Anu Solola

Go-Getter, Problem Solver, Creative

Mechanical Engineer

About Me

Summary

I'm a Spring 2025 Stanford mechanical engineering graduate with **5+ years** of **product design** experience through internships and academic projects. Passionate about finding **creative solutions** and **hands-on** building, I've proven my adaptability and reliability through teamwork and **cross-functional collaboration**. My portfolio contains project highlights showcasing my **creativity**, **attention to detail**, and **analytical skills**.

Experience

Apple
iPhone Product Design Engineer— Intern

Stanford Charm Lab
Haptic Device Research Intern

Stanford IRIS Lab
User-Centered Design Research Intern

Hobbies/Interests

Musical Instrument
Trumpet player of over 10 years

African/ African American Hair
Hair braider of over 8 years

Design Sketching

Navigate to project by clicking on the name

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Mechanical Design and Validation

Design and high fidelity prototype development focusing on validating engineering requirements

Vial-to-Vial Transfer Device

The Last Drop: Dripper Attachment

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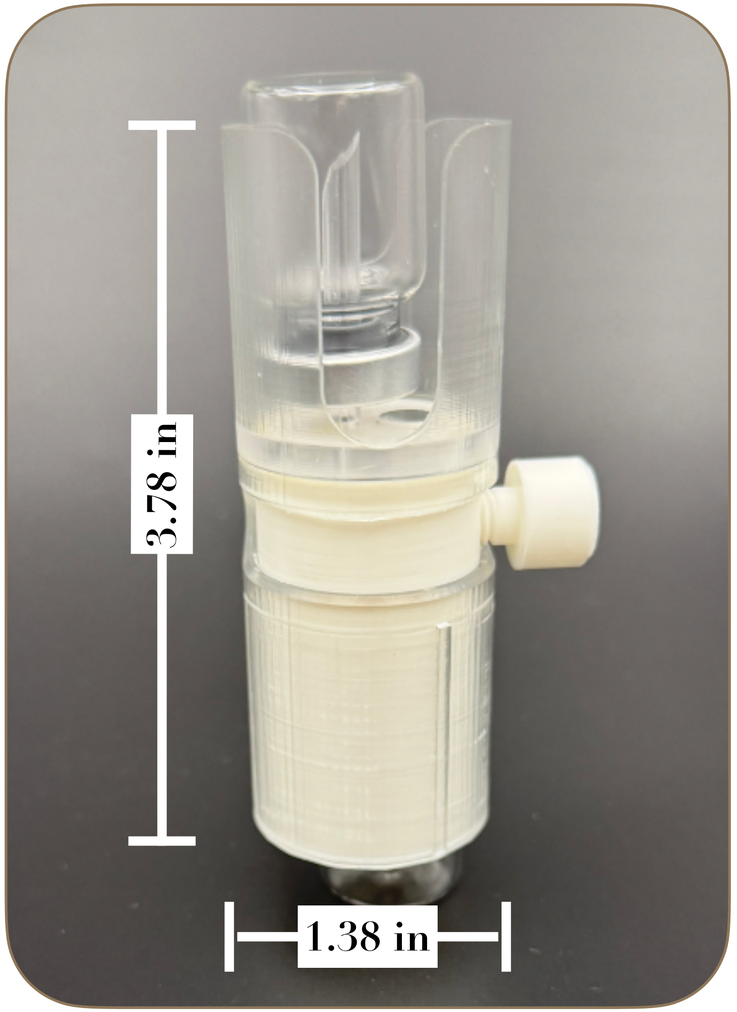
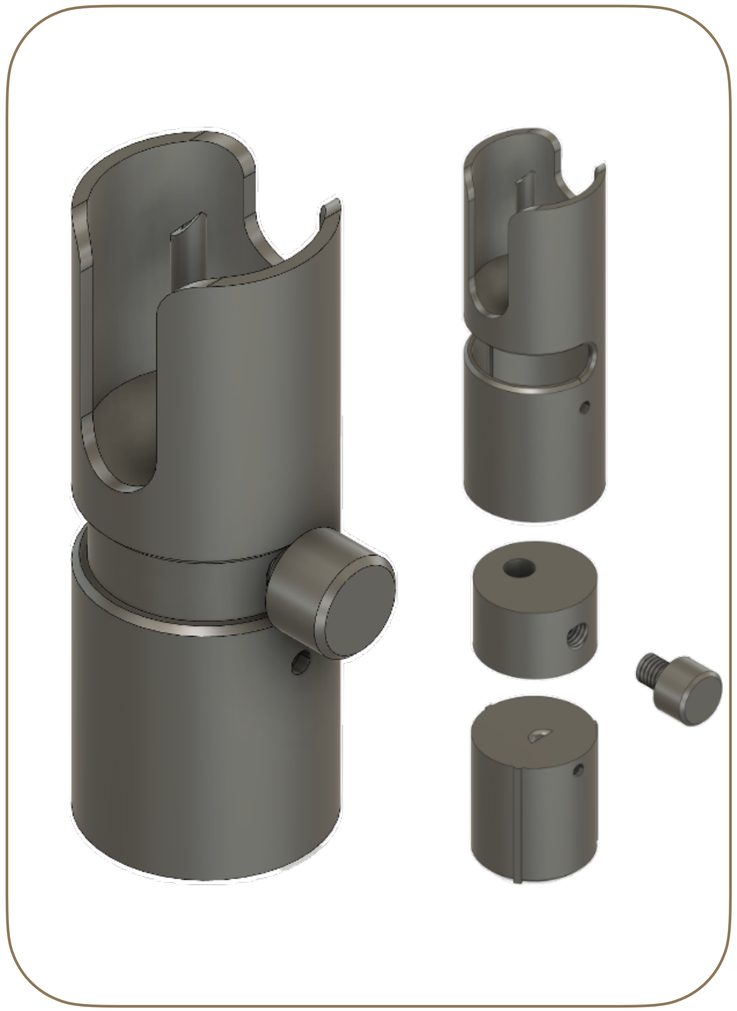
Vial-to-Vial Transfer Device

Overview





Goals

Design a precise vial-to-vial transfer device for at-home HDV drug reconstitution, minimizing user error.

Proposed Solution

Gravity-driven flow enabled by a simple rotational mechanical design.

Role

Co-design engineer leading prototyping and testing that drove critical design iterations.

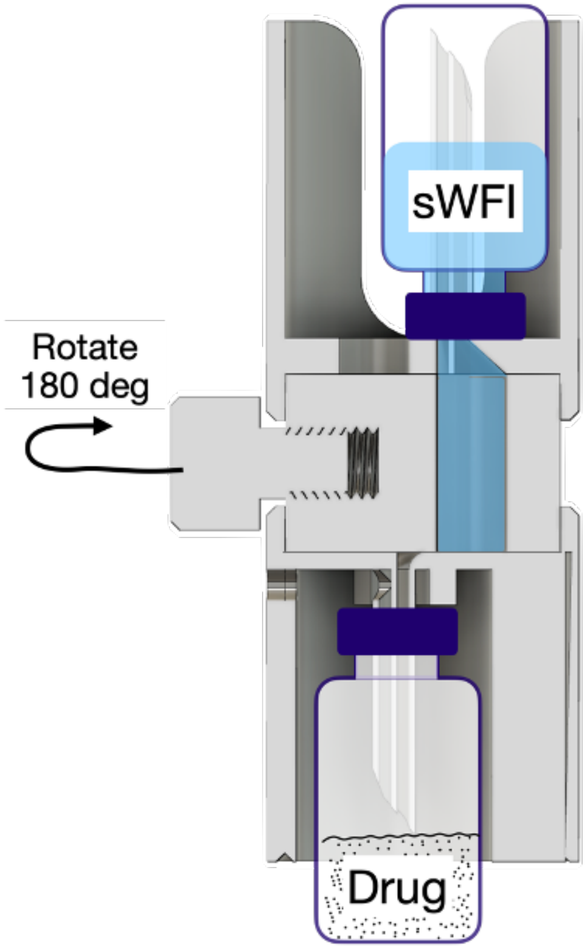
In Collaboration With:

Gilead Sciences
(a biopharmaceutical Company)

Demonstration Video

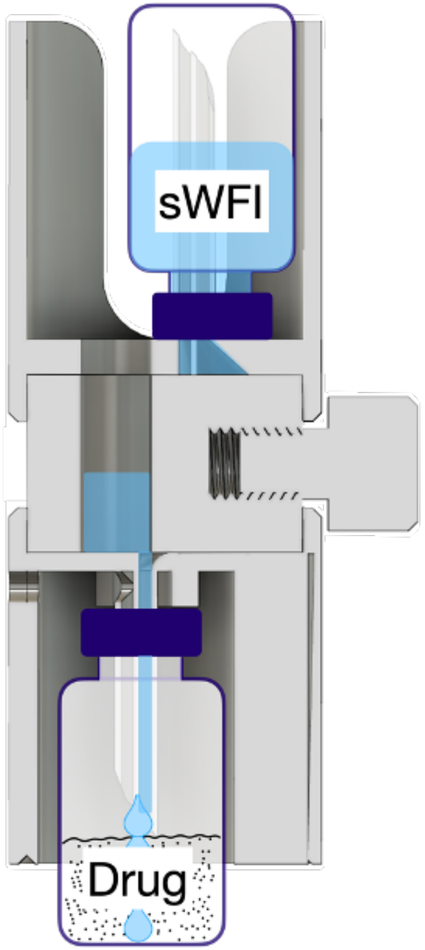
Vial-to-Vial Transfer Device

How it Works



Phase 1: User connects sterile water and drug product vials to device and water fills 1ml cavity

User rotates handle

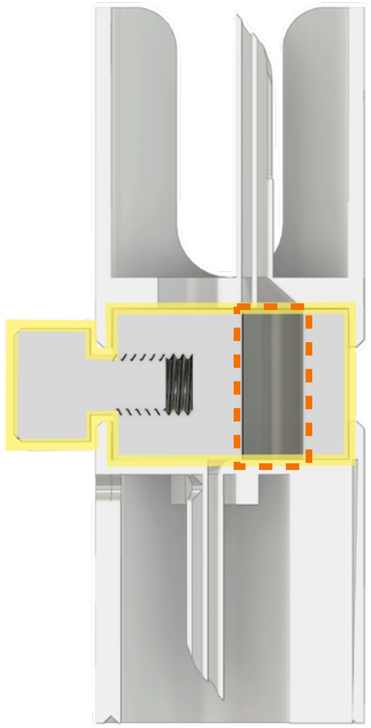


Phase 2: 1ml in cavity flows into drug vial

Vial-to-Vial Transfer Device

Engineering Analysis

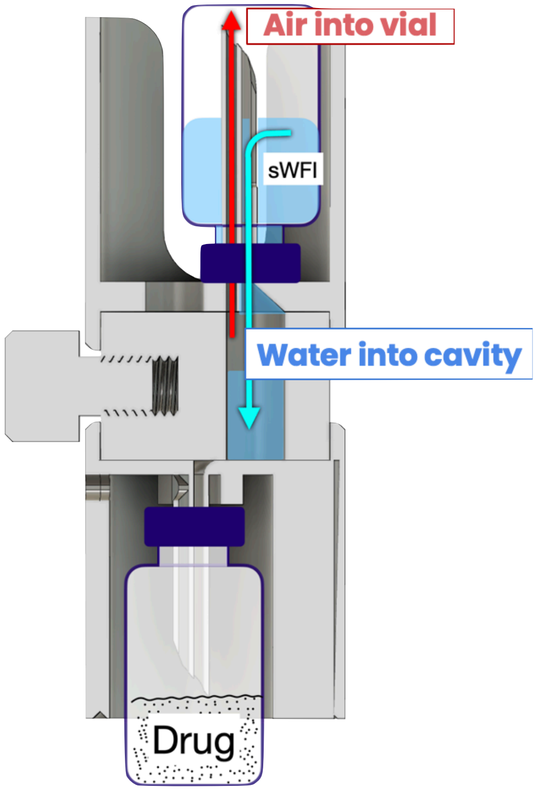
Tolerancing



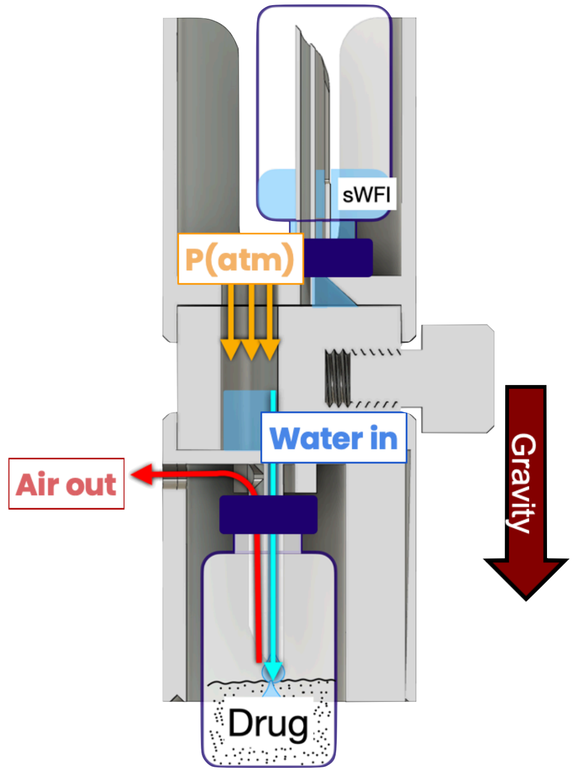
Rotating Drum (yellow) toleranced for smooth rotation and minimal water leakage; cavity (orange) sized to hold 1mL ± 0.5.

