KARTHIKA BAIJU

A triple threat – designer, engineer and artist

Karthika Baiju

With my experience in product design and development, I enjoy translating complex conceptual problems into user-friendly solutions and bridging the gap between design and development. I passionately advocate for a growth mindset and am committed to continuously seeking opportunities to learn and improve. I am also an amateur artist who loves combining art, tech, AI and data, a recovering software engineer who loves taking on new challenges, and a cringy dad joke enthusiast.

EXPERIENCE

Designer,
Blum Center for Developing Economies
Berkeley, CA | Sep 2022 - Present

- Leading the website accessibility initiative, ensuring compliance with the Consent Decree, resulting in a fully accessible Blum Center website.
- Led redesign of the website to increase usability, resulting in **improved navigation** and leading to a **15% increase** in user engagement.
- Collaborated with leadership and stakeholders to define and design a user-friendly website that communicated the organization's mission, vision, and goals.
- Aligned design recommendations with industry standards and organizational goals, optimizing user experience and ensuring a balance of flexibility, and ease of use.

Interaction (HCI) Design Researcher,
Everyday Design Studio
British Columbia, Canada | Jun 2023 - Aug 2023

- Conducted academic research on "Design for After-Life" at Simon Fraser University, emphasizing the importance of **sustainable design principles**.
- Collaborated with cross-university HCI researchers to explore how technology transforms interaction design in everyday practices; redefined living with technology.
- Investigated innovative strategies for developing decomposable batteries, a cornerstone of eco-conscious product design, emphasizing **responsible product lifecycles** and their impact on the environment.

Product Designer,
Vet's Pocket - Freelance
Hyderabad, India | Sep 2020 - Jan 2022

- Designed a mobile centric experience for field vets to optimize the business process and record keeping so that they can provide better care to the patients, envisioning a **saving of 2-3 hours per week**.

- Led the end-to-end design process, including user research, wireframing, and interactive prototypes, ensuring alignment with user goals and business needs.
- Built and maintained a **design system** and style guide ensuring a unified and consistent visual design and user experience.

Software Engineer,
Microsoft
Hyderabad, India | Jun 2018 - July 2022

- Engineered and designed "Compass," a SaaS-based application for Microsoft Azure data center build and commissioning, improving **commissioning speed by 40%** to gain a competitive advantage over other cloud service providers.
- Operated in fast-paced, agile and dynamic environments, influencing stakeholders and driving meaningful, incremental improvements to existing products to achieve a **~20% performance boost.**
- Conducted user research and data backed product decisions to strategically redesign critical modules, achieving significant monthly time **savings of 50-80 man hours.**
- Effectively **collaborated with cross-disciplinary teams,** consisting of research, design, development, engineering and product management to identify, plan, and execute end-to-end design solutions that enhance user experiences.
- Developed user scenarios, user flows, wireframes, and prototypes for new features and enhancements to the Safety and Commissioning modules.

EDUCATION

University of California, Berkeley
Master of Design, Human Computer Interaction (HCI), Dec 2023

Cochin University of Science and Technology, India
B.Tech Electronics and Communication, 2018

SKILLS

Design Skills
Wireframing, Storyboarding, User Flows, Prototyping, Mockups, User Experience (UX) Design, Interaction Design, Information Architecture, Visual Design, Design Methodologies, Design Systems, Design Thinking, Mobile and Desktop Design, Web Applications

Programming
C#, C++, HTML, CSS, JavaScript, TypeScript, Python, Unity, Processing, P5.js, Front end development

Design Tools
Figma, Adobe XD, Fusion 360 (3D Modeling), Adobe Creative Suite (Illustrator, InDesign, Photoshop), Google Suite, PowerPoint

UX Research
Usability Testing, Contextual Interview, Card Sorting, Qualitative Analysis, A/B Testing, Data Visualization

AI Tools
ChatGPT (OpenAI), Midjourney, DALL.E (OpenAI)

AWARDS

John L. Simpson Research Fellowship (HCI Research), 2023
University of California, Berkeley

MDes Distinguished Scholar Award
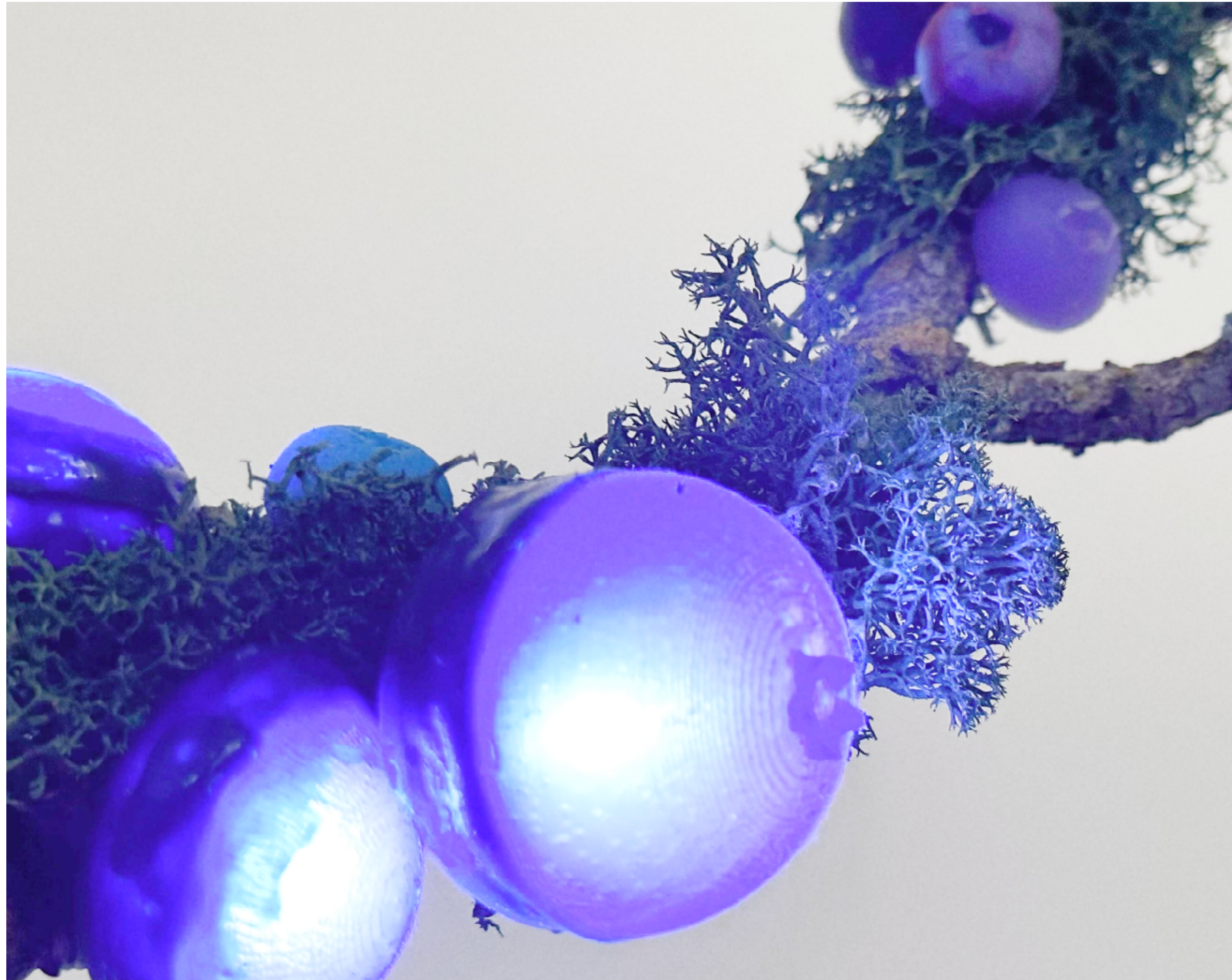University of California, Berkeley

Grace Hopper India Conference Student Scholar, 2017
AnitaB.org

RADIOACTIVE BLUEBERRIES

A Glimpse into the Future of Fruit

01

A speculative project and material investigation reflecting on the potential future of fruits amidst escalating radioactive exposure, drawing inspiration from the current harvesting of contaminated blueberries in Chernobyl.

It presents a thought-provoking critique through a soft robotic blueberry bush crafted with silicone casting, which glows and pulses eerily, evoking a future where all fruits may bear the mark of radioactivity. This project was created as part of investigating how silicone can be used as a medium for soft robotics and HCI.

