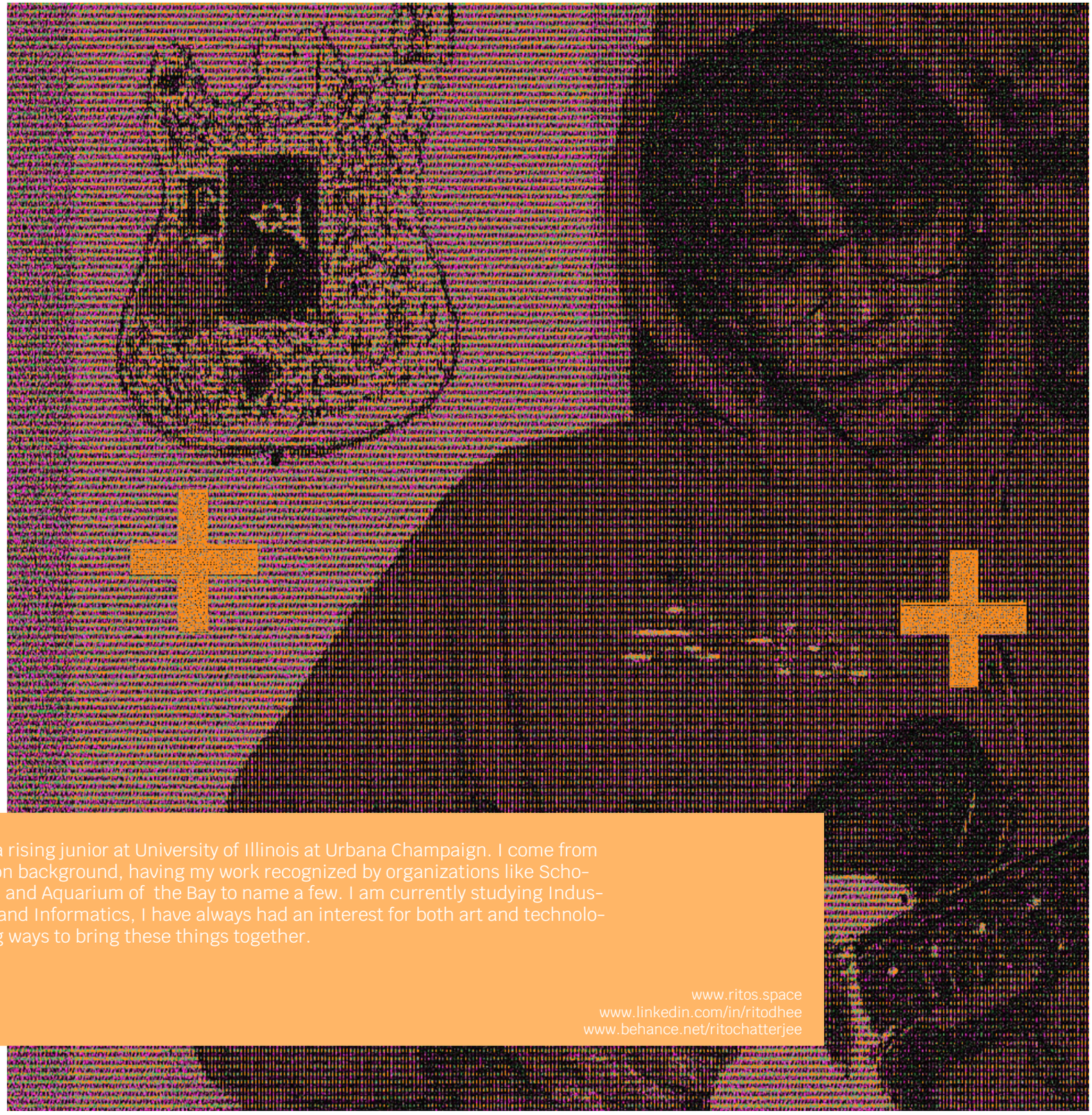
Rito Chatterjee

INDUSTRIAL DESIGN PORTFOLIO :



Hi I'm Rito, a rising junior at University of Illinois at Urbana Champaign. I come from an illustration background, having my work recognized by organizations like Scholastics, NPR, and Aquarium of the Bay to name a few. I am currently studying Industrial Design and Informatics, I have always had an interest for both art and technology, exploring ways to bring these things together.

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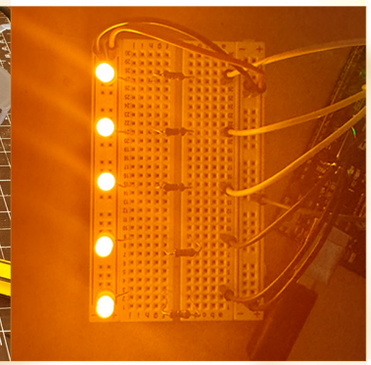


