

PORTFOLIO



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fadiya._.design

Skills

Solid Works - CAD
Painting
Sketching skills



IED Student Member

Personal profile

I am a dynamic, hardworking, and persistent individual with a lifelong passion for art and design. From a young age, I have been driven to create, starting with conceptual projects like a solar-powered traffic light system during middle school and later designing an ergonomic chair for a client. My dedication to refining my craft led to acceptances at esteemed institutions such as Pratt Institute and Parsons School of Design. Ultimately, I chose to pursue my studies at Loughborough University, renowned for its excellence in design and innovation.

Areas of Expertise

Education

BSc Product Design and Technology

Loughborough University
2024-2028

Upcoming Modules | First Year

Electronics, Programming & Interfacing
Prototyping for Manufacture
Augmented Reality Prototyping

Responsibilities | First Year

Course Representative

Courses

Completed a parsons affiliated summer design course at Atlas skilltech University in 2023

Work experience

Observer | Architectural Firm

Gained valuable insights into architectural practices, observing the design process, project planning, and client interactions. This experience strengthened my understanding of design principles and their application in real-world projects.

Founder and Student Representative | RAIS (Regional Association of International Schools), India

1. Founded RAIS to provide a platform for international school students to showcase talents, starting with a girls' football team.
2. Collaborated with school leaders to establish and expand RAIS, now affiliated with Cambridge.
3. Conducted surveys to assess interest in sports and events.
4. Built connections with nearby international schools to encourage participation.
5. Led meetings with school directors for event planning and growth, aiming for national expansion.

Interests

Drawing
Painting crafts
nature enthusiast
cooking

Personal projects

1. Mural painting in 2023
I painted my schools' wall with the support from my school.
2. Ergonomic chair in 2023
Designed an ergonomic chair which can change into any posture needed.

Hobby projects

Fashion Design | Representing Women in the Workforce

Designed and created a dress for a school fashion show, symbolizing the empowerment of women in professional spaces.

Art Collaboration | Local Government School

Collaborated with a local government school to teach arts and crafts, guiding students to create and paint a mural that brought their vision to life on the main school wall.

Custom Gift Design | Unique and Personalized Creations

Specialized in designing customized, out-of-the-box gifts for special occasions, focusing on thoughtful and creative solutions tailored to individual needs.

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Ultrasound Clinic and Diagnostic Centre

This project focused on designing an accessible ultrasound clinic, expanding its scope to a full diagnostic center offering a comprehensive range of services, including MRI, CT scans, ultrasound (USG), X-rays, mammography, and laboratory tests. The goal was to create a one-stop diagnostic facility that caters to all patient needs efficiently.

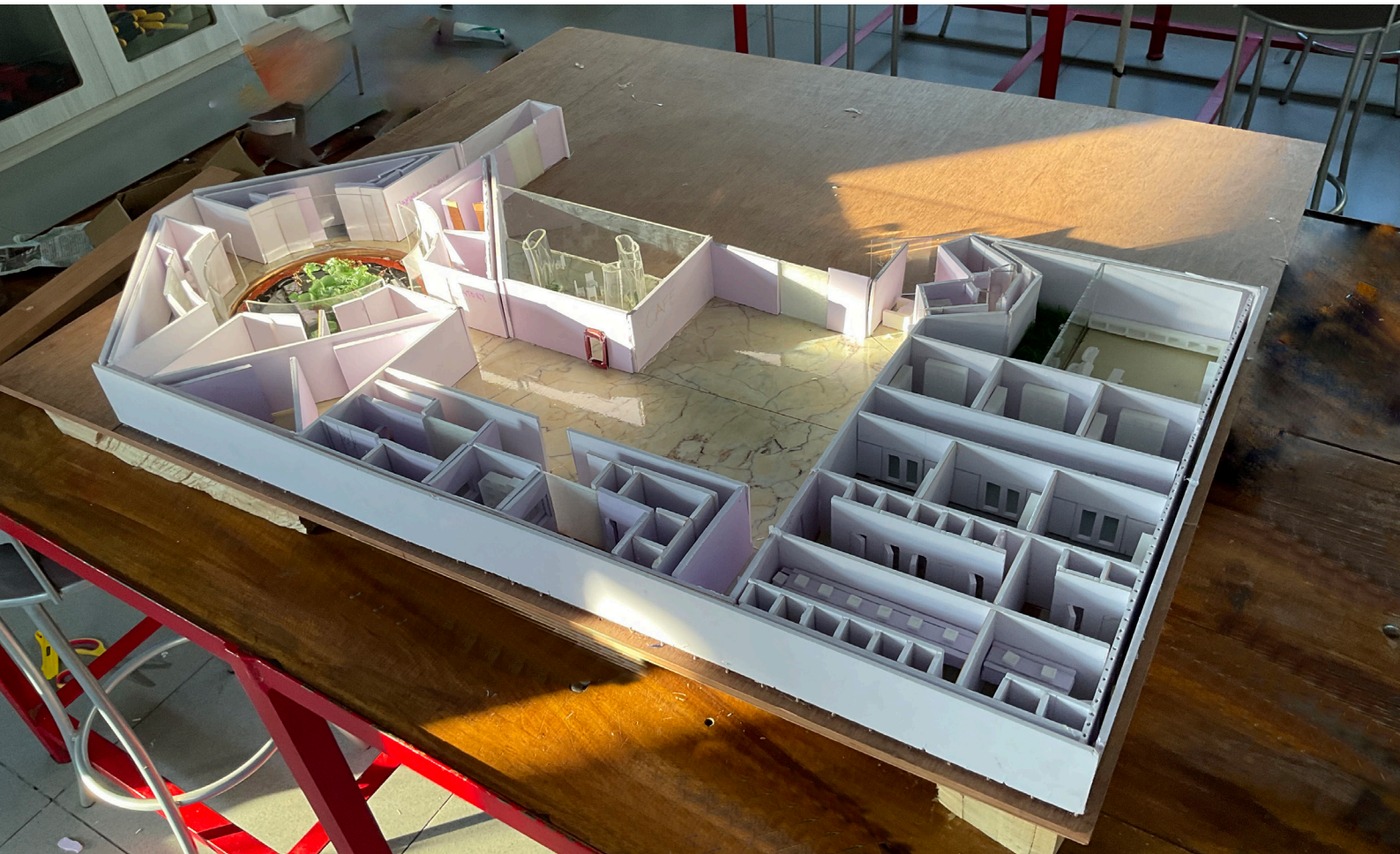
The design process began with conducting interviews and analyzing existing clinics for inspiration. Based on this analysis, three initial floor plan ideas were developed, each with detailed sketches. After evaluating the options, a combination of ideas was selected from floor plans 3, 6, 11, and 12. The chosen design incorporated elements like greenery to foster a peaceful hospital environment, ensuring that patients feel calm and comfortable during their visit.