Fluid Dynamics

Phase 1



Phase 2

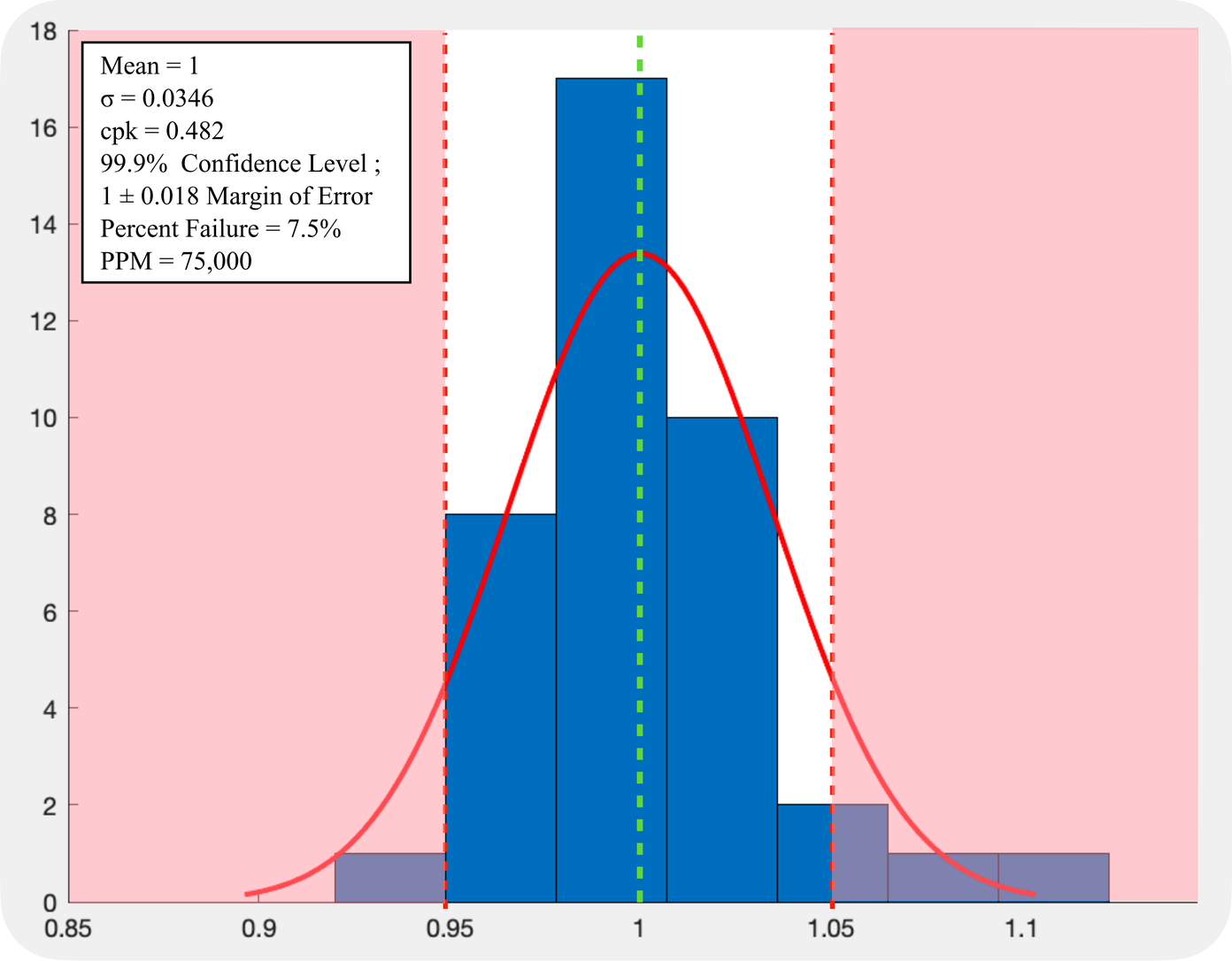


Hydrostatic pressures of the water in the top vial required a dual chamber puncture mechanism capable of pressure stabilization between air and water both inside each vial and inside of the 1ml cavity

Vial-to-Vial Transfer Device

Experimental Validation

Note: Hydrophilic interactions between water and 3D-printed plastic required testing with 90% isopropyl alcohol to isolate and validate mechanical geometry.



Interpretation

Although the device has a Cpk of 0.482, it stayed within the spec limits (0.95–1.05mL) in 92.5% of trials, with only 3 out of 40 falling outside. This suggests the process trends toward the USL and LSL but still meets our key engineering requirement. While the Cpk indicates limited capability, the results mark a clear improvement over the status quo, as performance within spec is what truly matters for this application.

Back to T.O.C

The Last Drop: Dripper Attachment

Overview

Goals

Design a V60 dripper attachment for precise flow control and optimal extraction, suited for both advanced and amateur coffee enthusiasts.

Proposed Solution

Lever-controlled mechanism allowing users adjust flow rates mid-brew based on their brewing preferences.

Role

Led design conceptualization and data analysis as co-design engineer.

Demonstration Video

The Last Drop: Dripper Attachment

How it Works

Step 1: Attach gasket to V60

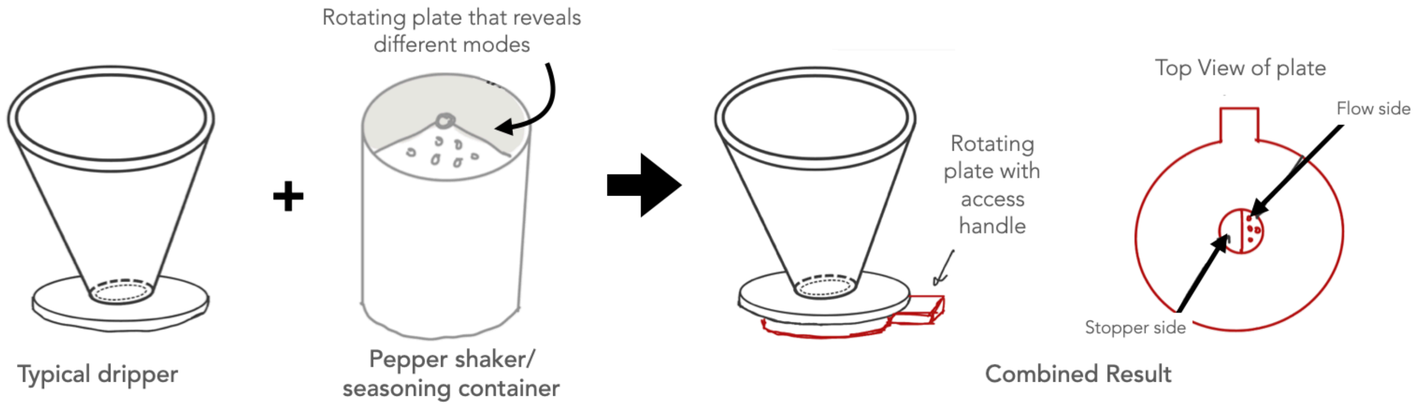
Step 2: Insert V60 into our attachment

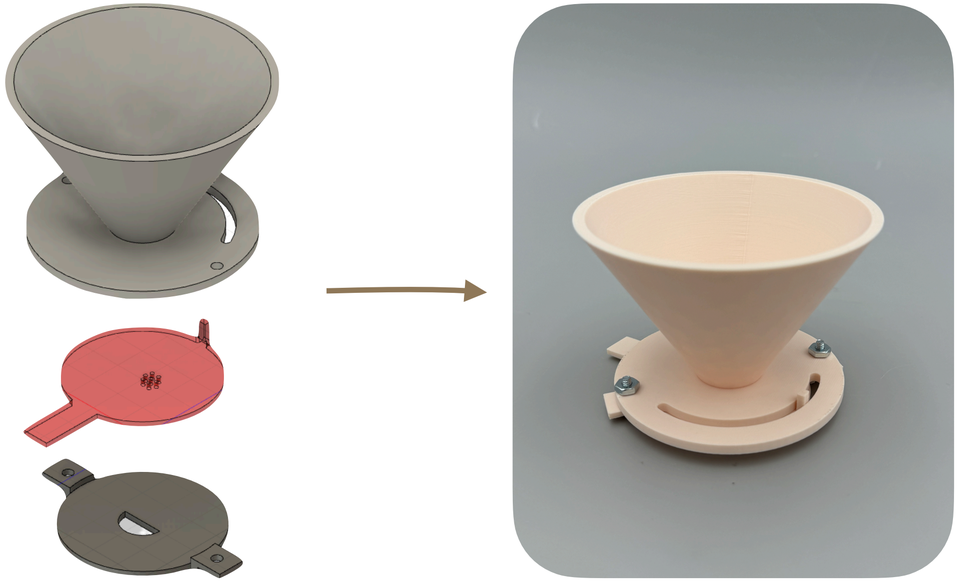
Step 3: Place assembly on stand

Step 4: Adjust flow rate using the handle (before or during brewing)