Projects

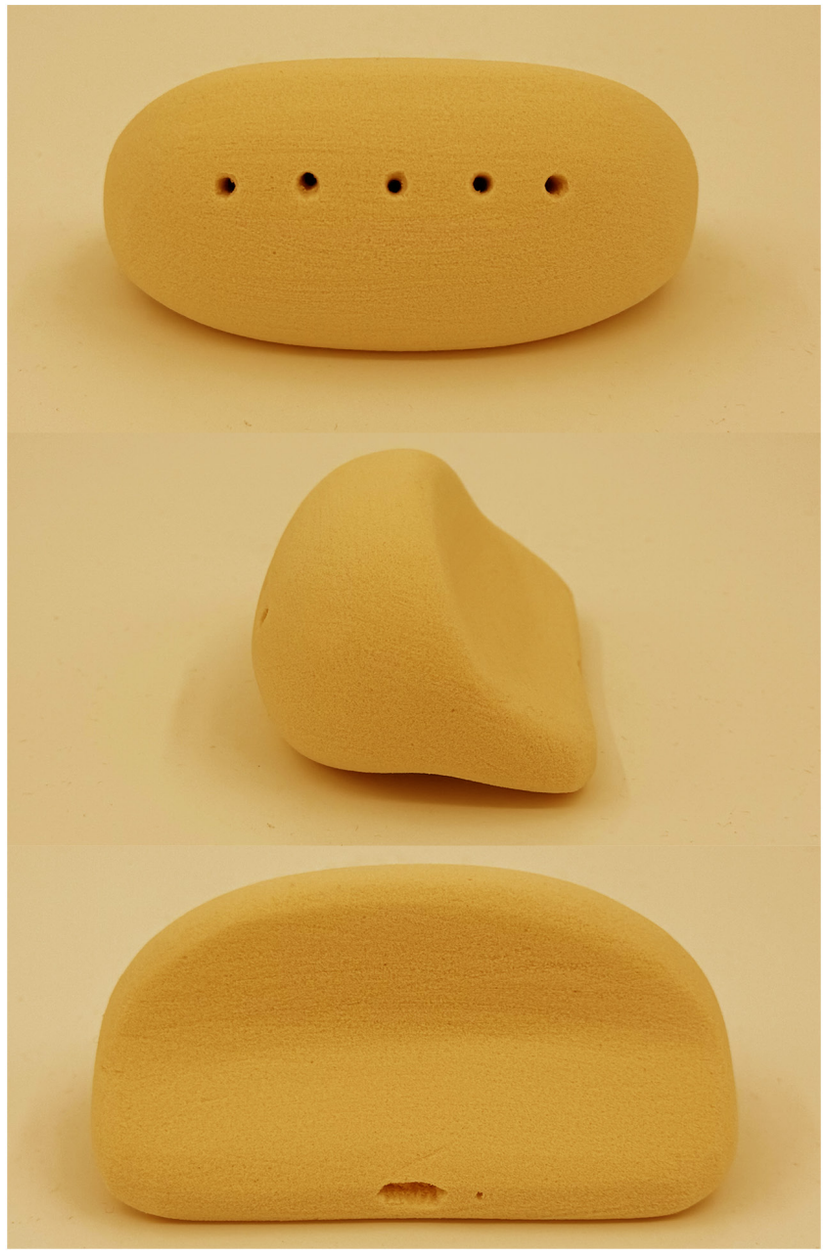
Electrode

Pomodoro style timer, with 3 LED animations that indicate study time, break time, and transitioning.

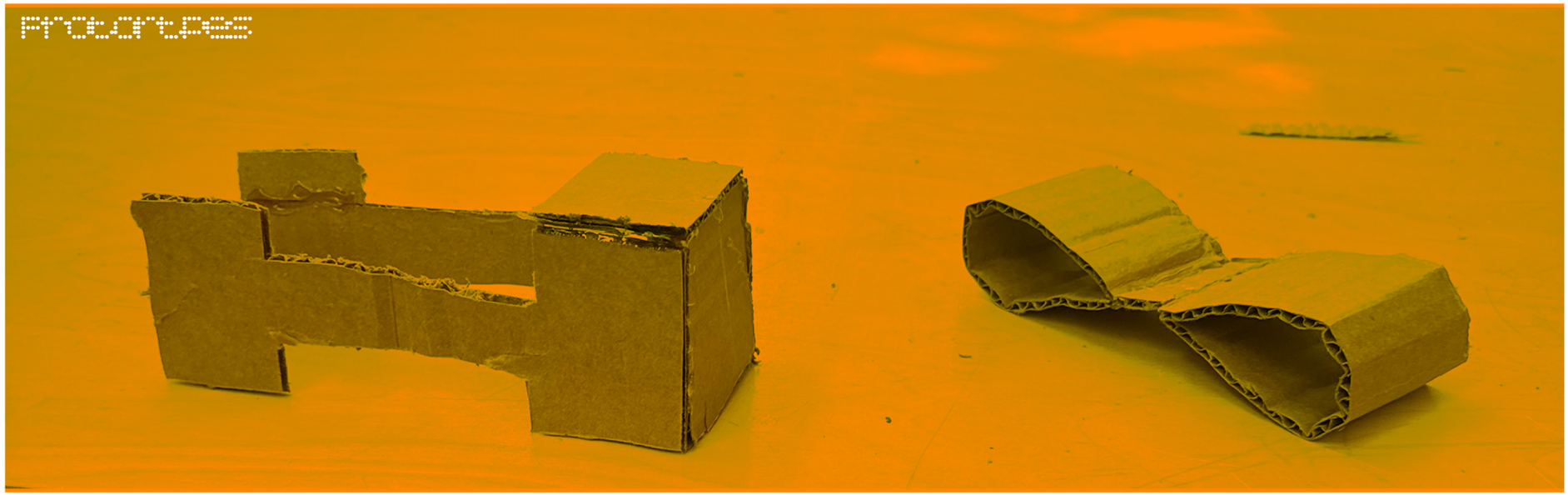
Group/solo project
5 weeks
Sophomore Studio

The form itself is designed to fit right into the palm of your hand.

We wanted the timer to have a traditional sand timer experience so we made it so you had to physically turn the timer upside to interact with it.