The design included several key specifications, such as easy patient interaction at the reception desk, ample storage solutions for every room (including MRI, CT, USG, X-ray, mammography, and laboratory spaces), varied seating arrangements, and the inclusion of shrubbery and plants throughout the center. The exterior was designed with light colors, and a prayer hall and private walk path were also integrated for added convenience and tranquility.

After creating initial CAD models of the clinic's ultrasound room and main waiting area, SketchUp was used to generate a comprehensive visual representation of the entire design. The next phase involved designing custom furniture for the spaces, evaluating the advantages and disadvantages of each, and refining the interior design based on feedback. Detailed consideration was given to the materials used in the building's construction, ensuring the final model reflected the real-world materials as closely as possible.

User testing was conducted with actual clients and other participants to gain valuable insights into the design's effectiveness and accessibility. This feedback was then used for final evaluation through SWOT analysis, identifying areas for improvement. The final adjustments were made to both the interior design, exterior design and product design, ensuring a user-friendly and practical layout.

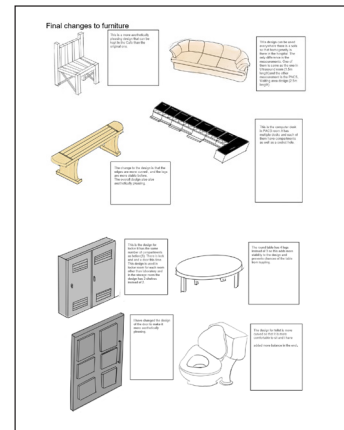
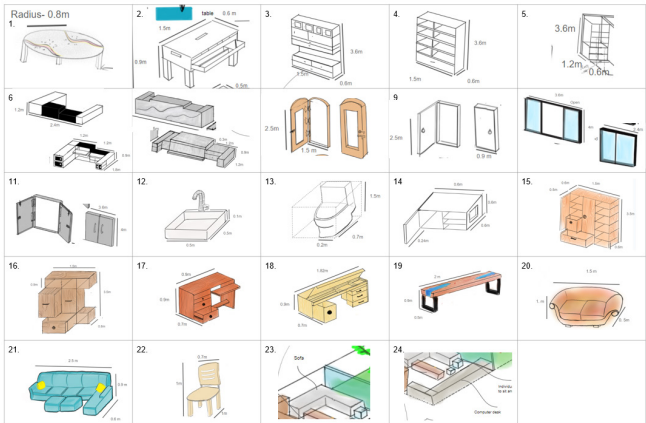






This project focused on designing an accessible ultrasound clinic and diagnostic center, including ultrasound rooms, a café, PACS, laboratory, and a main waiting area. Each space, along with furniture (chairs, sofas, tables, cupboards, sinks, toilets, doors, and reception), was carefully evaluated for pros and cons. Design and material changes were made as necessary, with eight designs ultimately refined to improve both functionality and aesthetics.