"Microplastic in our body, in the future we will have radioactive materials in our body"

Research

We drew inspiration from the Feral Atlas article, "Chernobyl is on your breakfast table", which discusses radioactive Chernobyl blueberries. Our concept relied on achieving the visual appearance of blueberries, and we started fabricating early and iterating immediately. We attempted to cast something that resembled a blueberry by adding blue silicone pigment when casting.

Victoria Baskin Coffey's artwork in Kate Brown's Feral Atlas article titled "Chernobyl is on your breakfast table"
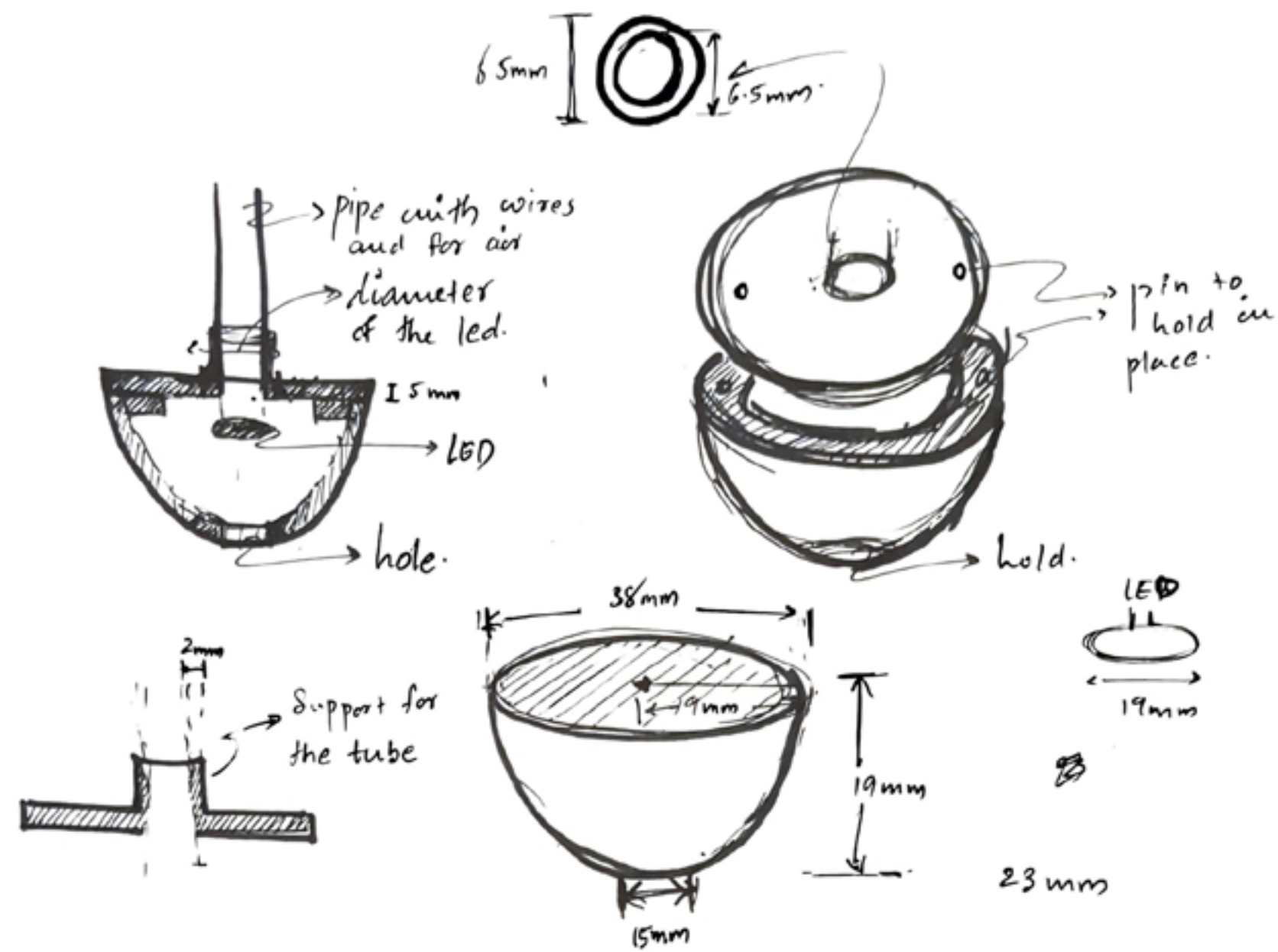
Material Exploration

We experimented with silicone pigments for the ideal blueberry color, mixing blue, red, and a hint of green. The mix was dark, but we avoided opaque white pigment due to LED compatibility. For the final color, we preferred the richer Silc-Pig type in paint pots over translucent options.

Our "chocolate dipped strawberry" technique emerged to conceal seams in the prototype, where an extra blueberry-pigmented silicone layer ensured a seamless finish.
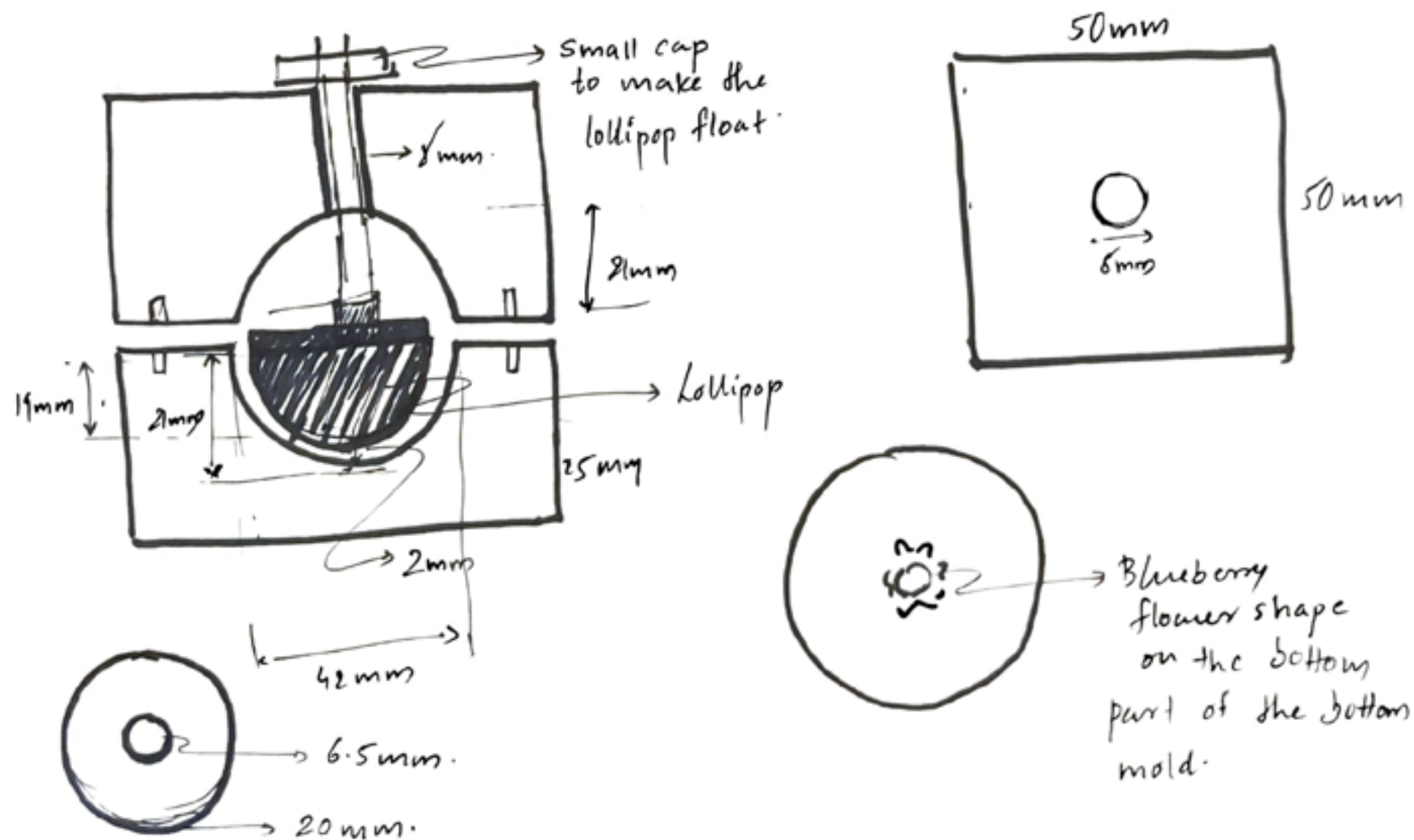
Inside

