

MAYANK THAKUR

Industrial Designer

PORTFOLIO
2026

ABOUT ME



Contact Info.:
Mayank Thakur
+1(215)9308744
mayank.th2597@gmail.com
www.mayank-thakur.com
Philadelphia,PA

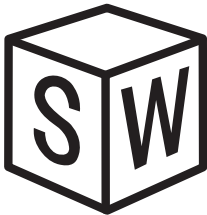
I'm Mayank, an architect turned industrial designer, with three years and 20+ projects worth of professional experience before making the switch.

Architecture taught me how to think at scale, coordinate across disciplines, and design for people who will actually live and move through a space. But it was the intimacy of industrial design, the challenge of solving a problem you can hold in your hand that pulled me in a different direction.

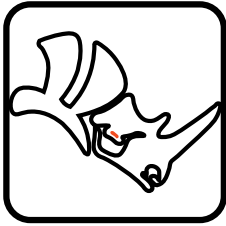
I approach design as a process of listening first. Understanding the user, identifying the real problem, and then iterating until the solution is honest and functional. Not precious, just resolved. Each project gets better because the last one taught me something.

User needs aren't a checkbox for me- they're the starting point

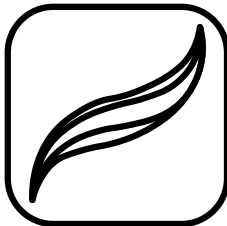
SKILLS



Solidworks



Rhino3D



Procreate



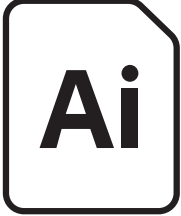
Fusion 360



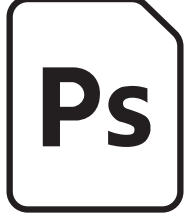
AutoCAD



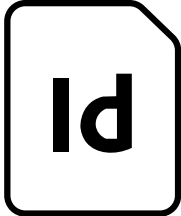
Revit



Illustrator



Photoshop



Indesign

Delhi Technical
Campus
2016-2021
Bachelor of
Architecture

Meroform India
Pvt Ltd.
2021-2021
JR. Architect

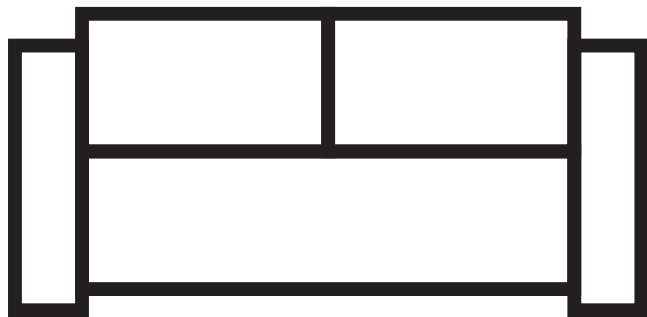
Intec Infra
Technologies
2022-2024
Architect

Thomas Jefferson
University
2024-2026
M.S. Industrial Design

Timeline

Table of contents

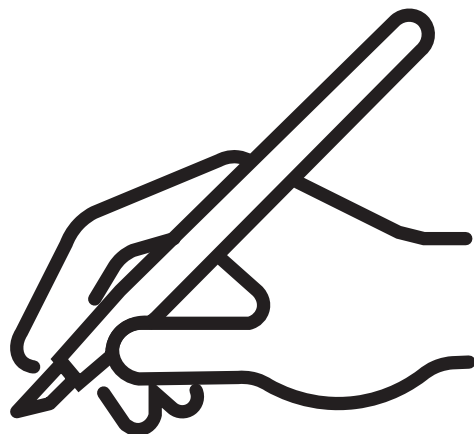
• 32X32



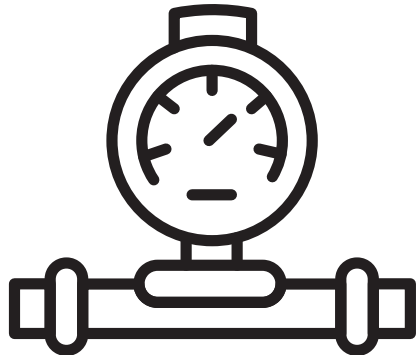
• Drivedeck



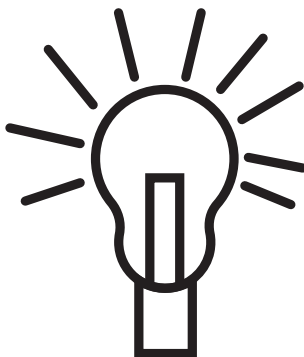
• Pentel Nomics.....



• Pressur.....



• EVENTIDE Ambient Light.....



32X32



01 Project

SIMPLICITY THAT REVEALS COMPLEXITY

A line of furniture that explores complex, overlapping patterns through simple joinery, echoing the fundamental archetypes of geometry.

Design Criteria

- Design a line of furniture
- It should only use 32mm x 32mm x 1040mm Wooden sections for construction
- It should be easy to manufacture
- It should use domino joinery.
- The design should translates over to the other pieces.
- Build one 1:1 scale prototype.

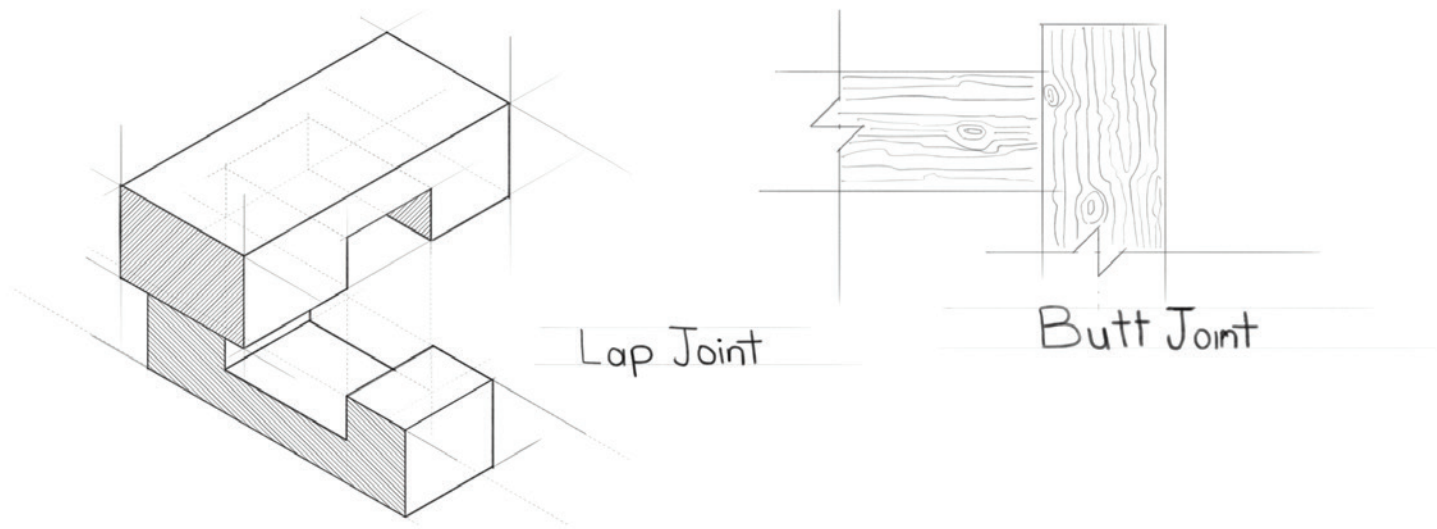


Image 1: The joinery study



Image 2: The form which was developed further



Image 3: The abstract structure based on the joinery study

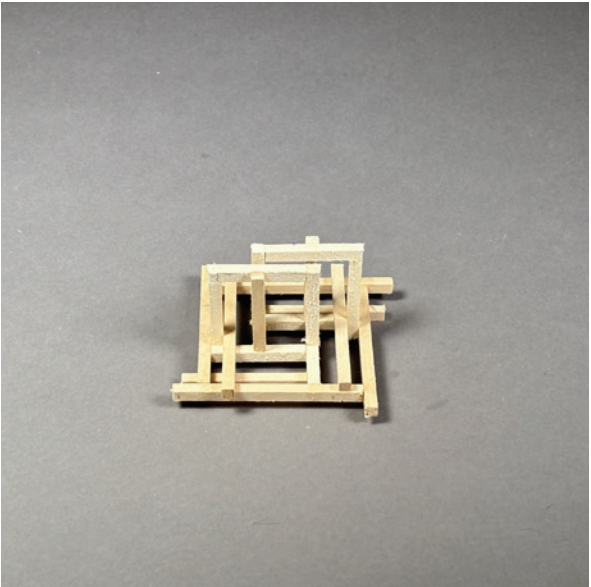


Image 4: The abstract structure based on the joinery study

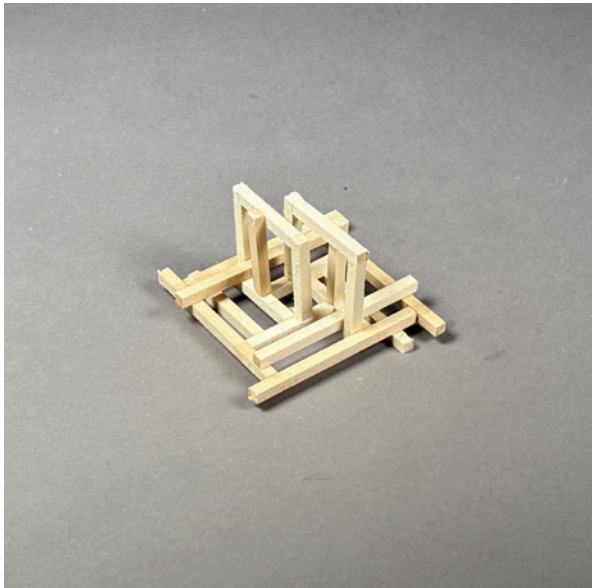


Image 5: structure interacting with a planar surface.

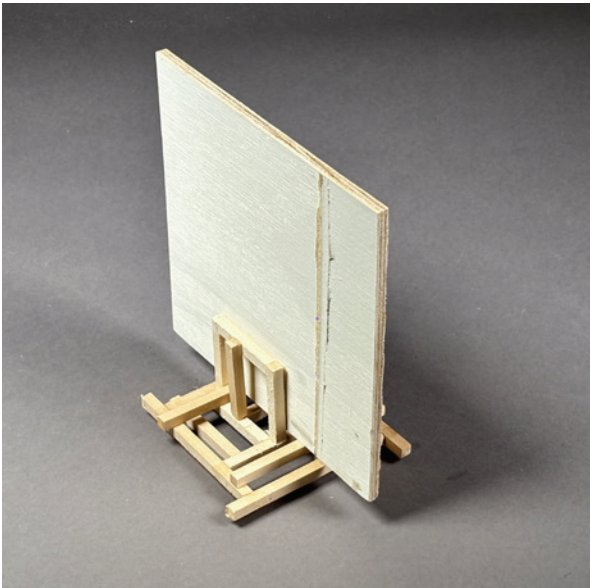


Image 6: structure interacting with a planar surface.

SIMPLICITY THAT REVEALS COMPLEXITY

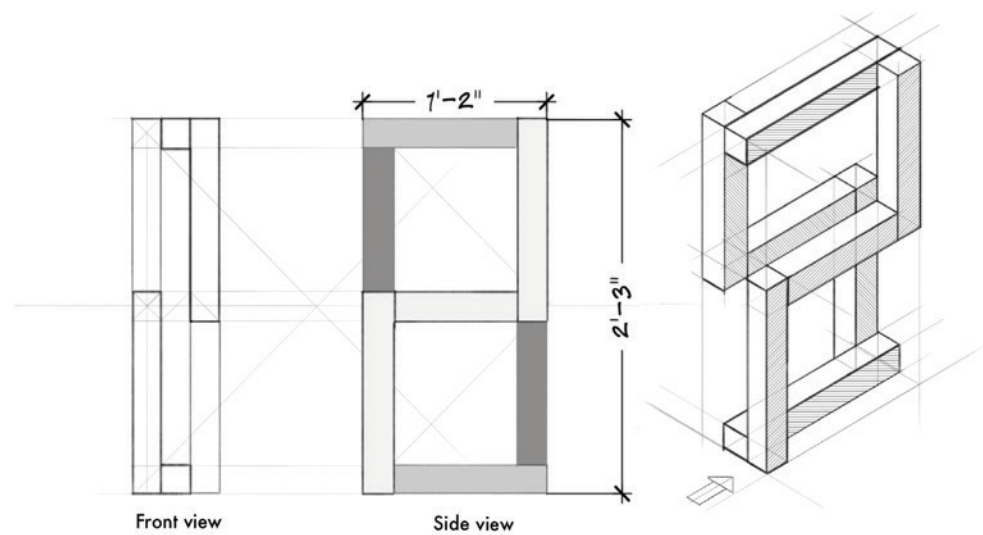


Image 1: Table leg

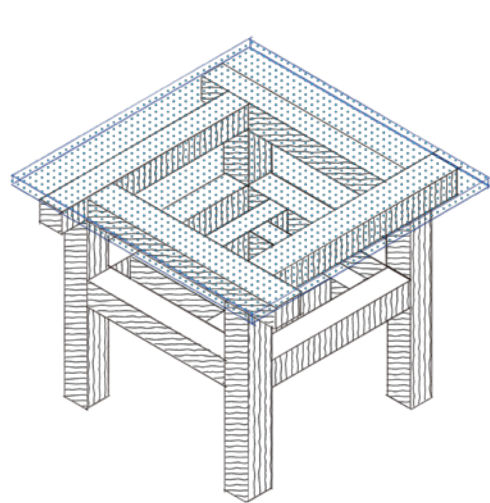


Image 2: Side table

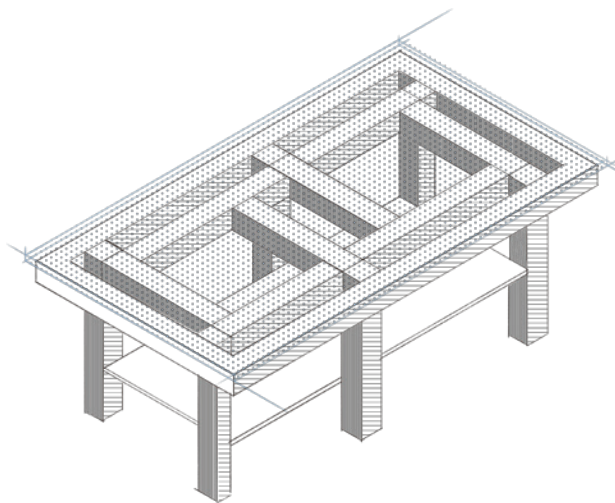


Image 3: Coffee table

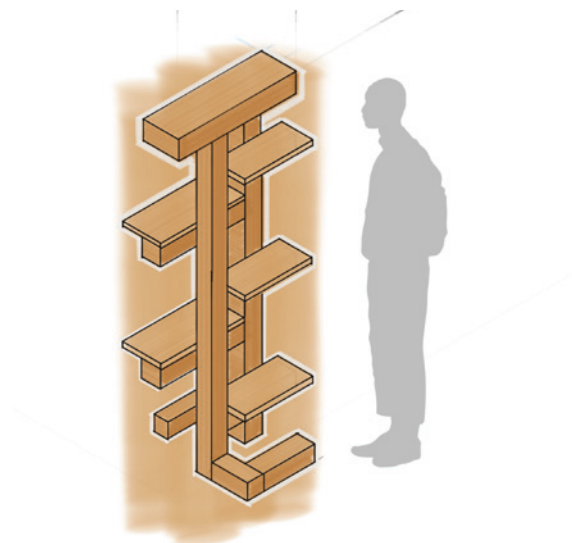


Image 4: Partition style book shelf

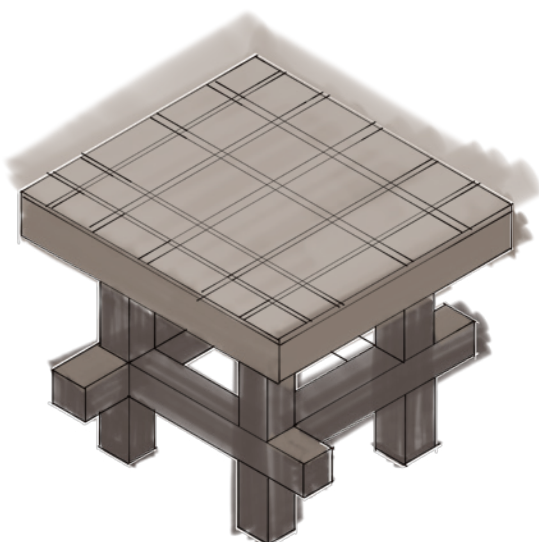


Image 5: Alternate side table

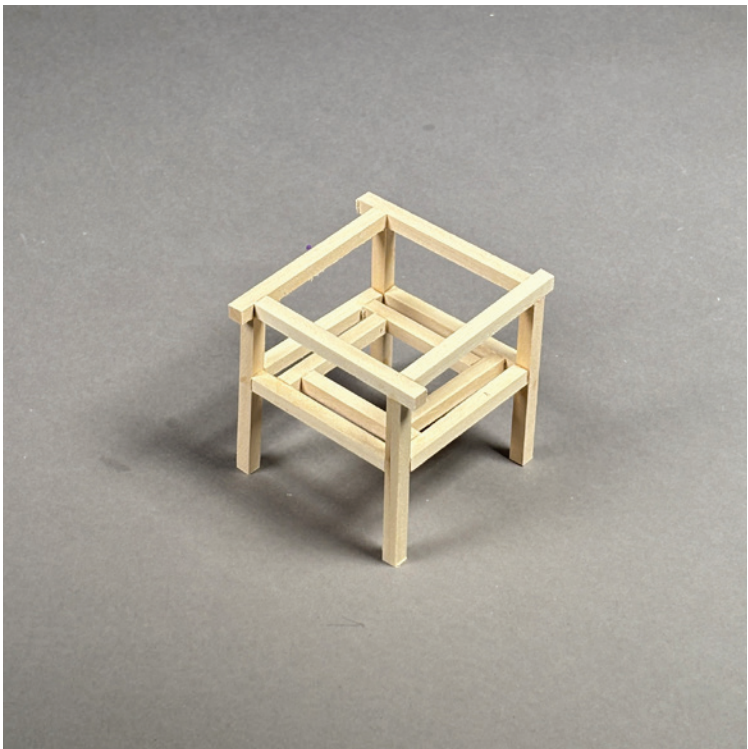


Image 6: Side table(scale 1:5)



Image 7: Side table(scale 1:5)



Image 8: Partition book shelf (scale 1:5)

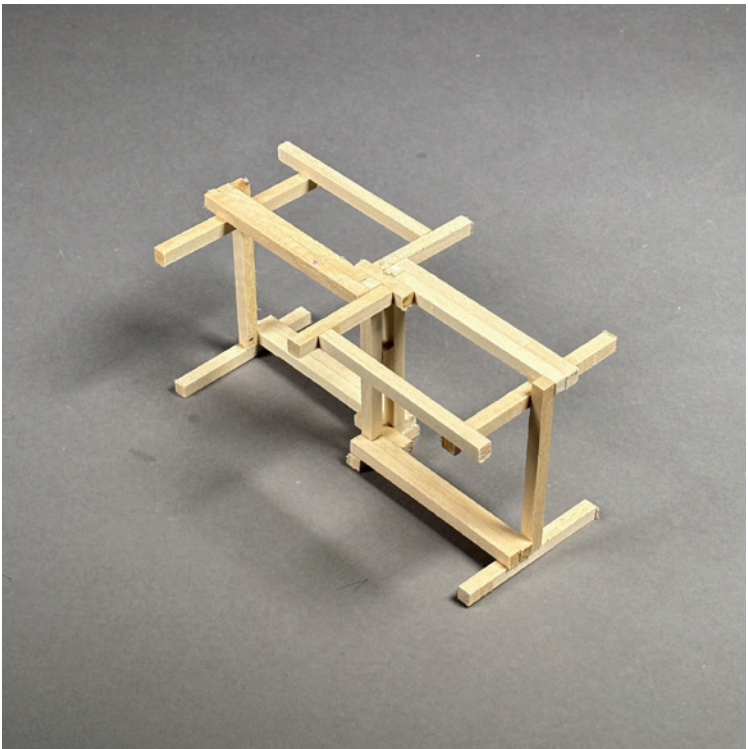


Image 9: Coffee table(scale 1:5)