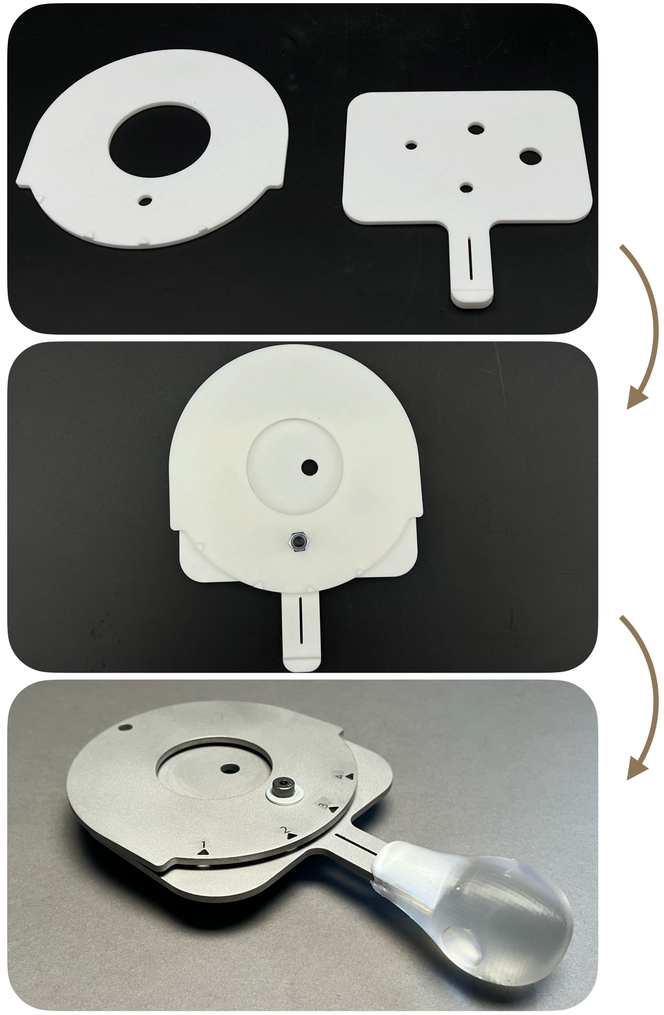
The Last Drop: Dripper Attachment

Concept Generation and Prototypes





Initial Design & Conceptualization

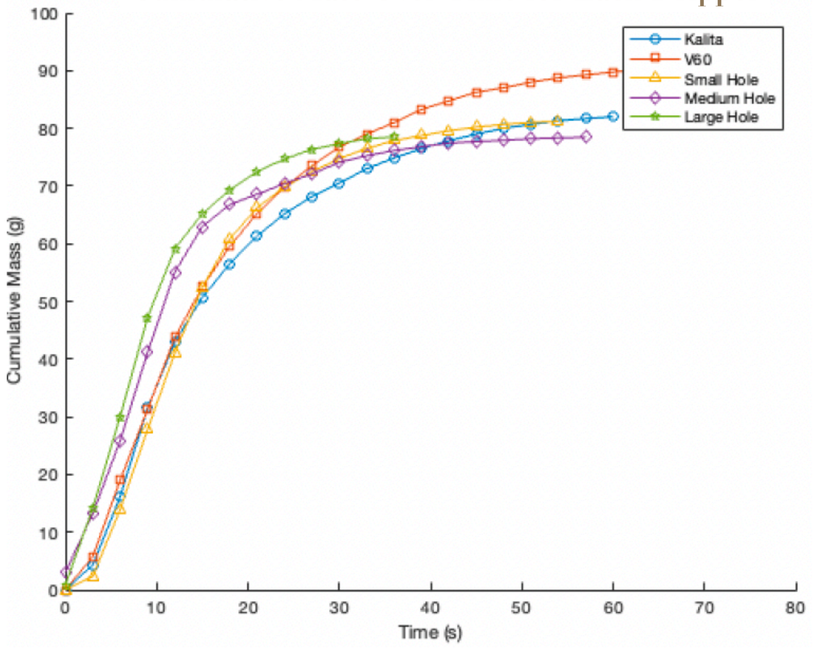


Final Iterations

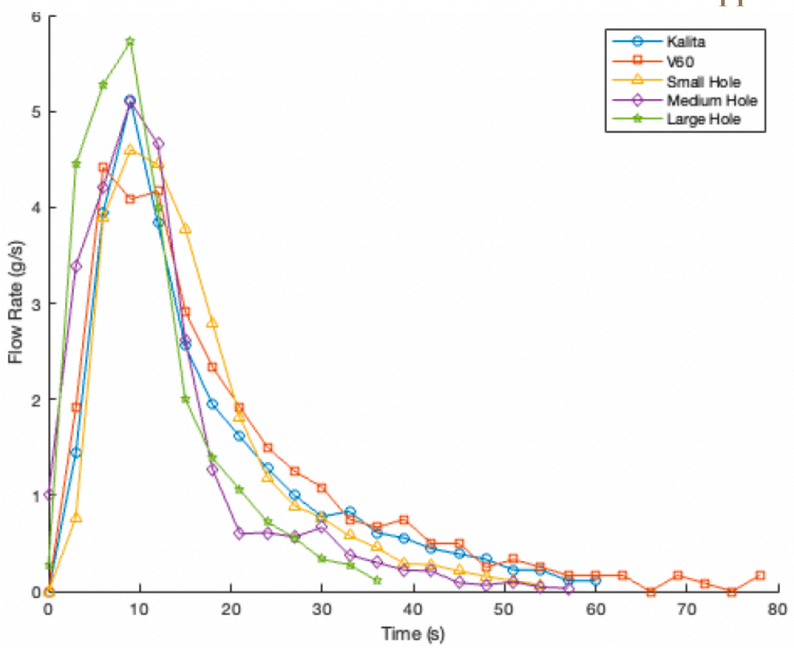
The Last Drop: Dripper Attachment

Experimental Validation

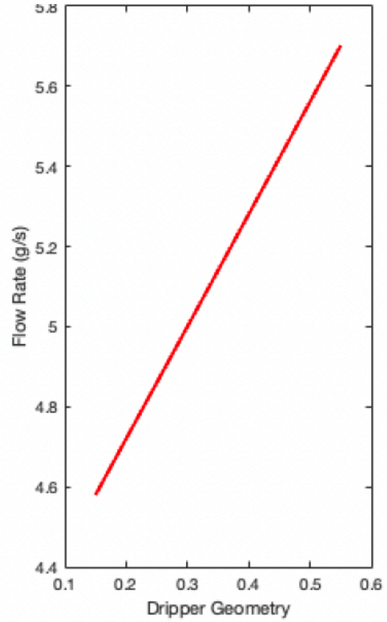
Cumulative Mass Over Time for Each Dripper



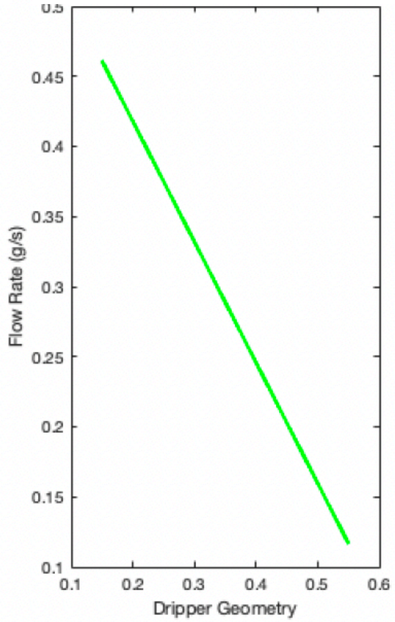
Instantaneous Flow Rate Over Time for Each Dripper



Max Instantaneous Flow Rates (3-15s)



Min Instantaneous Flow Rates (30-60s)



Dripper design was tested against standard V60 and Kalita drippers to isolate flow rate as a key factor in controlling coffee flavor. By measuring flow across different outlet hole sizes, we found that flow rate changes linearly with hole diameter. Instantaneous and integrated flow rate data confirmed this trend and validated our testing method, supporting our hypothesis that flow rate can be a reliable, standalone metric for influencing flavor in drip coffee.

Back to T.O.C

Manufacturing Design

DFM based projects spanning CNC, turning, casting, and sheet metal forming

Regal Notes: Collapsable Trumpet Stand

Good Grinds: Garlic Mincer

Mindful Whistle: Whistle Keychain

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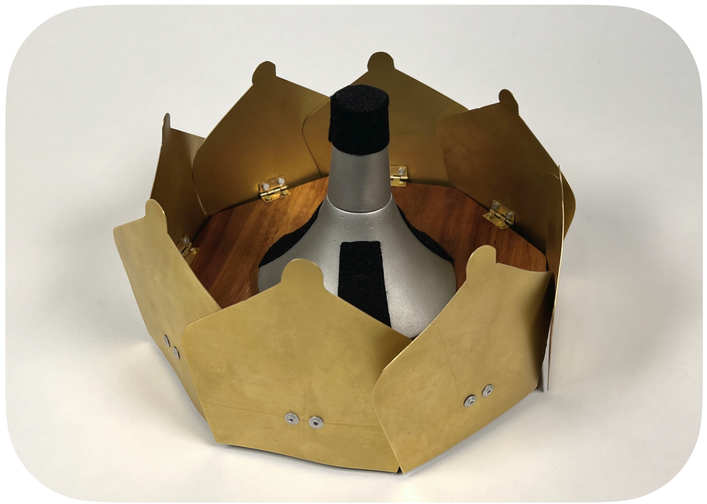
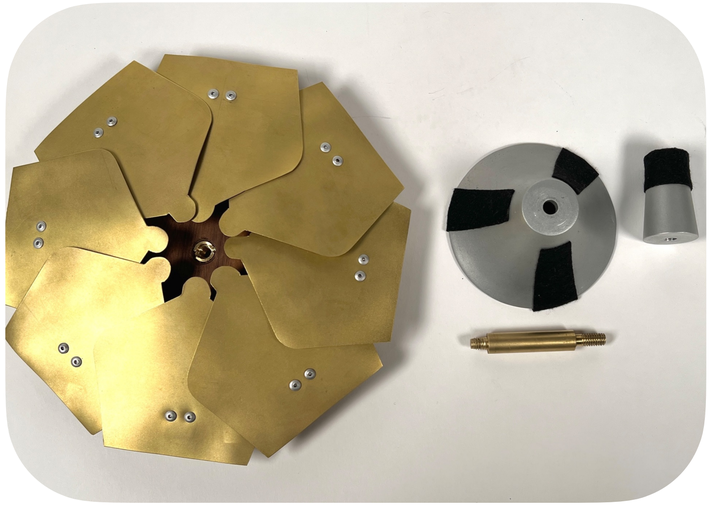
Regal Notes: Collapsable Trumpet Stand

Overview





Goals

Fabricate a stylistic and robust trumpet stand capable of simple compact disassembly.

Proposed Solution

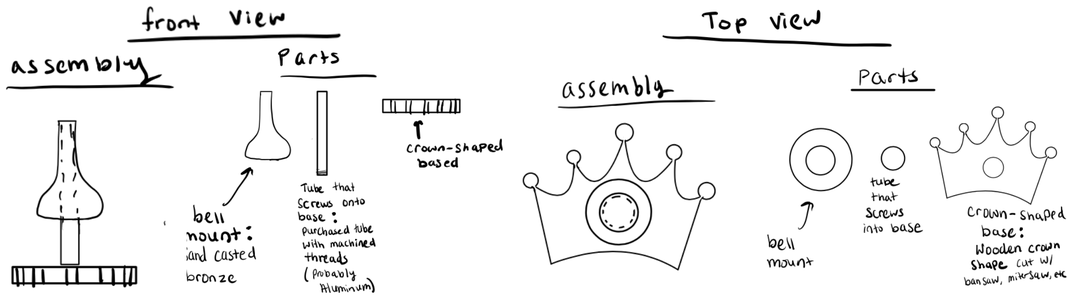
Metal and wooden stand featuring screw interfaces and a collapsible crown-shaped base for compact storage.

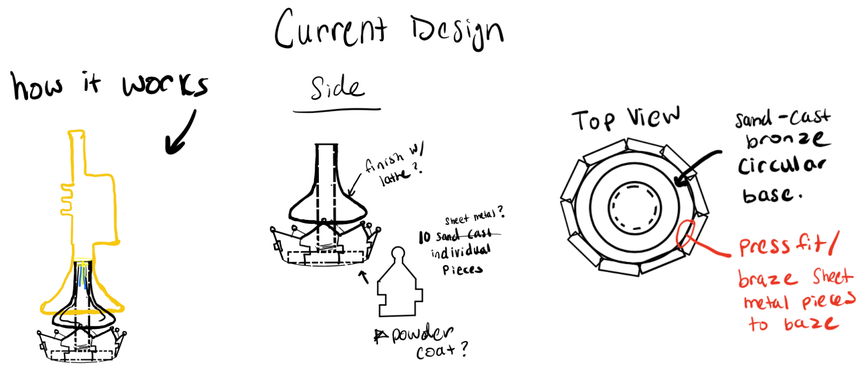
Role

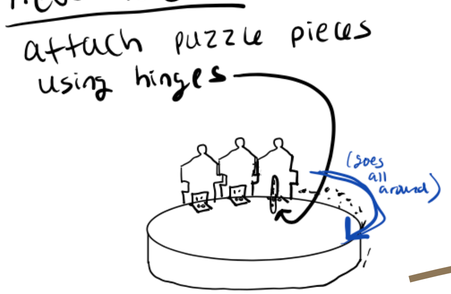
Independent end-to-end design and fabrication of a collapsible trumpet stand.