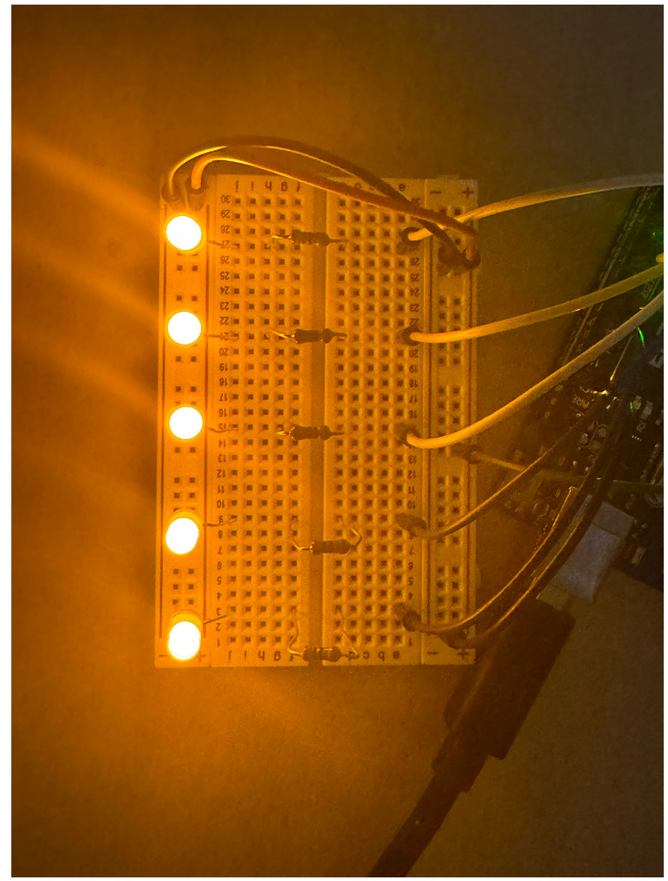
The model itself is made of yellow foam, with holes only for the 5 LEDS and a usb charging port with a small microphone for audio feedback.



I experimented with these 3 shapes. but eventually settled on the final form being ergonomic to someone's palm. These were inspired by hourglasses and rotatability.

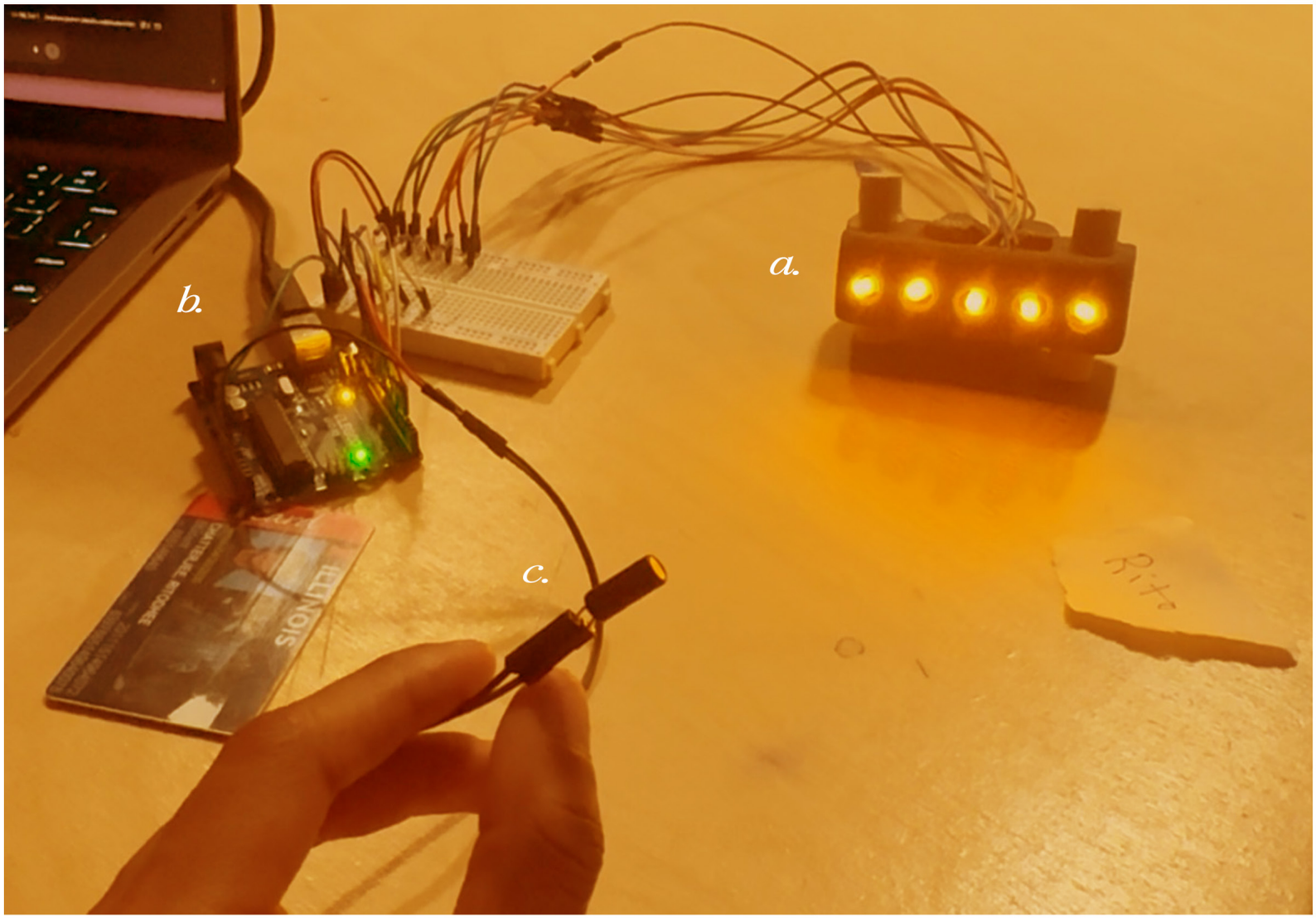
Code and wiring done with Arduino kit. The circuit was pretty simple and writing the loops that made up our animation was simple due to the way we configured the LEDs into the Arduino board.

```
void loop() {
  while (pomodoroCount < 4) {
    // 1. Study Timer (25 minutes total)
    studyCountdown();

    // 2. Signal flip needed
    racingUntilFlip();

    // 4. Break Timer (5 minutes total)
    pulseAll(10); // pulse for 5 minutes

    // 5. Signal flip again
    racingUntilFlip();

    pomodoroCount++;
  }

  // Optional: flash all LEDs when all 4 pomodoros are done
  for (int i = 0; i < 6; i++) {
    turnOnAllLEDs();
    delay(300);
    turnOffAllLEDs();
    delay(300);
  }

  while (true); // stop loop
}
```



Here is the code for the main loop that drives our animation. It also named the different modes the LEDs go off in, pulsing is for the break and it mimics a breaking pace to signify break time. Countdown is the study mode, with each light counting for 5 min compared to the 1 min per light for break time. Finally the race mode signals when each of the times are down and you are about to transition. The next phase wont start till you physically flip the timer over.