Development – Prototype



Image 1: Using domino joiner to make joins

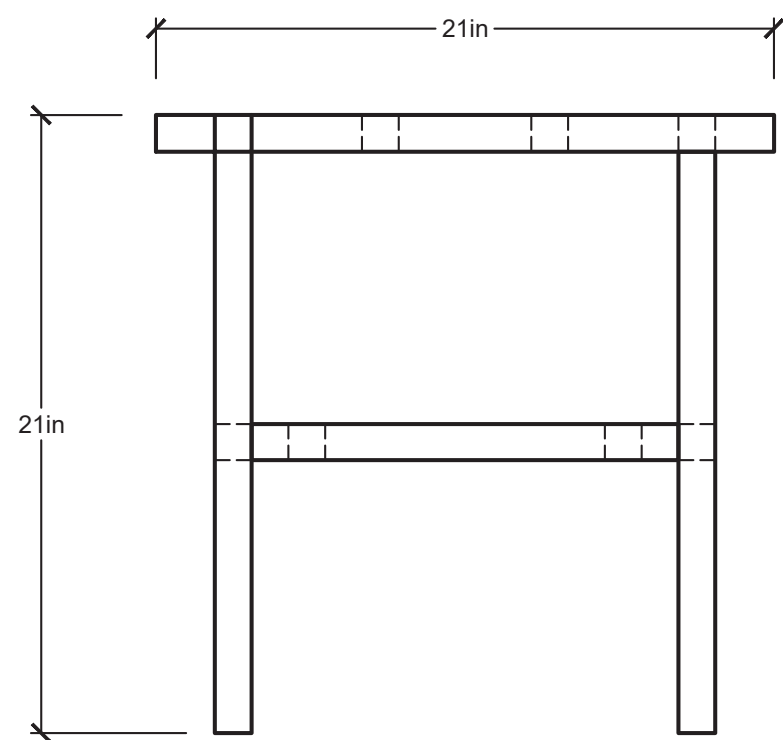
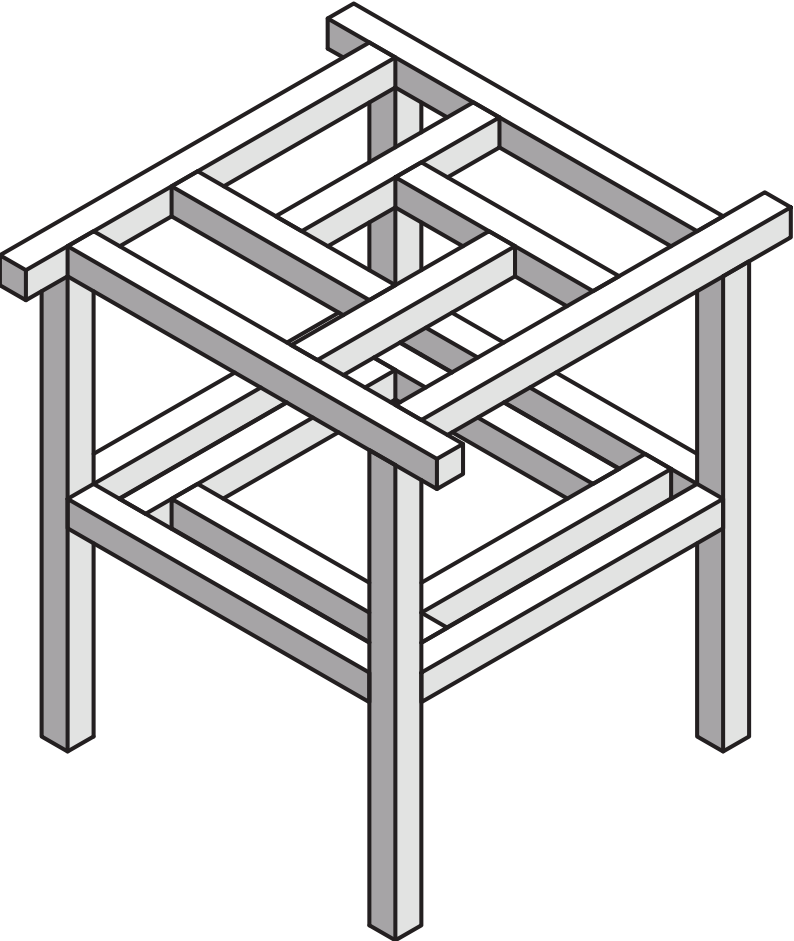
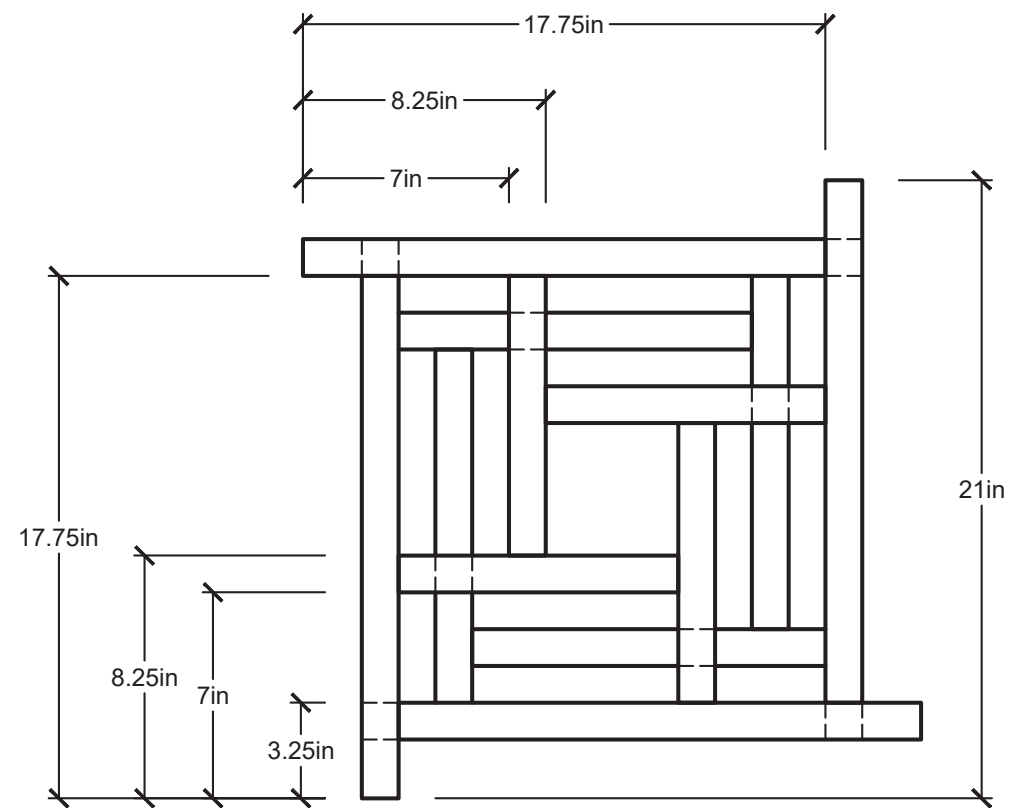


Image 2: Sanding the before applying Finish coat.



Image 3: Pre-Final assembly to check how is everything fitting.

Orthographic Views



Final Design

Design Criteria

- Design a line of furniture
- It should only use 32mm x 32mm x 1040mm Wooden sections for construction
- It should be easy to manufacture
- It should use domino joinery.
- The design language should translates over to the other pieces.
- Build one 1:1 scale prototype.

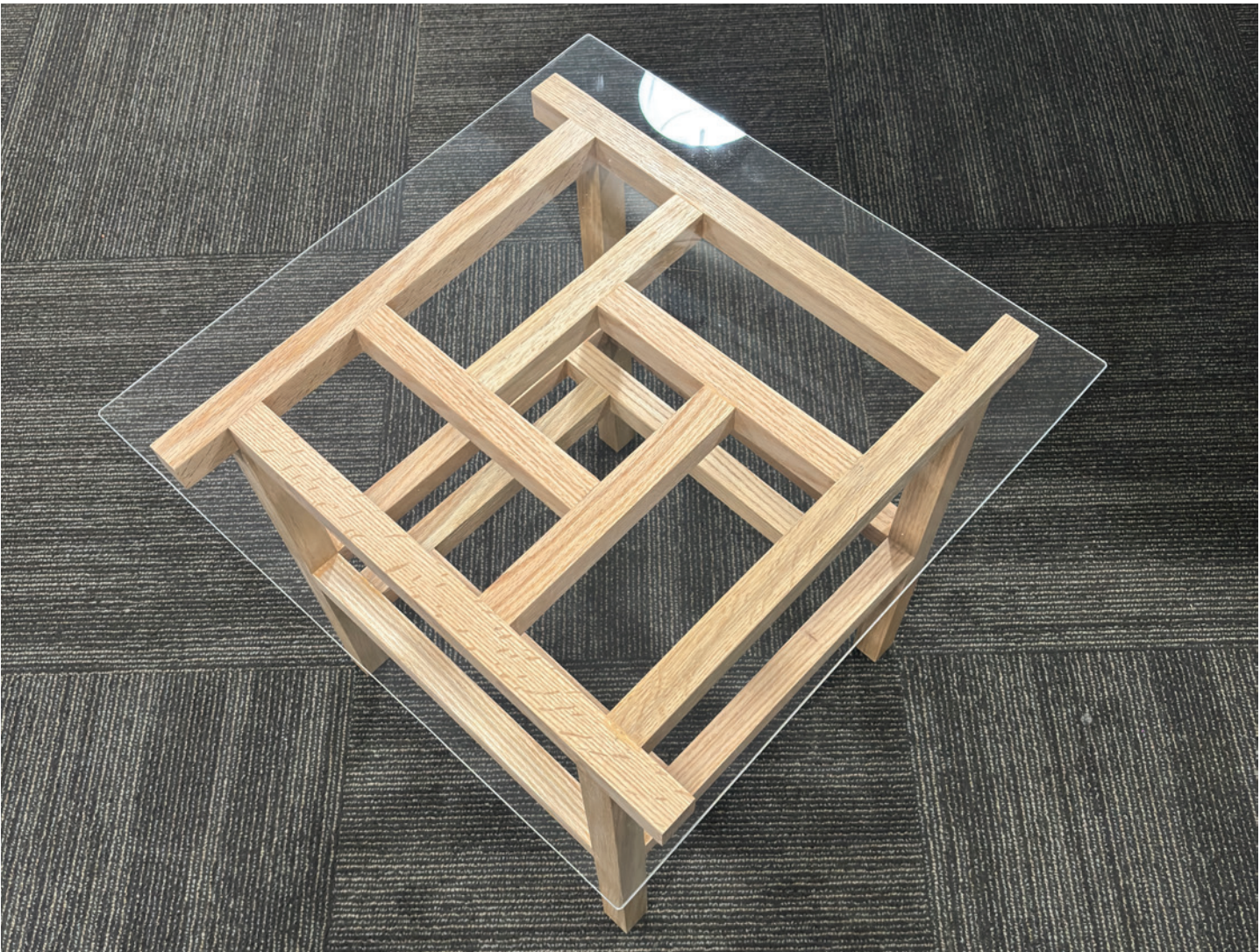


Image 1: 1:1 Scale Prototype.

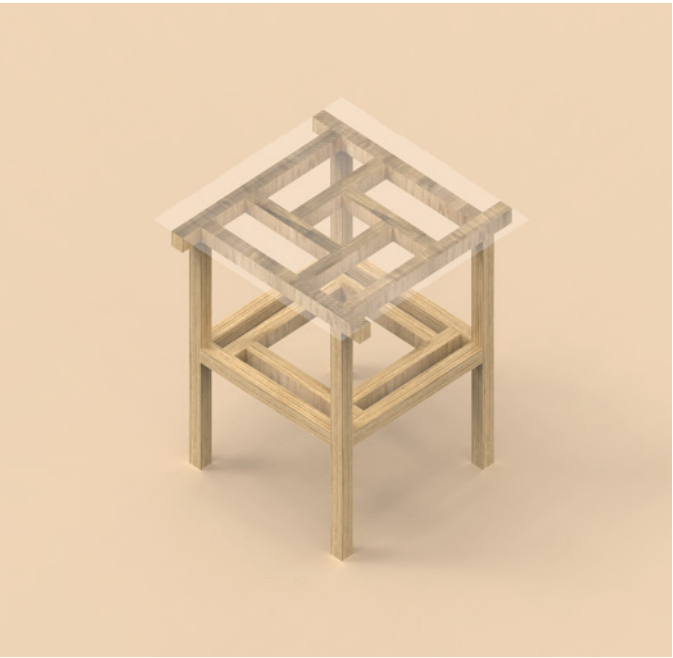


Image 2: Side table

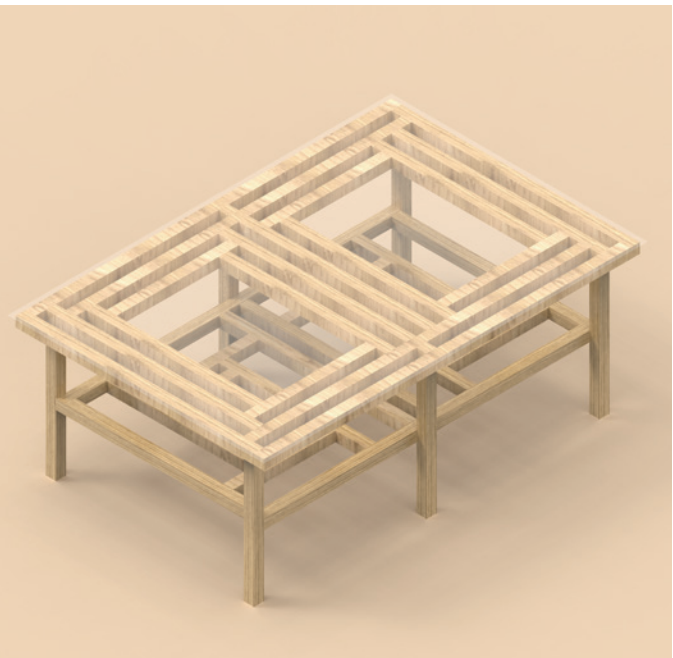


Image 3: Overlapping Knot design on top of the Coffee table

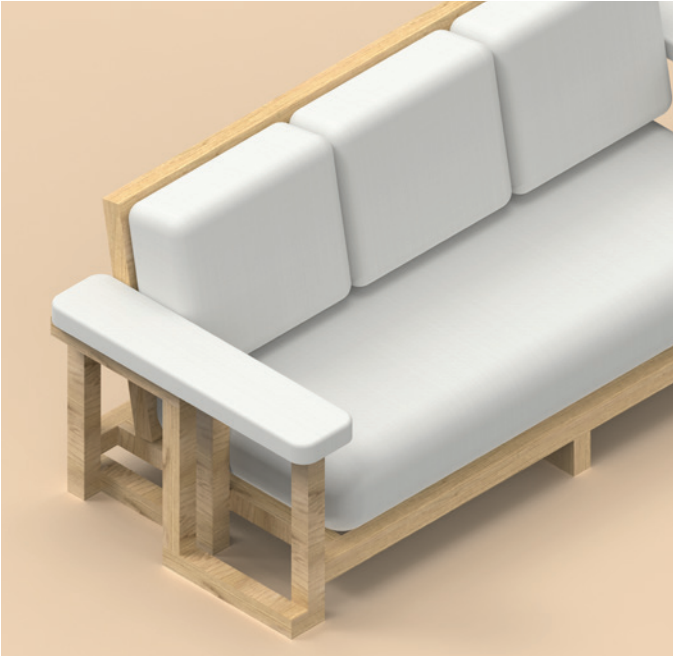


Image 4: Overlapping knot design on side of the Sofa

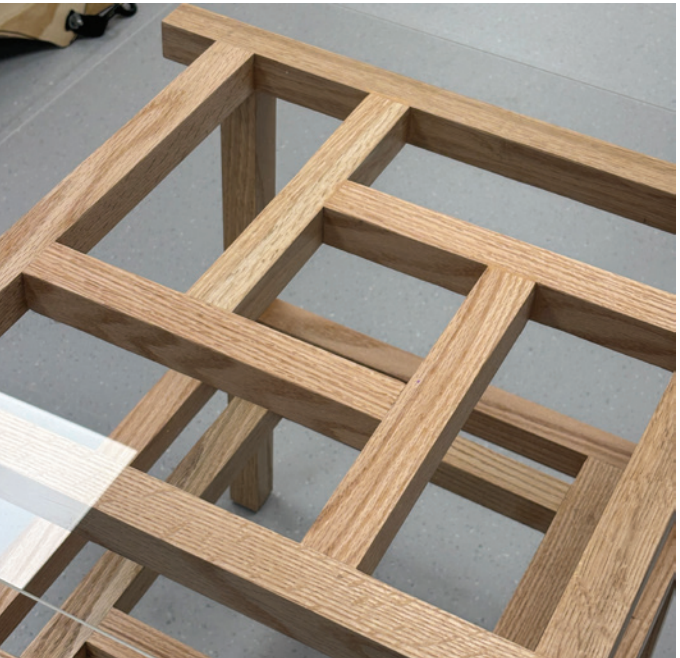


Image 5: The overlapping knot design

DRIVEDECK



02Project

ALL HANDS ON DECK

This project was completed in collaboration with Easter Seals of Southeastern Pennsylvania. The physical therapist at Easter Seals identified a need for an alternative control system for bumper cars, designed to better accommodate children with physical and motor disabilities. The bumper cars' stock joystick controls can present challenges for children who have limited fine motor control or upper extremity function. To address this, a simplified interface was developed using large, easy-to-press buttons that allow children to move the car forward or backward — giving more children the opportunity to participate in and enjoy the experience independently.

Design Criteria

- The tray should be mount/unmount with minimal effort.
- The tray should not hinder the user in anyway.
- The any adjustment made to the tray should be done without any special tools
- The tray should be light and sturdy enough to support the kids weight
- The tray controls should be simple enough for user to engage easily.



ALL HANDS ON DECK



Image 1: Alternate forms to the Tray design incorporating Hinges.

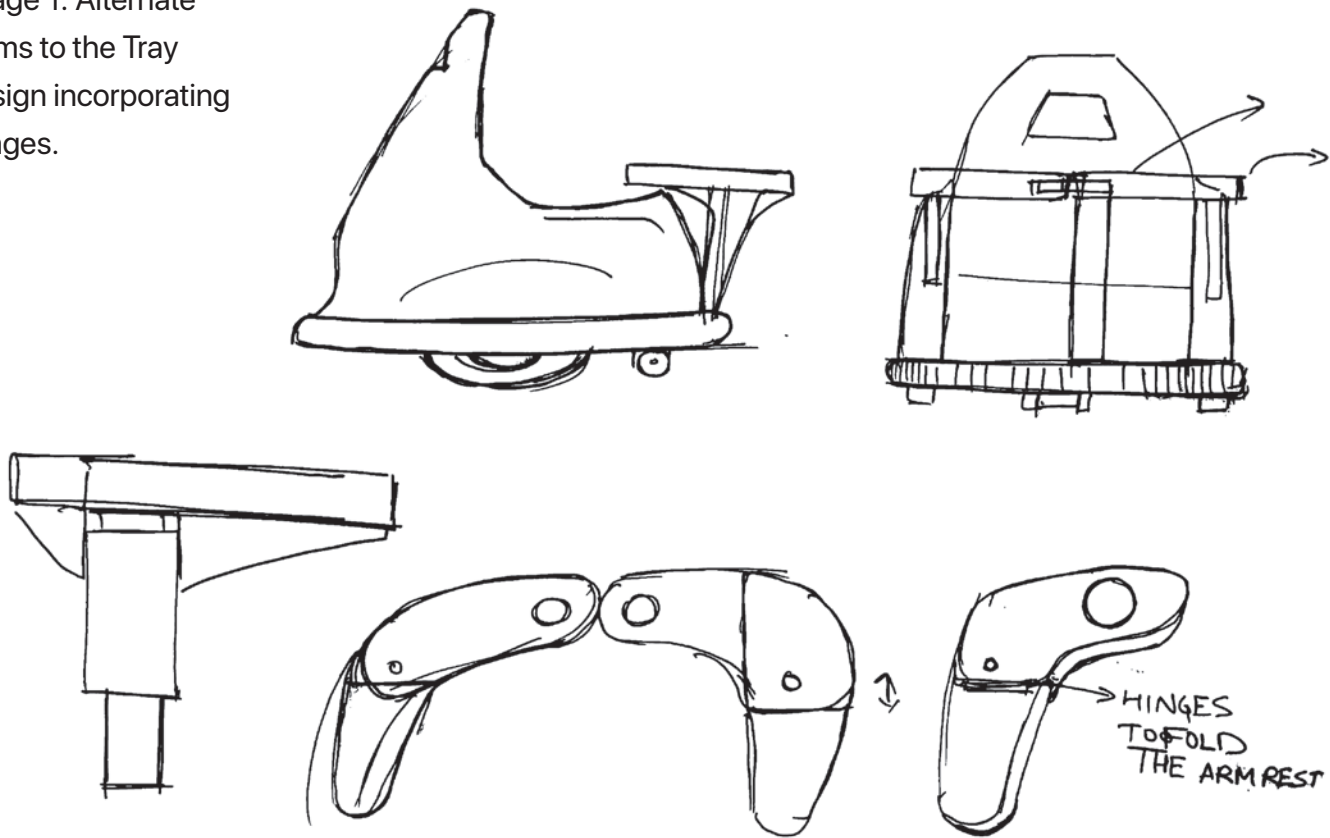


Image 2: Showcasing tray angle for ease of use.

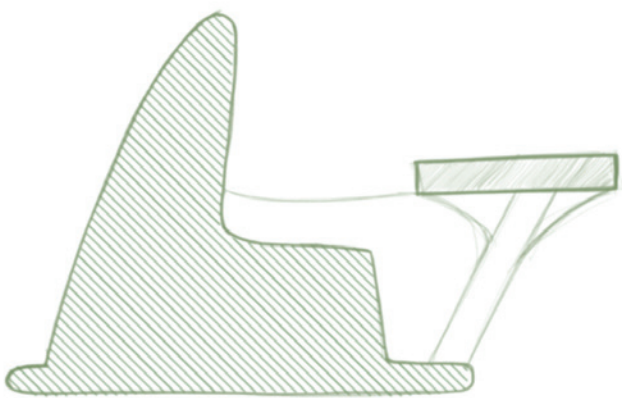
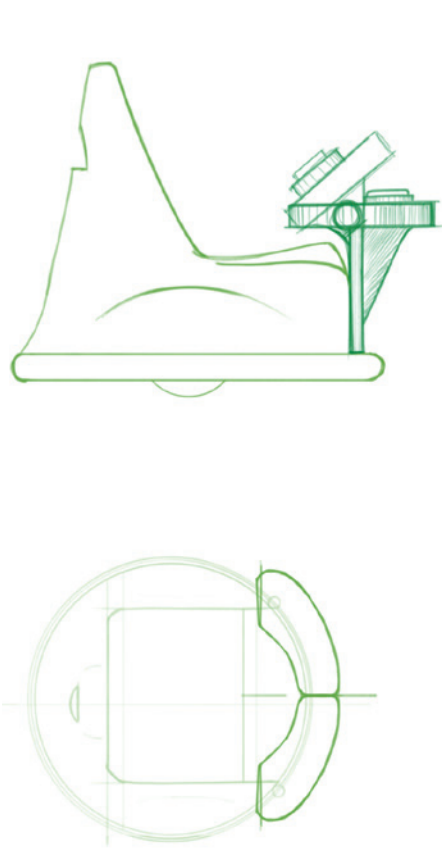


Image 3: Section showcasing clearance for user to sit comfortably

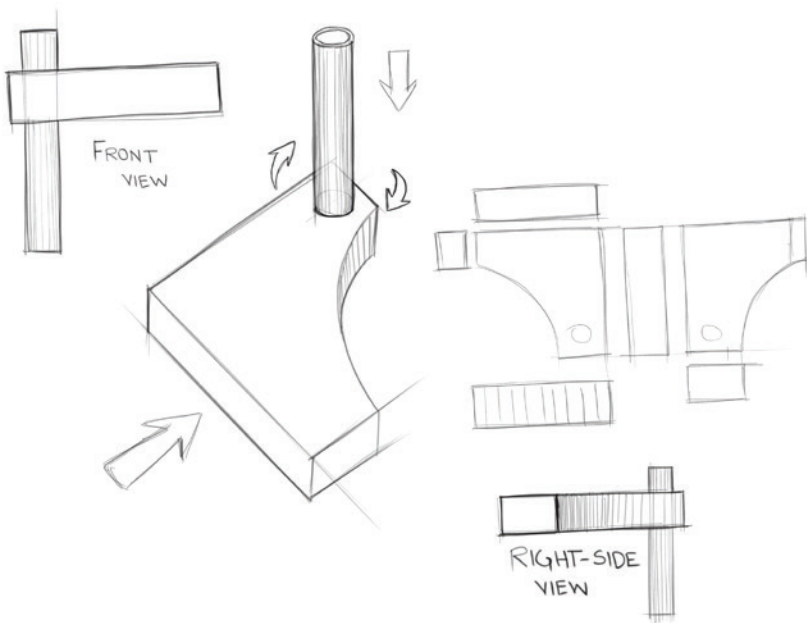


Image 4: First mock-up of the tray, demonstrating size and scale and iteration with user.