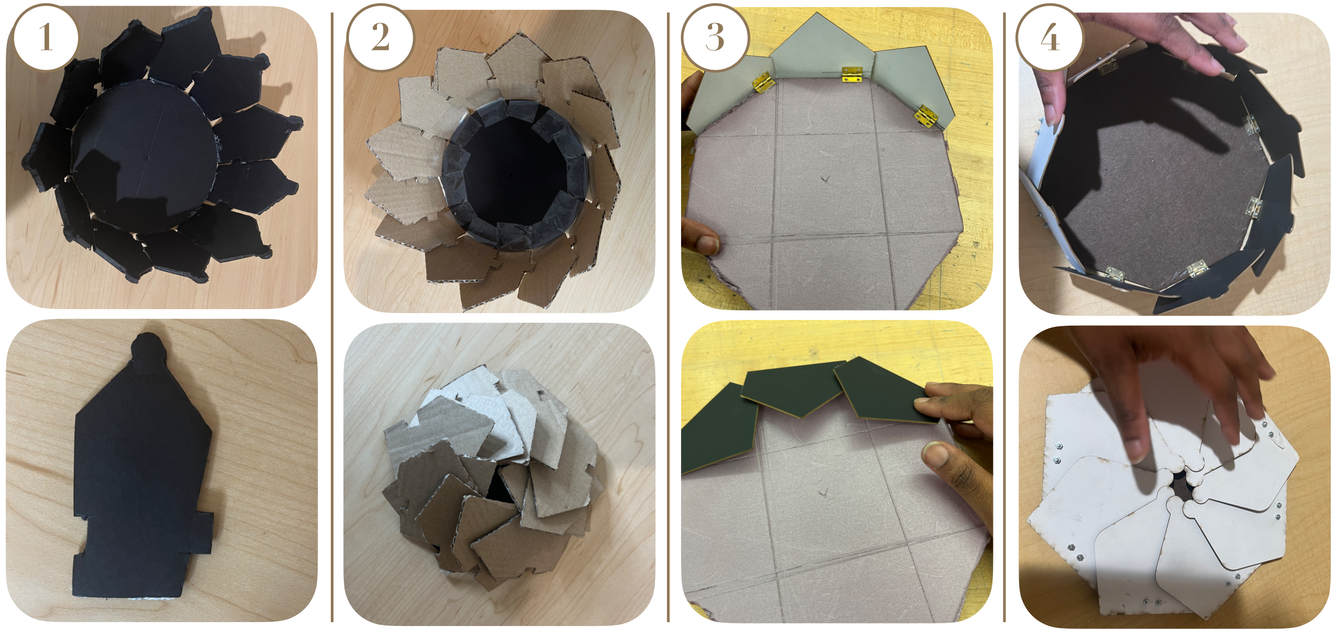
Regal Notes: Collapsable Trumpet Stand

Ideation and Prototypes









Demonstration Video

Regal Notes: Collapsable Trumpet Stand

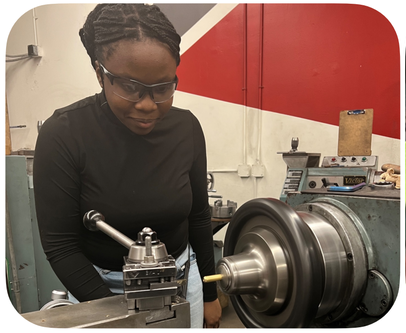
Manufacturing Processes

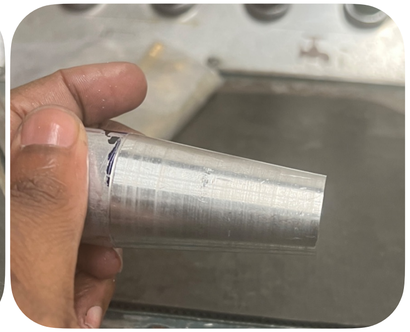
Sand Casting

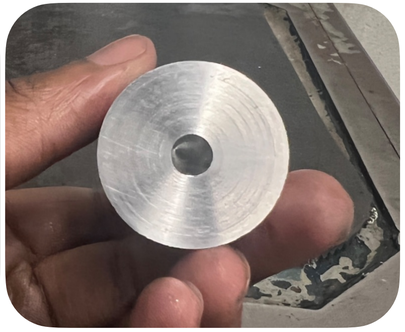




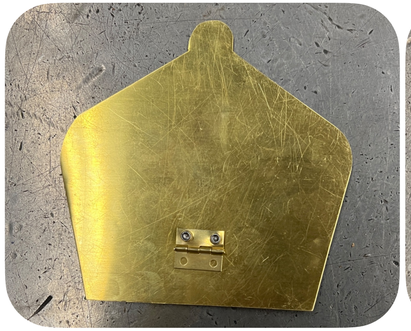
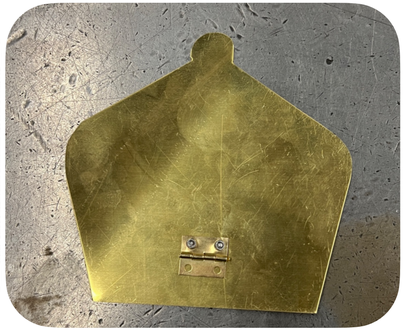
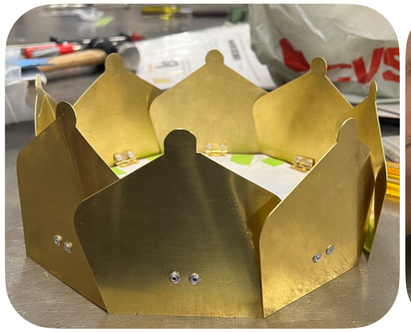

Turning





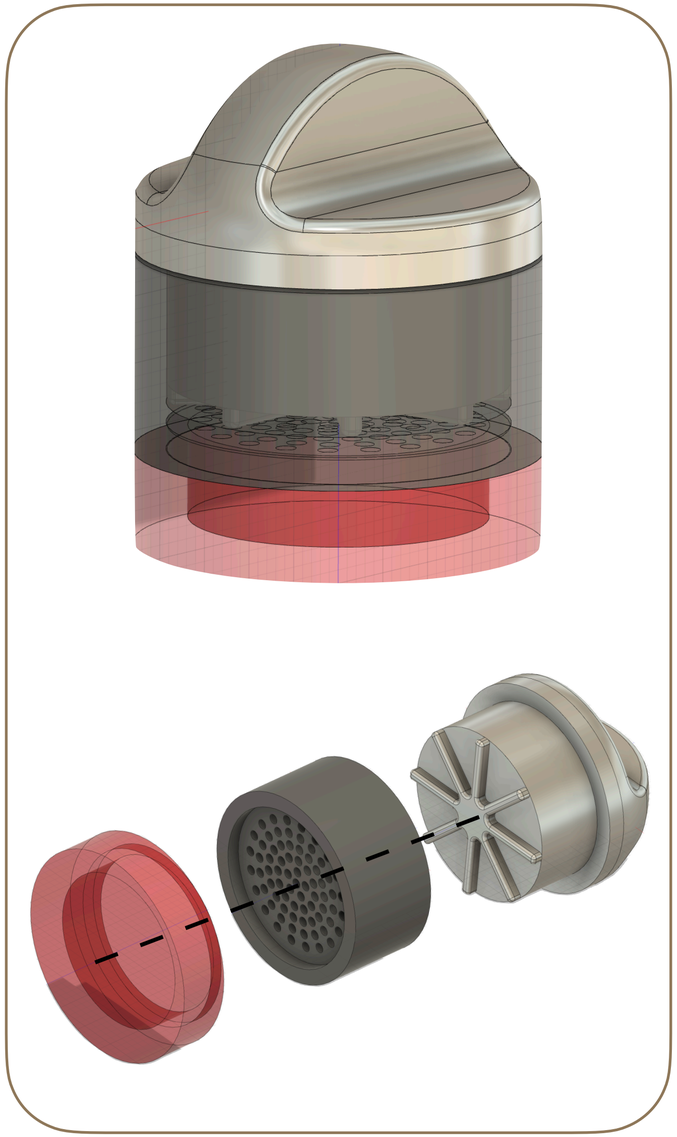
Sheet Metal Work


Back to T.O.C

Good Grinds: Garlic Mincer

Overview



Goals

Fabricate a stylistic and intuitive garlic mincer

Proposed Solution

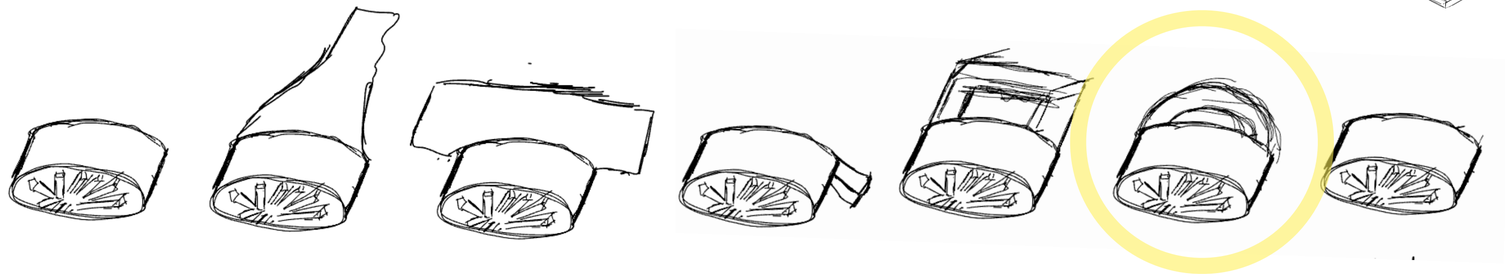
Ergonomic manual garlic mincer, engineered for optimal mashing and easy collection.

Role

Independent designer and fabricator

Good Grinds: Garlic Mincer

Ideation and Prototyping

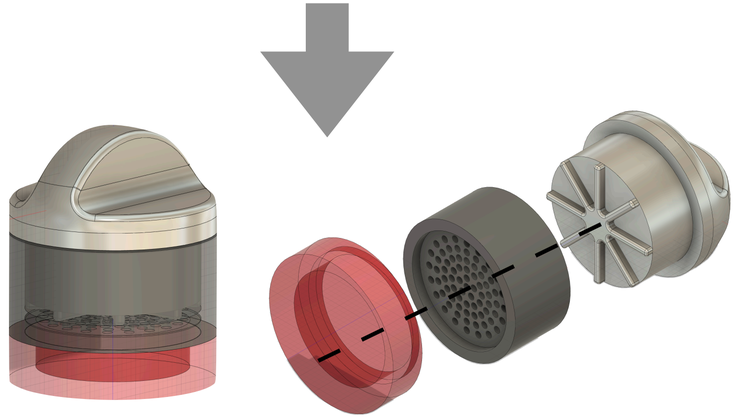


After choosing the garlic mincer concept, I iterated on the different forms it could take focusing on ergonomic handling.