shell mode.
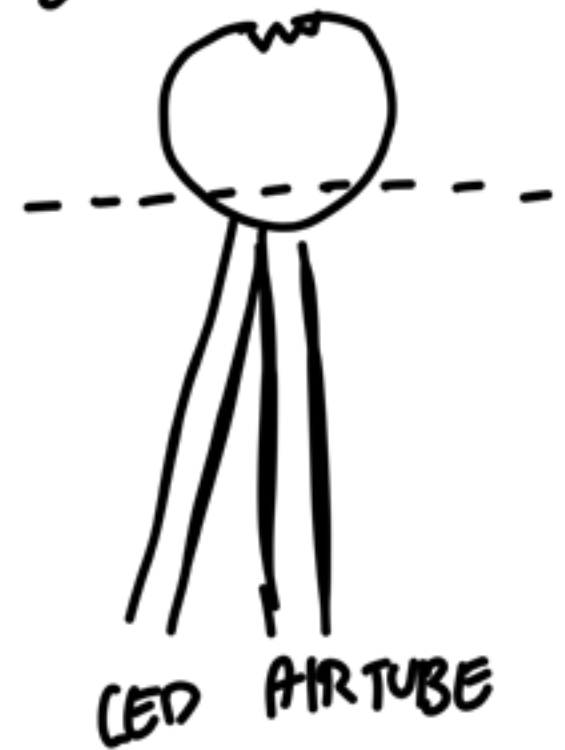
6.5mm   6.5mm

→ pipe with wires and for air
→ diameter of the led.
15mm
→ LED
→ hole.

→ pin to hold in place.

2mm
→ Support for the tube

38mm
→ 9mm
19mm
23mm
15mm

LED
19mm
B

Outside.

→ Small cap to make the lollipop float.
→ 3mm
→ 21mm
→ Lollipop
25mm
14mm   2mm

→ 2mm
42mm

→ 6.5mm.
→ 20mm.

50mm
50mm
○
6mm

→ Blueberry flower shape on the bottom part of the bottom mold.

BLUEBERRY
SIDE VIEW

GLOWING
BLUE &
PULSATING

LED   AIRTUBE

LEAVES

RADIOACTIVE BLUEBERRIES

BOWL OF BLUEBERRIES
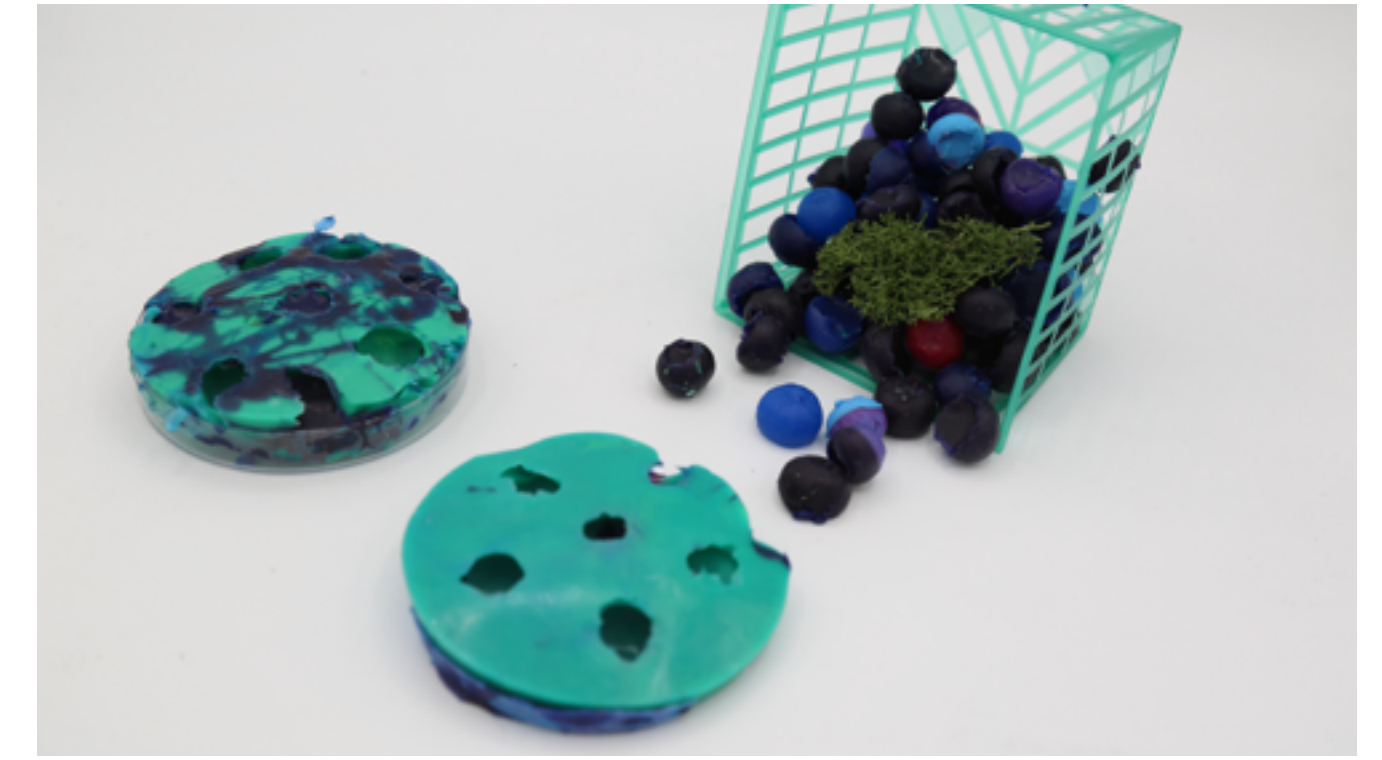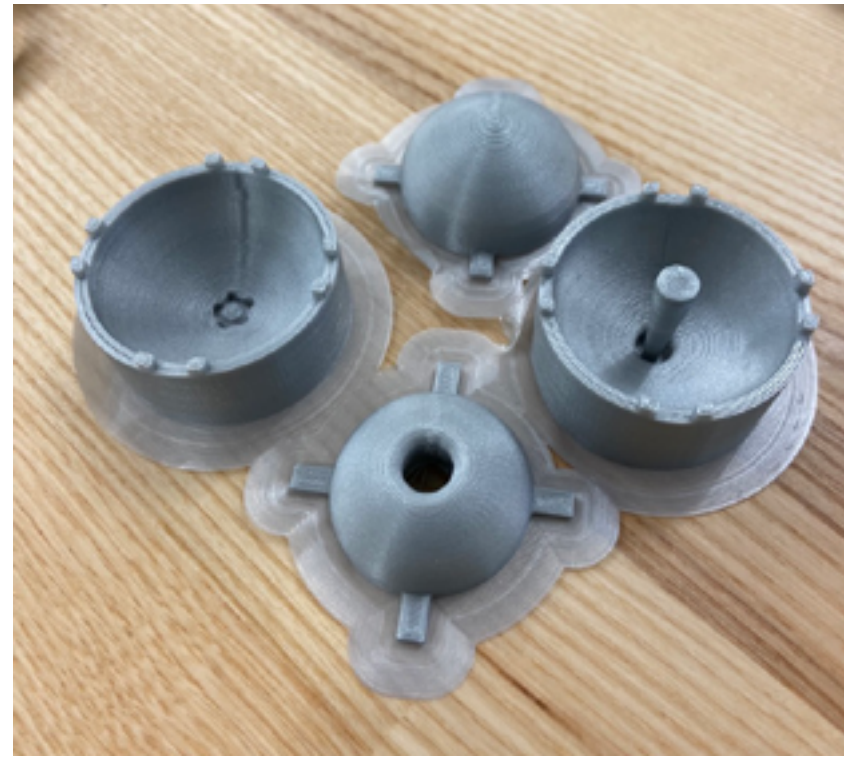
FRESHLY FARMED
BLUEBERRIES

We sketched out our idea of what we wanted the blueberry and bush to look like. We then crafted a 4-part 3D printed mold yielding a blueberry shape with a star-shaped top. We also tried creating a mold with a floating element inside. But for that iteration, the silicone kept seeping into the mold as well as not setting properly.

Prototyping

Concealing the hardware was crucial to mimic natural blueberries. We built a blueberry plant in a planter that hides the ESP32 microcontroller, air pumps, and batteries.

Pneumatic tubes and LED wires, secured with twist ties behind branches and masked with moss and smaller silicone blueberries, ensured a seamless appearance.