Prototype 1.0

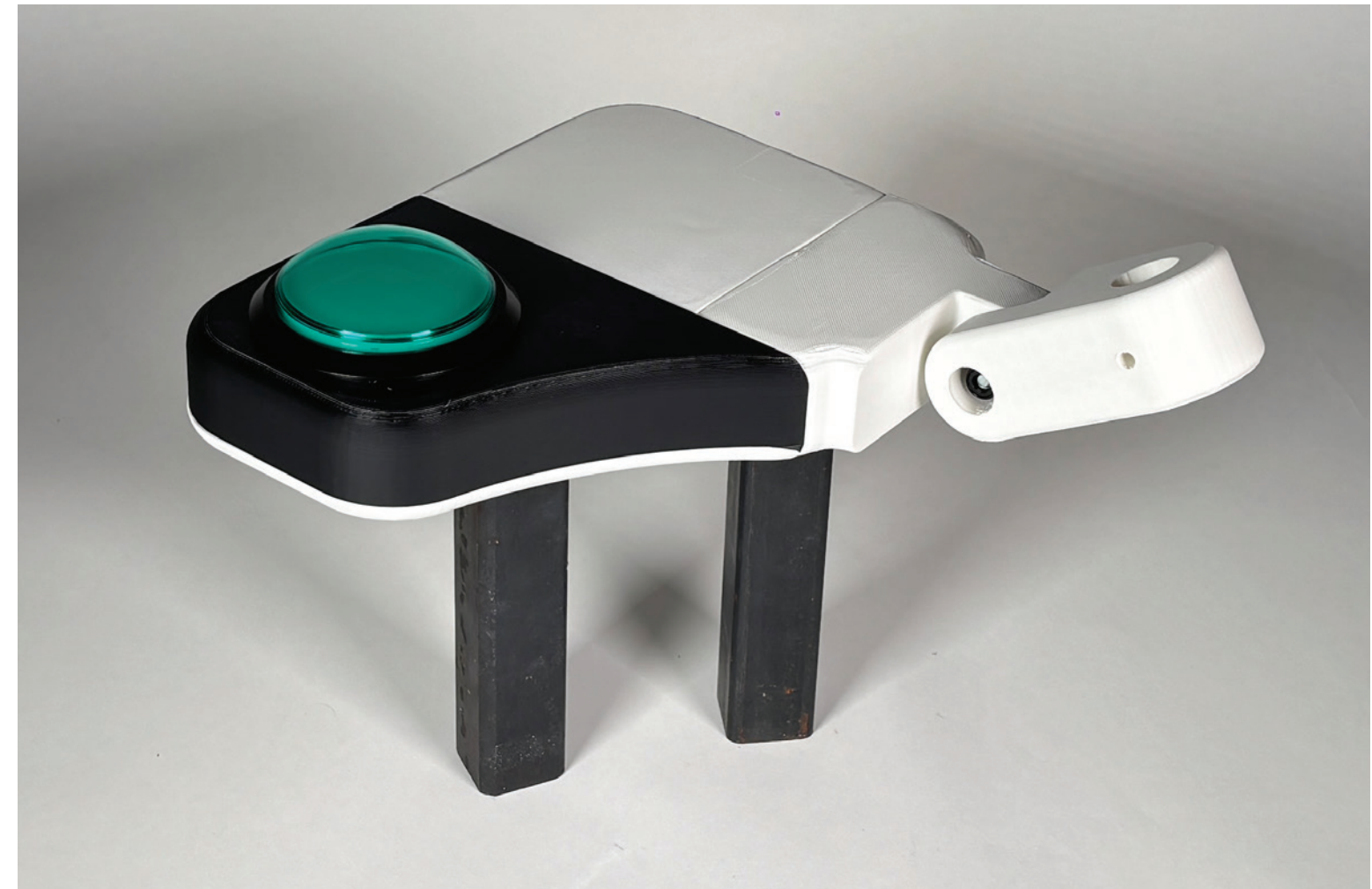
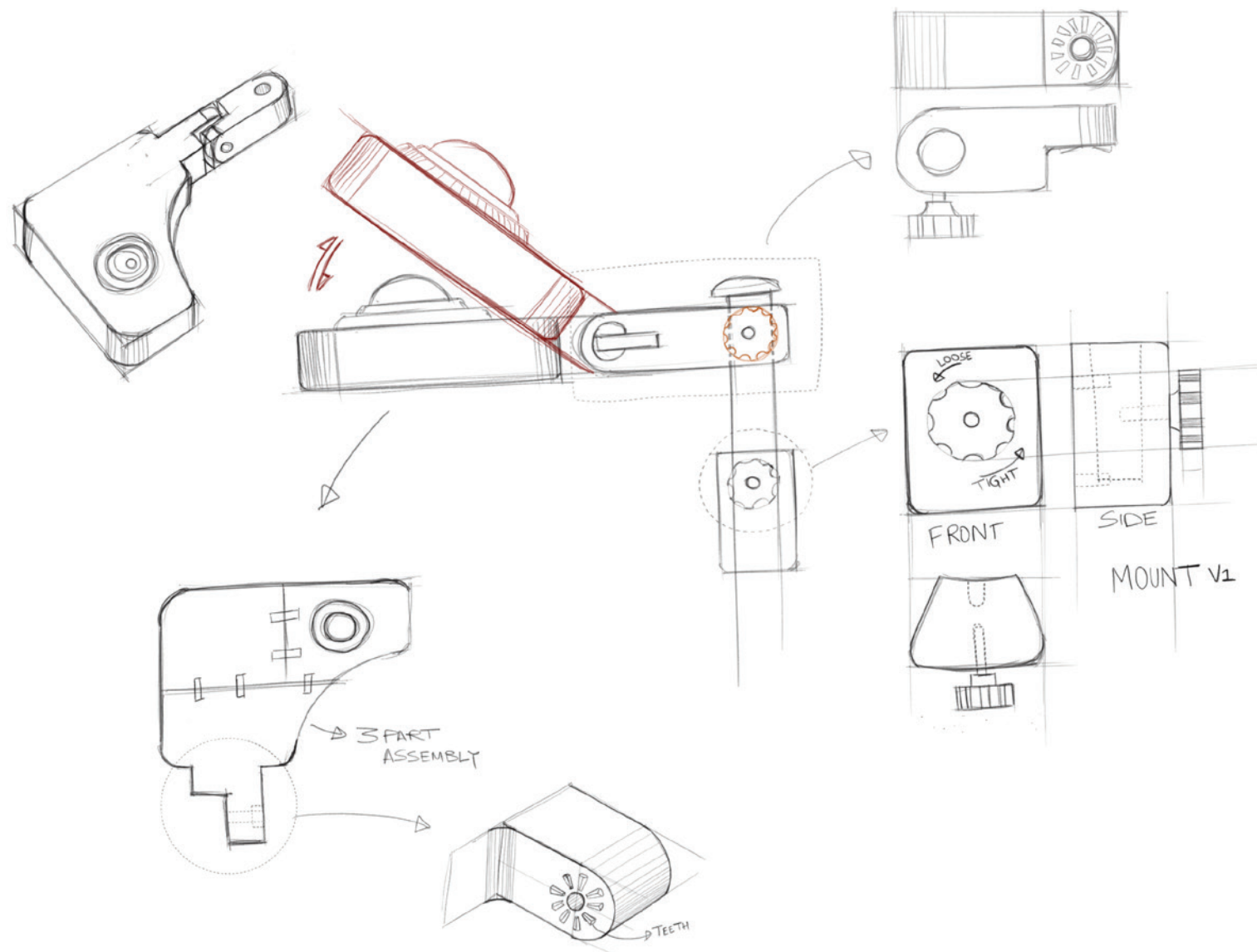


Image 1: Prototype 1.0

Issues with Prototype 1.0:

- **Too bulky to support its own weight** - The arm was too thick and heavy, and since the tray cantilevers from one side mount, that weight bent the arm and the front edge sagged. It couldn't hold a level surface for a child to rest their forearms on.
- **Not easy to adjust** - Changing the height or angle took real effort and fought the joints, which fails the tool-free criterion. A therapist or parent needs to reposition it quickly between different kids.
- **Mount sticking out too much** - The Mount V1 block projected off the car's shell instead of following its curve, making it bulky, a snag risk, and less secure.
- **The pivot points not strong enough** - The joints flexed and slipped under load, so the tray wouldn't hold its set angle once a child leaned on it.



Image 2: Prototype 1.0 on tray, sagging due it being heavy.



Image 3: Mount for prototype 1.0

Prototype 2.0



Image 1: The second iteration of tray; both mounted and ready to engage

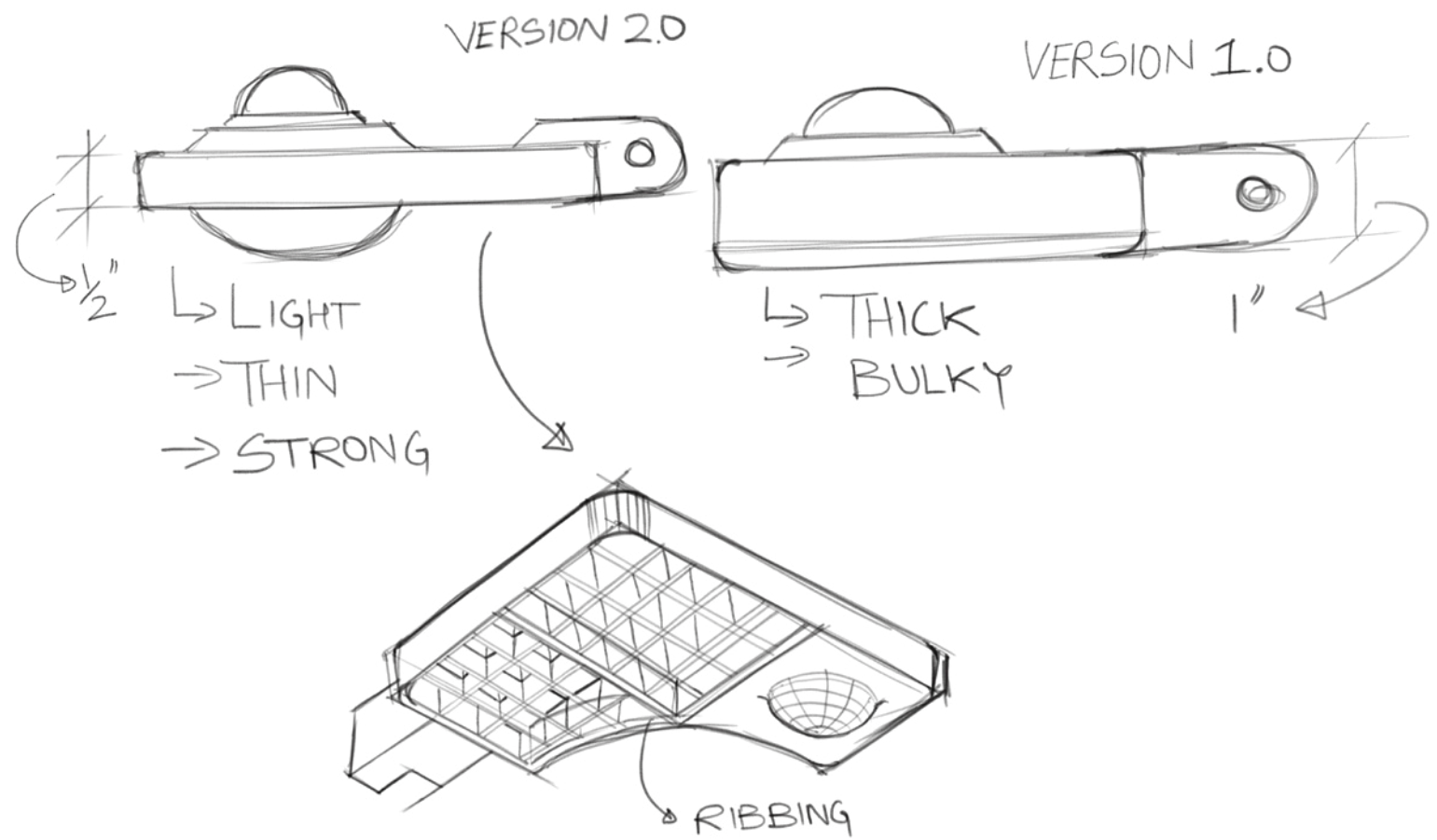


Image 2: The second iteration of tray; more refined and lighter than previous version.



Image 3: A button cover to prevent accidental actuation.

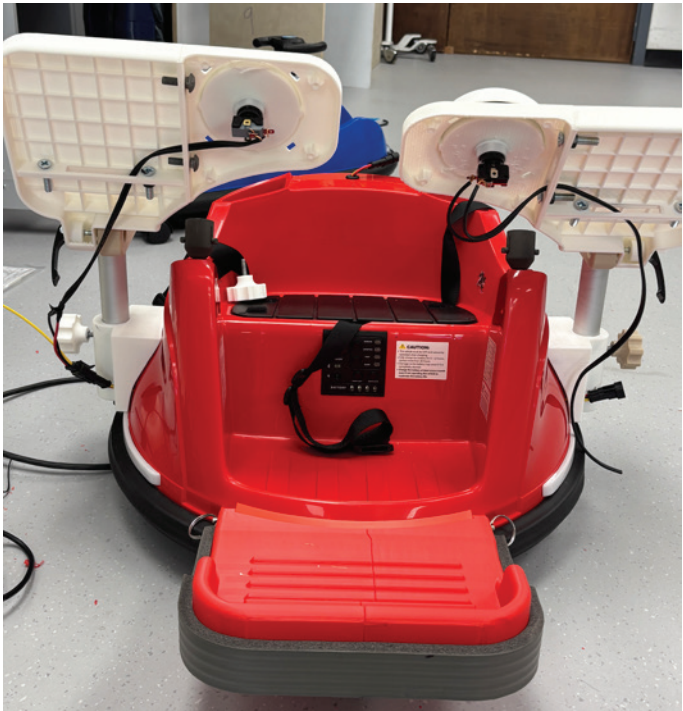


Image 4: How tray looks when engaged, from the front.

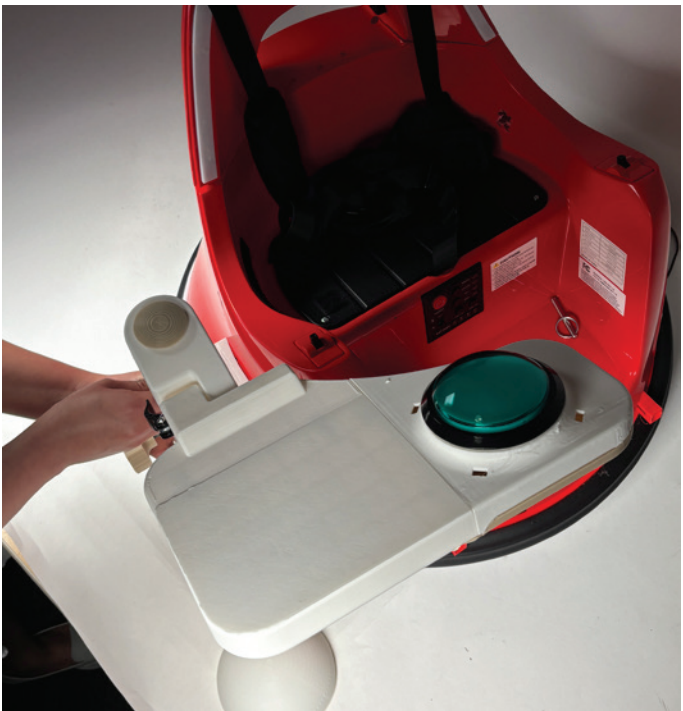


Image 5: How tray looks when engaged, from the Top.

Prototype 2.0

Image 1: Front view of mounting hardware, Pipe mount and adjustable tray arm. Showcasing how the mount molds to the form of car.

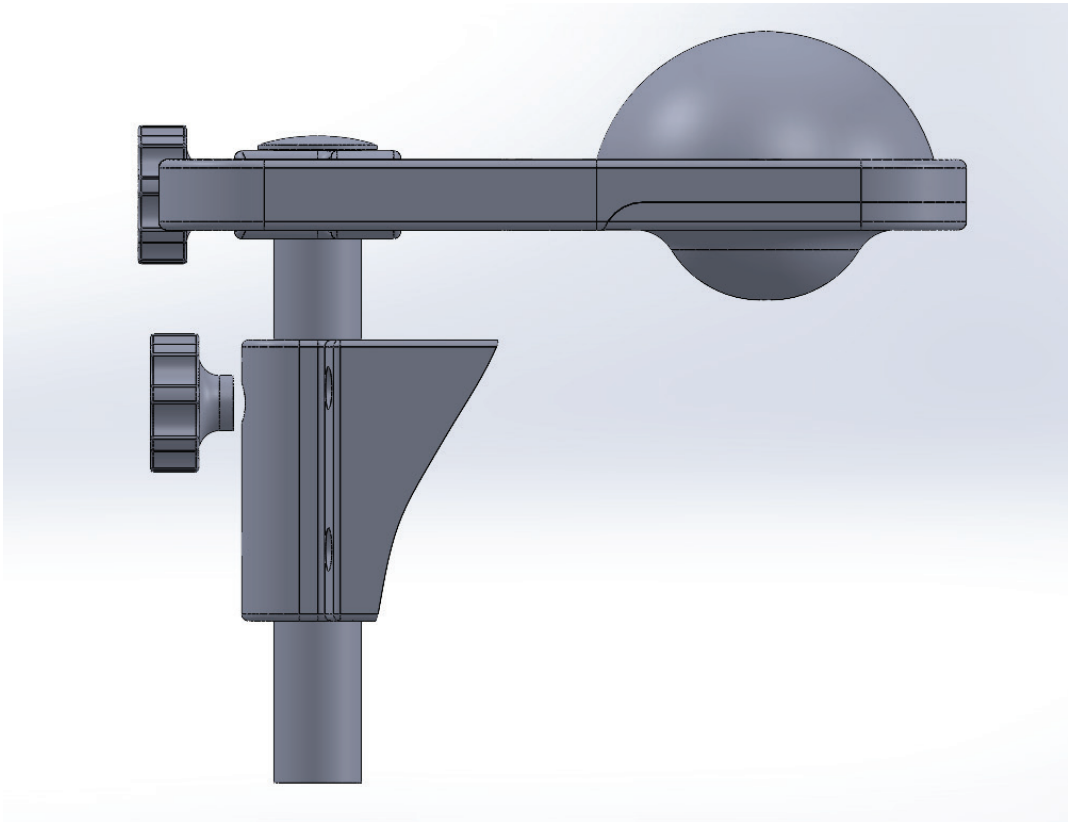


Image 2: Side view of mounting hardware, Pipe mount and adjustable tray arm.