3rd Prototype

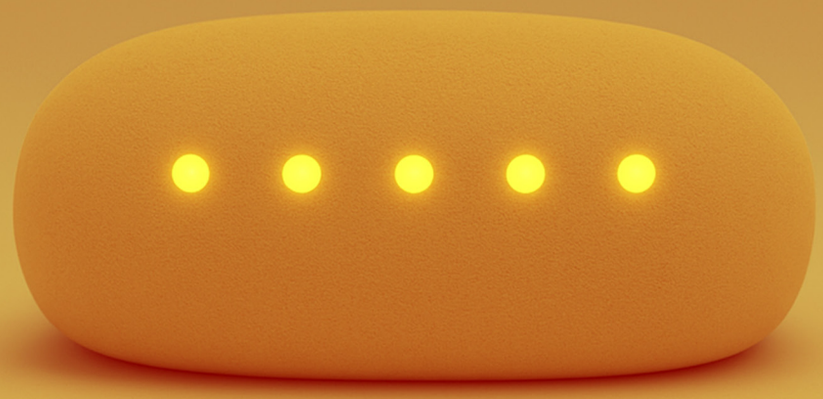


a. the final working prototype with the LEDs and wiring placed into it. The model was optimized to be a comfortable flip from either direction.

b. the breadboard and arduino board that powers and has the code for the timer

c. the key piece in the hourglass effect, the tilt switch sends an input when the timer is flipped

Pomodoro Timer
25 min study | 5 min break | x3 times



I rendered the model to have a stone/ceramic type finish. I also liked the LEDs as a yellowing color and the color of the yellow foam, although I did render it in a ton of different colors


F o c u s
c a L m
Productivity

UIUX

Redesign of the UIUC Bus app. Complete UI overhaul that represents the app from a more visual perspective,

solo project
7 weeks
Sophomore Studio

Buses are one of the most common ways students move around campus. The current tools available are not always accurate or user friendly. This is a complete UI/UX overhaul of the UIUC Bus app, turning the app from pages of lists to an interactive map/hub

User

Persona

Amy

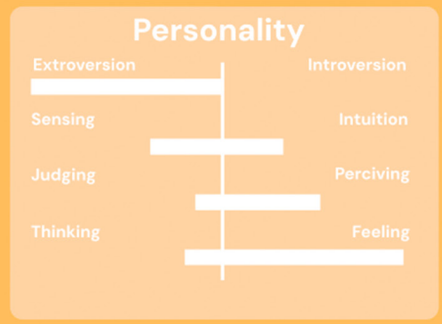
she/her

Student

20yo

Background

Amy is a Sophomore at UIUC, shes a avid photographer and loves to play video games and read books in her free time. Shes in many RSOs utilizes the bus system the campus offers often.



Needs

- A simple system that is reliable and will show her where the buses are real time
- A app that seamlessly integrates into her life and will make things easier for her

Frustrations

- Doesn't like how the current bus apps are not accurate about bus location or time
- Each app has individual features so she has to switch between/use both apps simultaneously

Goals

- Use public transit for sustainability
- Be on time to all of her commitments

Pain Points

- too many menus
- confusing layout
- bus information unclear

The app opens to the map, it shows the users location and all the buses available in the MTD network. If they click the main bus icon they will be able to view all buses/stops as well as recommended buses based on the user's schedule.
Login using Net ID allows us to see when and where users have classes and that would allow for quick recommendations and easy transport. MTD bus pass as well as favorite lines/stops are also features available

the user flow would start at the main map, you then find the nearest stop to view the buses and their ETA. From there you pick a route. and your good to go

The current system leads you through 2-3 menus of lists to finally show you the bus route. This makes it easier and more efficient.

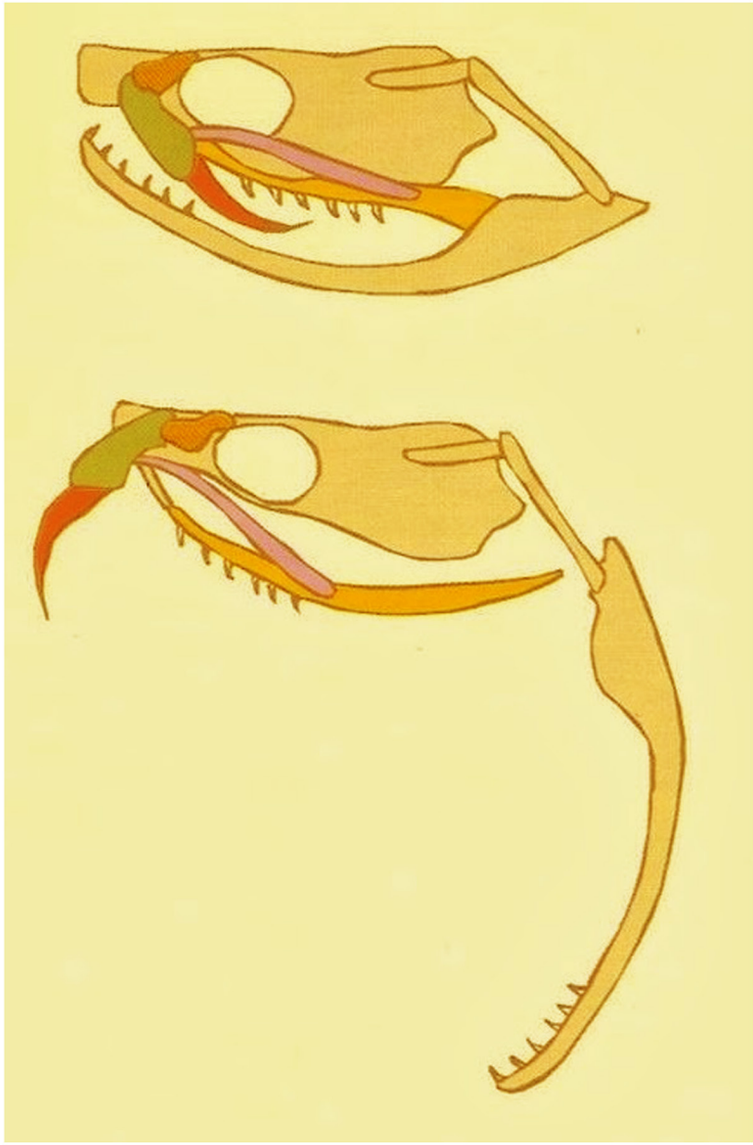
3.BIOMIMICRY

Biomi

Utility knife inspired by snakes and their fangs. Working appearance model with inter-changeable blades.