I am planning to continue forward with the selected 23 designs shown above except for computer chair because I wanted to know what the height of the table should be and what approximate size and design should the computer chair be. I am also showing how the sofa, and reporting desk will be in the PACS room.

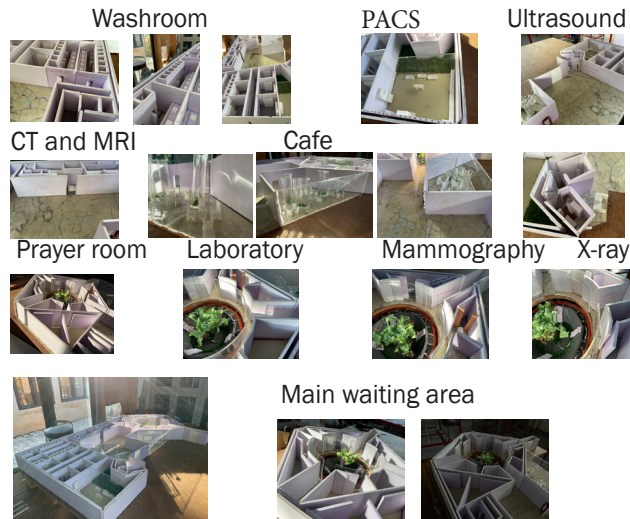


I explored innovative methods for furniture design, using both 3D printing and clay modeling, and ultimately chose 3D printing for its accuracy. The project seamlessly integrates architectural planning with custom product design, ensuring a practical, efficient, and comfortable environment for patients and staff.

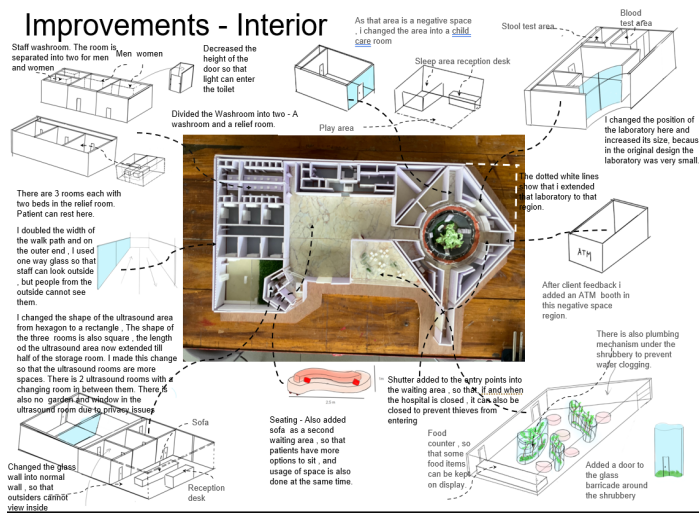




The clinic's exterior was crafted using foam board, hot glue, and wallpaper, with a prayer room added to serve the religious population of Kozhikode, Kerala. Patient and doctor paths are separated for efficiency, and greenery creates a peaceful environment. The ultrasound room has two entrances, and the waiting area features a circular garden with a large tree. Accessibility for older patients was considered with multiple washrooms and rest areas.