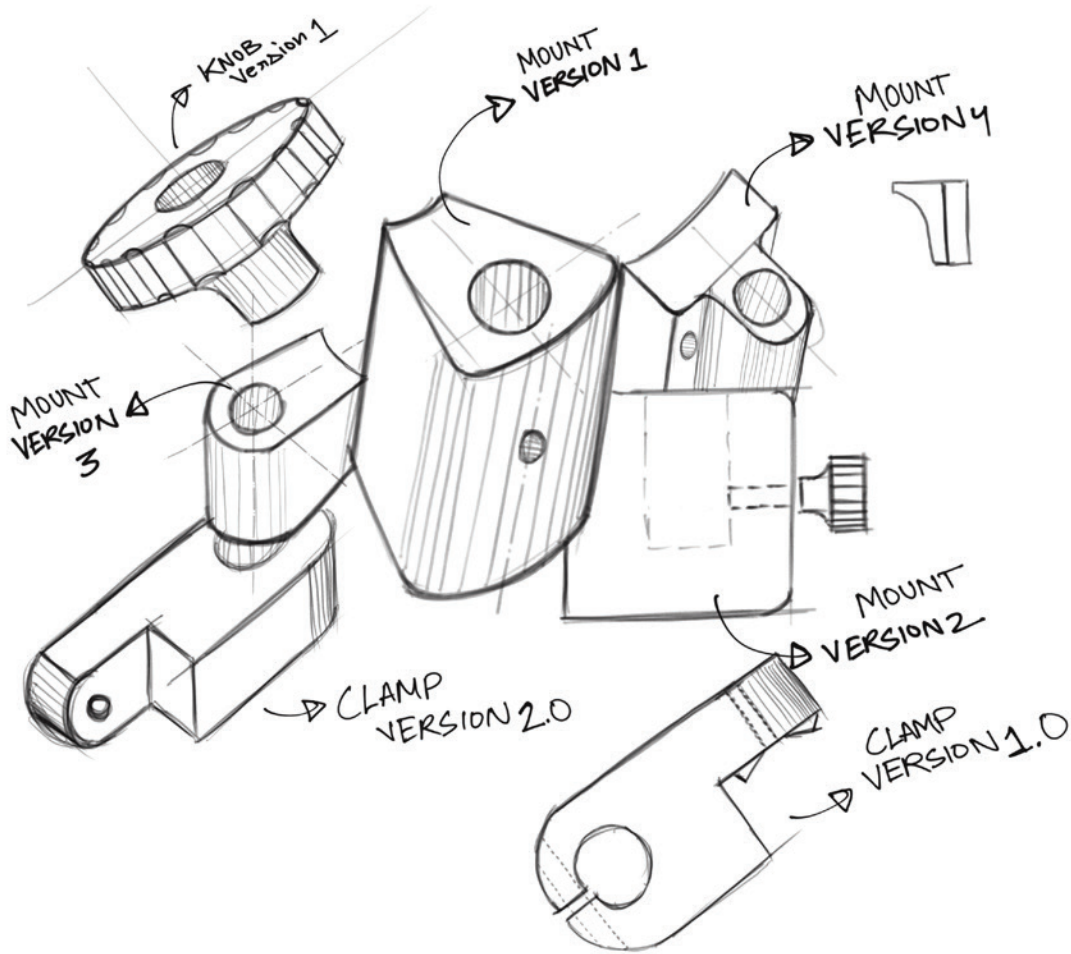
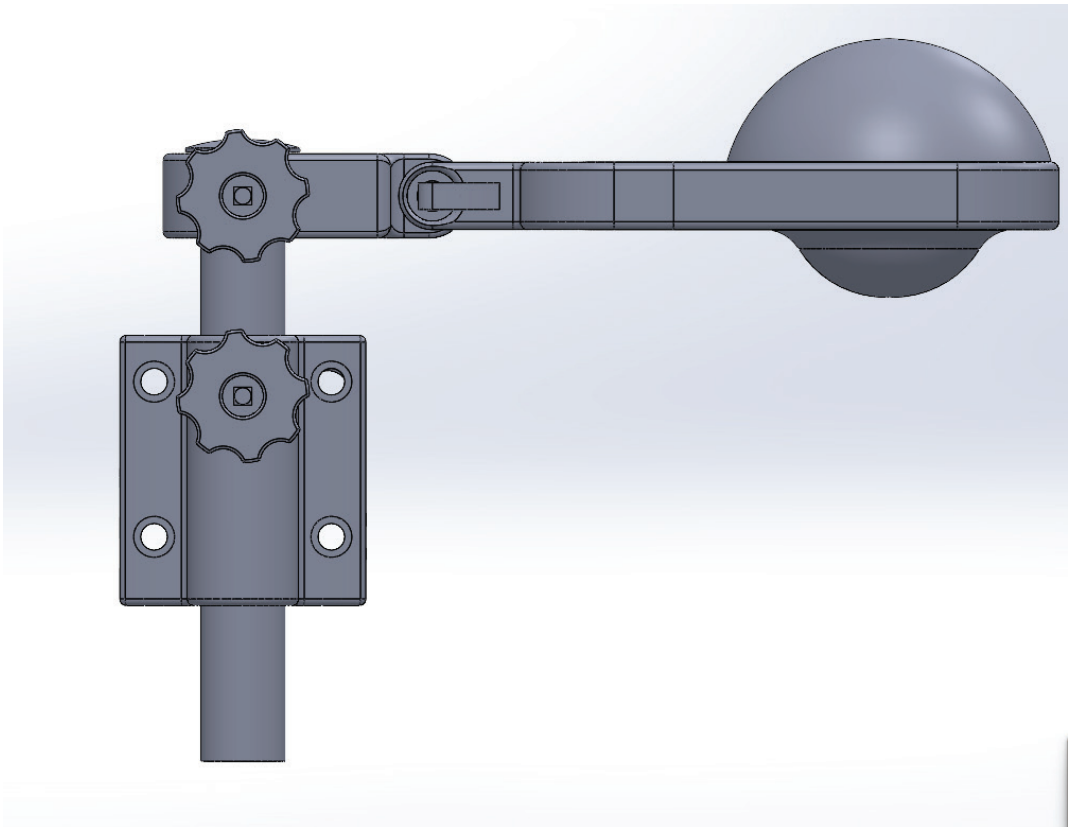


Image 3: All the iterations of the parts, the mount for pipe, the knob for tightening the articulation points

Final Design

Design Criteria

- The tray should be removable with minimal effort.
- The adjustment can be made to tray without any additional tools
- The tray should be light and sturdy enough for kids to rest their forearms on it.
- The controls should be simple enough.



Image 1: A user engaging with the bumper car using Drive-Deck



Image 2: Angle of the Deck



Image 3: Deck engaged



Image 4: Deck fully Extended out.

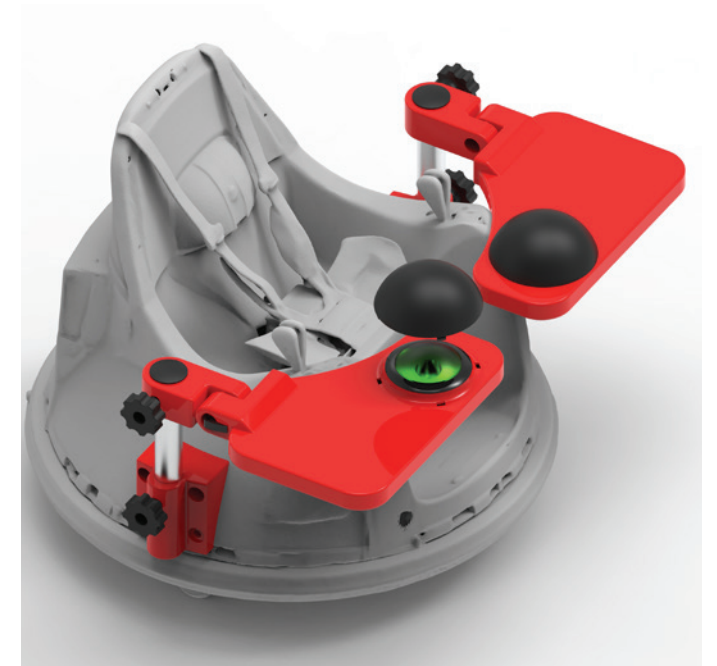
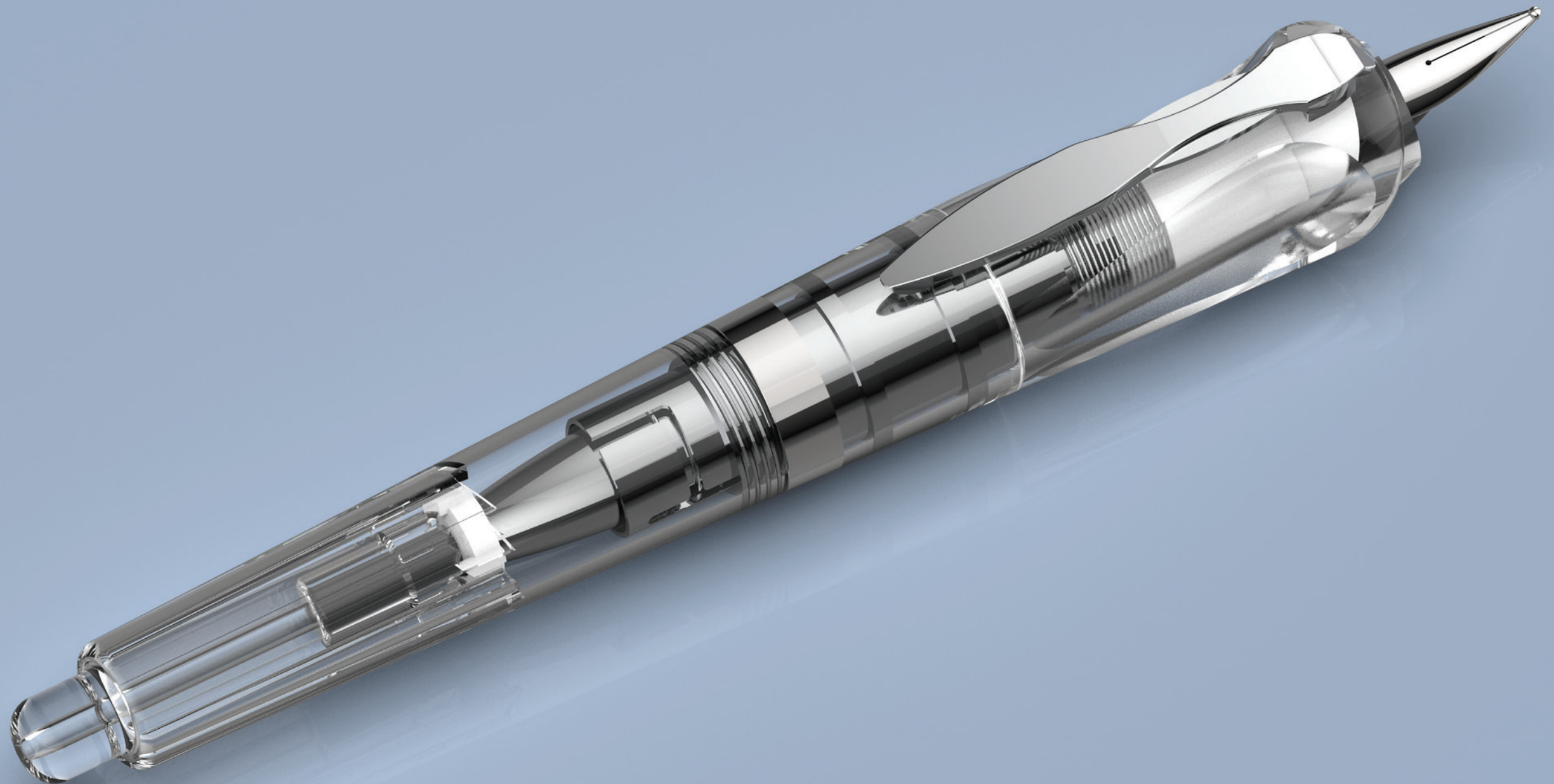


Image 5: Drive-Deck

PENTEL NOMICS



03Project

Getting hands on

Design Criteria

- Making an ergonomic pen which has a nib retracting mechanism.
- Redesigning the pen to provide a better writing experience.
- Designing it in such a way that it standouts in a premium way.
- Designed with manufacturing processes in mind.

Pivoting from a traditional form to discover a more unconventional shape but ergonomic shape that is easier to hold and support.

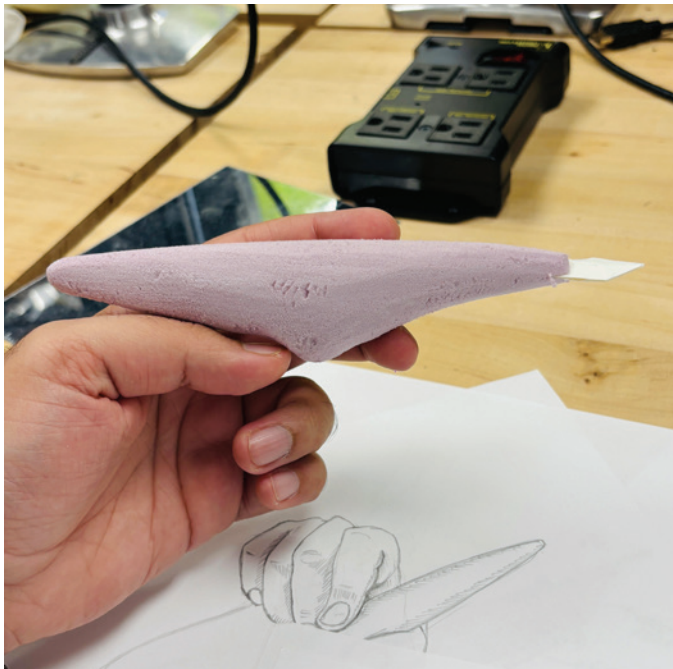


Image 1: First form study for shape of Pen Body.

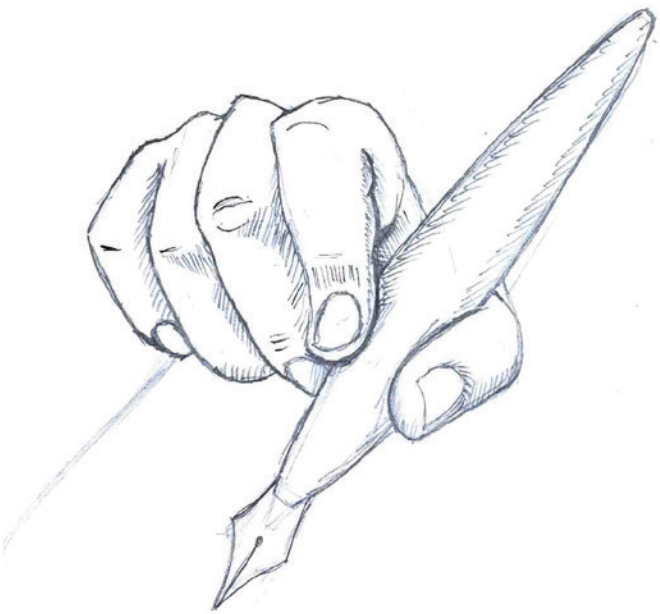


Image 2: First form study for shape of Pen Body.

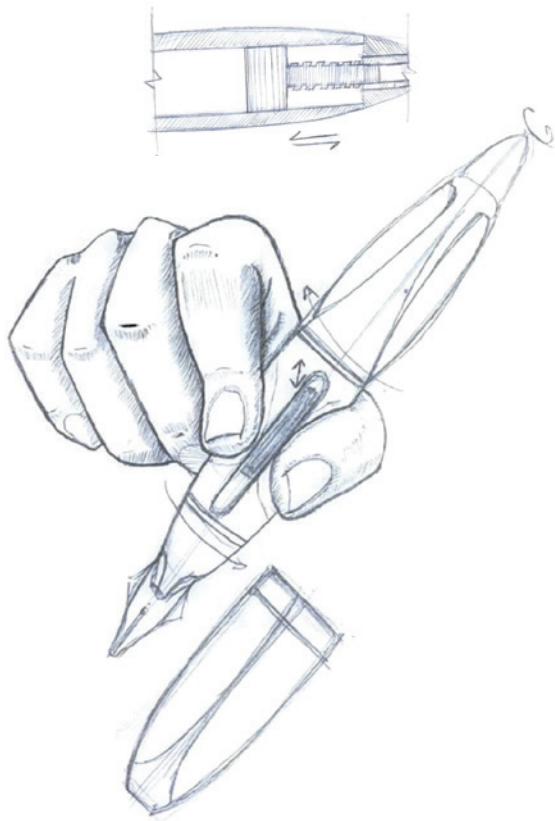


Image 3: First form study for shape of Pen Body.



Image 4: Second Ergonomic study for Shape of Pen Body

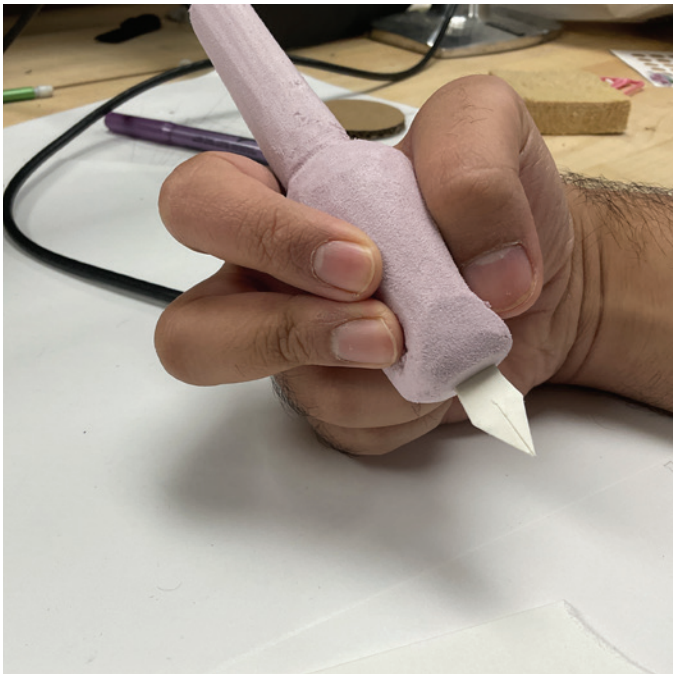


Image 5: Second Ergonomic study for Shape of Pen Body

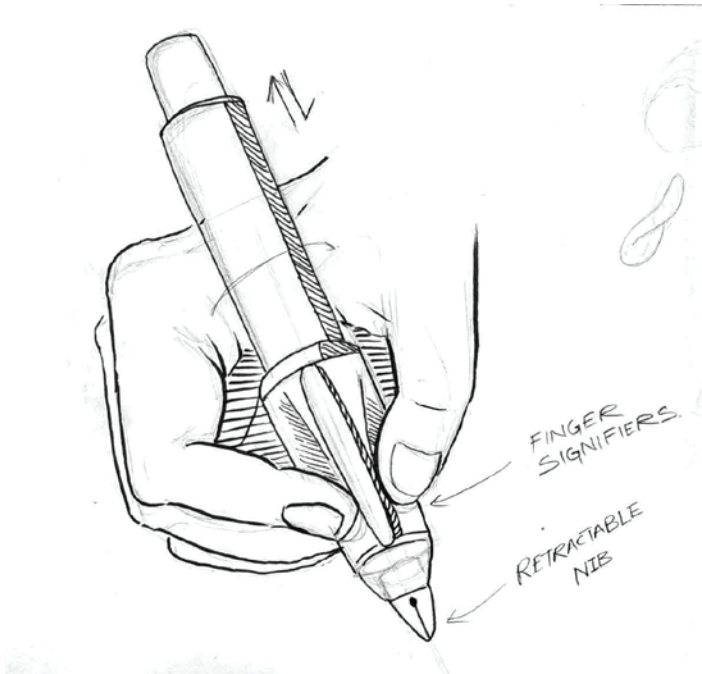


Image 6: Second Ergonomic study for Shape of Pen Body

Initial ergonomic ideation prioritized increasing the pen's barrel diameter to improve grip comfort. I explored organic, spheroidal geometries over a uniform cylindrical profile, leveraging more natural hand conformance and contact distribution. The enlarged cross-section increases the available gripping surface area, reducing localized pressure points and pinch-grip fatigue. This optimized the user-product interface for sustained, comfortable handling, encouraging longer writing sessions.

Ergonomic exploration



Image 1: Third ergonomic Study for shape of Pen Body, setting a baseline for refinement.

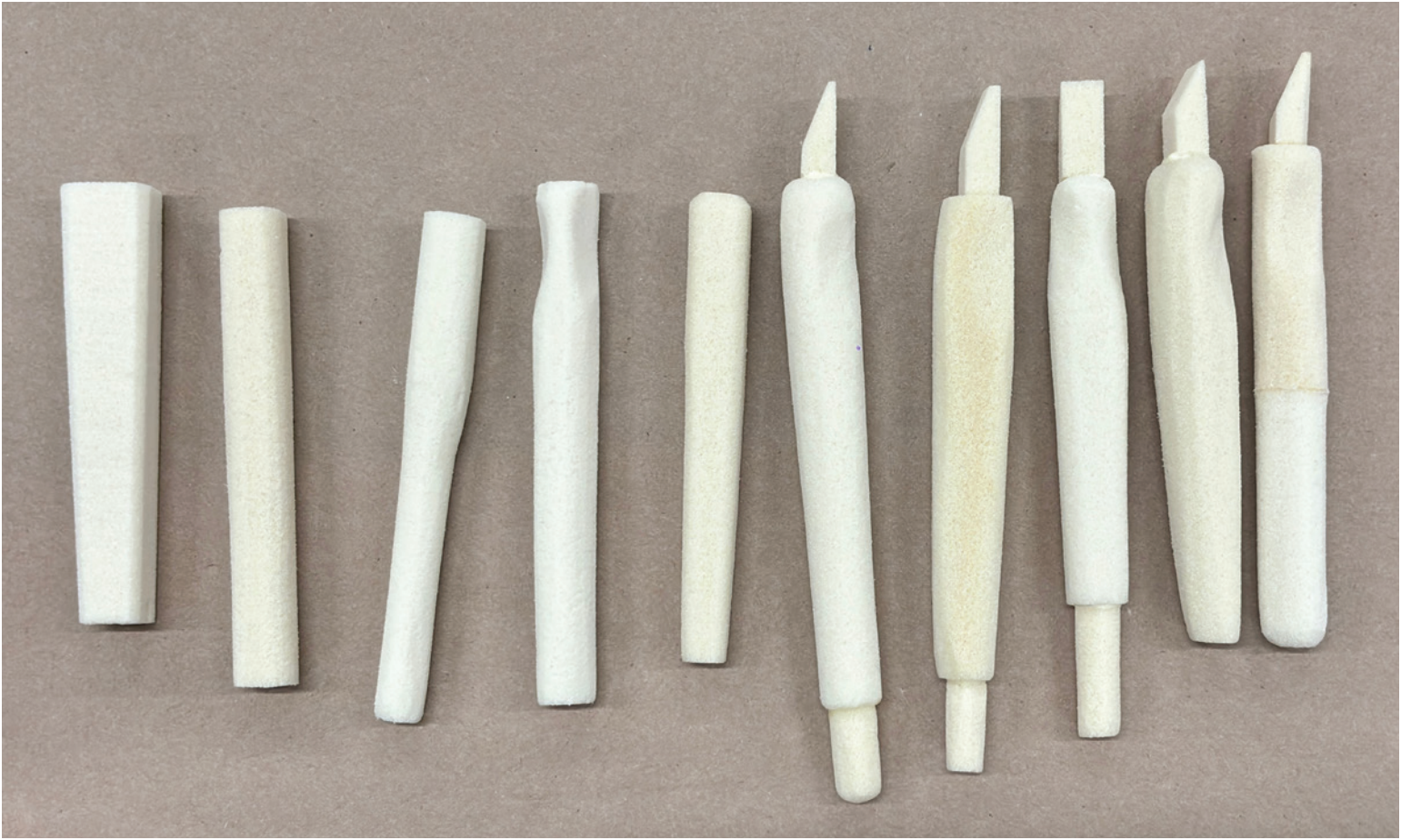


Image 4: 10 Different variants based on the third form from first round of development



Image 2: Third iteration in the smaller hands



Image 3: Third iteration in the big hands

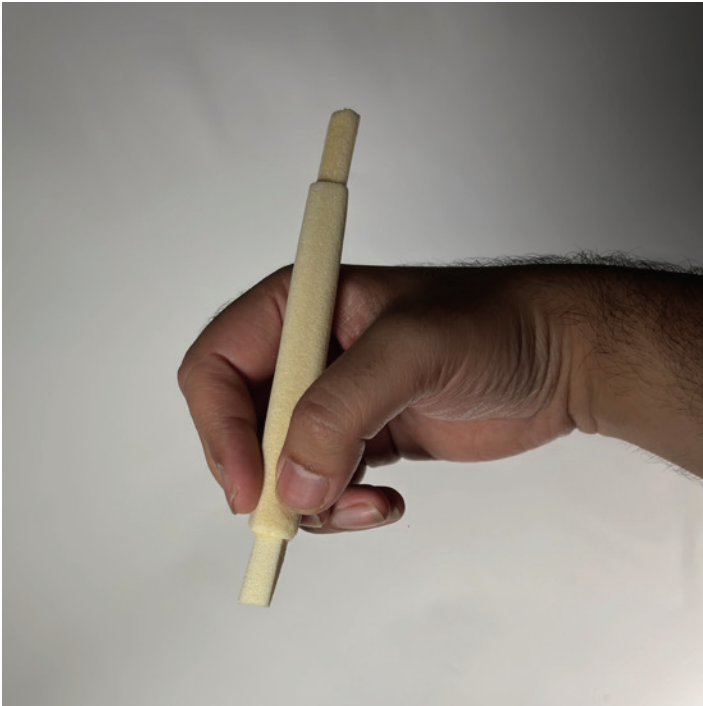


Image 5: Touch points on the Pen.