Partner project
3 weeks
Sophomore Studio

Our inspiration for this project came from snakes. They are able to store fangs, almost the size of their entire head inside of their mouths using a unique technique, which we replicated to design a foldable utility knife.



Snakes are able to store their fangs inside their mouth by folding it in at 2 different pivot points. These are highlighted in the diagram in green and orange. We mimicked this mechanism, even copying the shape of the bones in our design. We chose this mechanism because we wanted to create a utility knife that had a blade as large as the handle, which most knives of the same type on the market can't do due to their mechanism.

Aesthetically we were looking for a worn, relic-like finish. If this were to go further we would've looked into a strong but light metal and finished it with multiple layers of paint to reveal new colors as it chips away. We were able to accomplish this with the appearance model and I liked how it paid homage to how snakes shed their skin.

The ability to pull the hinge out further gave us the opportunity to integrate the feature of being able to switch out the blades whether your cutting rope or cooking food.

Section view

safety locks | easy to open, clean, and modify.

Ergonomic shape | 6-inch interchangeable blade |

started by looking at handles from previous project, studying what shape balanced comfort and fit the restrictions of our new project

Hinge mechanism took up most of our prototyping time, really figuring out how the pieces would layer to fit into the case.

Prototyping

F A N G

4 organizer

Modular storage shelf. The swiss army knife of desk organizers, with endless configerations.

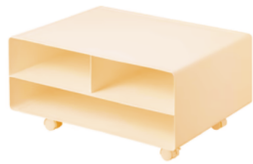
Individual project
8 weeks
Sophomore Studio

modular desk shelf that evolves around your workplace, seamlessly integrating into your workflow, allowing for flexibility and customization.

This is the current orientation of the desk organizer. This particular example showcases the versatility in this piece of furniture.

MARKET

$39.90
Acrylic Storage 3 Drawers



TOWER
Rolling Printer Stand - Steel
$125.00

HÄSTVISKARE
Mini chest of drawers, 12 ½x9 ½ "
$16.99
(21)

IKEA Family price
BISSA
Shoe cabinet with 2 compartments, 19 1/4x11x36 5/8 "
$39.99

RESEARCH

ESTIQUE SHELF WITH HOOKS
$44.00

MONTAGE WALL SHELF
$65.00

When looking at similar products on the market I learned what works, what the standard size for these types of pieces are, and how brands manufacture these types of things, which helped a lot when it got to prototyping.

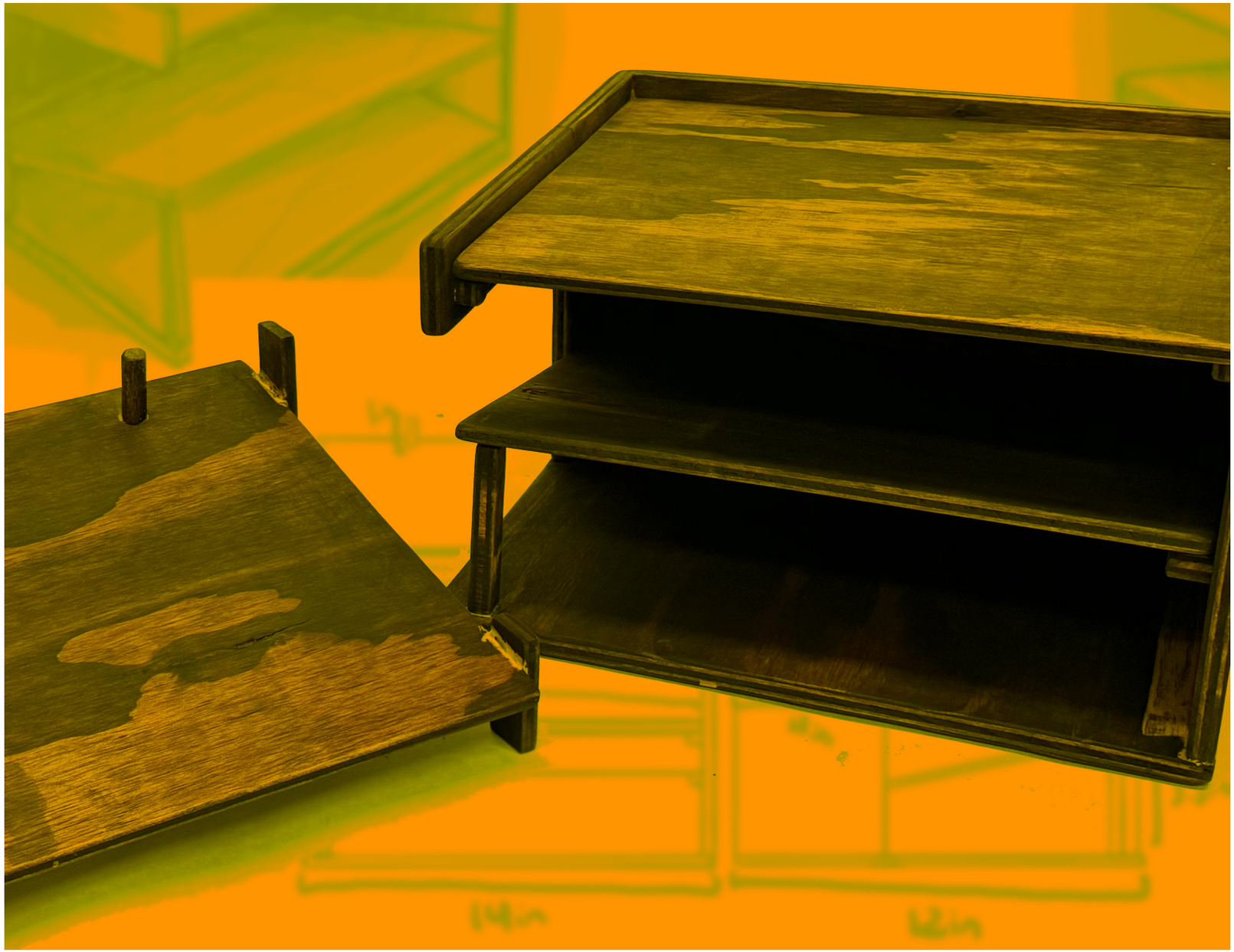
Prototyping started with a 1:2 cardboard prototype based on initial sketches of what the user wanted, a desk organizer for books, hats, and smaller items. I then moved into CAD to experiment with size and finished up with a 1:1 cardboard and plywood model.