FRESHLY FARMED
BLUEBERRIES

PRODUCT OF
CHERNOBYL
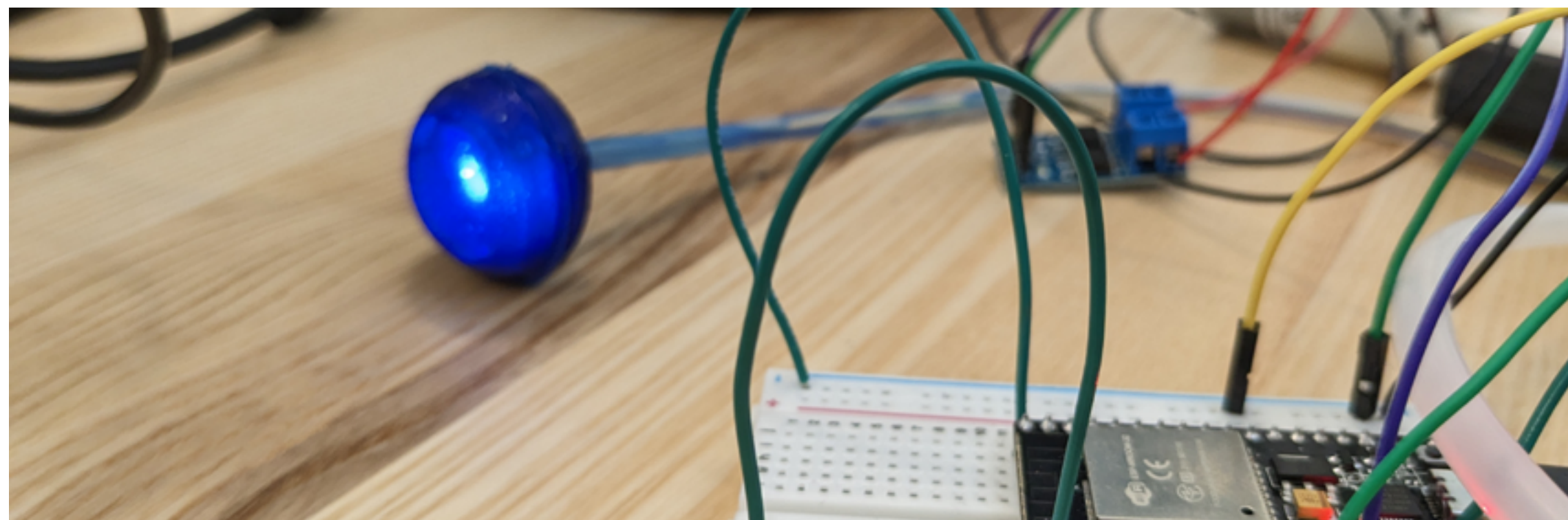
FRESHLY FARMED *Organic* чорниця

IF THE EARTH COULD TALK...

An Interactive Installation on the Environmental Footprint of Humanity

02

This art installation uses barefoot interactions to create visual ripples on the ground, metaphorically representing the environmental impact of human actions. The ripples intensify with repeated movement, symbolizing the potential for irreversible damage, while pausing shows the earth's slow healing process.

The experience fosters a deeper connection with nature, reminding us of the importance of maintaining a sustainable balance with our planet.

Dear inhabitants of me [earth],

My tried and tested resilience in the face of human induced ecological casualties has awakened a consciousness. It has morphed into visceral responses to remind you that I am still here. I have seen how my presence has not only permeated your minds but has entrenched body and soul because of the constant disregard of our relationship.

As we both represent the triality of past, present and future, I can only hope, that with time, human error transforms for the greater good of all life
who call me home.

Sincerely,

"As an artist, other than thinking about what we want to express as a human, I care more about how the ground feel, what the ground want to express when we step on it."

- Nature's response to human interaction
- Physical manifestation of feelings (that can be shared)
- Psychological influence (focus on urban spaces)
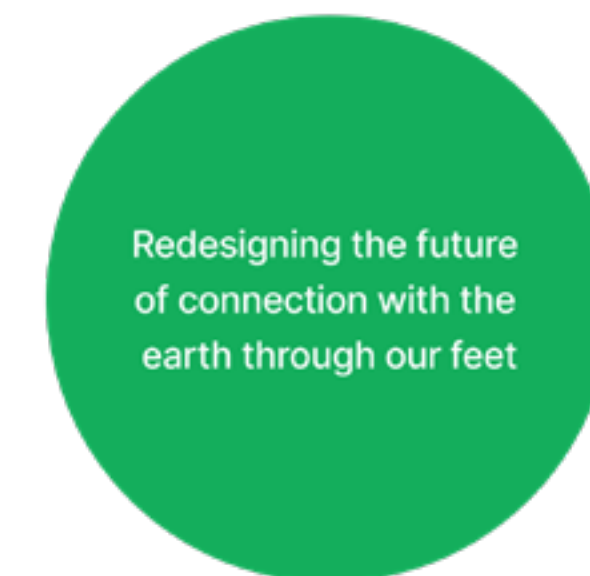- Fulfilling emotional void
- Physical manifestations of health

Reimagine the future of:

Enhancing Human interaction/
perception with:
- Physical World
- Natural World
- Internal World
Through sensor technology and AR/VR

Lens 1: A direct connection with the earth and our lived environments to inhance our percpetion

Lens 2: Create an object that evokes the feeling of earth's past, present and future.

Doesn't have to be footwear

...

Whatever we're creating it we should be mindful of it's impact.

What materials? Sustainable? Who is our audience? How do we want to invite them into our project? What is the relevance of our project?

What you see isn't what you're experiencing. What you feel isn't what you're touching.

i.e touching a table but what you're actually feeling is the material in it's most natural state.

Our potential users:

- People who love nature?
- Sustainability concious people
- Environmentalist

Consider sense of smell and taste (least explored of our senses)

(The goal is to focus on two of our five senses)
Sight
Smell
Touch
Taste
Hearing

The Seven Senses — Pathways

What are the seven senses?
Yes, there are seven!

- Sight (Vision)
- Hearing (Auditory)
- Smell (Olfactory)
- Taste (Gustatory)
- Touch (Tactile)
- Vestibular (Movement)
- Proprioception (Body Position)

Narrow Down Down →

Redesigning the future of connection with the earth through our feet

Accessibility point to remember:
- people born without legs
- people with disabilities

Carmela Wilkins

Physical protection of wearing shoes to protect us from the elements (the elements we created)

Carmela Wilkins

We started with elaborating on the topics that we are interested in exploring. We want to explore the intersection of: Nature's response to human interaction, the physical manifestation of feelings, psychological influence (focus on urban spaces), fulfilling emotional void and the physical manifestations of health.