Image 6: How pen looks in the Hand.

High-Fidelity Mock-ups for User Validation



Image 1: High Fidelity Mock-ups for User Validation(from Left to Right):- Alpha, Beta, Gamma, Omega



Image 2: Client educator 1: Omega, they like the weight in the grip, says it helps with writing motion.



Image 3: Client educator 2: Omega, they like the way contours guide the finger placement and overall weight distribution.

High Fidelity Prototyping



Image 1: Grip Refinement models for User validation. Starting from Left and final one on right.



Image 2: How whole pen body feels when fully assembled and in-hand.



Image 3: How clip acts as signifier for guiding finger for correct grip.

Final Design

Design Criteria

- Redesigning the pen to provide a better writing experience.
- Making an ergonomic pen which has a nib retracting mechanism.
- Designing it in such a way that it standouts in a premium way.
- Designed with manufacturing processes in mind.



Image 1: Demonstrator version of Pen showcasing the internal mechanism.

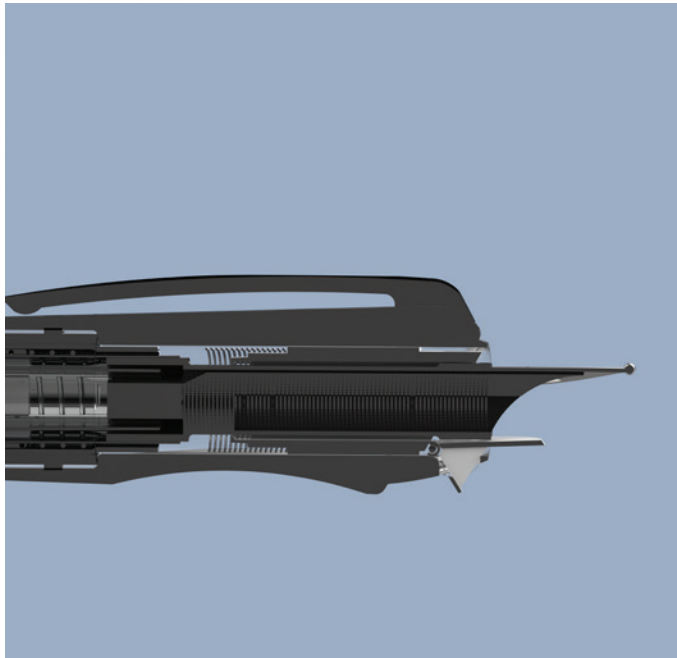


Image 2: Sealing Mechanism Close-up

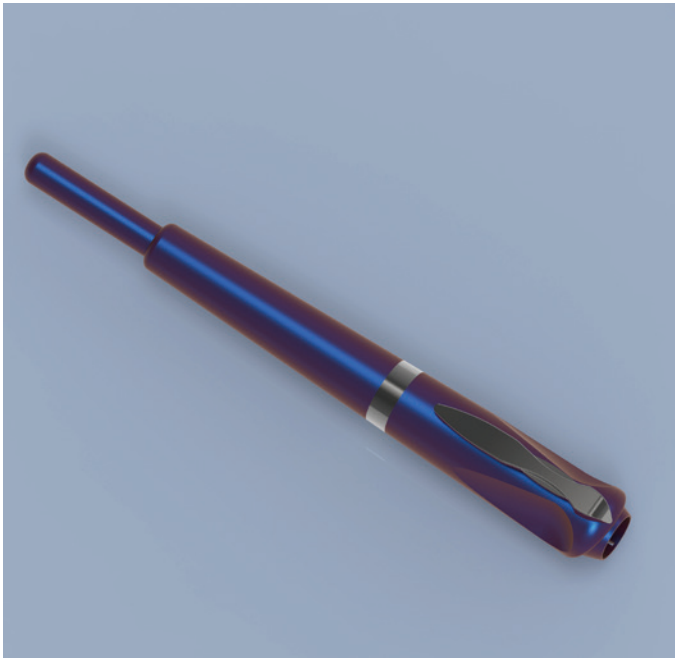


Image 3: An Iridescent version of the pen



Image 4: Pen when the tip is retracted

PRESSUR



04Project

Initial Ideation

This design exercise was about redesigning the external enclosure for the tire inflator, adding additional functionality to product but keeping the same internal parts. Another consideration was design for manufacturing and assembly. I decided to add a mount to attach to a bike.

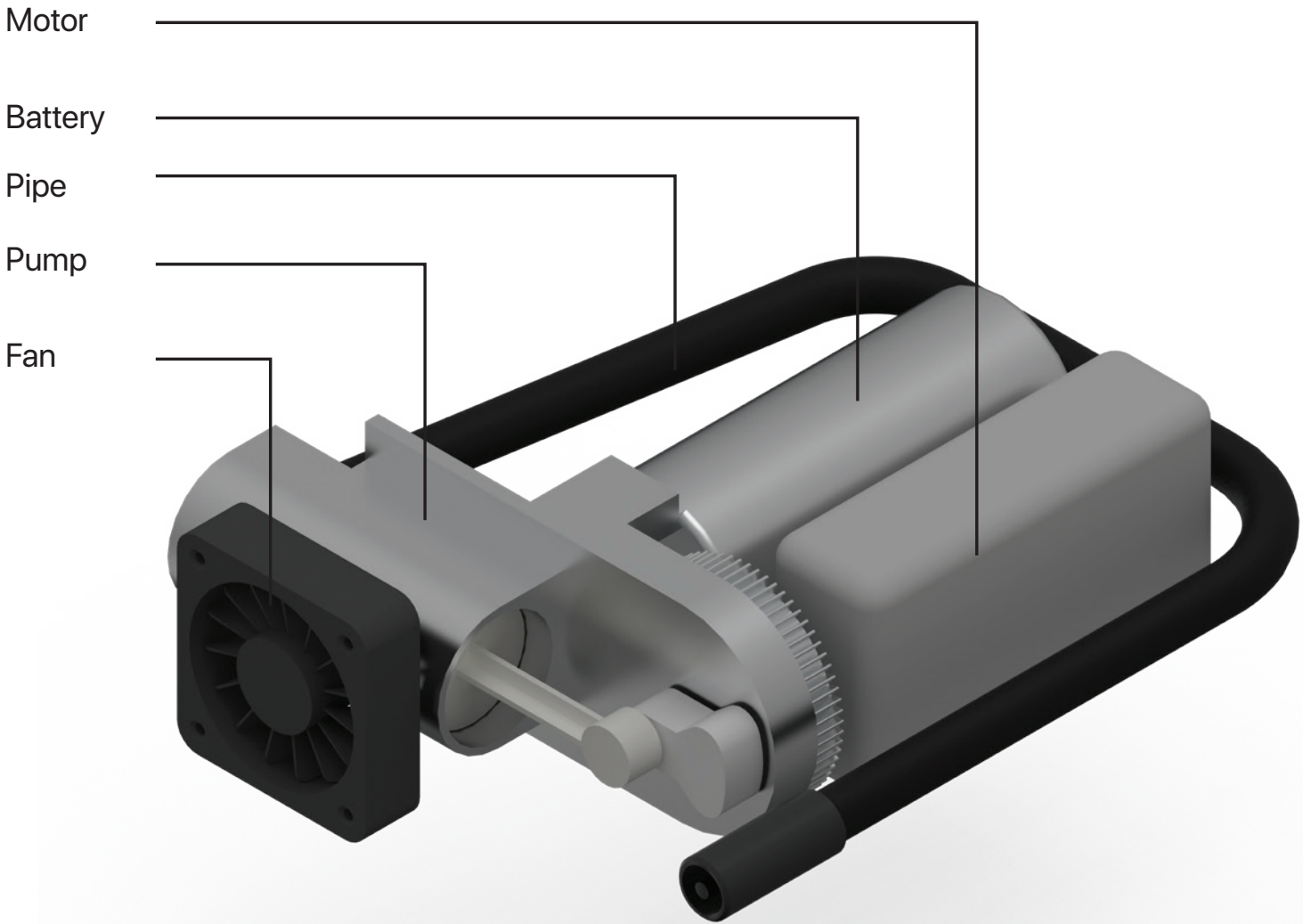
Design Criteria

- Redesigning the enclosure but using same internal components as previous design.
- Design should be injection mold-able.
- It could be mounted on bike.
- It should add more visibility for rider.

Image 1: The new tire inflator was developed by re-purposing internal components from the original unit, shown here held in position beneath the bike saddle. This illustrates the intended mounting configuration—the compact, rectangular housing seats directly under the seat rails, demonstrating the spatial envelope and packaging constraints the form factor was designed around.



Image 2&3: Possible mounting orientations for the inflator beneath the saddle via the bike rail mount.



Initial Ideation

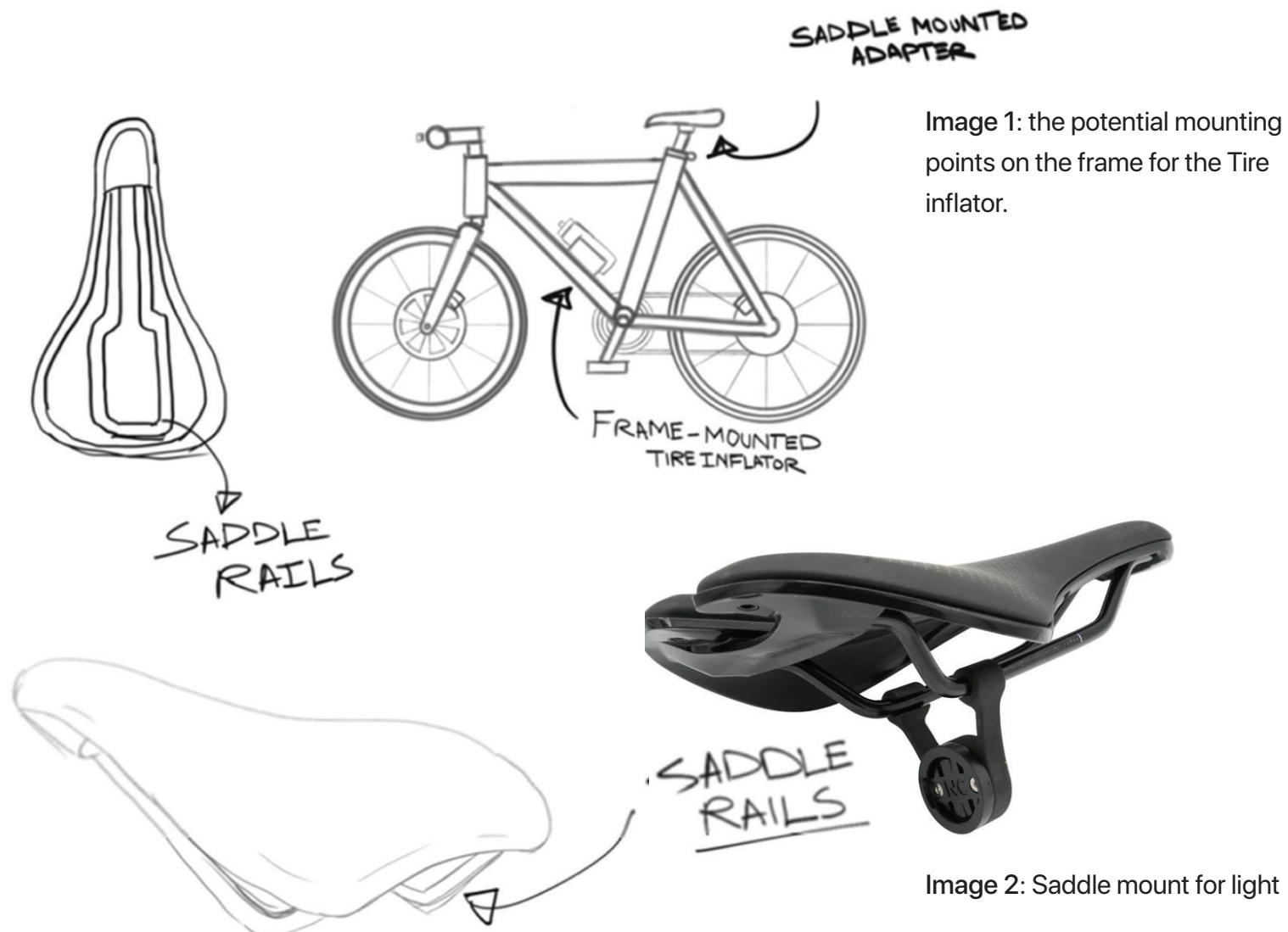


Image 2: Saddle mount for light

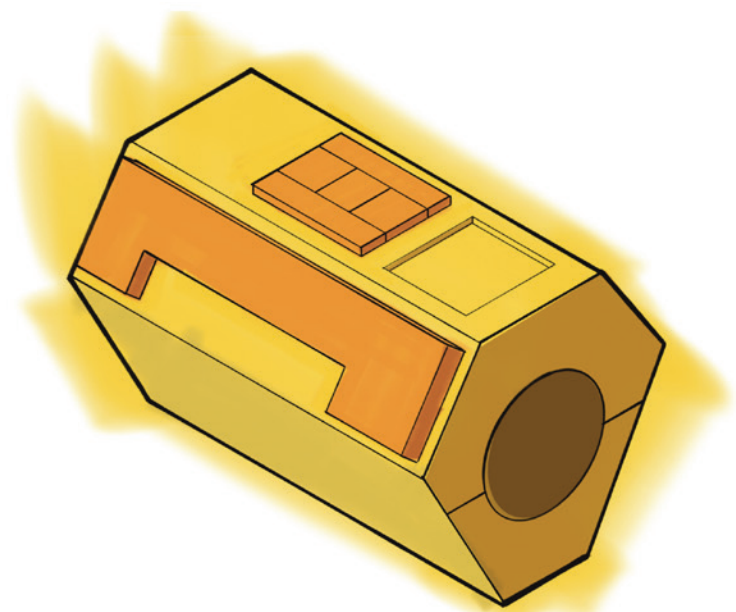
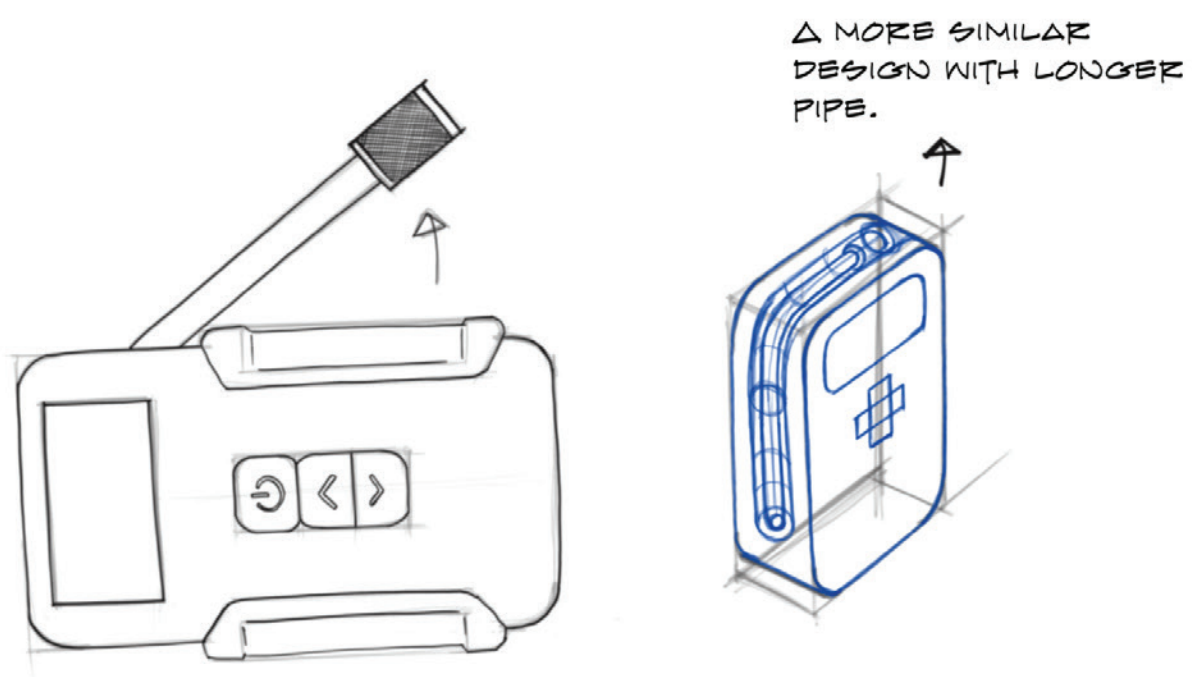


Image 3: CMF exploration, instead of black making it more visible.

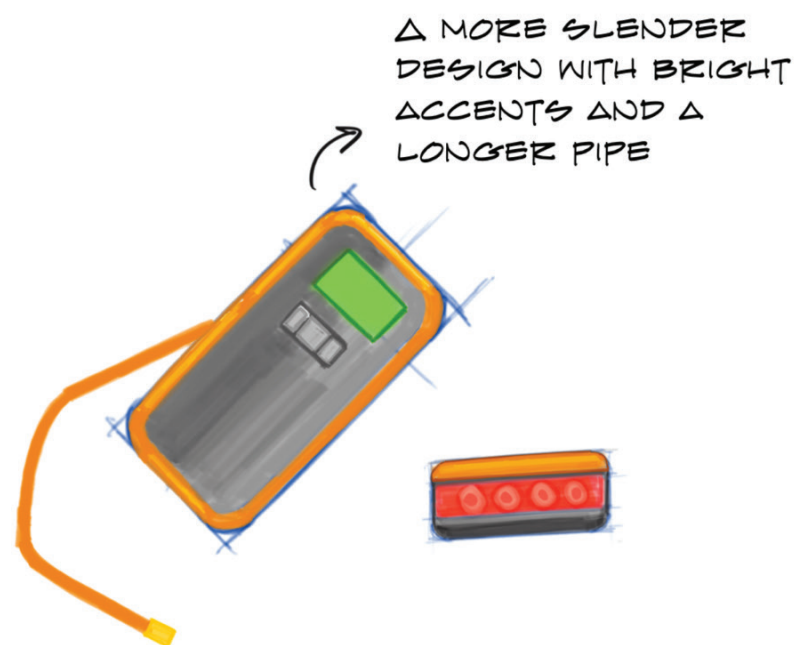
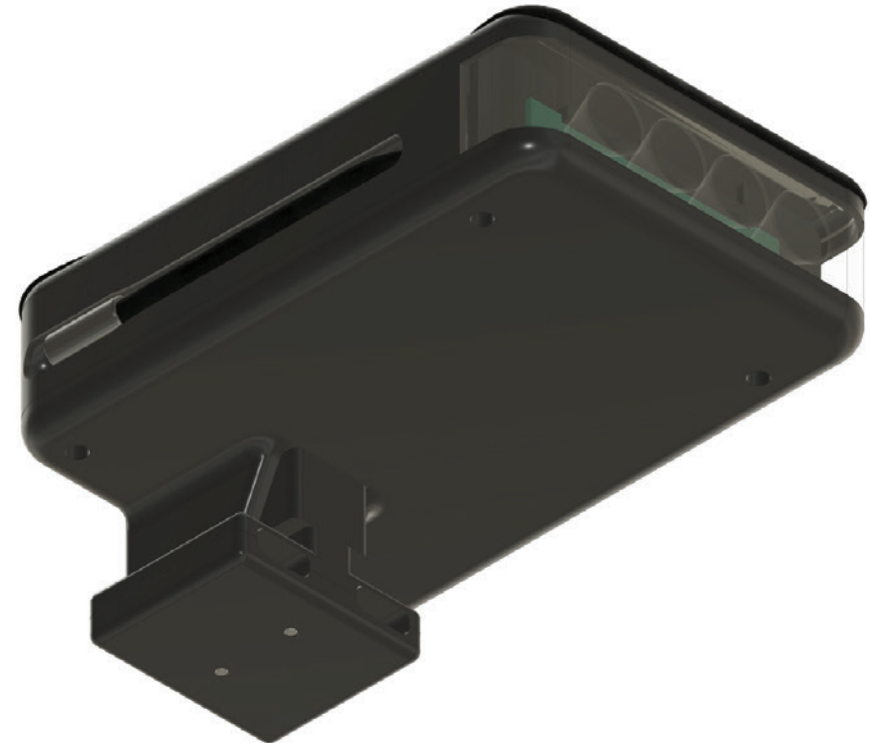
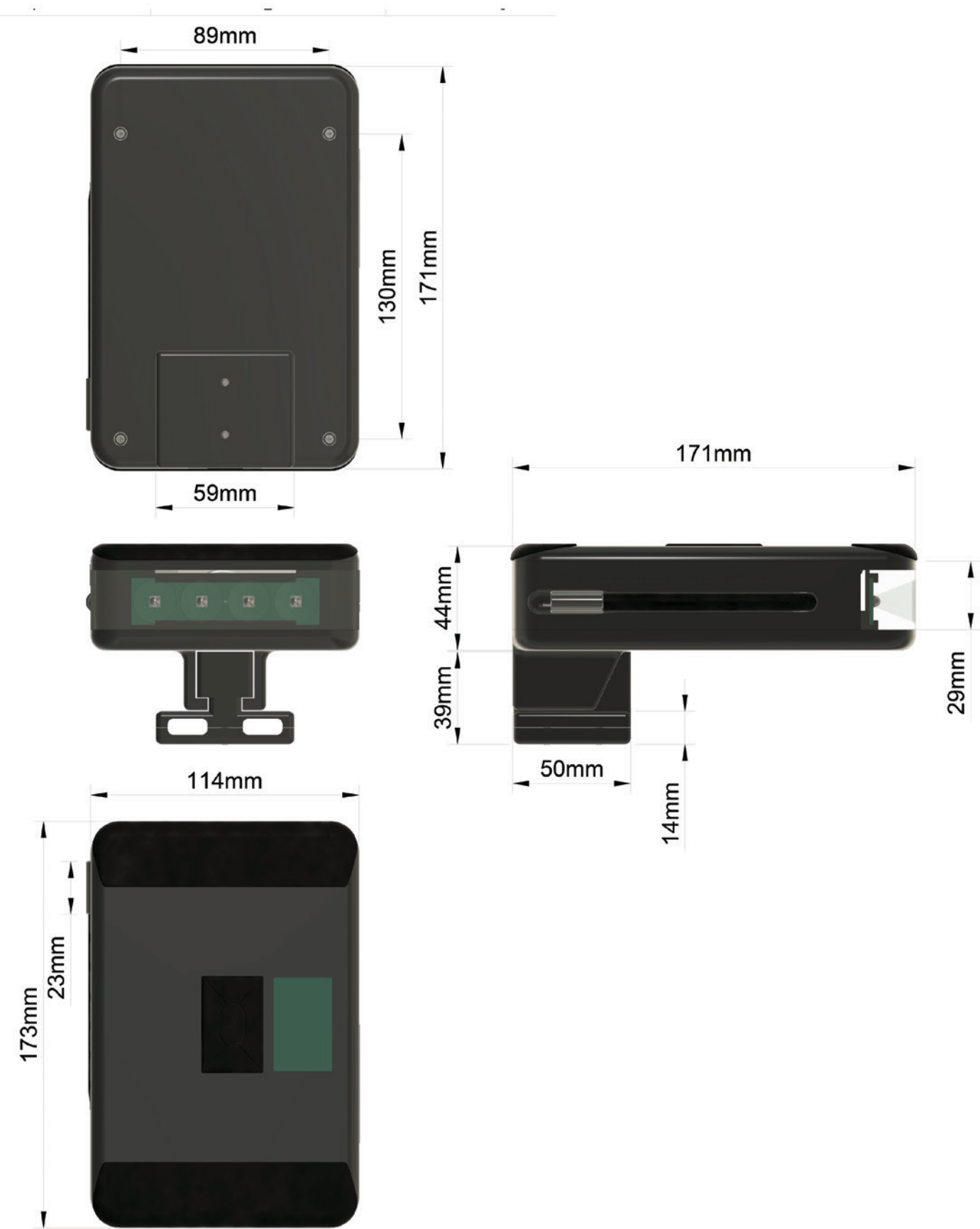


Image 4: Another CMF exploration.