Phase I

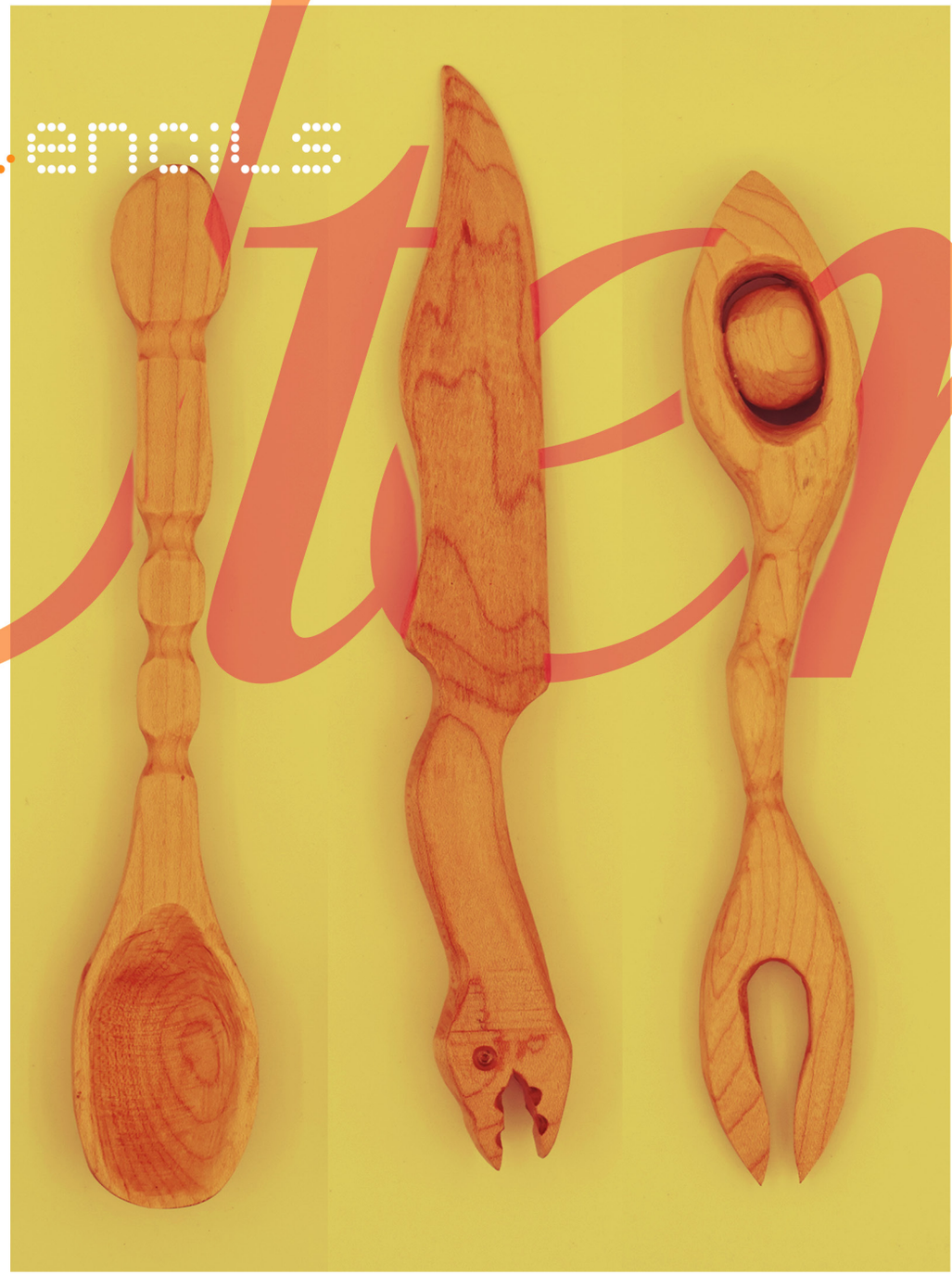
Phase II

Phase III

Weight of objects, size of hats, storage space without taking up too much room, and easy to take apart and move around were all things to consider.



Utensils



3 unique kitchen utensils, inspired by aquatic life and tribal craftsmanship and culture.