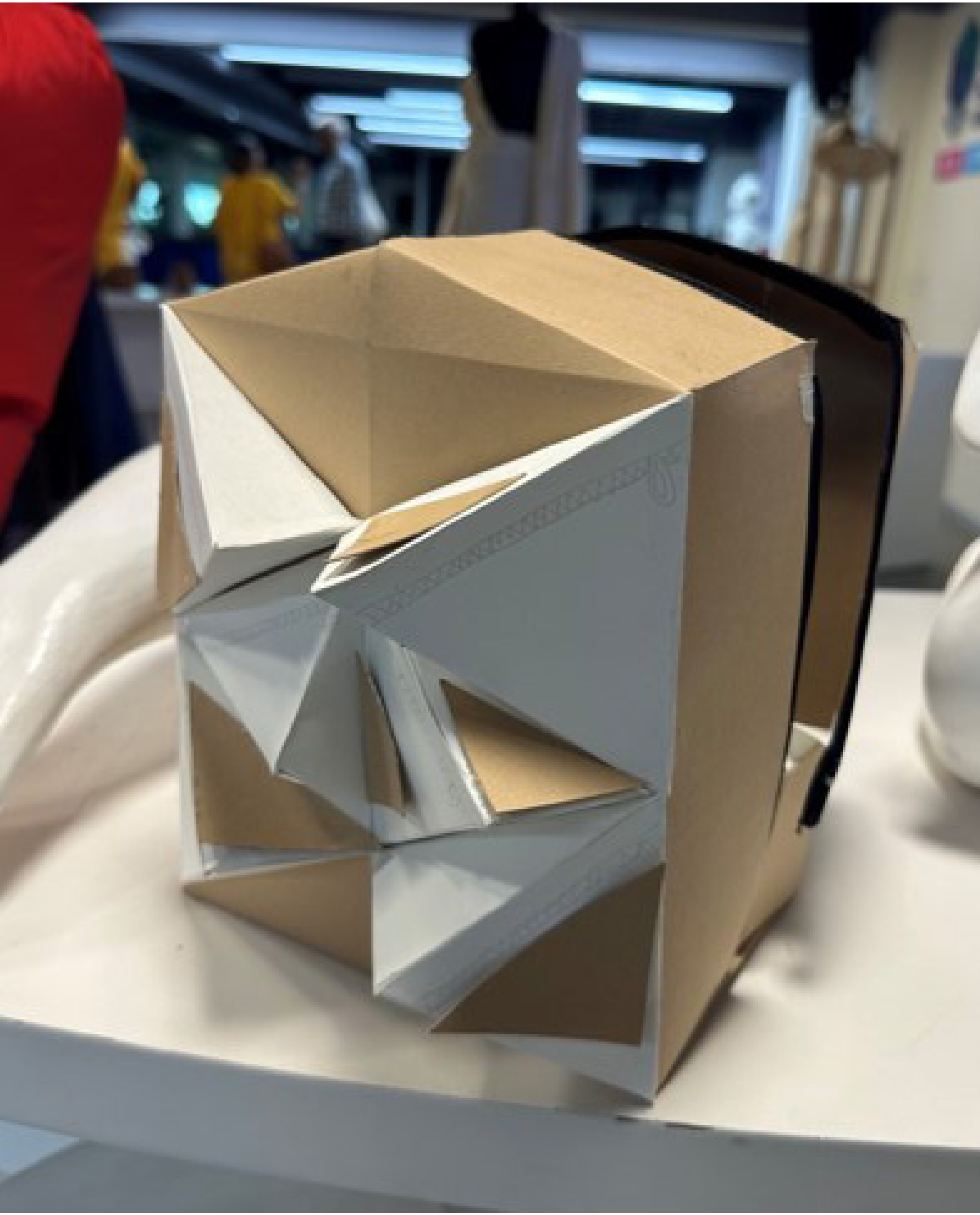


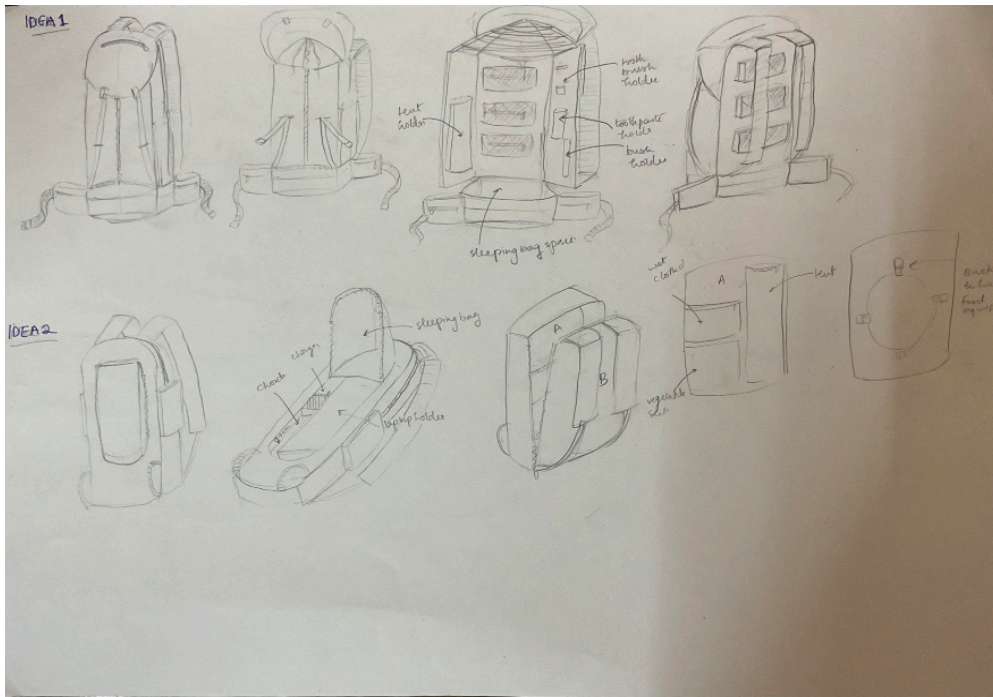
This two-year project taught me time management, communication, and the importance of precision. Building the model improved my patience and persistence, as mastering foam board and acrylic cutting took several attempts. The clinic is a nature-connected space that prioritizes comfort, efficiency, and user