Image 5: How the tire inflator is gonna look once it is mounted using the bike rail mount.



ORTHOGRAPHIC VIEWS



Final Design

Design Criteria

- Should be injection mold-able.
- Redesigning the enclosure but using same internal as previous/old Design
- Can be mounted on bike.
- Add more visibility for rider.

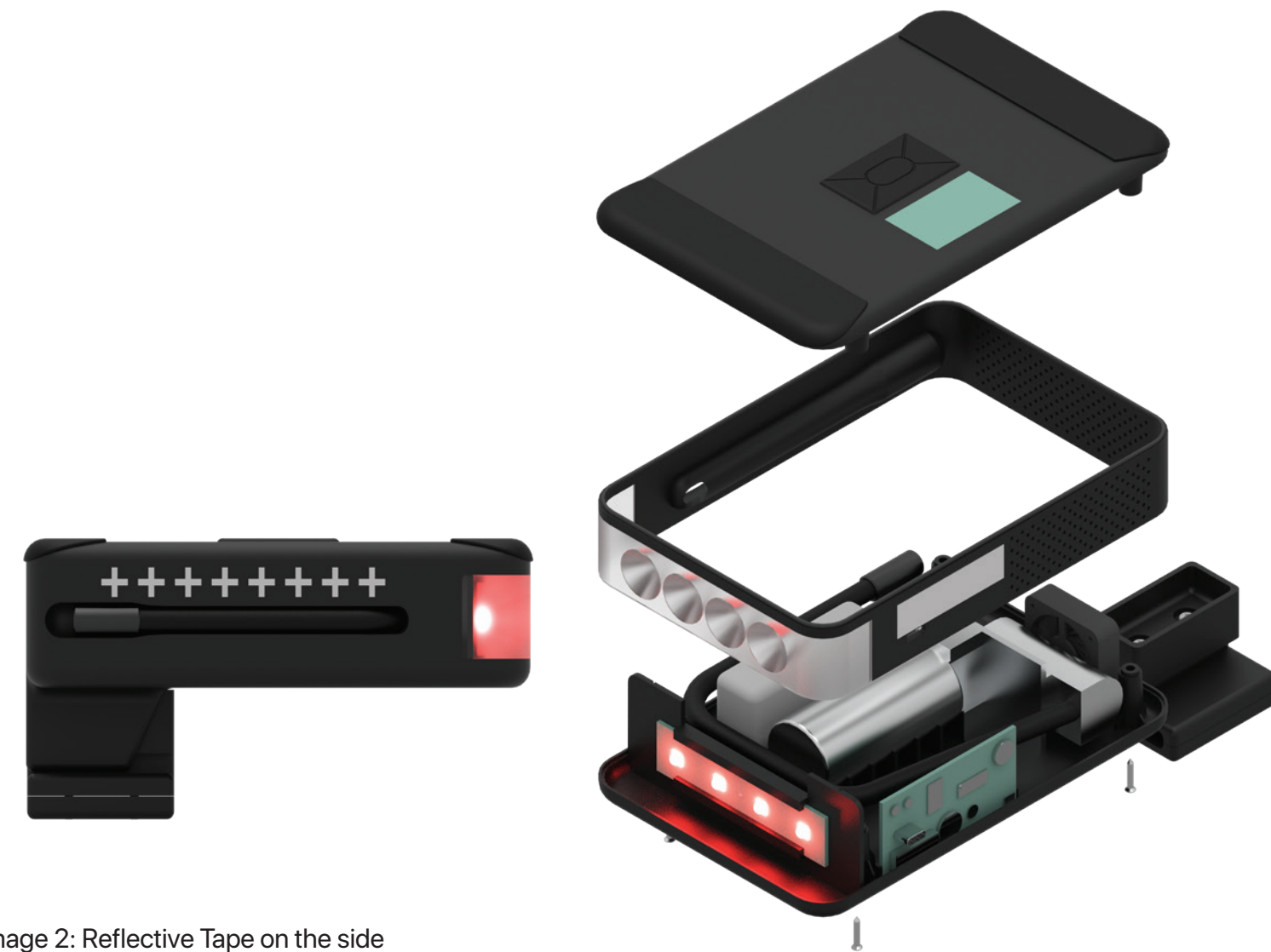


Image 2: Reflective Tape on the side



Image 1: A view showcasing how the Tire inflator is mount underneath the bike saddle



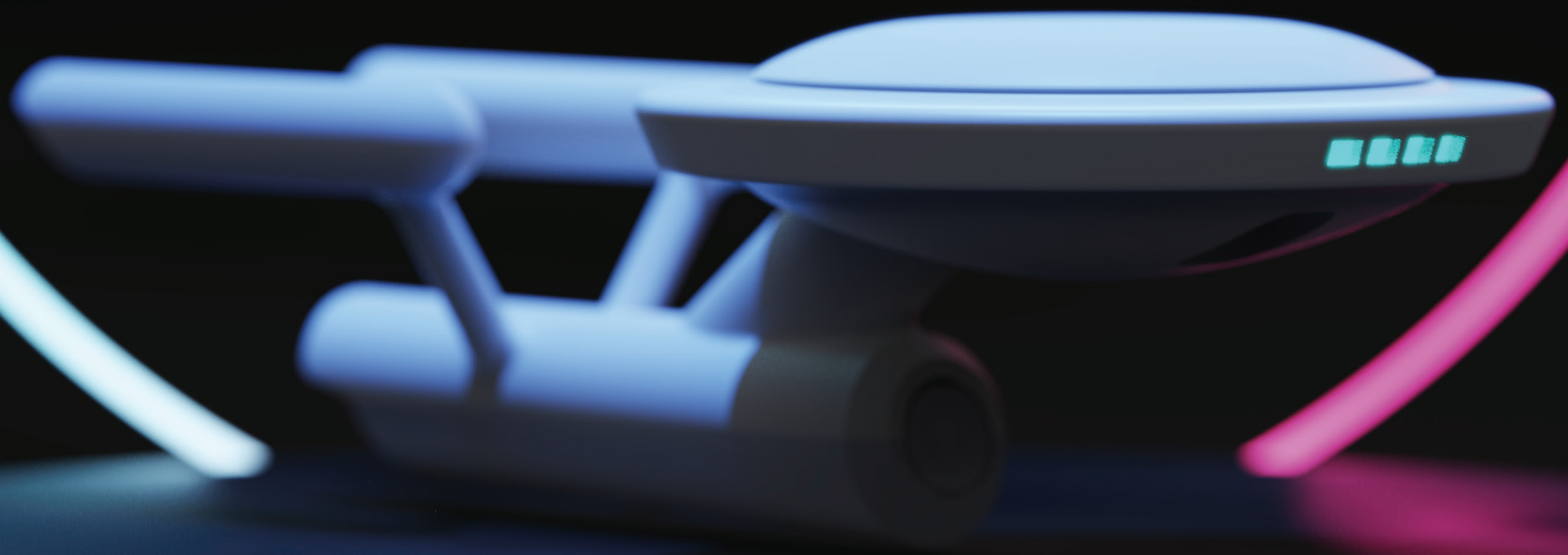
Image 3: The Lights on the back



Image 4: Reflective Tape on the Other side and vent holes for airflow

EVENTIDE

Ambient Light



05Project

Lighting idea

Design Criteria

- To make an enclosure that is assembled using the snap-fits, no screw and glue to put it together.
- Need to house a light pipe that uses the light from neopixels on the circuit playground.
- Making design with keeping the constraints of 3D-printing in mind.

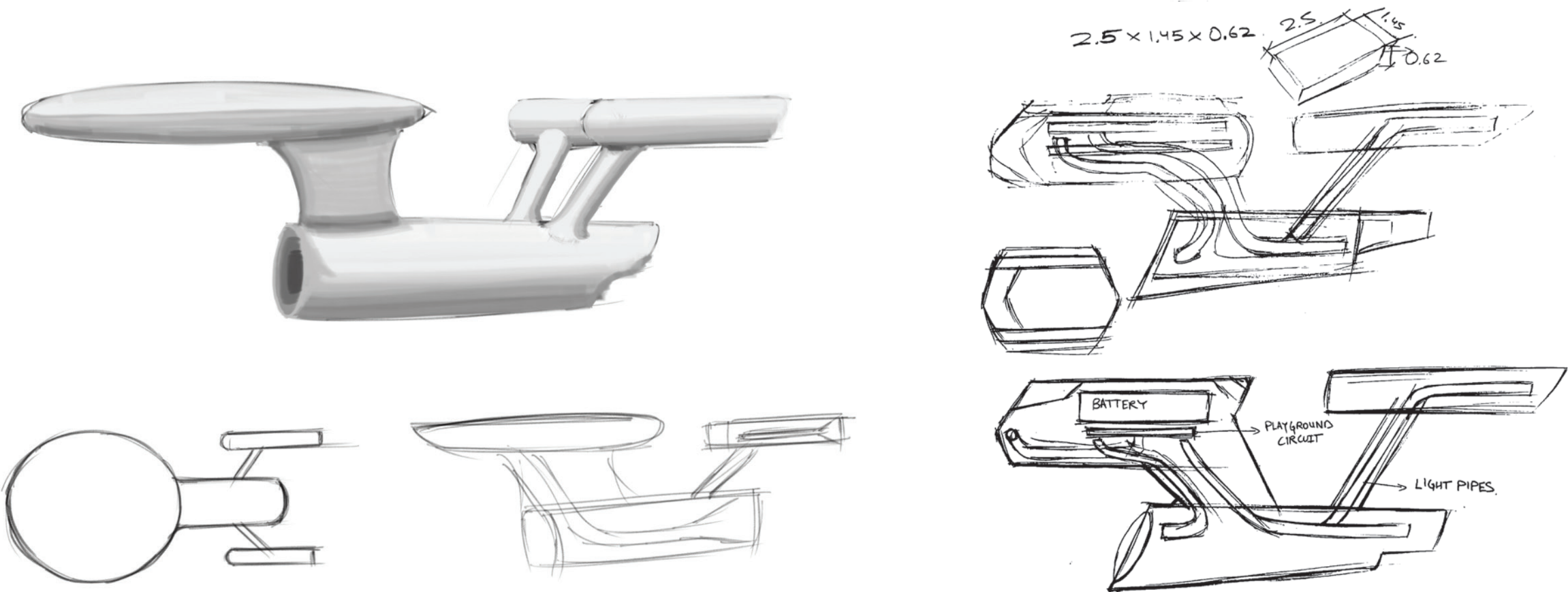


Image 1 : The form exploration ideas for deciding which shape would look best.

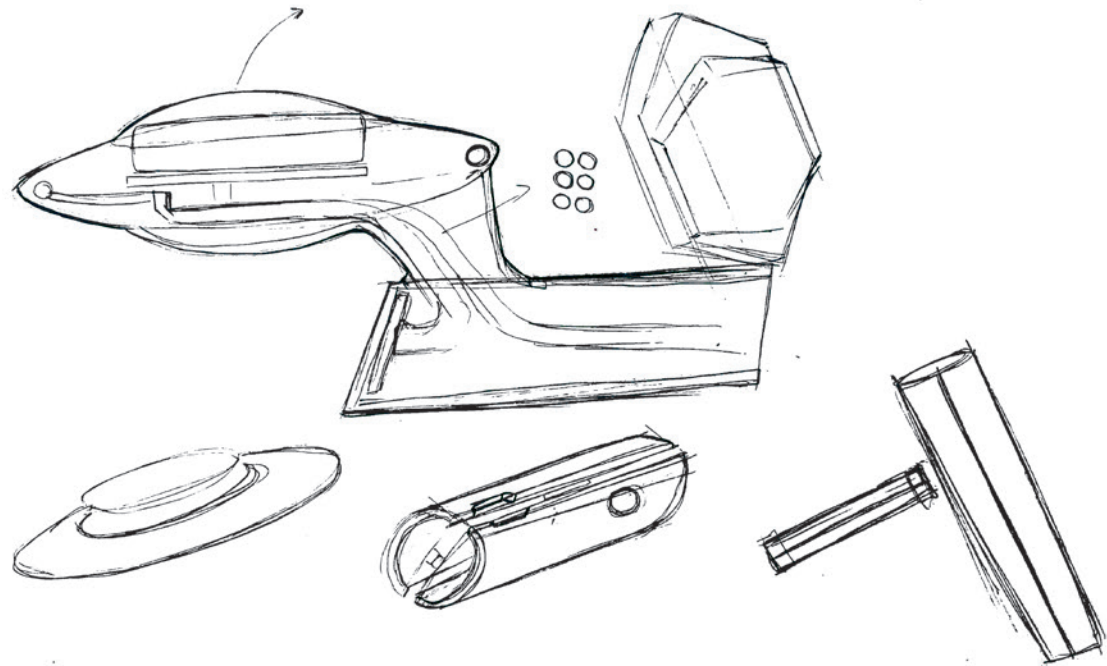
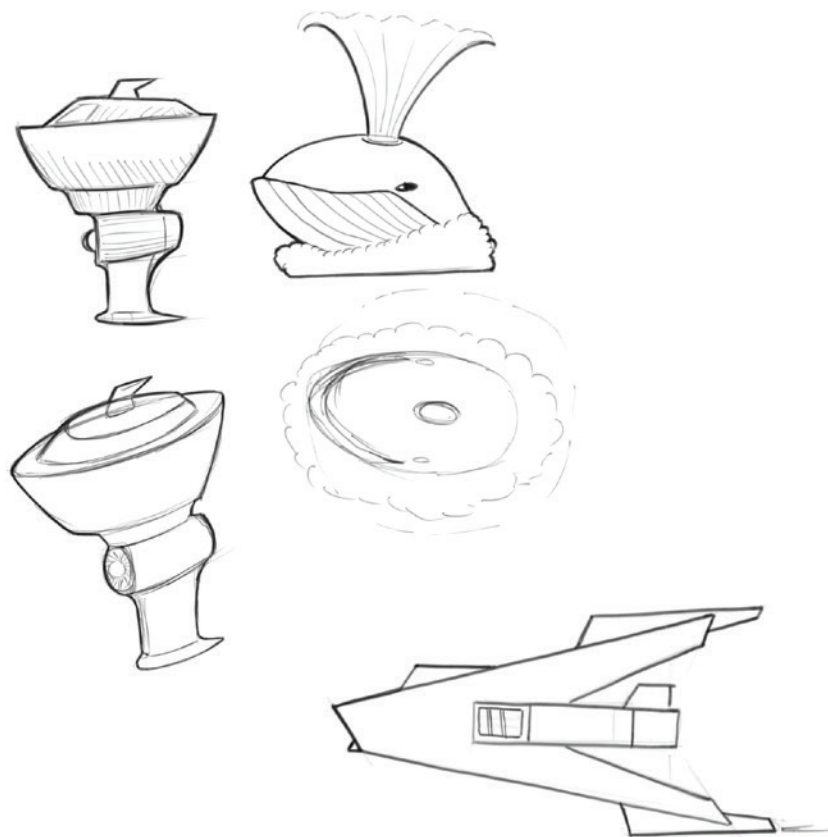


Image 2: The rough assembly sketch to explore the possible configuration of parts.

Initial CAD

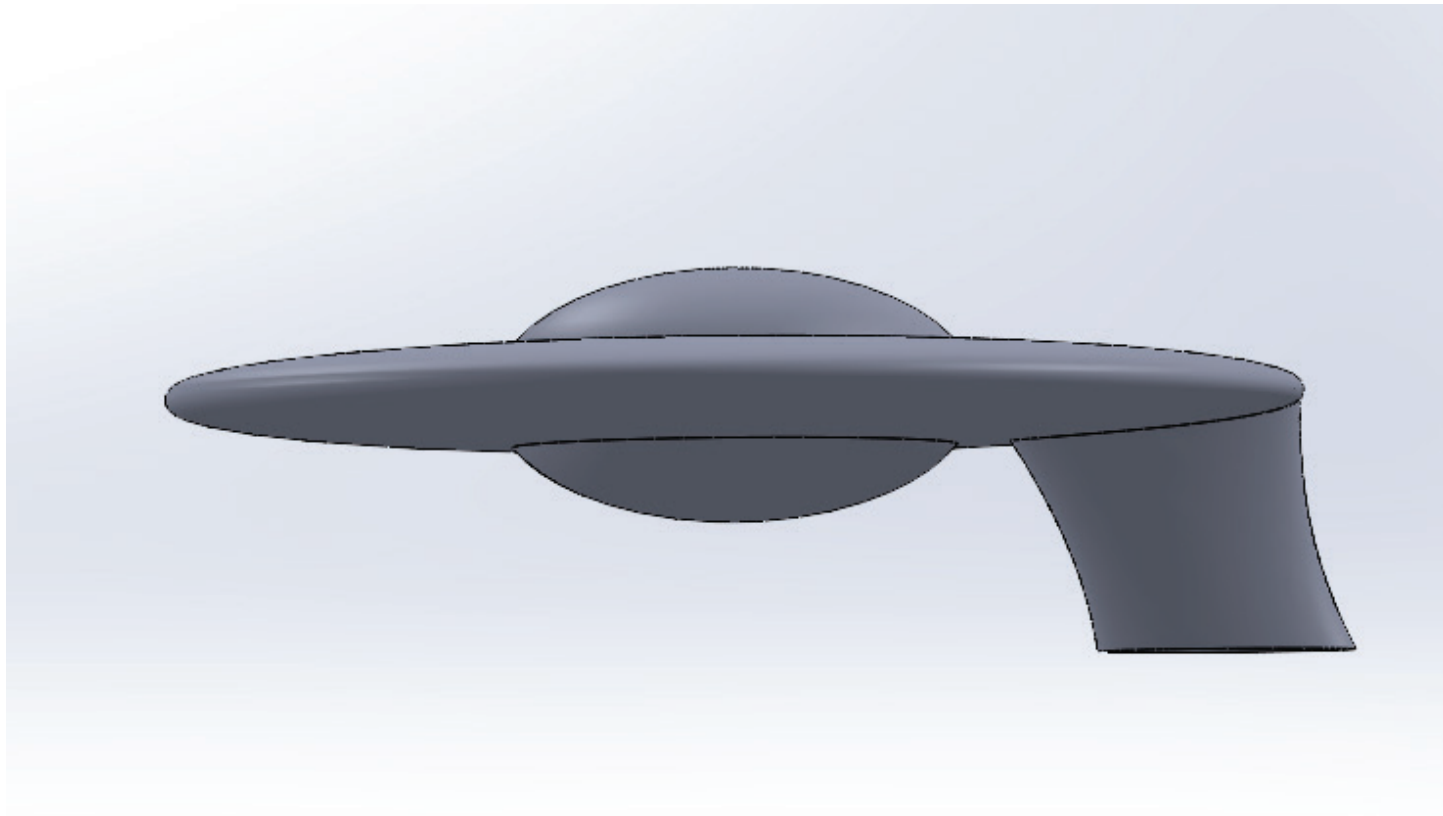


Image 1: The first iteration of the shape of the housing.