Group project
7 weeks
Sophomore Studio

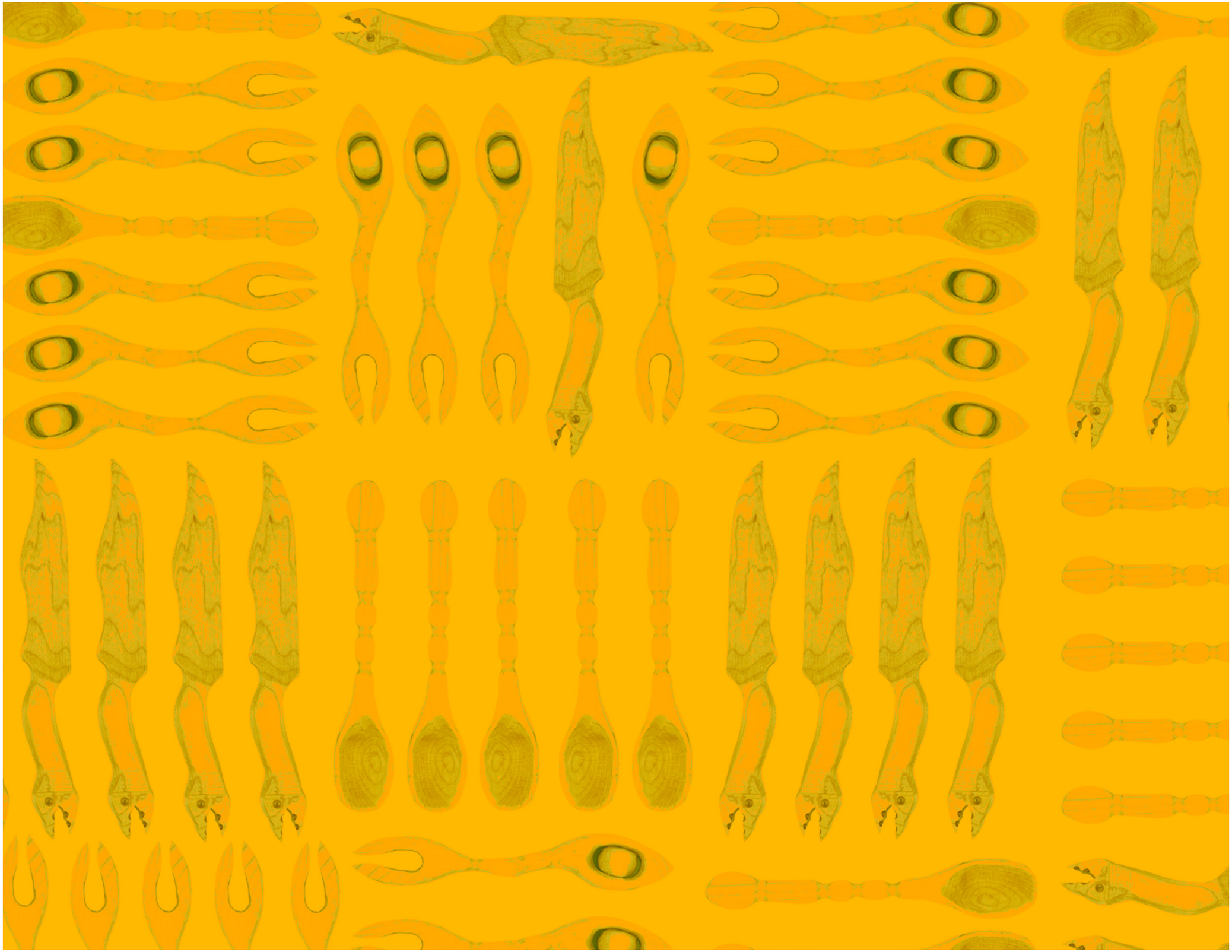
3 specialized tools, represented by 3 unique creatures

eel chefs knife, turtle serving spoon, squid meat-fork

Utility, pre-industrial tribal craftsmanship, and ergonomic comfort were our guiding principles. Polynesian culture has told stories of the ocean for thousands of years and we sought to capture that same art of storytelling through wood carvings and hand-crafted details. our results? 3 unique tools that honor tradition by turning shared meals into shared stories.

Prototypes

We made over 60 different prototypes totaling exploring different animals, grip, handles, spoon depth, and number of prongs among other things. These were some of the notable ones that evolved into our final design



Dispenser

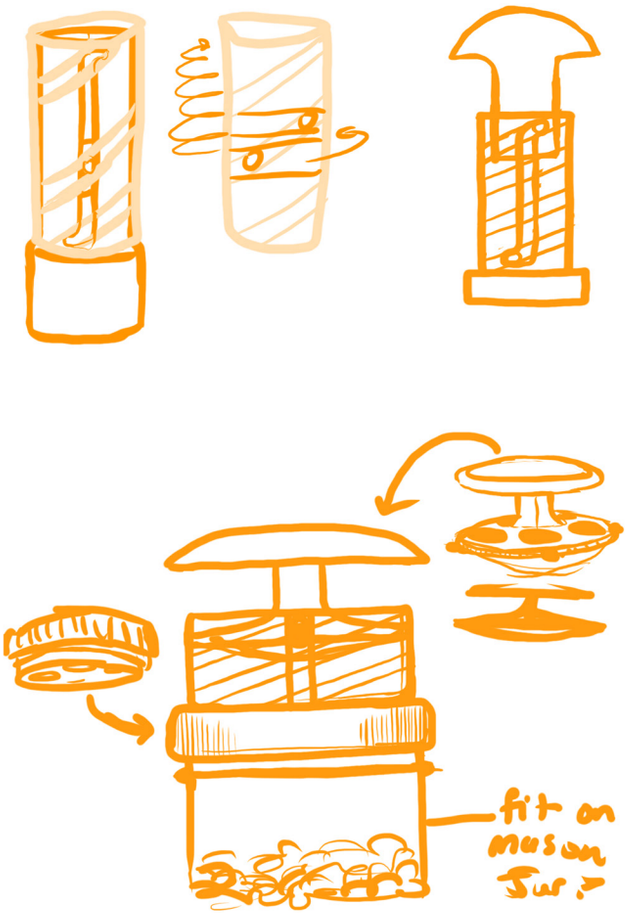
E.DISPENSER

Attachment for mason jars that makes dispensing smaller treats easier and more convenient while delivering satisfaction