Versatile Multi-Purpose Bag

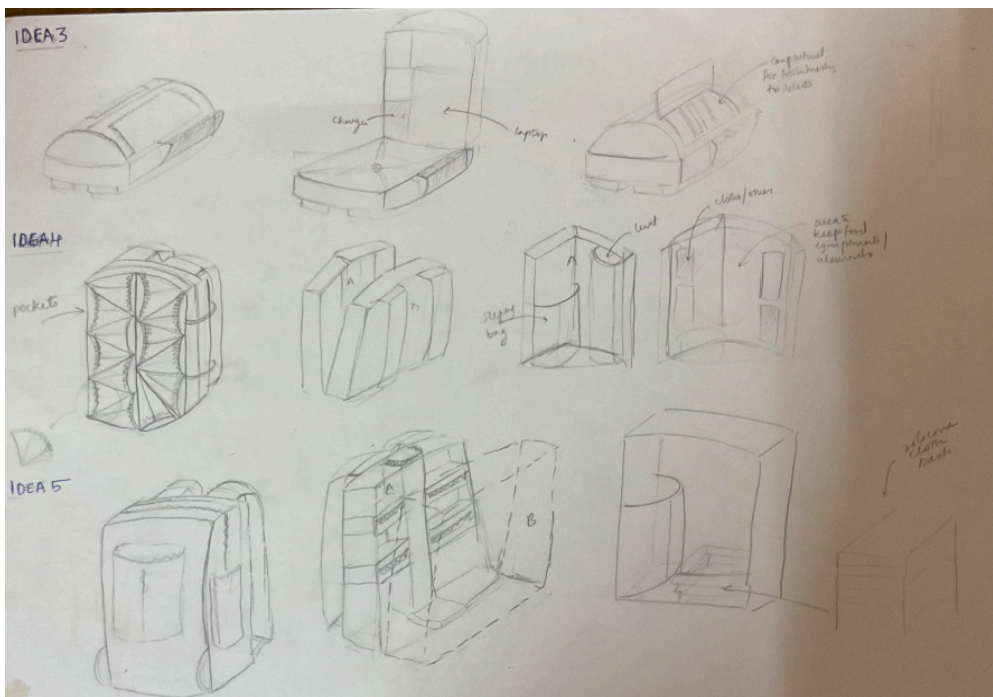
This innovative bag is designed to address the challenges of traditional backpacks by offering a more organized, functional solution. Featuring multiple compartments, including triangular pockets for small, easily lost items, the design ensures easy access to essentials without the need to unpack everything. The bag's modular concept allows it to be resized for various uses, such as a travel, party, or art bag, while protecting larger items with inner compartments and keeping smaller items secure and accessible in the front. Perfect for those who need convenience and organisation in one bag.





Goal:

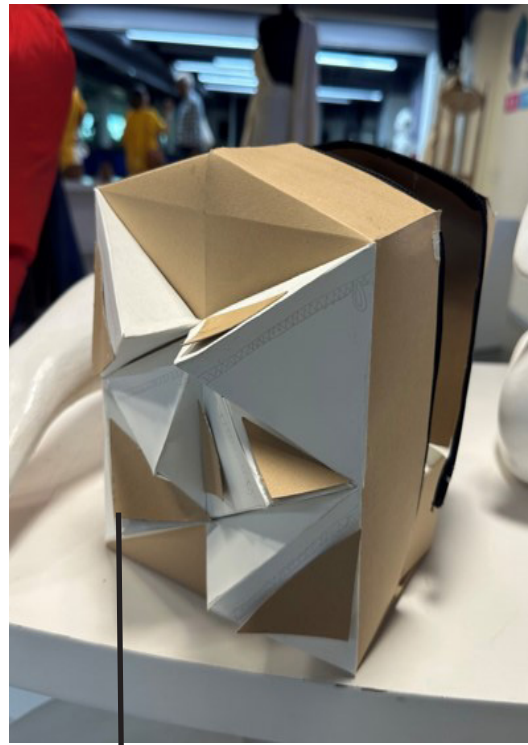
1. Improve outdoor gear organization for users.
2. Identified Issue: Existing trekking bags lack efficient storage.
3. Solution: Designed a more organized trekking bag for quicker access and enhanced time efficiency.



- Idea 1: Three compartments, waterproof fabric, zipper alignment issue.
 Idea 2: Front opening, space for utensils and wet clothes, limited customization.
 Idea 3: Front opening, space for utensils and wet clothes, lacks individualized storage.
 Idea 4 (Selected Idea): Triangular pockets for essentials, aesthetically appealing, lacks lock mechanism.
 Idea 5: Improved back support, silicone bucket for used clothes, lacks aesthetic appeal.