This we narrowed it down to the topic: **Redesigning the future of connection with the earth through our feet.**
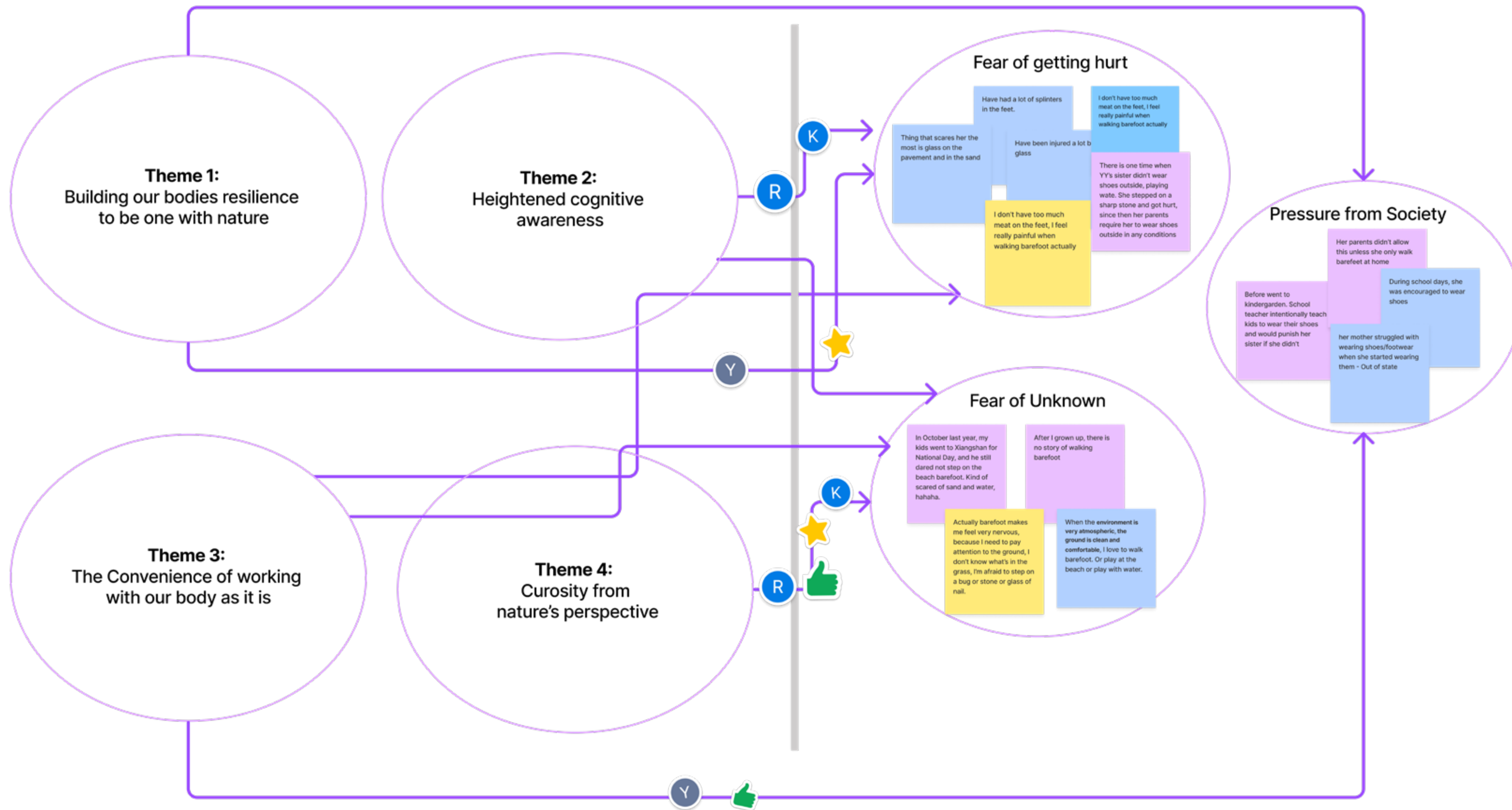
We went out and talked to people about walking barefoot

Theme 1:
Building our bodies resilience to be one with nature

Theme 2:
Heightened cognitive awareness

Theme 3:
The Convenience of working with our body as it is

Theme 4:
Curosity from nature's perspective

Fear of getting hurt

Have had a lot of splinters in the feet.

I don't have too much meat on the feet, I feel really painful when walking barefoot actually

Thing that scares her the most is glass on the pavement and in the sand

Have been injured a lot b glass

There is one time when YY's sister didn't wear shoes outside, playing wate. She stepped on a sharp stone and got hurt, since then her parents require her to wear shoes outside in any conditions

I don't have too much meat on the feet, I feel really painful when walking barefoot actually

Pressure from Society

Her parents didn't allow this unless she only walk barefeet at home

During school days, she was encouraged to wear shoes

Before went to kindergarden. School teacher intentionally teach kids to wear their shoes and would punish her sister if she didn't

her mother struggled with wearing shoes/footwear when she started wearing them - Out of state

Fear of Unknown

In October last year, my kids went to Xiangshan for National Day, and he still dared not step on the beach barefoot. Kind of scared of sand and water, hahaha.

After I grown up, there is no story of walking barefoot

Actually barefoot makes me feel very nervous, because I need to pay attention to the ground, I don't know what's in the grass, I'm afraid to step on a bug or stone or glass of nail.

When the environment is very atmospheric, the ground is clean and comfortable, I love to walk barefoot. Or play at the beach or play with water.

Prototyping

Creating the test tile with lasercut plywood, pressure sensors and arduino. We added moss to the top of the wood to give it more texture and make it feel like walking on earth.