Prototype Findings

3D printed prototypes revealed:

1. Footprint too large
2. Handle is not designed well for CNC
3. Radial tolerance to large

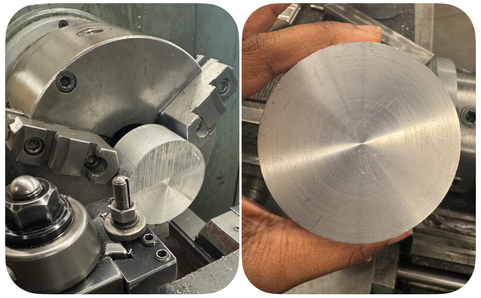


Good Grinds: Garlic Mincer

Manufacturing Process (CNC)

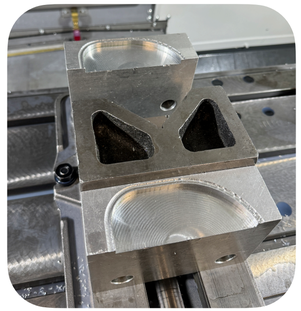
Cylindrical Stock Prep

Rough stock cut with horizontal bandsaw

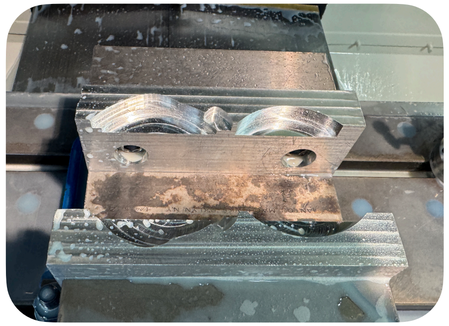


Used the lathe to create flat faces

Work Holding



I First Attempted to use V-Blocks with larger vise jaws
Issue: Stock was not contained and wanted to rotate about x axis

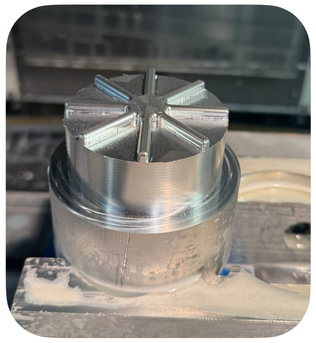


I moved on to creating soft jaws.

Probing

Center boss probing.

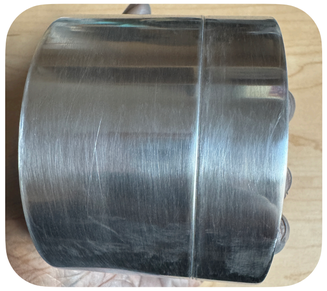
3D Geometry



Ergonomic Handle and Star prongs for mincing

Post Processing

Filed 0.003” in z to clear out holes



Sanded Enclosure and tray to 600 grit

Made letter stickers on Vinyl cutter

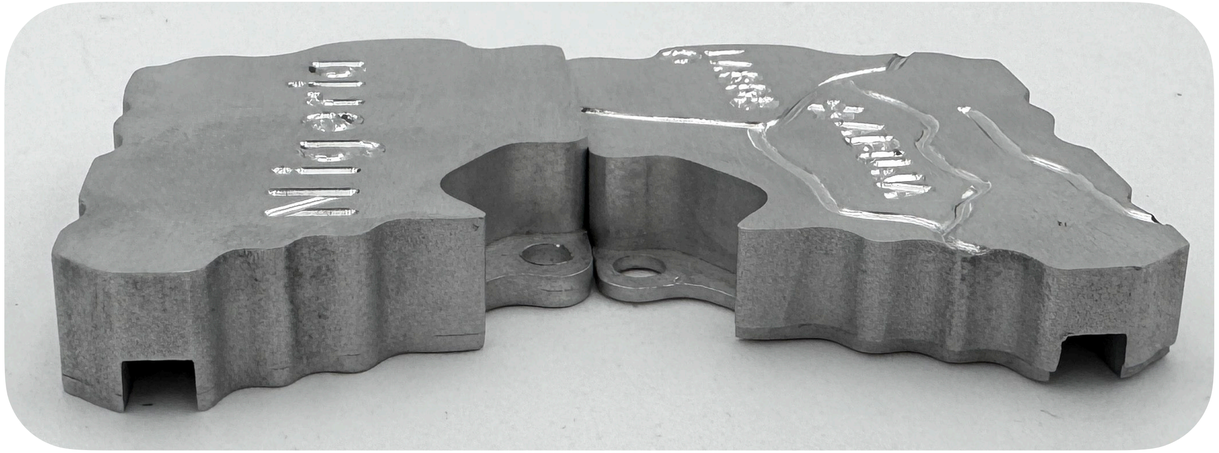
Placed stickers on Enclosure and tray components

Bead blasted Enclosure to create contrasting finish. Handle was left with machine finish

Back to T.O.C

Mindful Whistle: Whistle Keychain

Overview



Goals

Fabricate a stylistic whistle suitable for indoor environments

Proposed Solution

2 part kettle whistle design

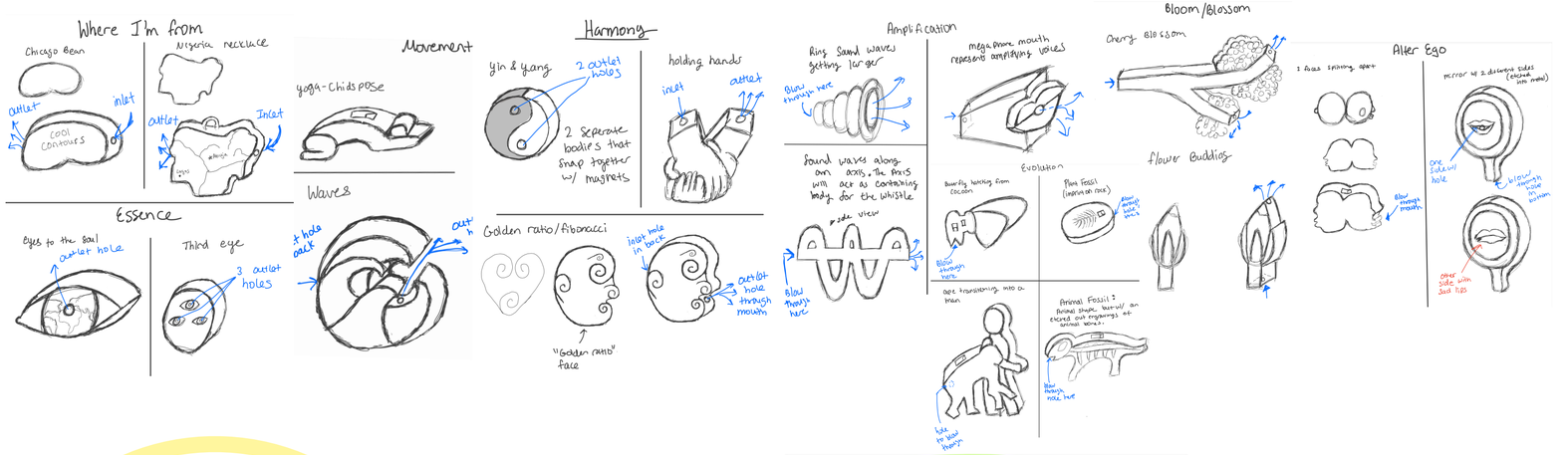
Role

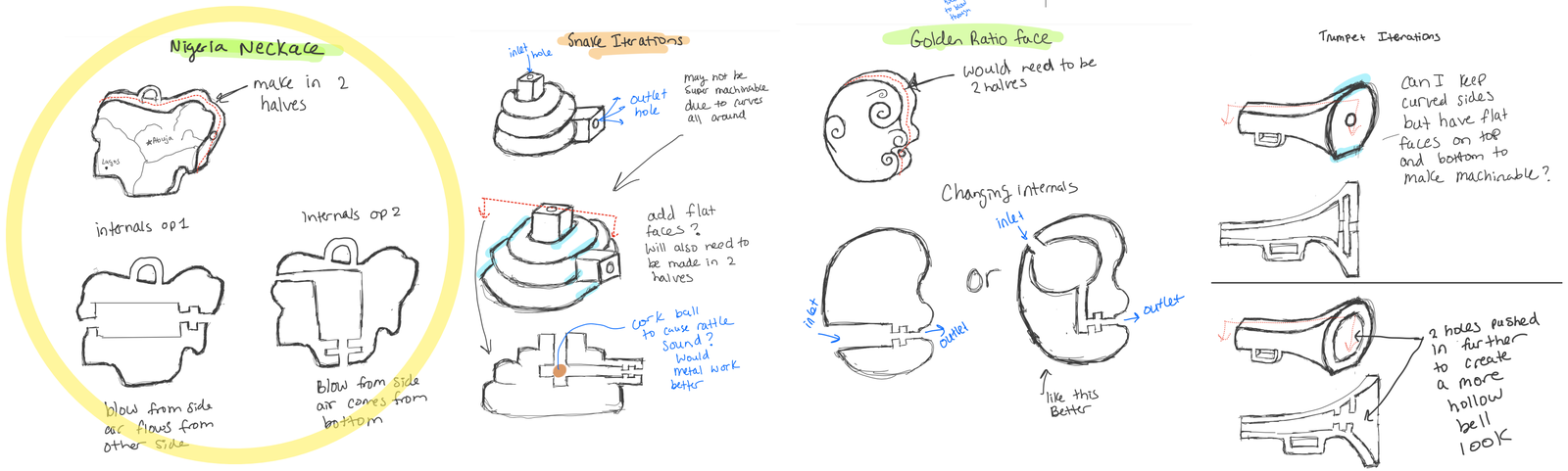
Independent designer and fabricator

Mindful Whistle: Whistle Keychain

Ideation and Prototyping

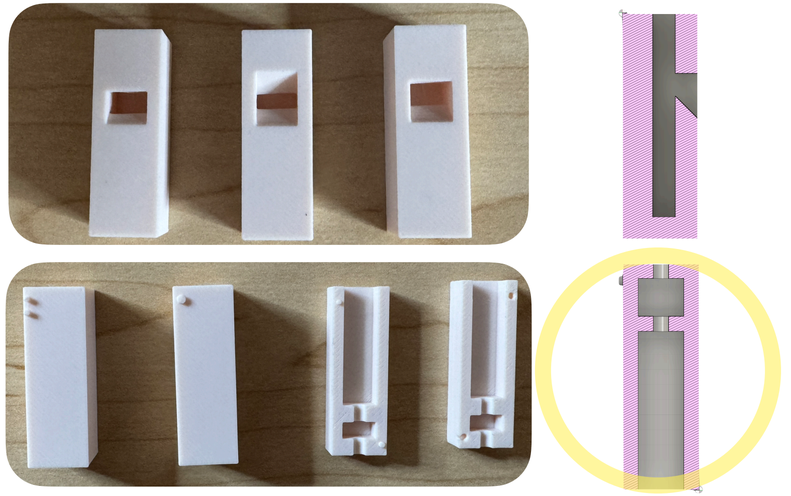
Concept Sketches



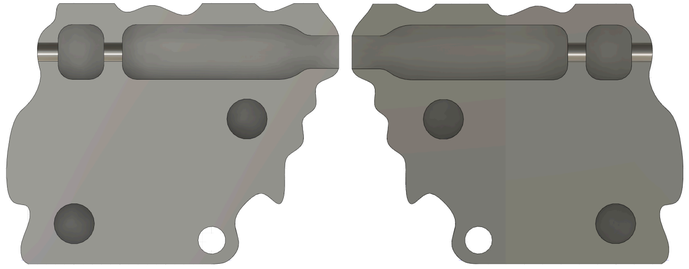


Down selection involved iterations of top concepts considering how a whistle internal geometry can be manufactured

Prototypes



Initially prototyped 2 whistle mechanisms, only the double hole (kettle whistle) successfully produced sound so I moved forward with that geometry

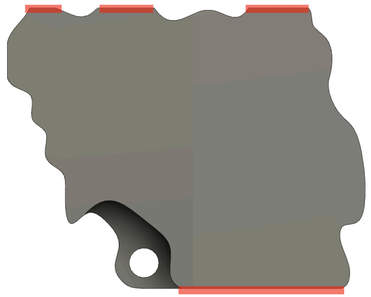


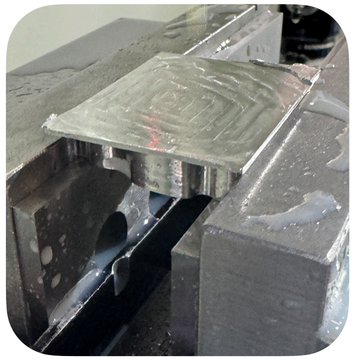
Final CAD utilized first double hole geometry

Mindful Whistle: Whistle Keychain

Manufacturing Process (CNC)