Tent holder/Brush holder



Pockets

Laptop/Canvas holder



Sleeping bag/ cup holder



Travel gas cylinder/Paint holder

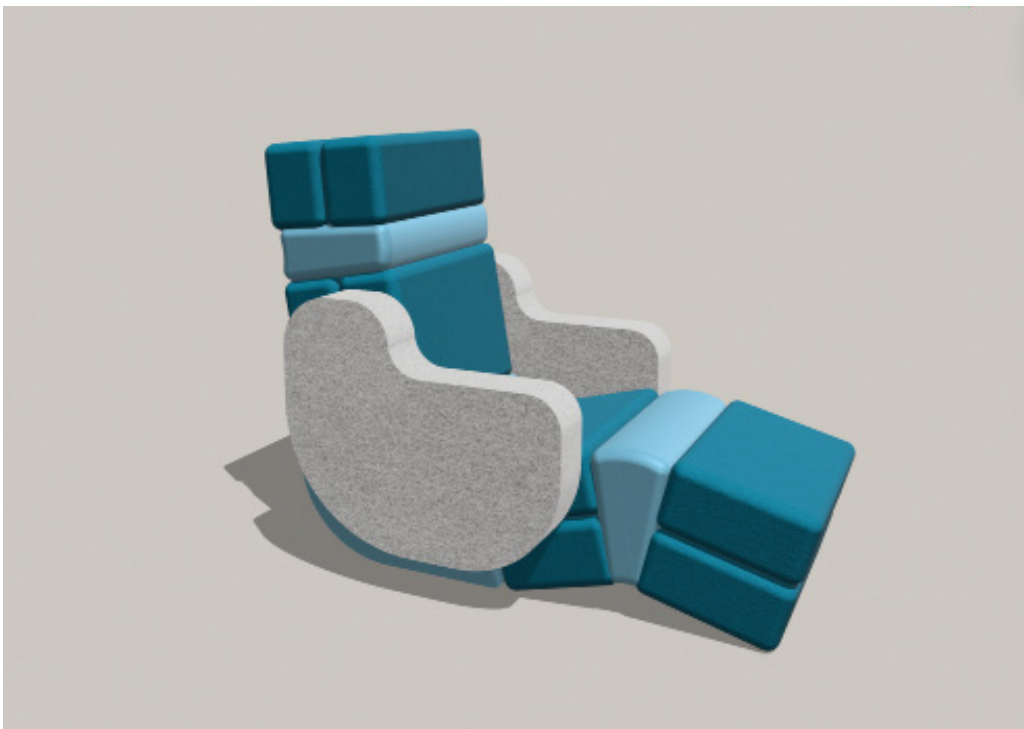
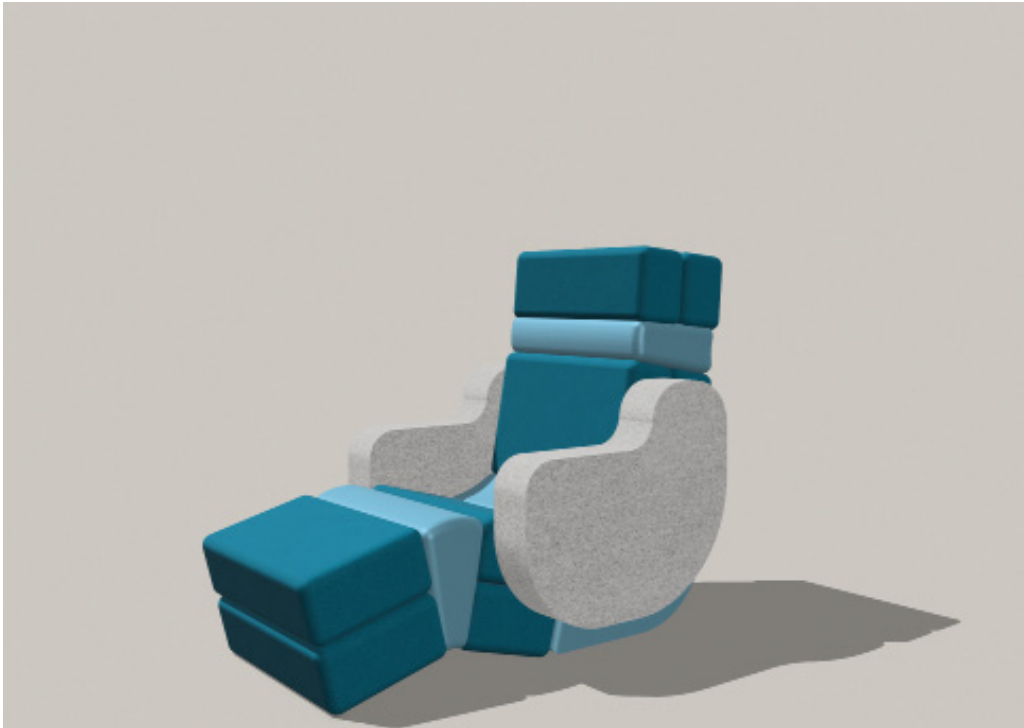
After creating the model, I realized that the sharp edges of the triangular pockets needed to be curved for safety. Additionally, I identified the necessity for a mechanism in the shoulders to enhance comfort.