We then moved on to scale the tiles to create a walkable portion of the installation. We created the visualisation of ribbled on the place that people step on using Processing and using a projector to project it on the tiles.
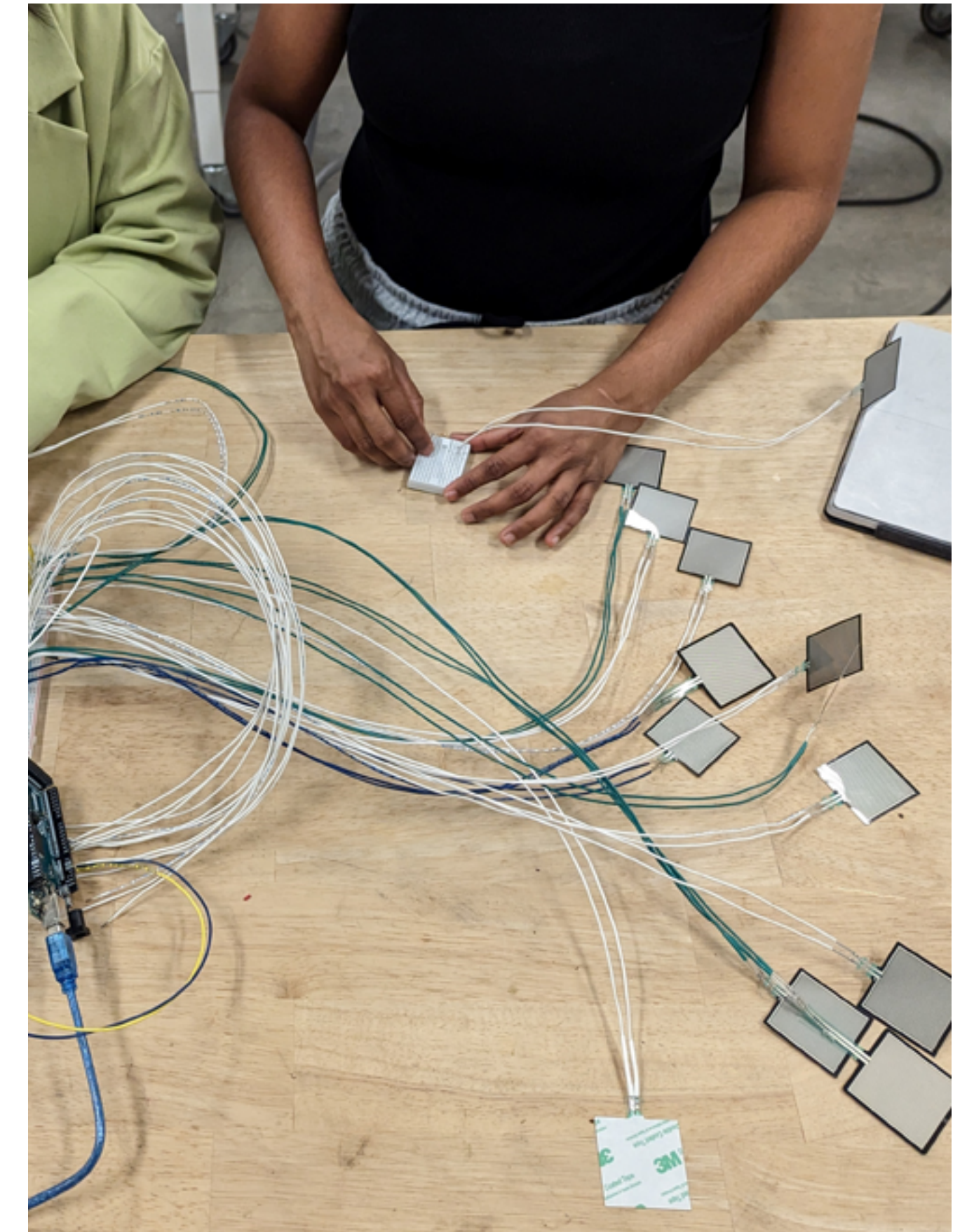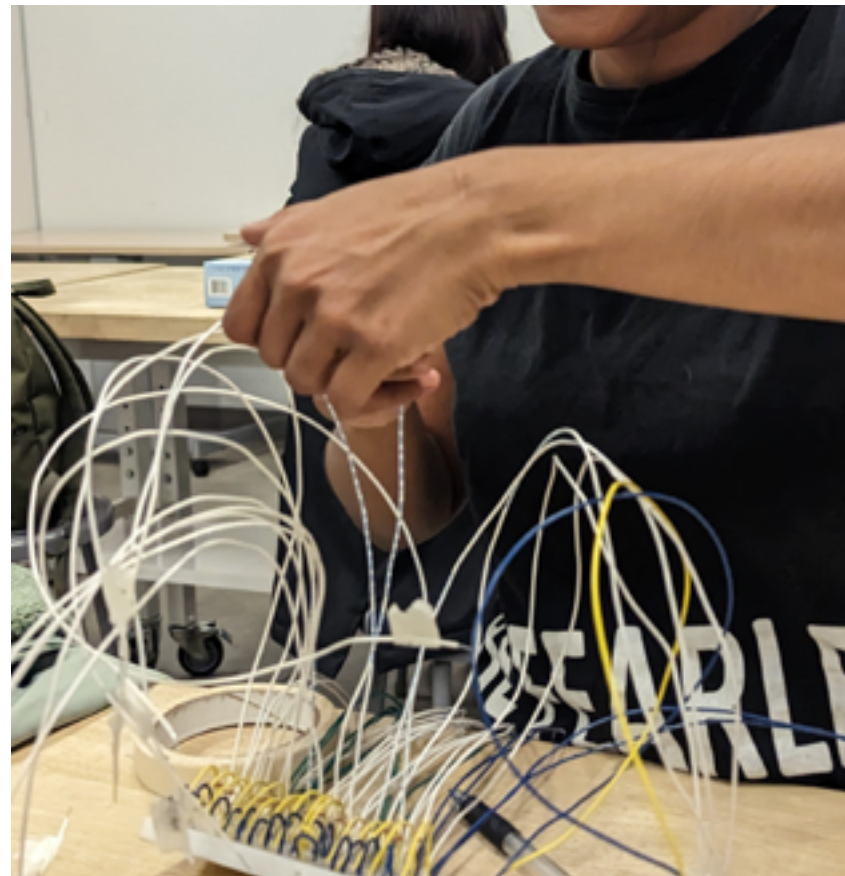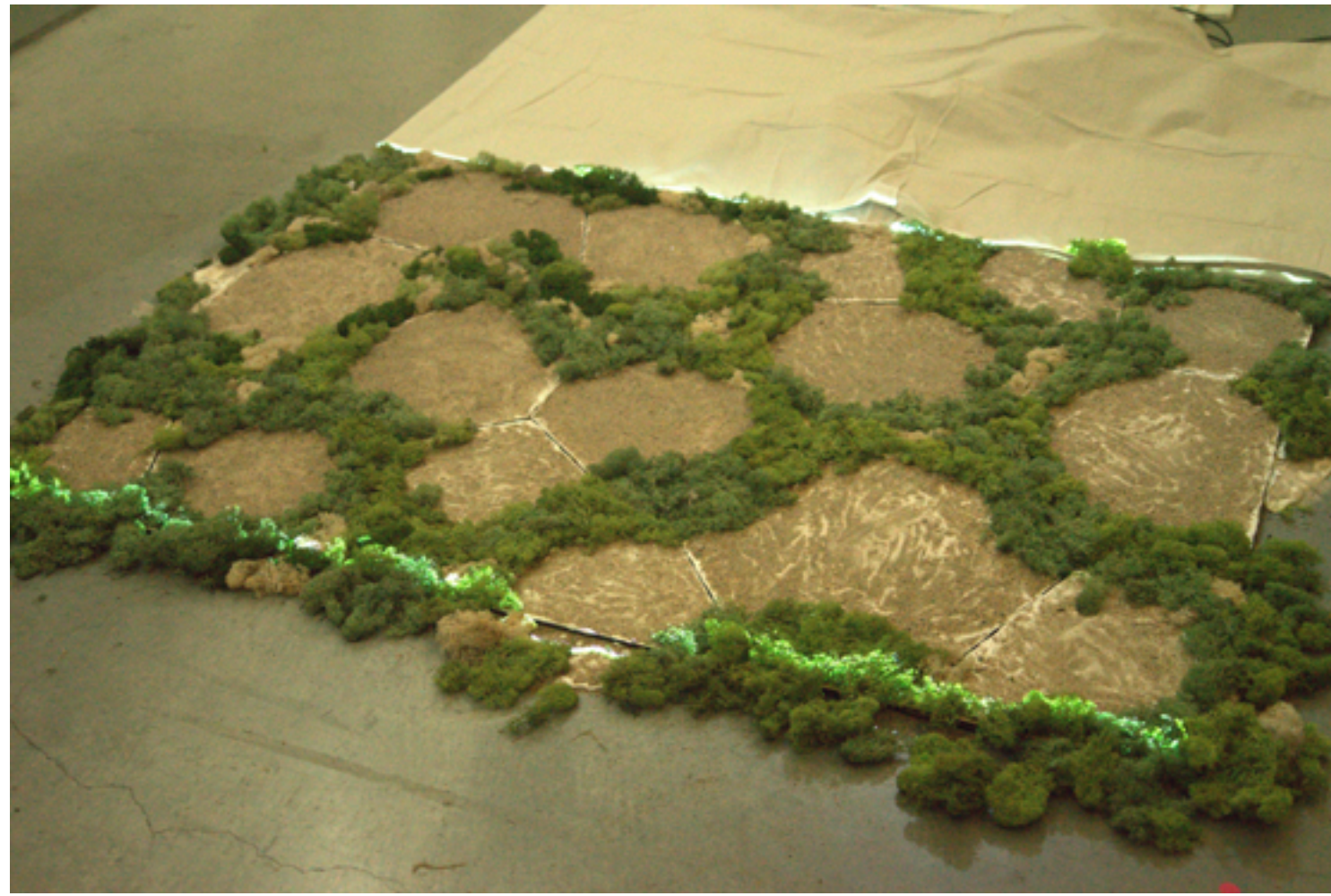
if earth could talk, it would SCREAM

Dear inhabitants of me [earth],

My tried and tested resilience in the face of human induced ecological casualties has awakened a consciousness. It has morphed into visceral responses to remind you that I am still here. I have seen how my presence has not only permeated your minds but has entrenched body and soul because of the constant disregard of our relationship.

As we both represent the triality of past, present and future, I can only hope, that with time, human error transforms for the greater good of all life who call me home.

Sincerely,

earth
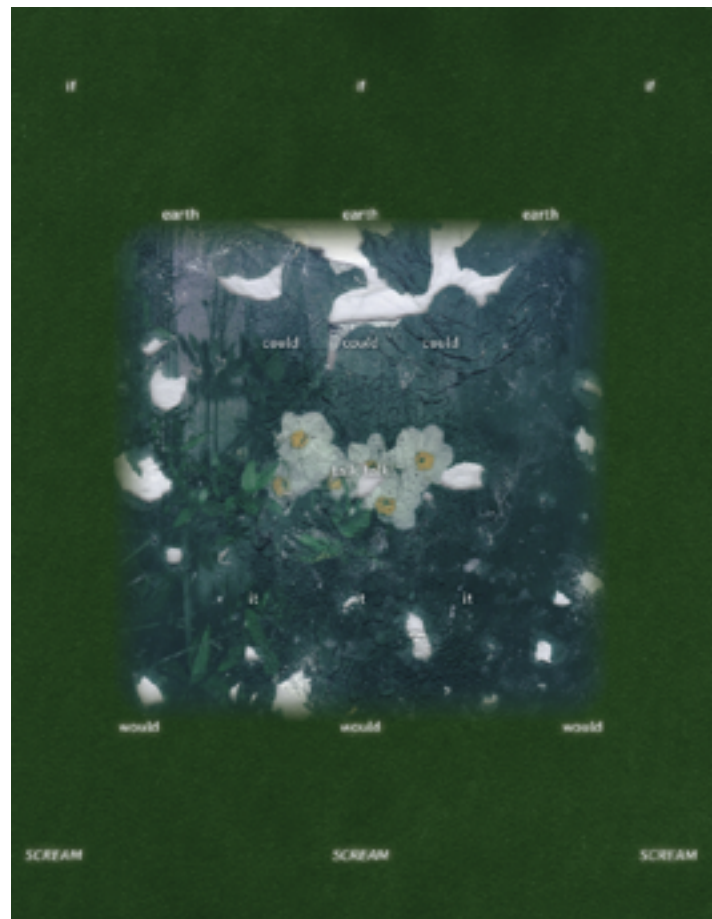
THE HIDDEN LIFE OF EVERYDAY OBJECTS

Influence of Embodied Memories of Objects on Attachment and Consumer Behavior

03

What if we could use design to create artifacts that have a way of embodying their memories and histories of their lives. How can we encourage human object bond by using these that tell a narrative.

