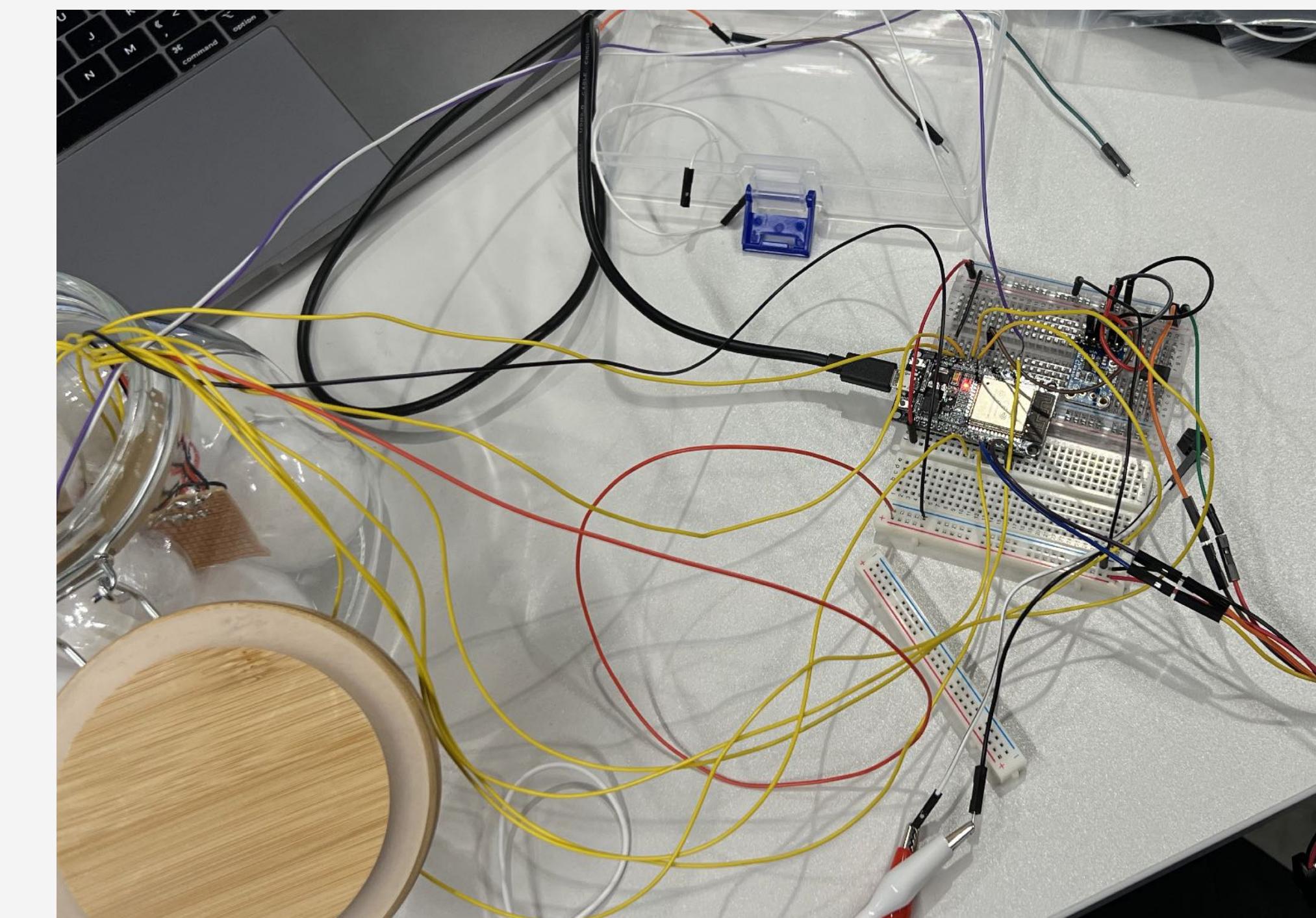
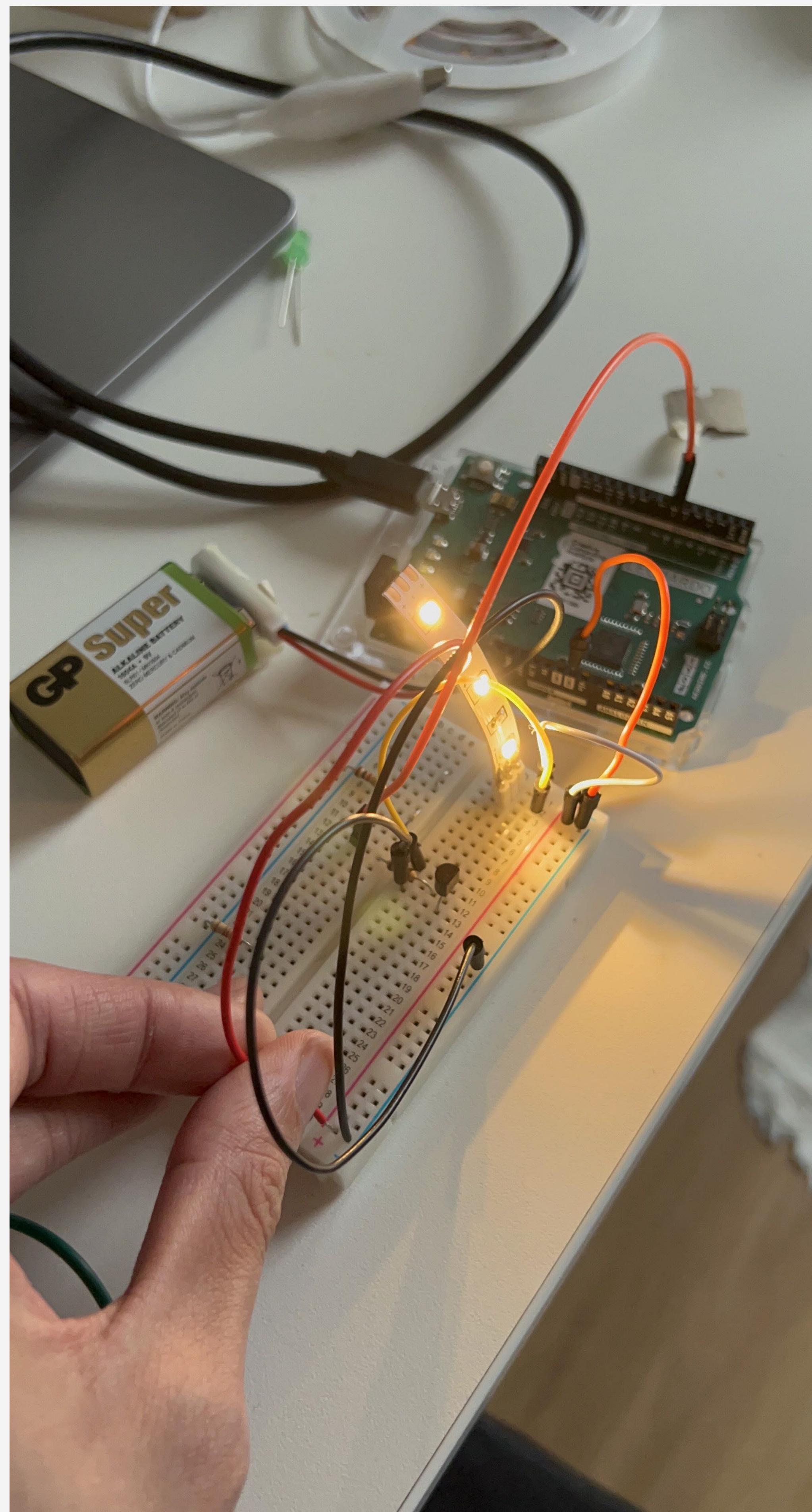
# MPR121 + Moisture Sensors

A capacitive touch sensor (MPR121) picks up the 12-channel input data from different parts of the plants.

Three moisture sensors are each attached to the soil.

<https://learn.adafruit.com/adafruit-mpr121-12-key-capacitive-touch-sensor-breakout-tutorial>







# Epilogue

↑↑↑% attempts to aestheticise the chaotic dynamics in natural systems. While the vegetal lives produce unpredictable signals that manipulate the light and the tonal terrain, we are invited to review the possibility of 'organic collaborators' that we might confront in the future.

**Video 1**

<https://youtu.be/vGd-JQdAmYI>

**Video 2**

<https://youtu.be/jQ1evAxYSqI>

**Github Repositories**

[https://github.com/msc-creative-computing/p-comp-jasper-zheng/tree/main/week\\_final](https://github.com/msc-creative-computing/p-comp-jasper-zheng/tree/main/week_final)