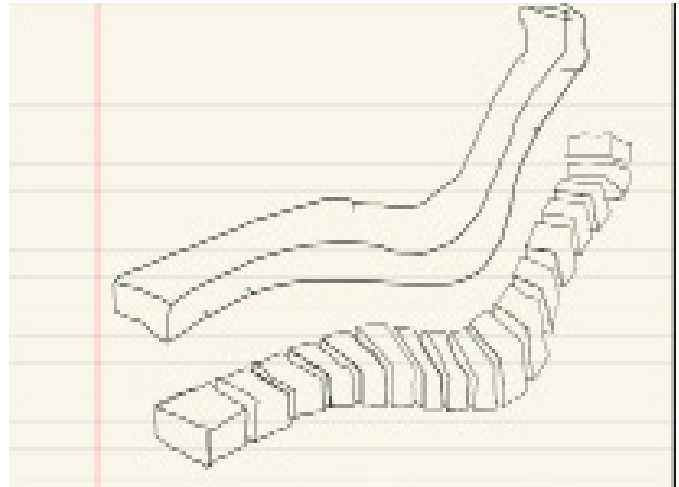
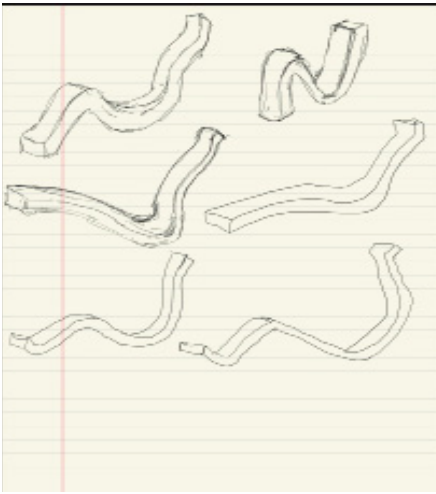
For further development, I aim to integrate a discreet and secure pocket within the backpack specifically designed for storing valuables. Additionally, I intend to implement a user-friendly lock mechanism, ensuring convenient access for the owner while enhancing security against theft or pilferage.



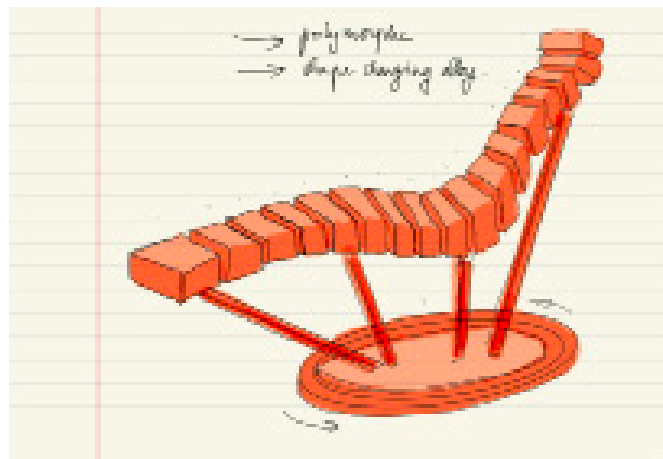
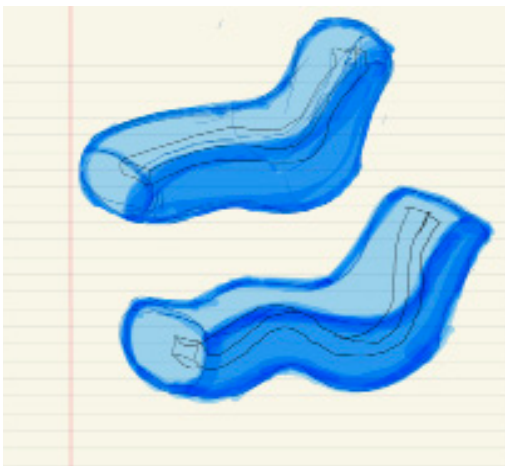
Ergonomic Chair

This thoughtfully designed ergonomic chair is tailored to address the specific needs of individuals, particularly a 46-year-old radiologist suffering from neck and back issues caused by years of sitting in the same posture. Drawing inspiration from the flexibility of a rattlesnake's tail and the human spine, the chair features multiple adjustable sections that can be customized for optimal support. To further enhance comfort, three small bean bags are integrated between the sections, adapting to the user's posture and pressure for a more dynamic seating experience. In addition, the chair includes strategically designed armrests to relieve strain on the arms and shoulders, ensuring an all-around ergonomic solution. This chair is built for long-term use, offering tailored comfort, im-