"It's not only me remembering the relationship with the object, but also the object remembering its relationship with me"

The core of "Hidden Stories of Everyday Objects" is to enhance the bond between humans and objects through narrative-rich designs, challenging the quick turnover of consumer culture. The study features a counterfactual artifact, a ceramic mug that chronicles and visualizes the sounds it hears as abstract images, encouraging user interaction and emotional attachment. This mug's life stories, displayed through a specially crafted wooden block, aim to elevate everyday interactions into meaningful connections and advocate for a sustainable ethos by treasuring the history embedded within our belongings.
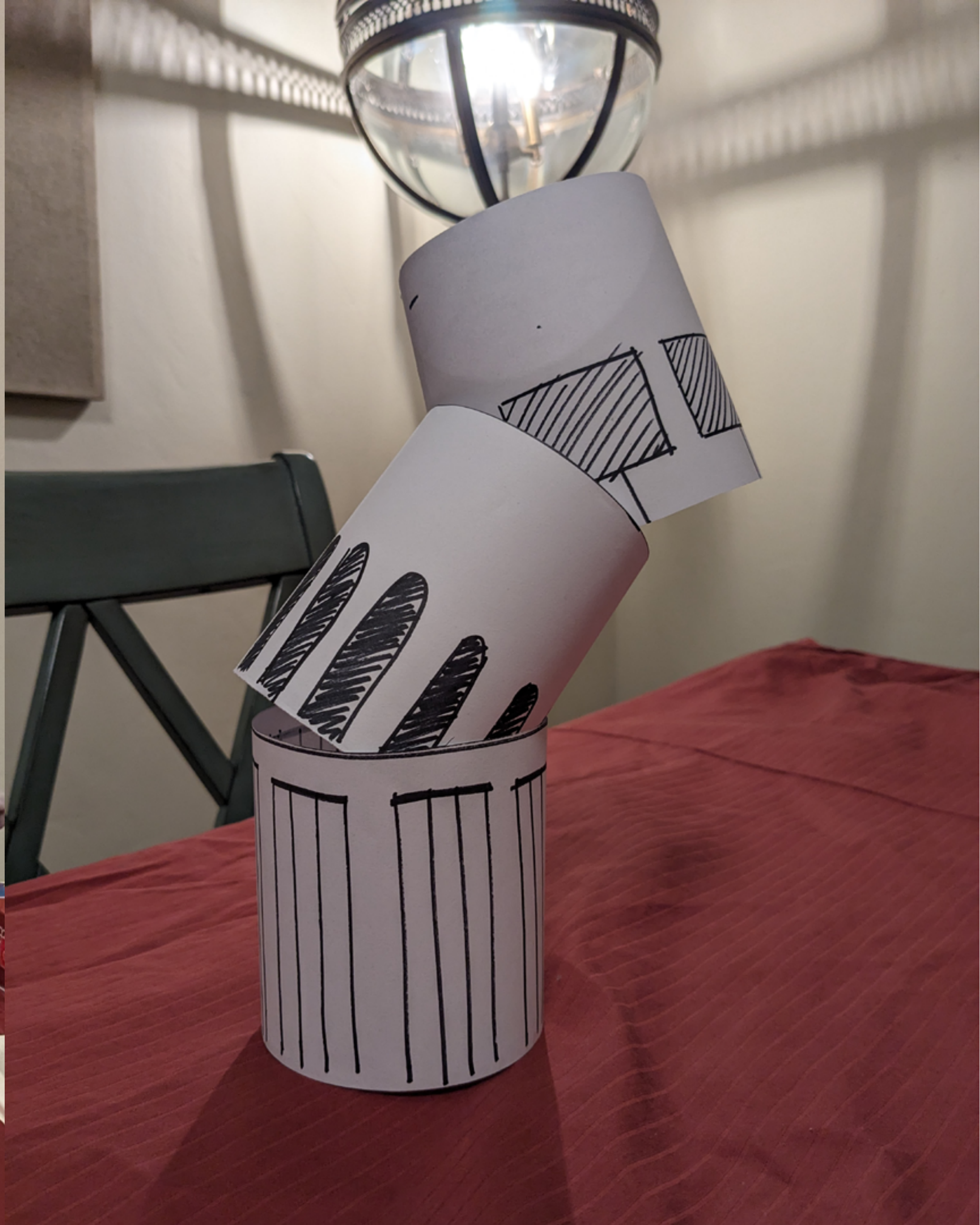
Conductive Paint Experiments

I experimented with conductive paints to create interactive touch sensors on a ceramic mug. Using both store-bought and homemade paints, including food-safe activated charcoal and more conductive graphite-acrylic mixtures, I transformed the mug's surface into a responsive interface that detects user contact.