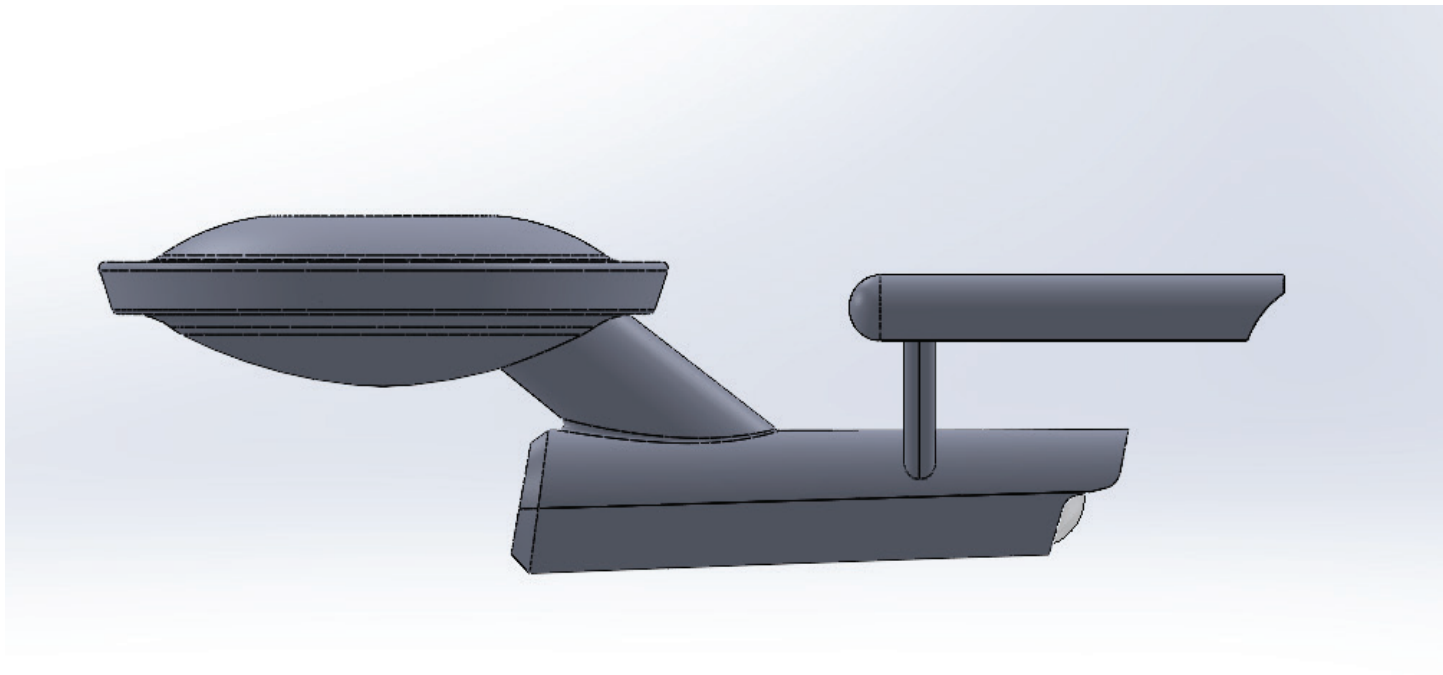


Image 2: The first iteration of the shape of the housing.

Refining the Shape

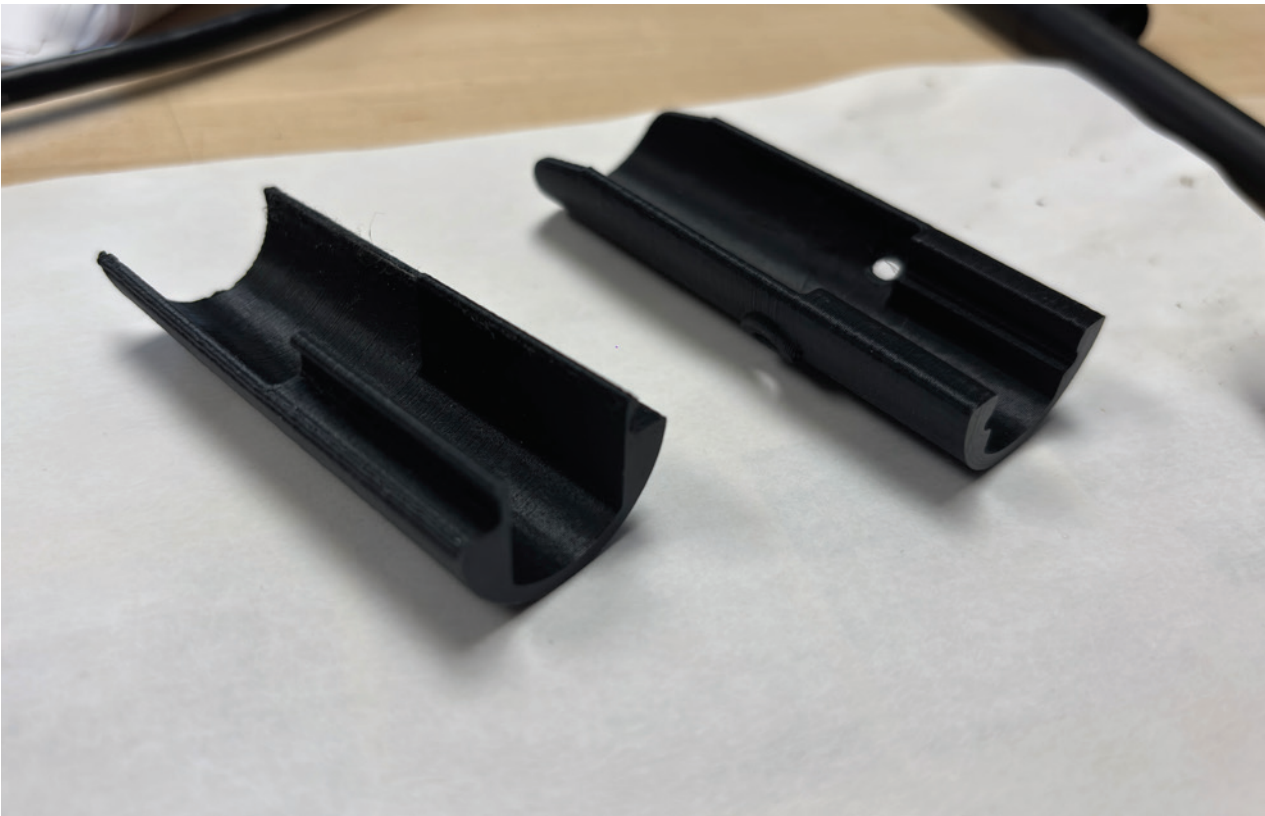


Image 3: 3D printed prototype used to test snap-fit functionality

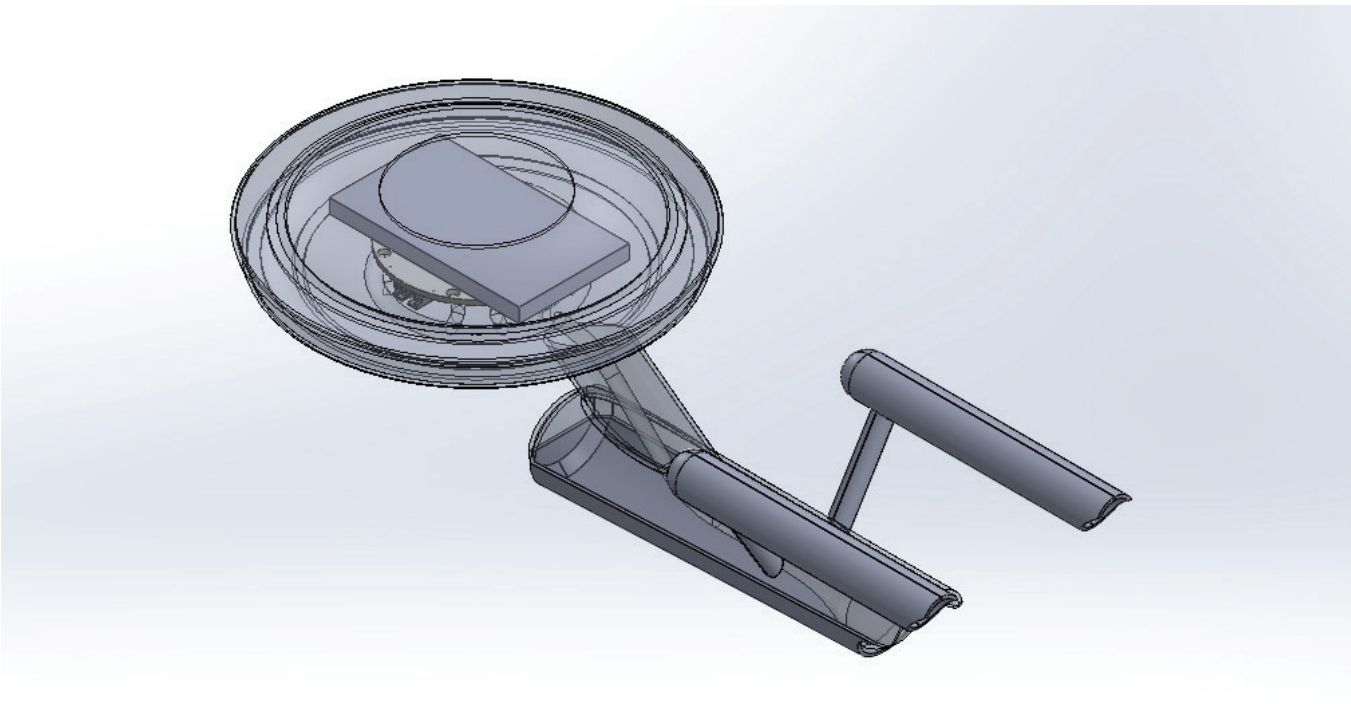


Image 4: Parting lines of the body

Final Form

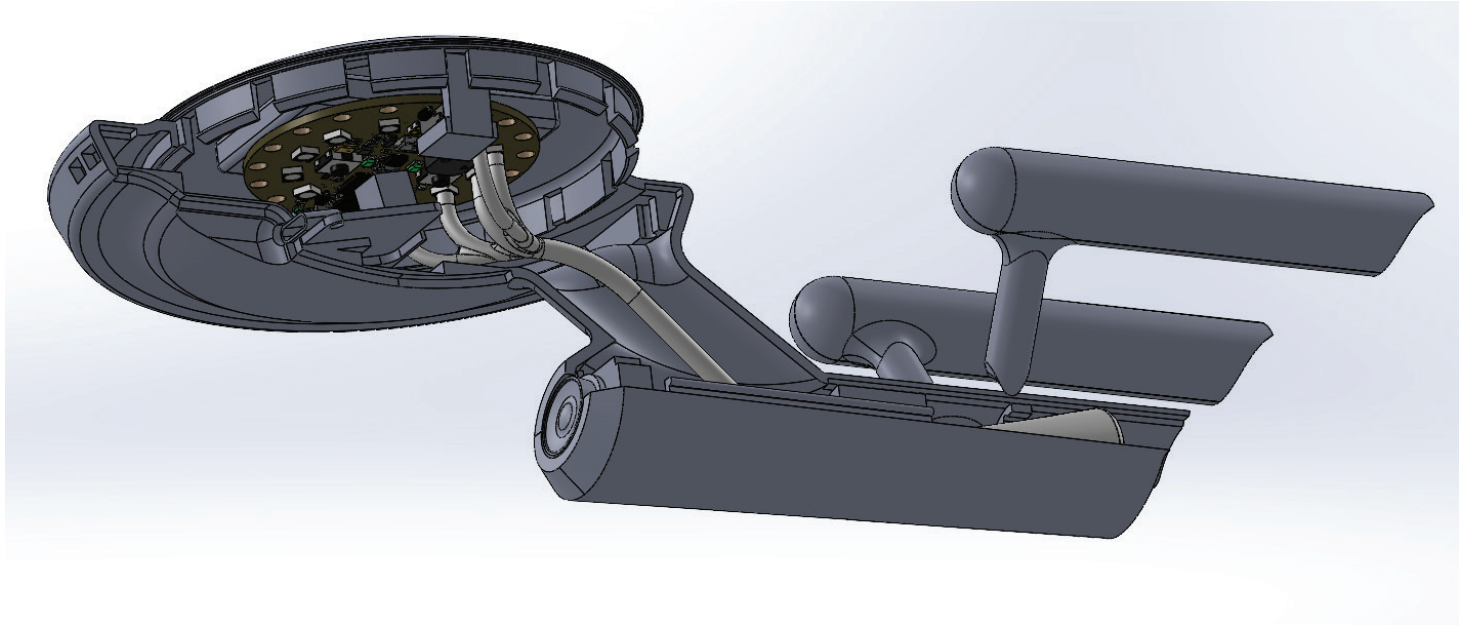


Image 1: How the components sits inside the housing

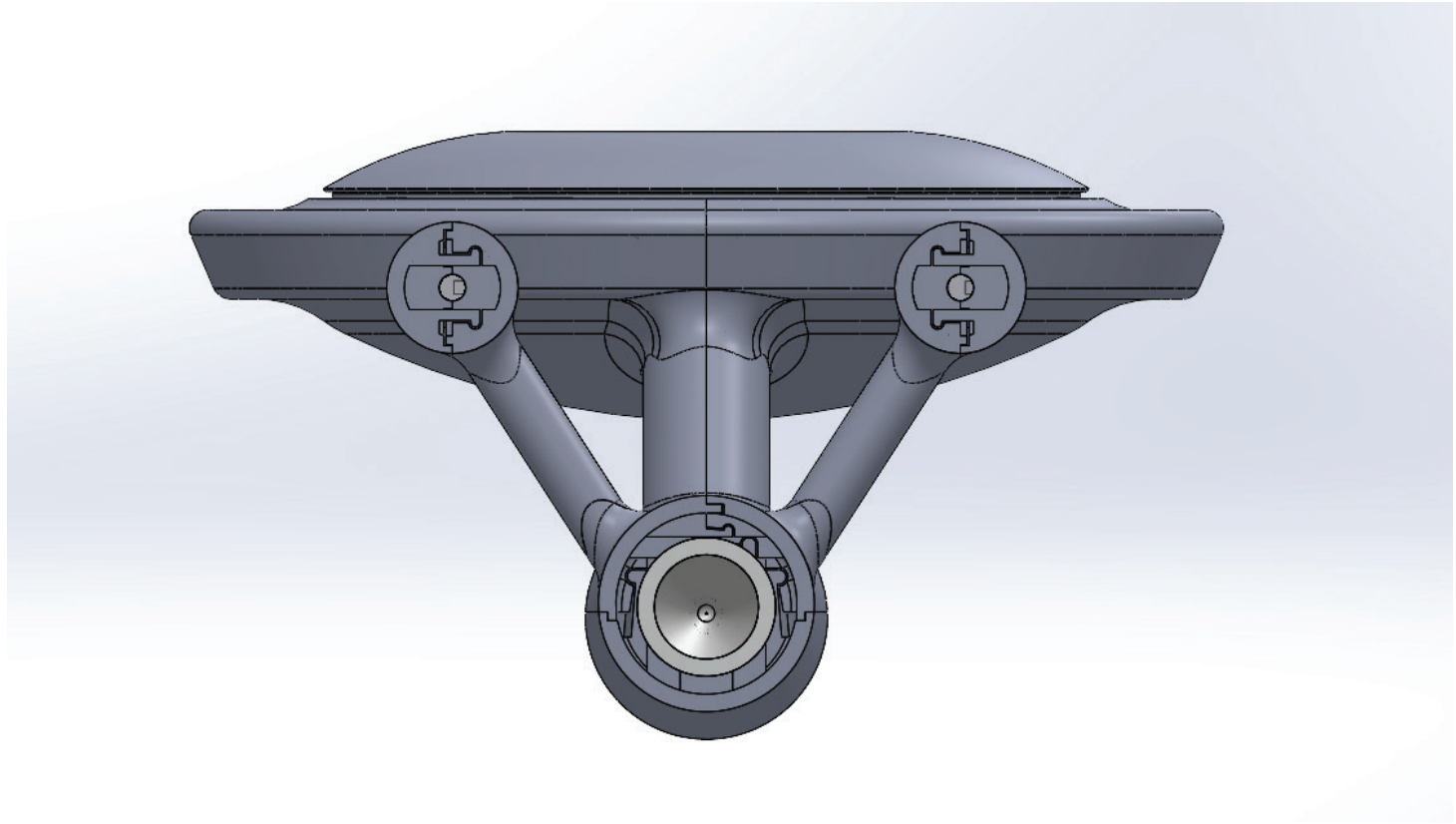
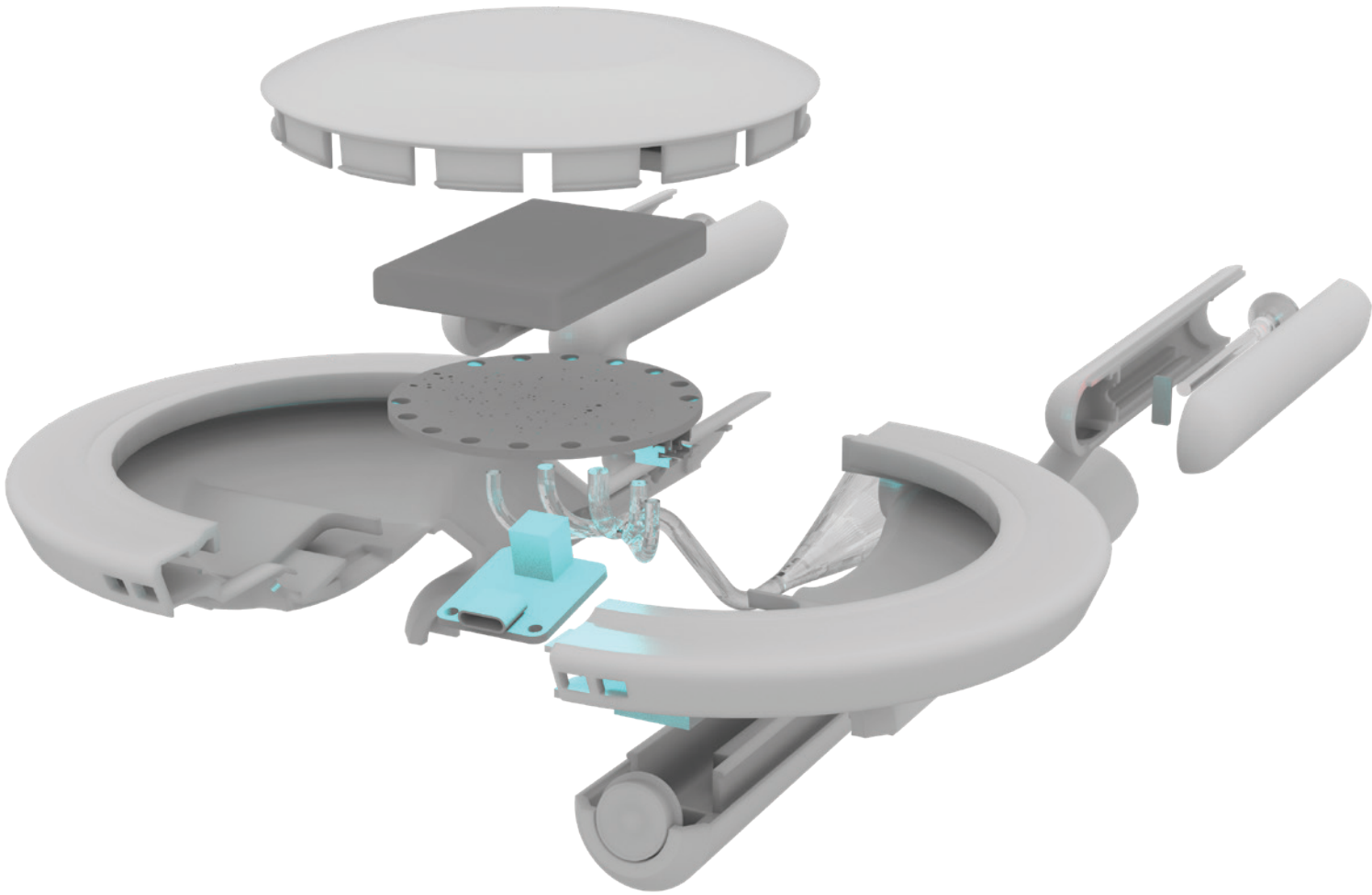


Image 2: Cross-section of the main engine and the snap-fits.



Snap-Fits and Lip & Groove joints.

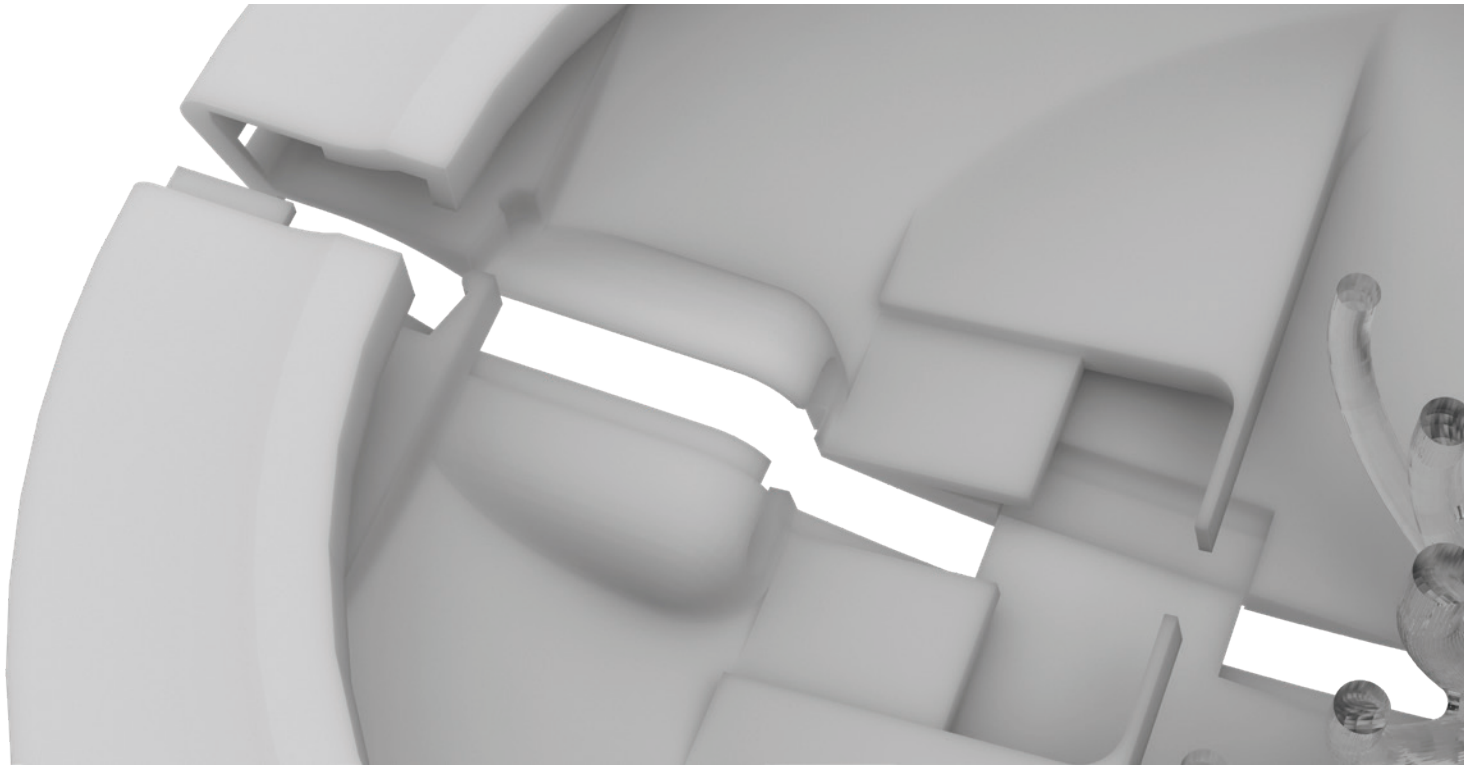


Image 1: Snap-fits and lip&groove joins in the main head of the form.