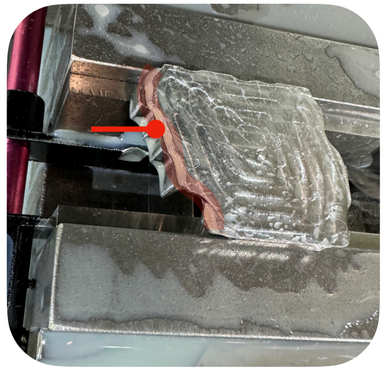
Work Holding

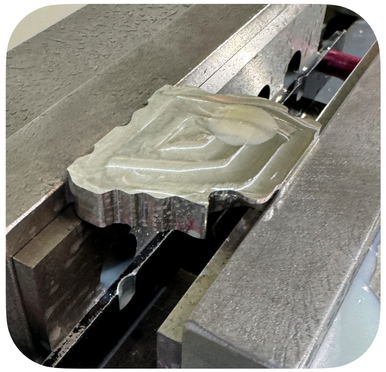




Created flat surfaces for vise to easily clamp onto after part flip

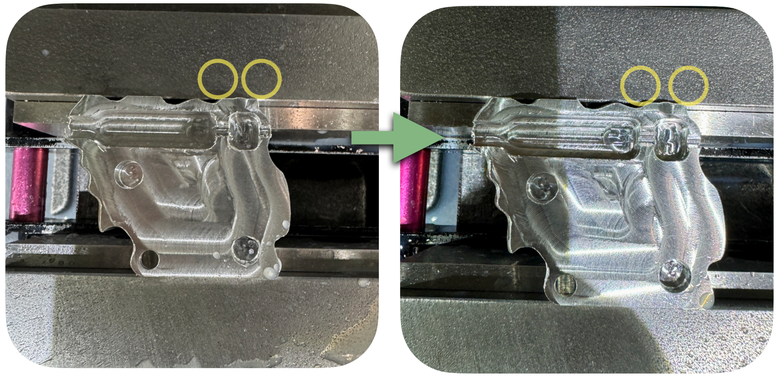
Offset Correction





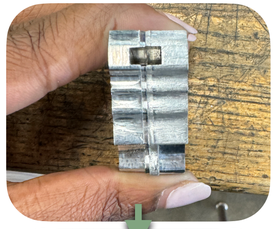
Part had offset of 0.08” in x and 0.05”in z.
Added a flat operation with 1/2” FEM to remove 0.05” in Z by subtracting 0.05” from work offset. Corrected x centering issue in CAM.

Finishing Pass with 3D Pocketing



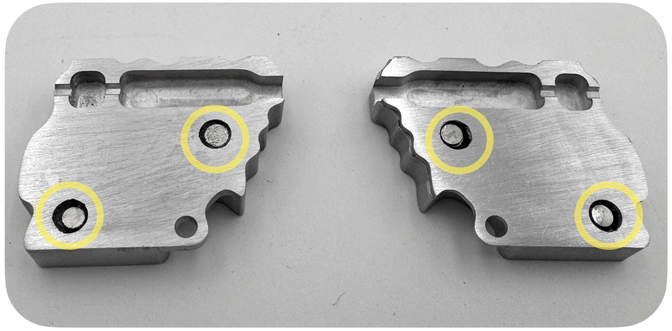
Post Processing

Bead-blasted around sides



Sanded flat surfaces

Assembly



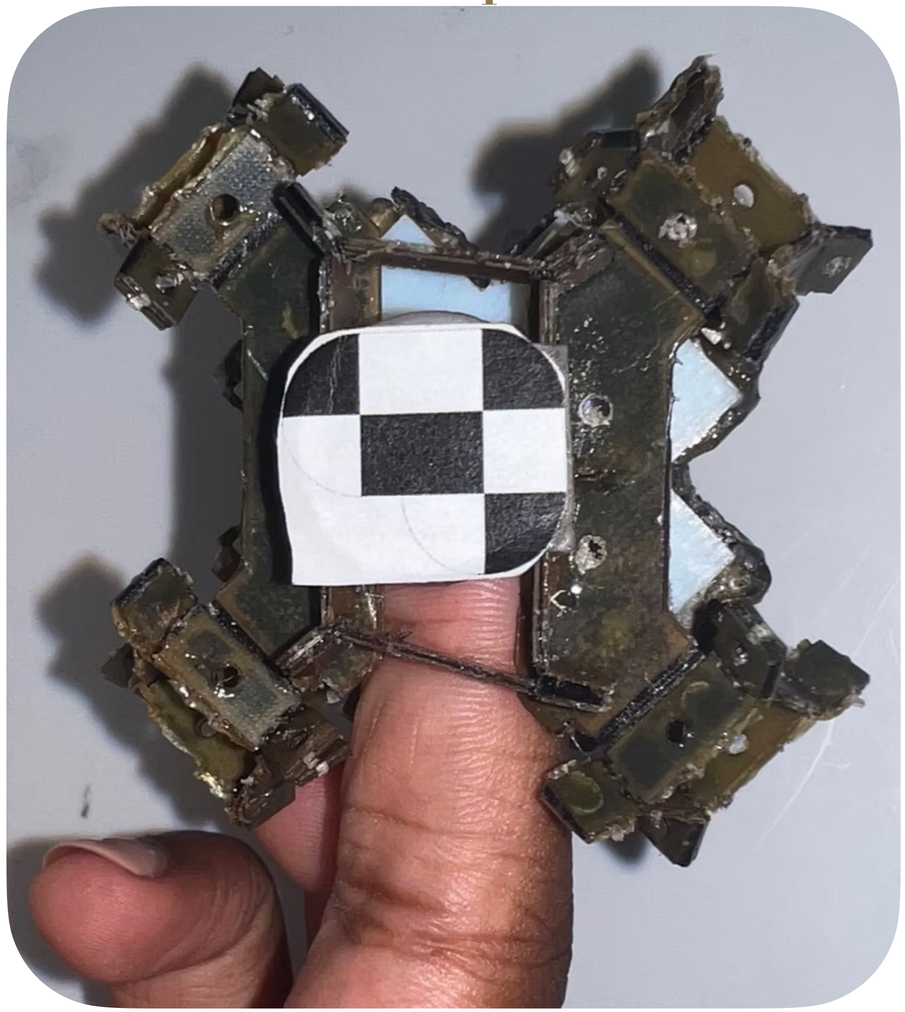
Super glued 4 magnets to pockets and biased them to the the same side for better alignment

Back to T.O.C

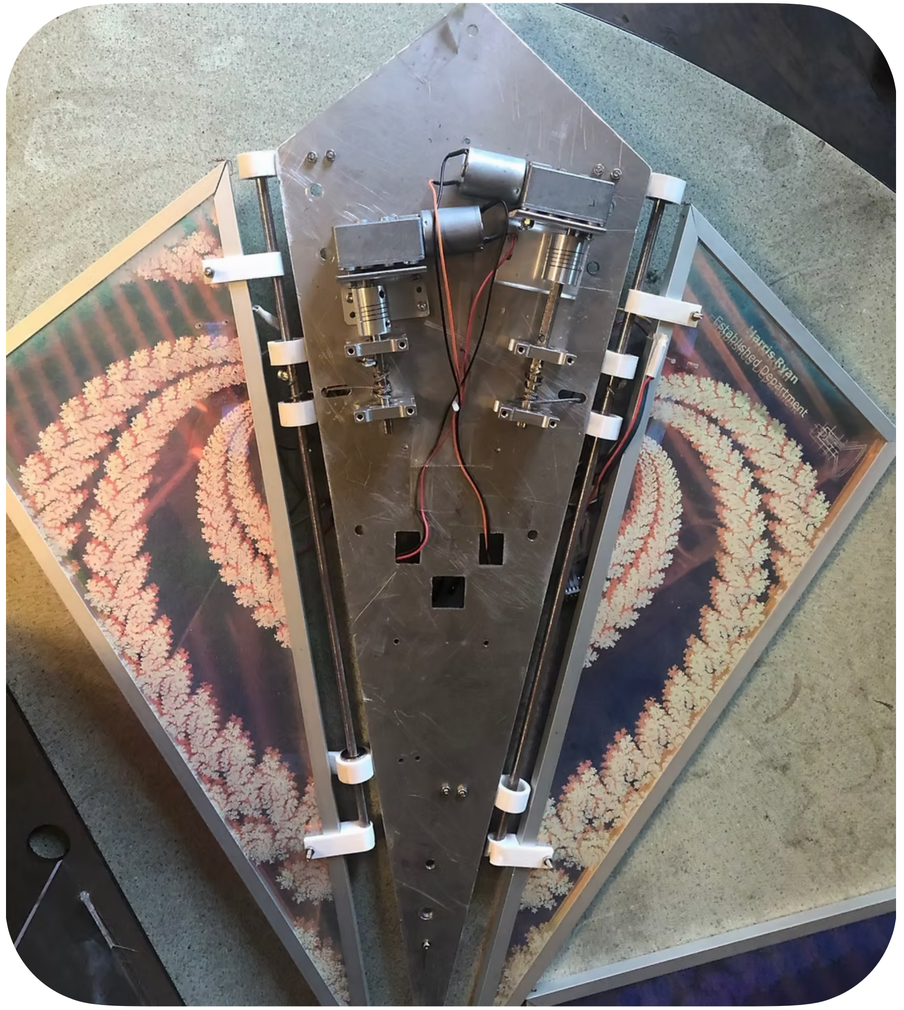
Experimental Design

Development of fixtures and controlled experiments for design iteration

Wearable Haptic Device



Fractal Flyers



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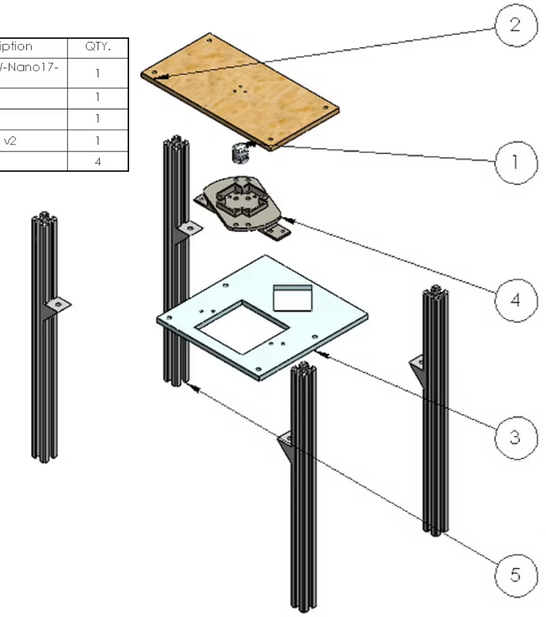
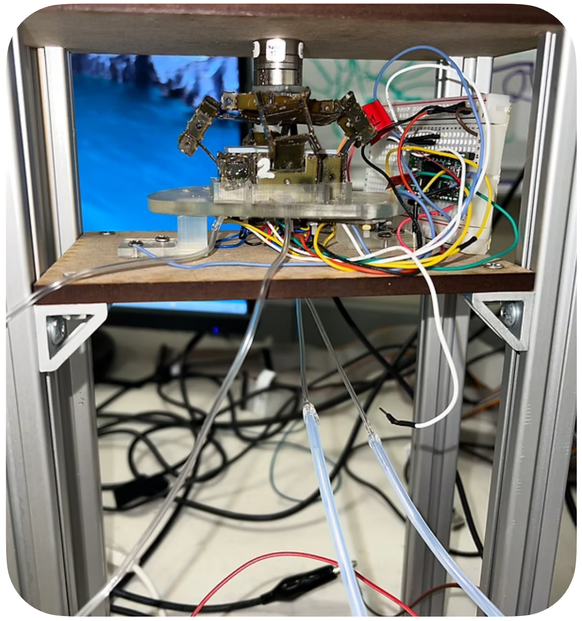
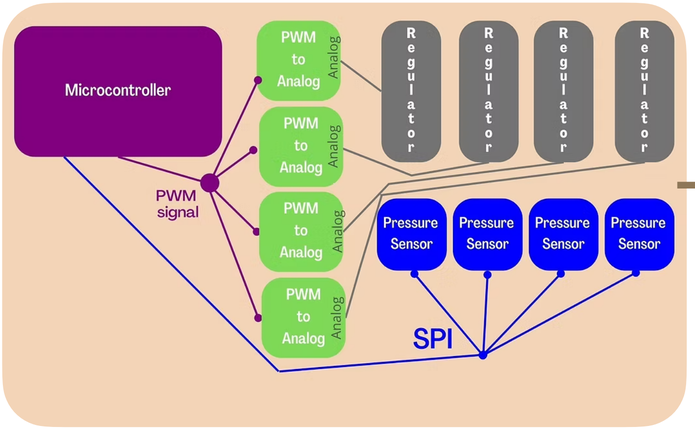
Wearable Haptic Device