21/10

3 pass
Activated
charcoal

Ceramics as a HCI Medium

The mug itself was crafted using ceramics due to its aesthetic appeal and compatibility with domestic use. The design process involved slip-casting using plaster molds of a 3D-printed mug, with the clay being hardened in the mold, and then bisque-fired. Conductive paint patterns were added using vinyl cutouts, which were later removed after underglazing and glazing, leaving grooves, in a method I call vinyl resist. Similar to paper resist in ceramics, vinyl resist is where vinyl cut patterns are adhered to the surface of the bisque-fired object and used to resist underglaze and glaze. These grooves can then be filled with conductive paint, creating a touch sensor. This approach was inspired by Clement Zheng's Ceramic Circuits but adapted the method for the mug's fabrication process. The exploration showed the potential for using ceramics as a medium in human-computer interaction (HCI) and the possibilities of crafting interactive ceramic surfaces.
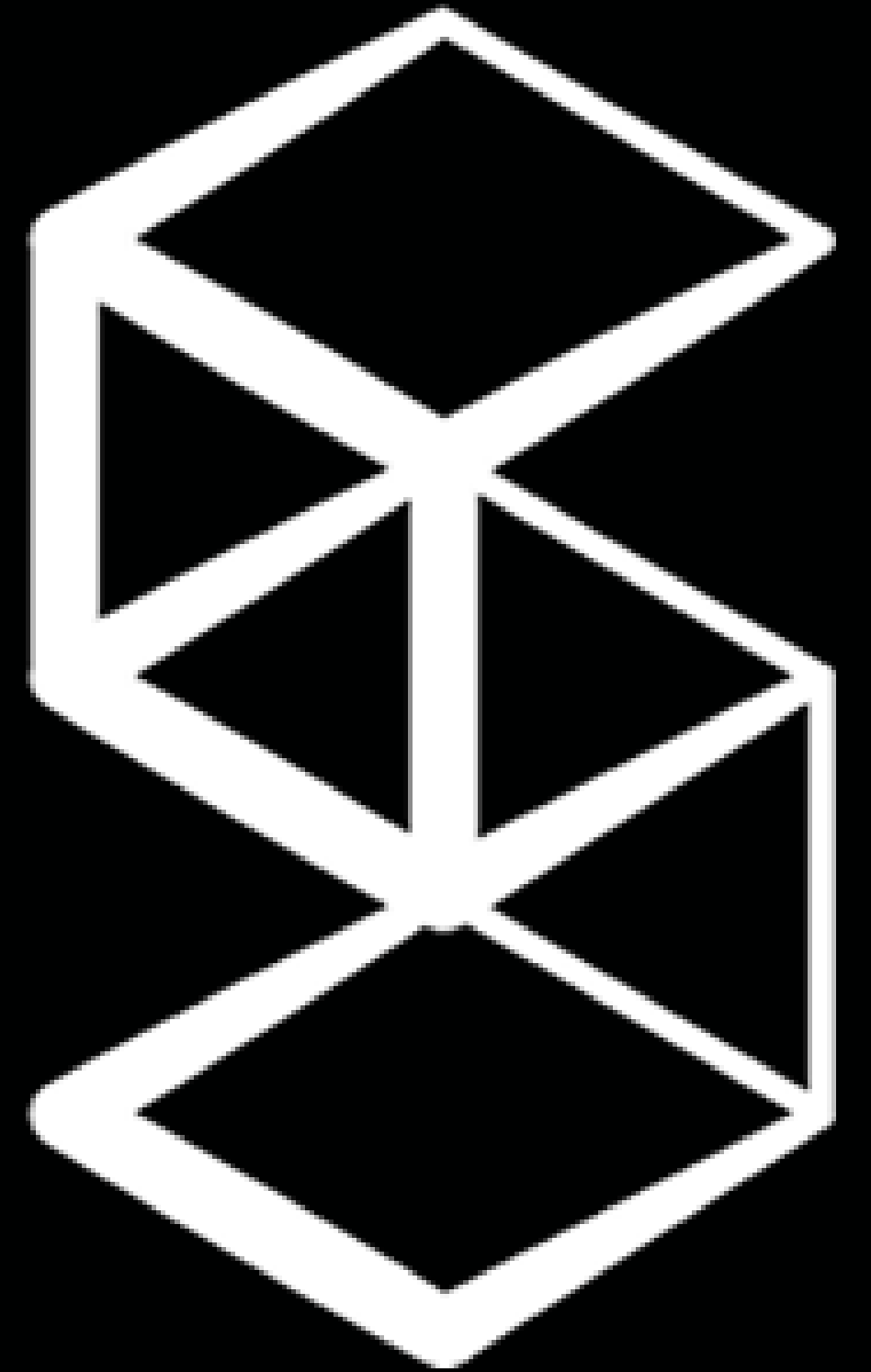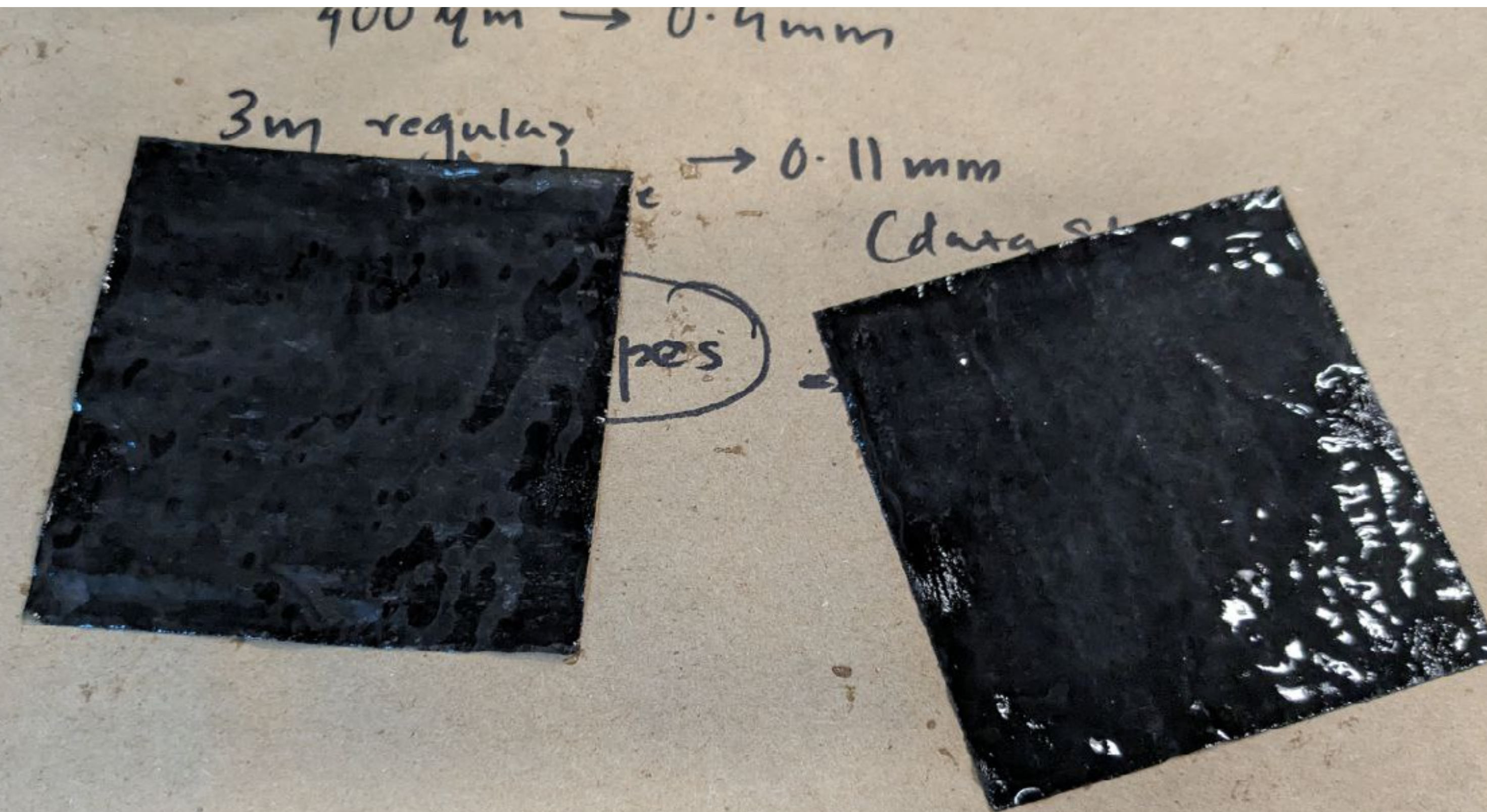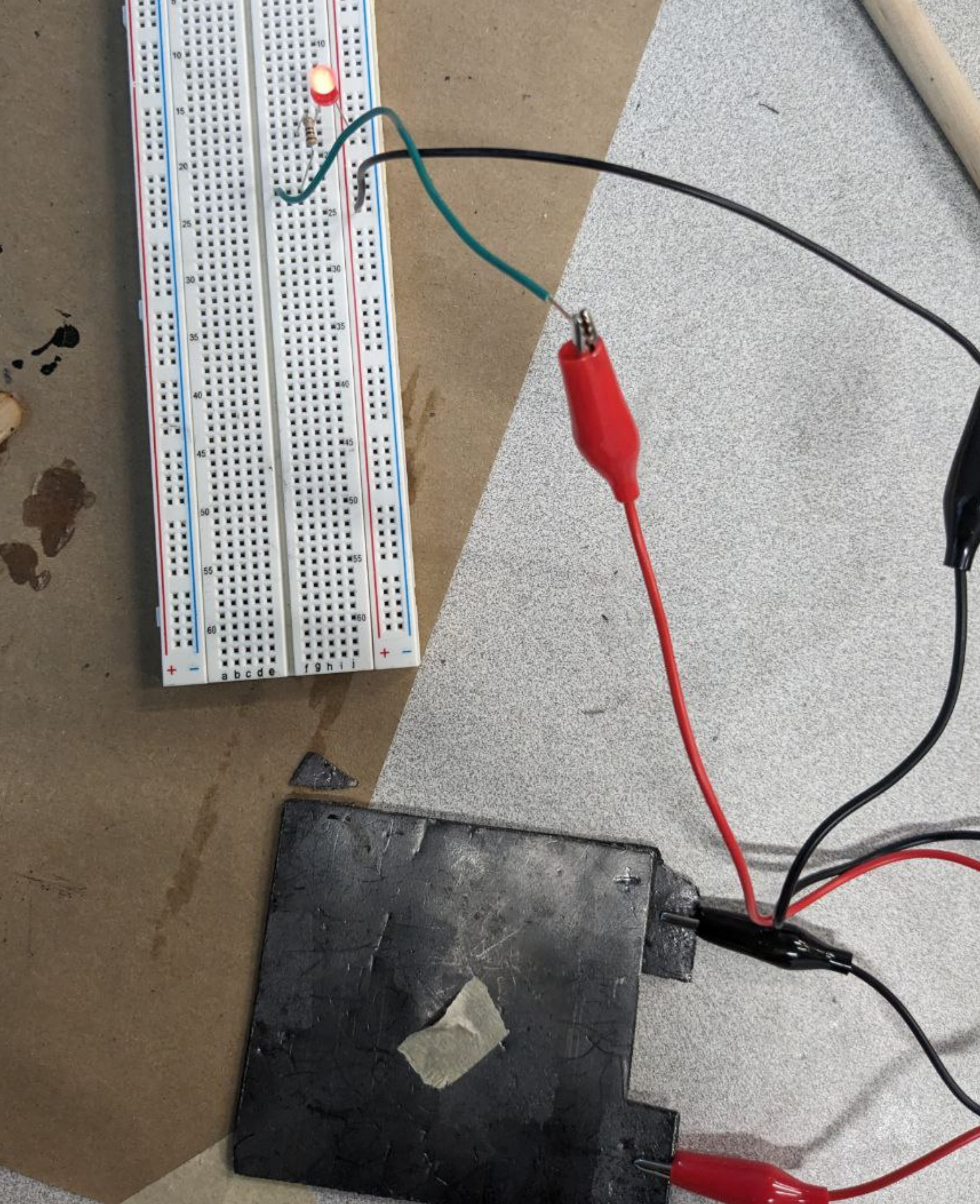
Decomposable Batteries

Researched on creating and using decomposable batteries using graphite, activated charcoal, salt and glycerine, to be used in the research project Turner Box. I was investigating on whether these batteries would be powerful enough to power a ESP32 and an ESP32 Camera.

SFU SIMON FRASER UNIVERSITY

Information ?