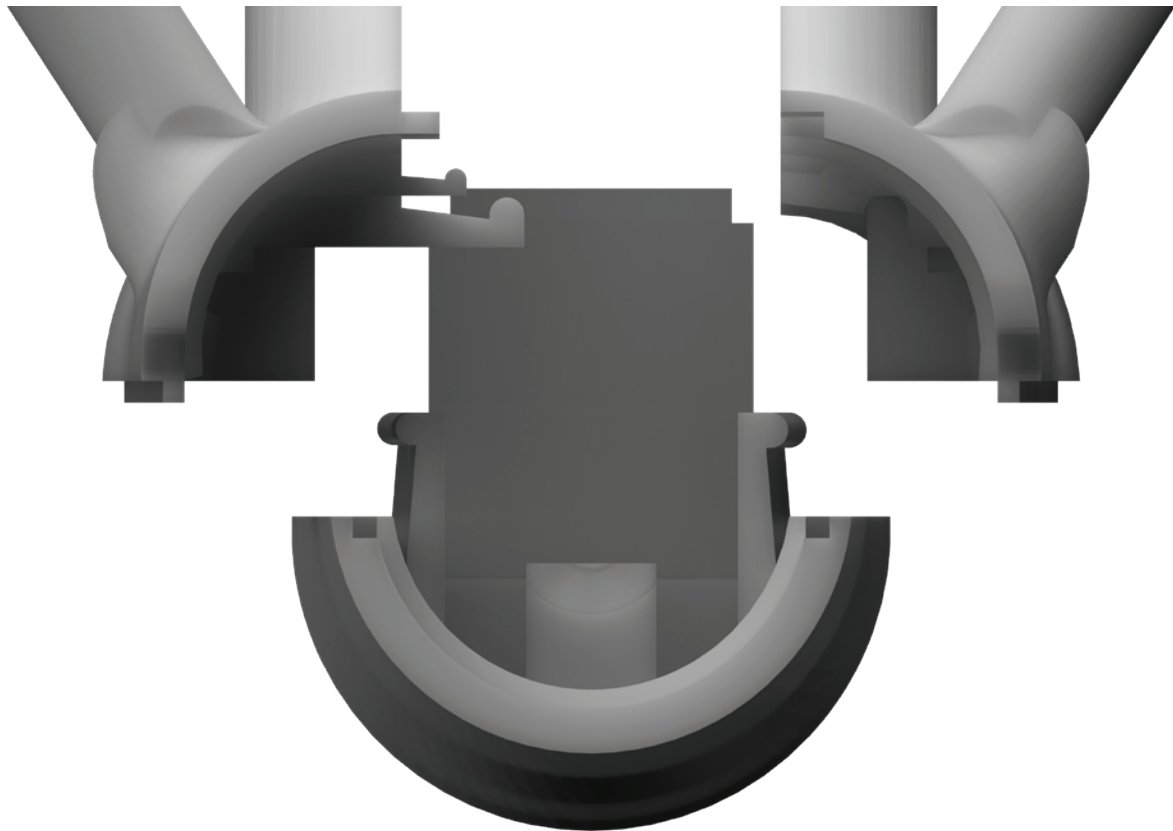


Image 2: Snap-fits in the main engine area.

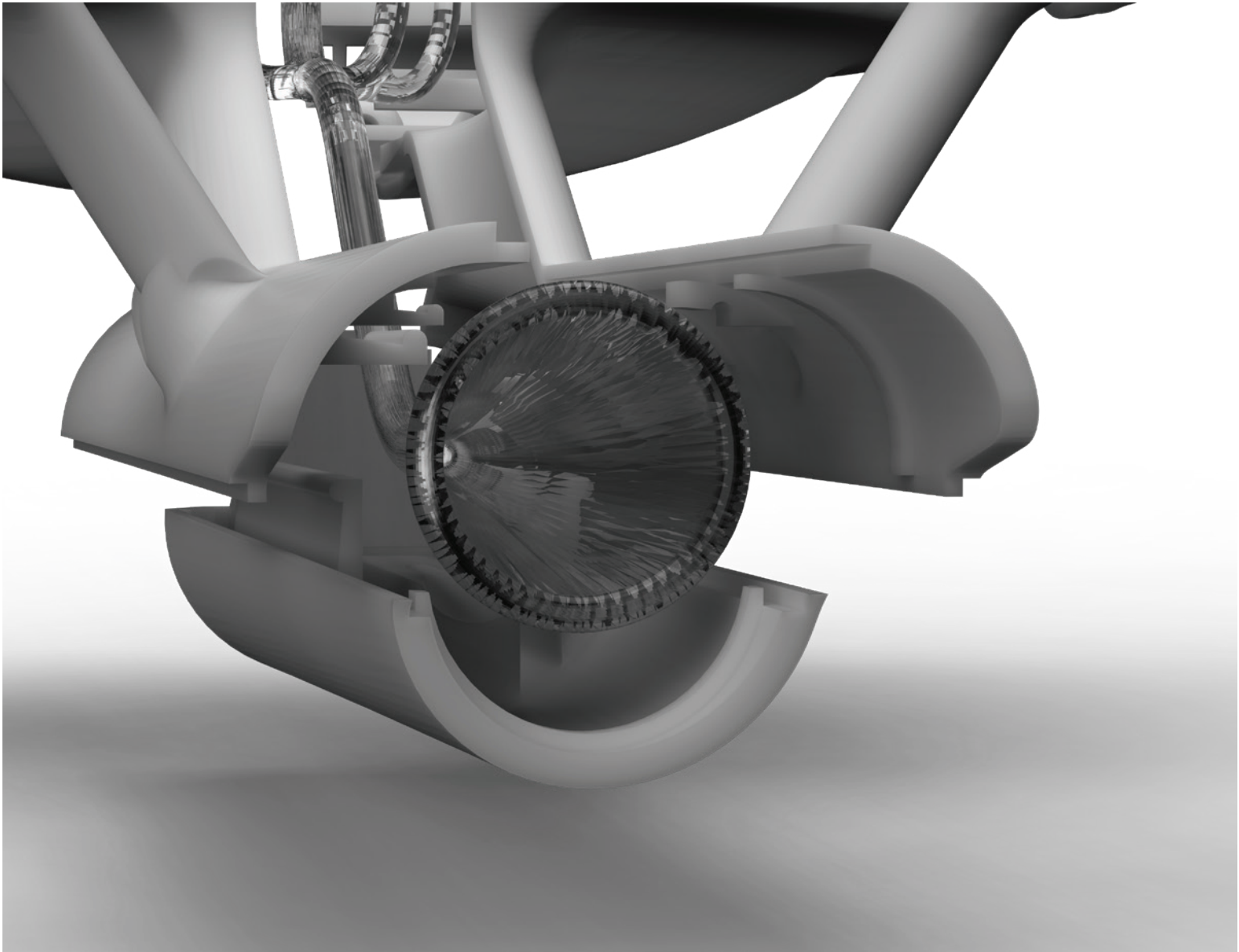


Image 3:How the Snap-fits sandwich the light-pipe in the middle.

Light Pipe Development

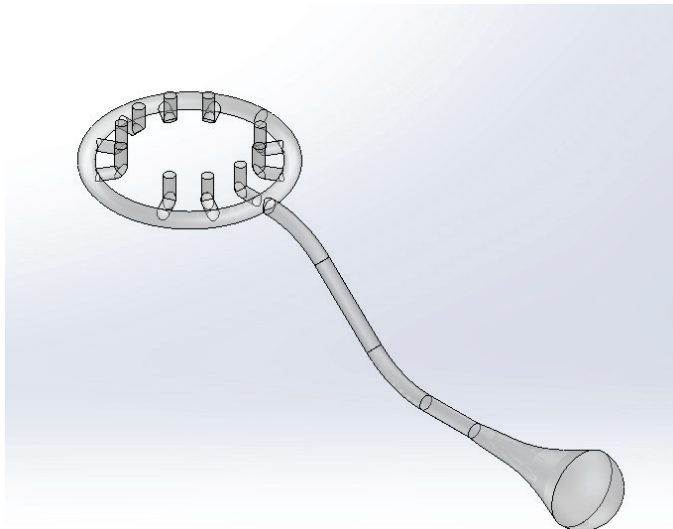


Image 1 :First Light pipe design

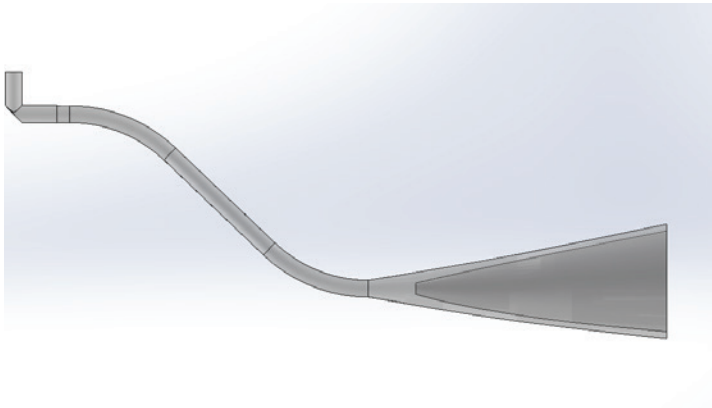


Image 2: Test light Pipe design



Image 4: Testing out the light-pipe in the dark.

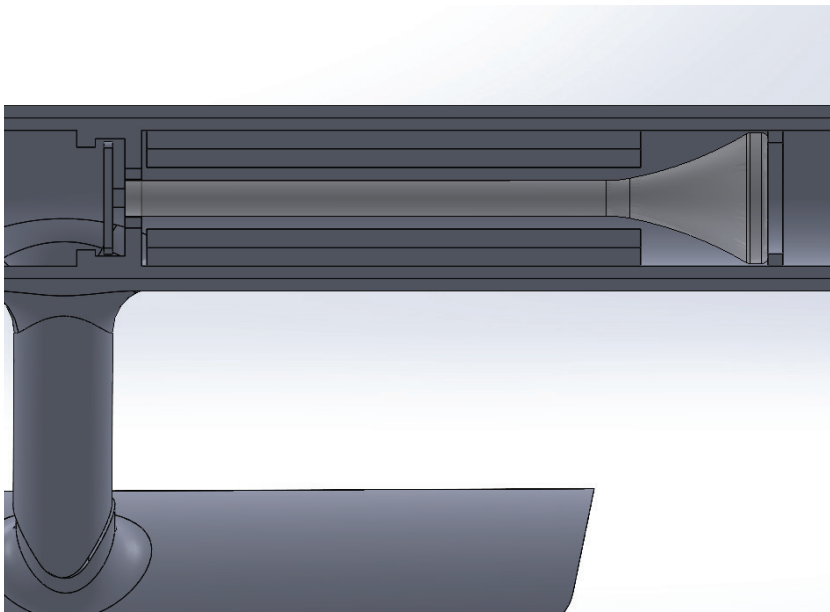


Image 4: smaller Additional Light pipes.

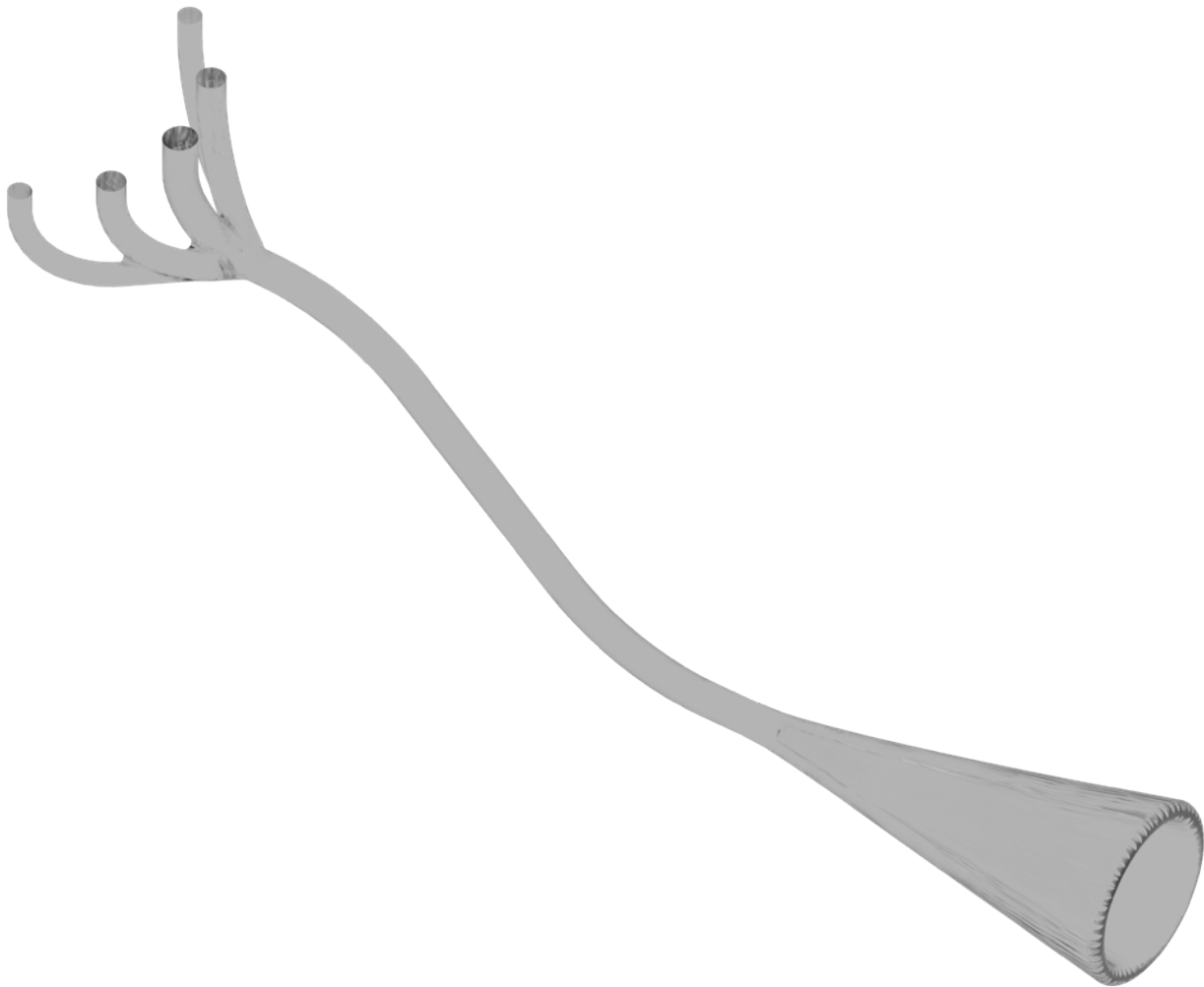


Image 5: Final light Pipe design

Final Design

Design Criteria

- To make an enclosure that is assembled using the snap-fits, no screw and glue to put it together.
- Needs to fit a Adafruit Circuit Playground, Lithium ion battery, a light-pipe.
- Also to design a light pipe that uses the light from neopixels on the circuit playground.
- Making design with keeping the constraints of 3D-printing in mind.

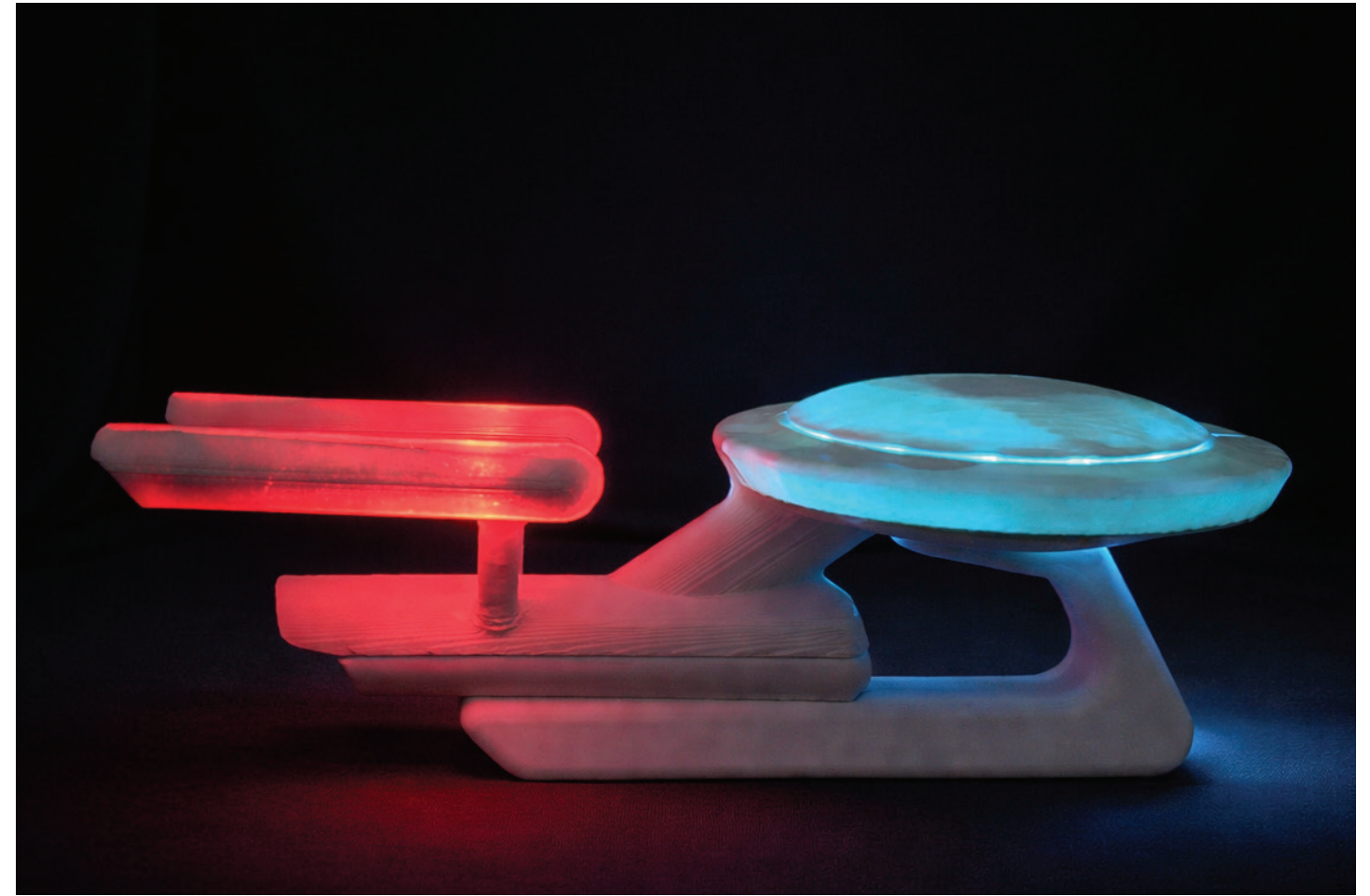


Image 1: Final model with everything working.



Image 2: View showing how the light-pipe sits in the enclosure



Image 3: A view showing light-pipes in action

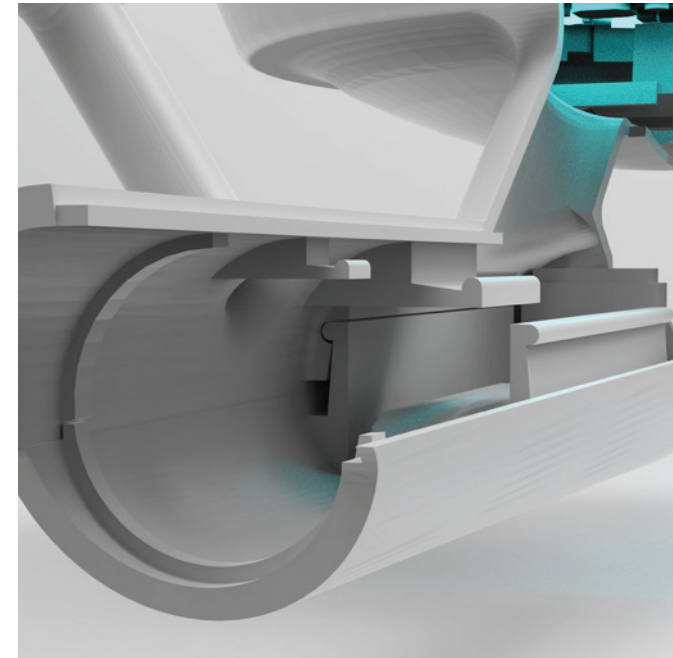


Image 4: A view showing snap-fits engaging and tolerances

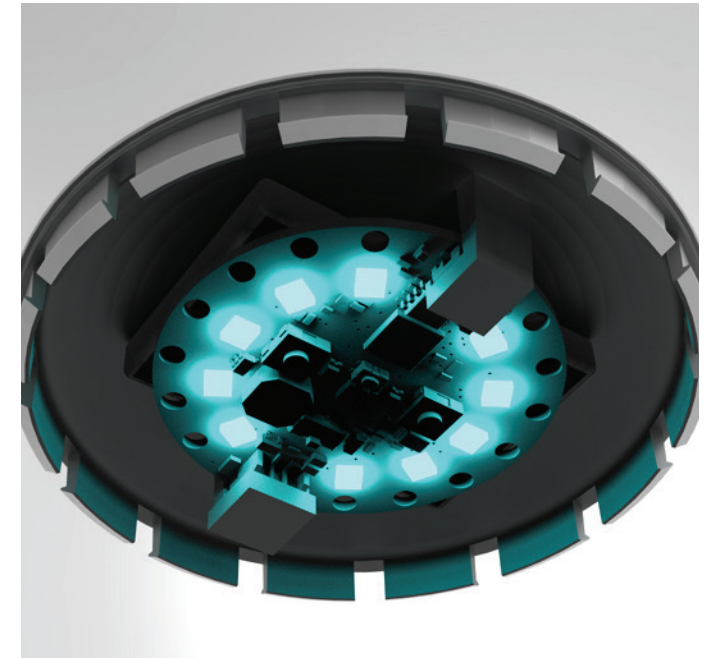


Image 5: A view showing how the circuit playground is attached to top cover.