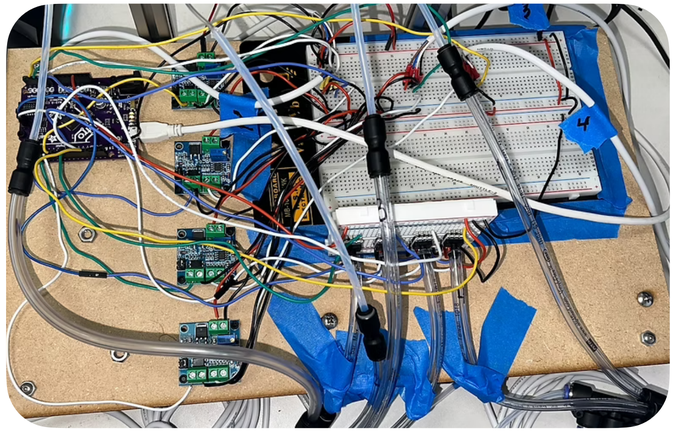
Overview

ITEM NO.	Description	QTY.
1	ATI-9105-TW-Nano17-RSC	1
2	1st plate	1
3	2nd plate	1
4	PCB mount v2	1
5	80-20 bars	4









Goals

Characterize 4 D.o.F. wearable haptic device

Proposed Solution

Build figures and test rigs to constrain device for proper force readings

Role

Research intern responsible for leading fixture design and conducting blocked-force experiments.

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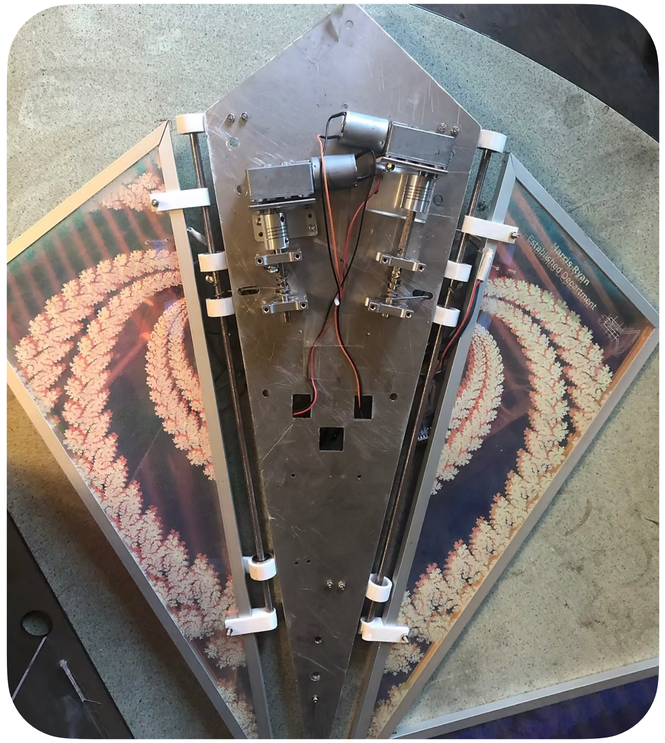
Fractal Flyers

Overview



Goals

Analyze device and implement improvements to push towards mass production

Proposed Solution

Quantify perceived safety of this ceiling-mounted device and identify ways to improve it.

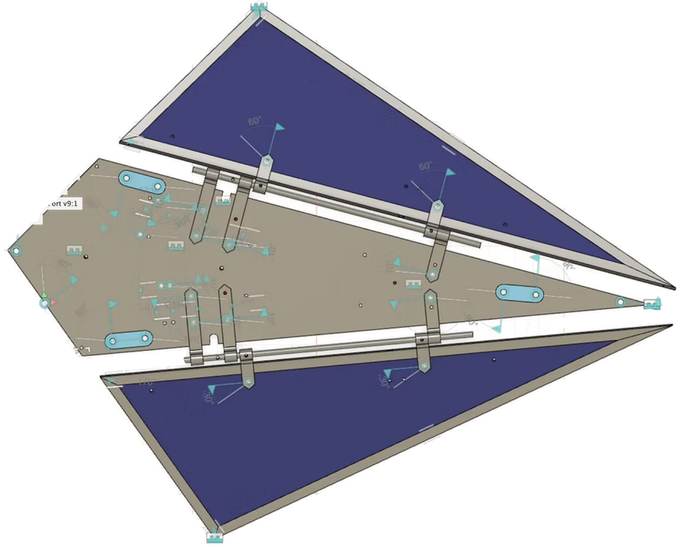
Role

Research intern who assisted in reverse engineering the flyer and led experiments to improve its perceived safety.

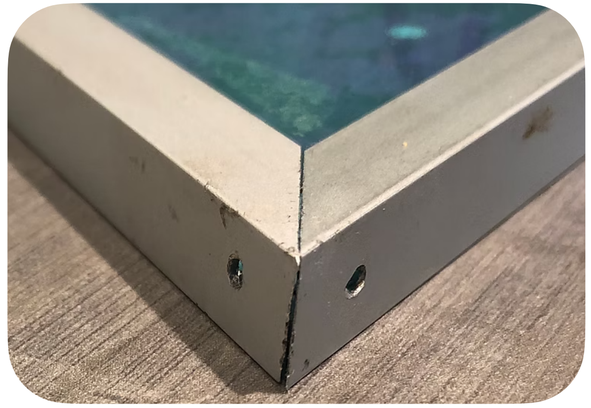
Fractal Flyers

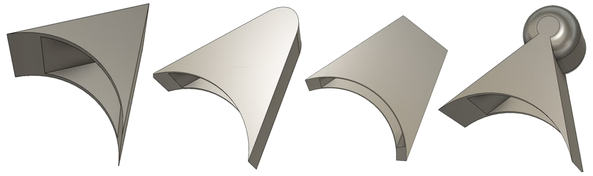
Research Summary

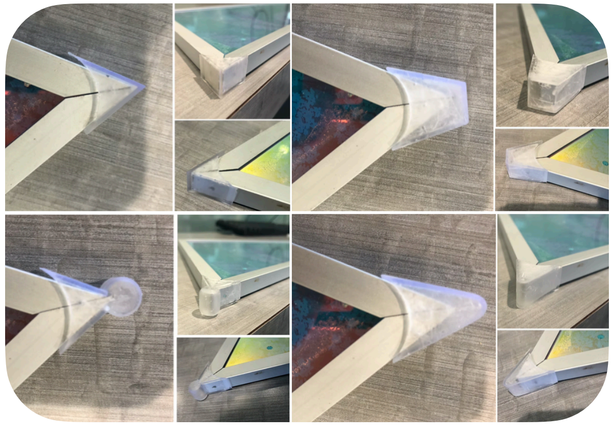
Reverse Engineering to find discrepancies



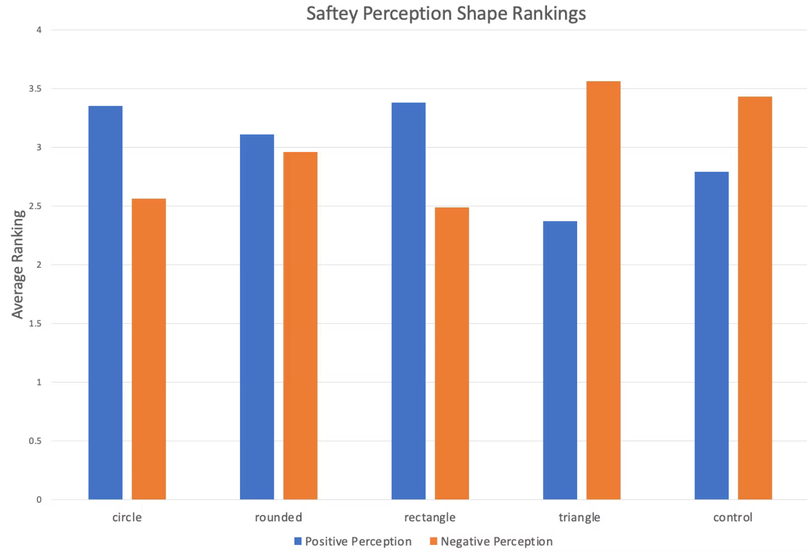
User perception experiments using 3D-printed cap shapes







Results & Implications



Survey results from 37 participants disproved my hypothesis—rounded caps were perceived as less safe, while sharp and triangular designs were viewed more positively. The findings highlight how user-centered experiments, even when thoughtfully designed, must be highly controlled to account for subjective factors like familiarity and visual fit

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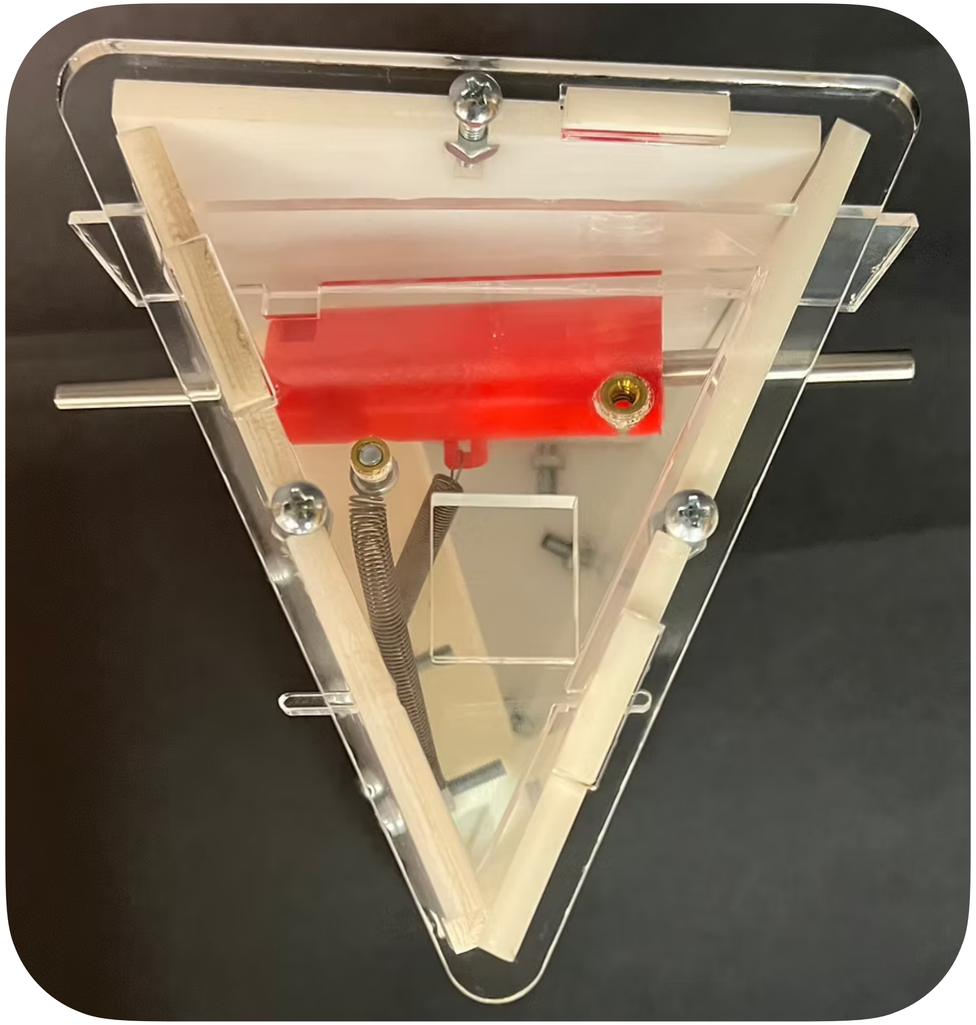
Mechanism Prototyping