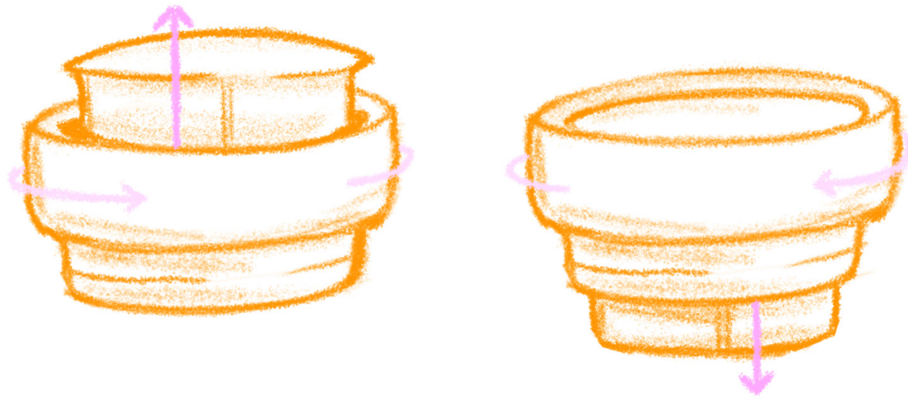
Solo project
5 weeks
Sophomore Studio

My goal with this project was to transform this piece of a mason jars lid into a universal dispensing attachment that is air-tight but easy to open.

This product would be for anyone who has troubling opening mason jar lids, or uses them frequently and just wants more efficiency or accessibility.



Initial sketches were inspired by chapstick, and the mechanism some brands use as well as candy dispensers.

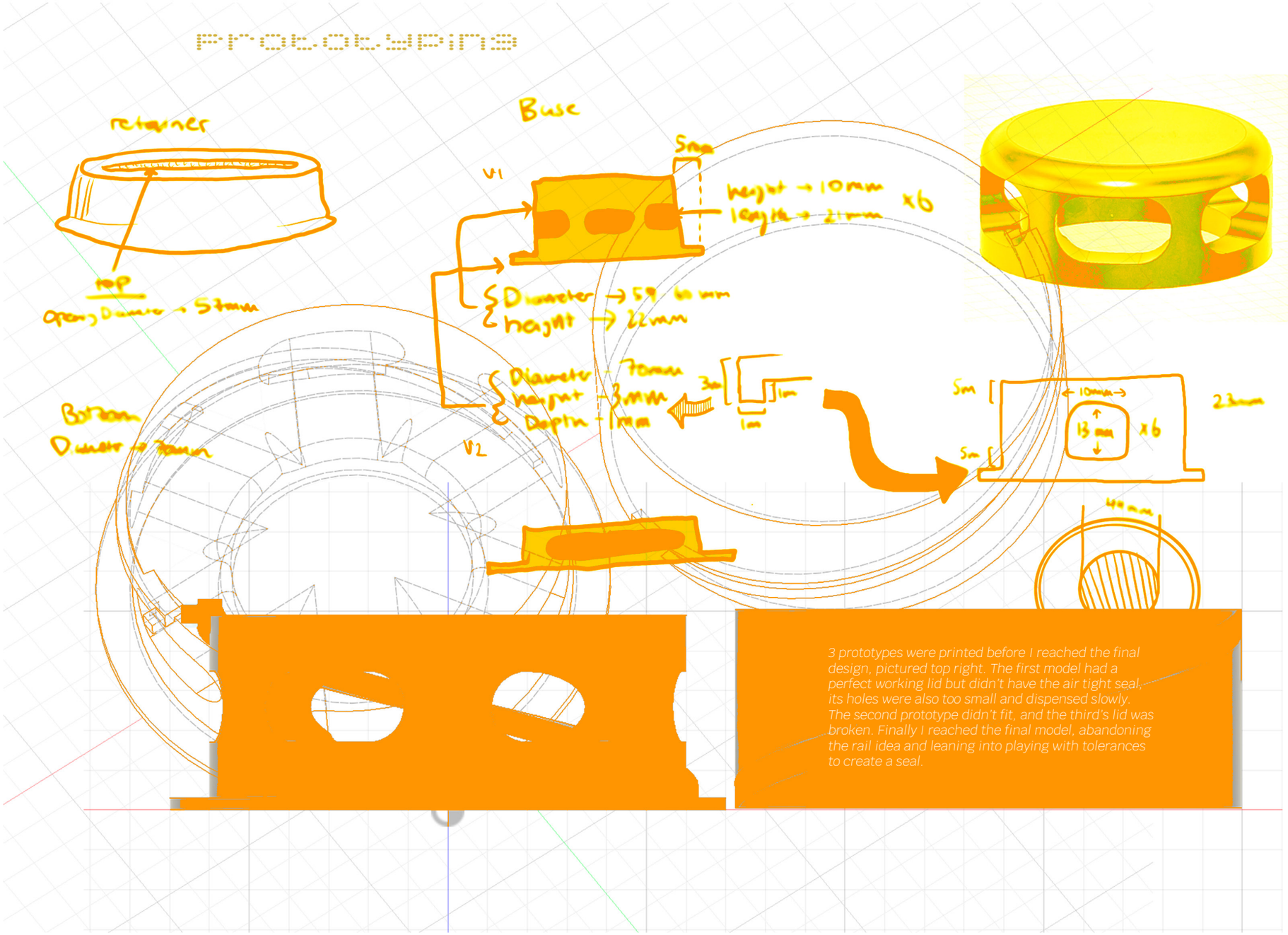


I came across a 360 degree, anti-spill, travel mug which had a very interesting mechanism on the lid. (sketched above)

FINAL MODEL

After 3 prototypes I reached a final appearance model that was able to keep the jar airtight while having the right tolerance for the top cover piece. It's easy to install and clean. Future revision to this project will include a locking peg to make the user experience very simple.

prototyping



3 prototypes were printed before I reached the final design, pictured top right. The first model had a perfect working lid but didn't have the air tight seal, its holes were also too small and dispensed slowly. The second prototype didn't fit, and the third's lid was broken. Finally I reached the final model, abandoning the rail idea and leaning into playing with tolerances to create a seal.

The handle/cover piece is built with the top having that slit for grip, it also comes out all the way for easy cleaning, more dispensing, and customizability with different colors. The tight fit also gives a satisfying feel and sound.

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