Development of mechanisms through prototyping techniques to achieve defined functional goals

Anti-Jam Candy Dispenser



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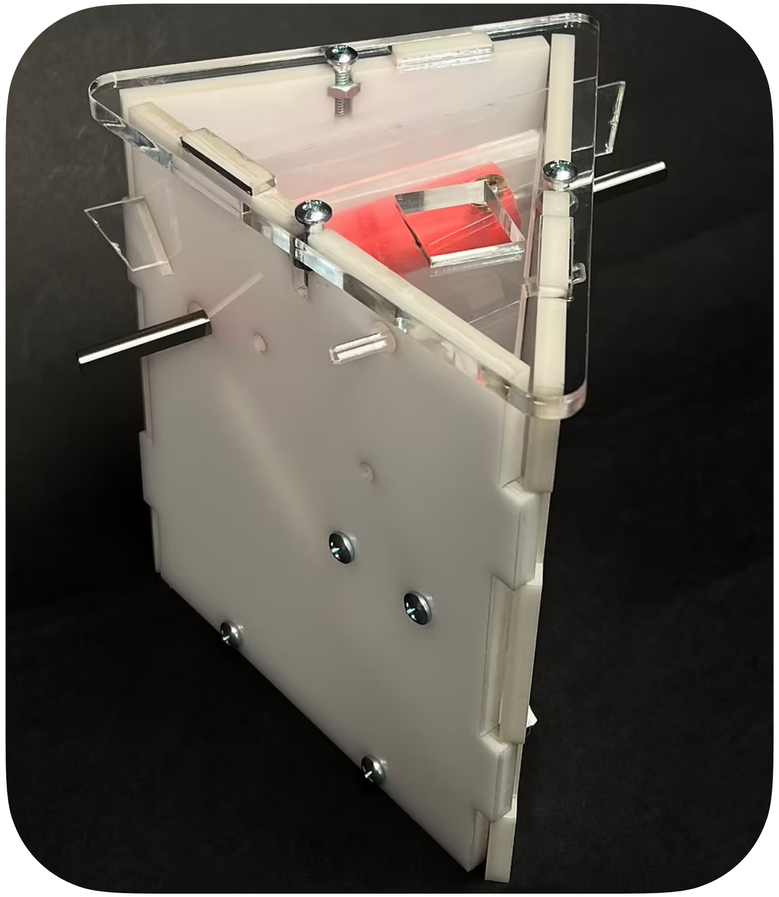
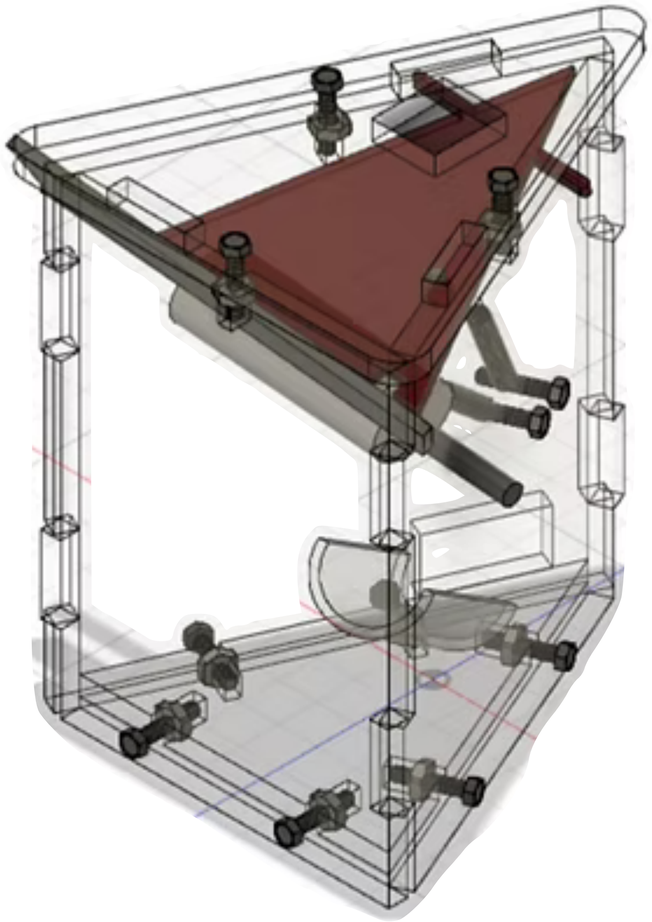
Anti-Jam Candy Dispenser

Overview





Goals

Prototype a unique mechanism capable of dispensing one candy at a time

Proposed Solution

Single-motion actuated candy dispenser with integrated anti-jamming mechanism.

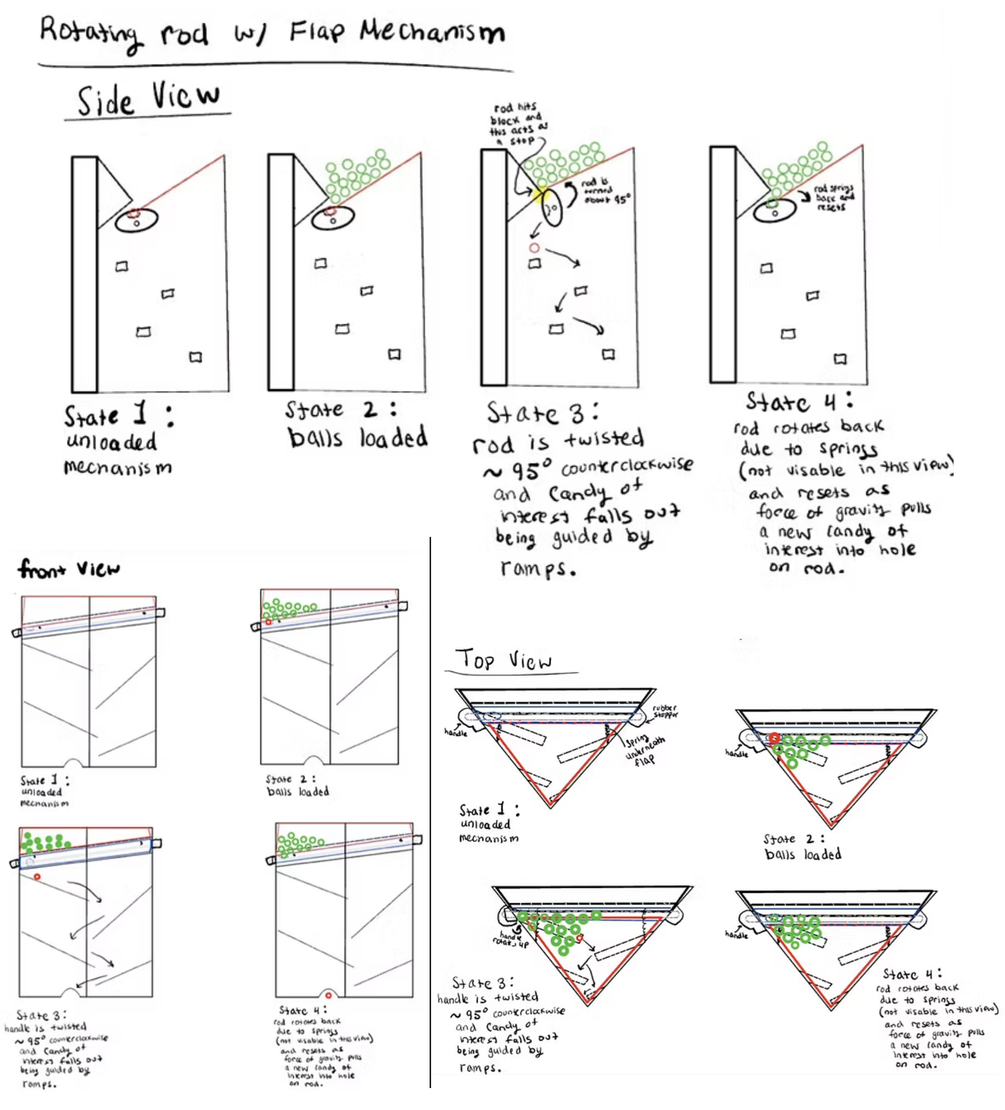
Role

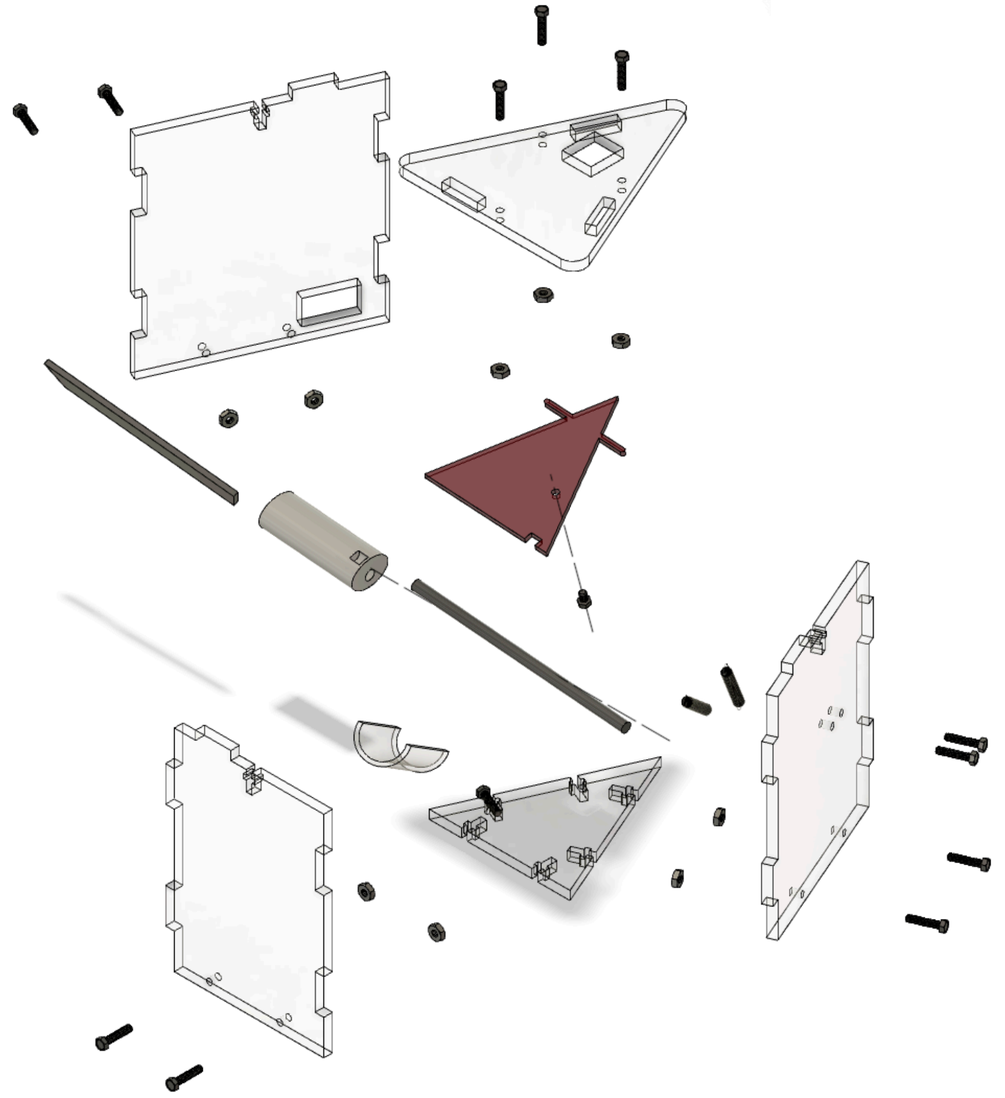
Independent designer and fabricator

Demonstration Video

Anti-Jam Candy Dispenser

Conceptualization and Demonstration





Thank You

Contact

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