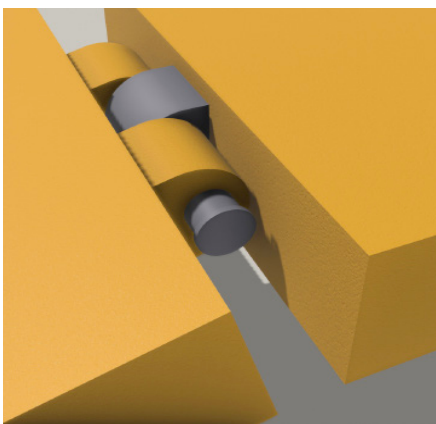


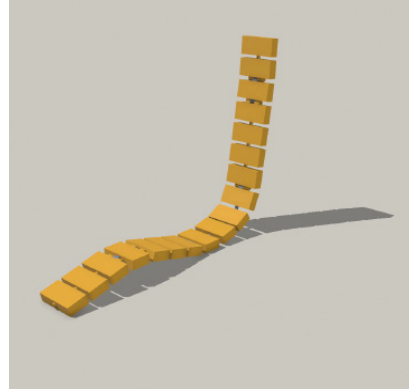
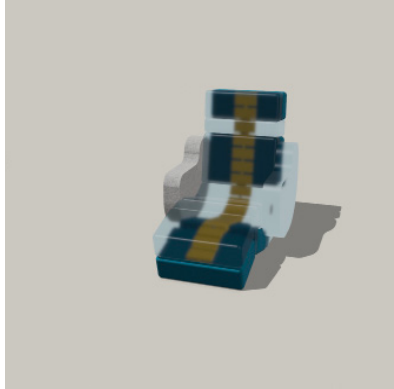


To better understand the common sitting positions and their impact on comfort, I sketched various sitting postures and analyzed the range of sitting poses. This helped in gaining a deeper comprehension of how people sit and what positions are most likely to cause discomfort. To enhance the seating experience, cushioning was added to the skeletal structure of the chair, offering better support and comfort for long sitting periods.

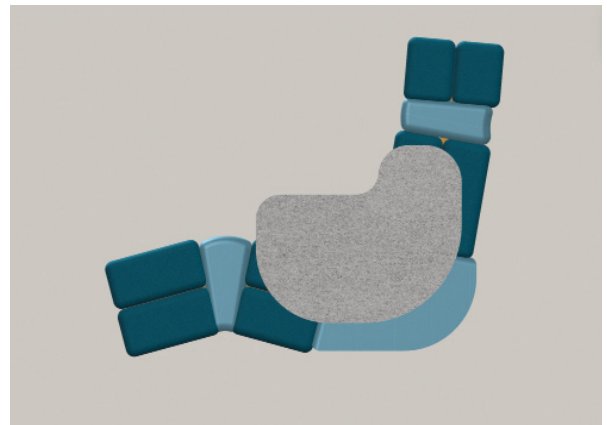
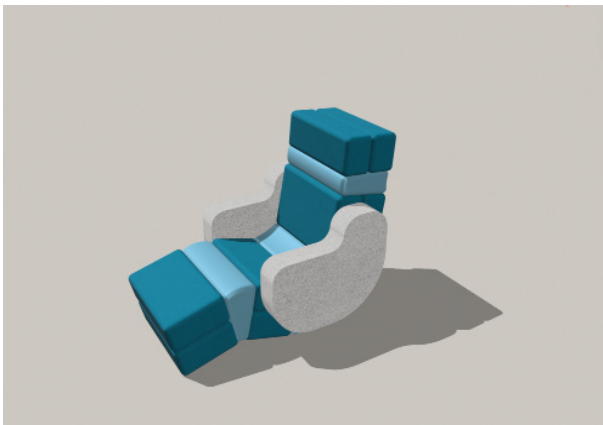


However, a challenge arose with the use of a single cushion, as it complicated posture changes and didn't provide enough flexibility for users to adjust easily. Additionally, structural issues were noted, as the cushion became difficult to remove, inconveniencing users who wanted to adjust or clean the chair. These insights contributed to the refinement of the design, ensuring better comfort and ease of use.

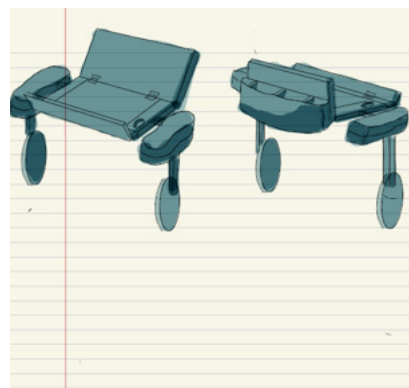




The chair's structure features segmented cubes for adjustable angles and 360-degree rotation, offering flexibility. Made from durable PVC, it simplifies the design with fixed blocks and incorporates speaker mesh for ventilation. The armrests include a rotating mechanism with an interlocking gear system, enabling smooth adjustments for better comfort and positioning.



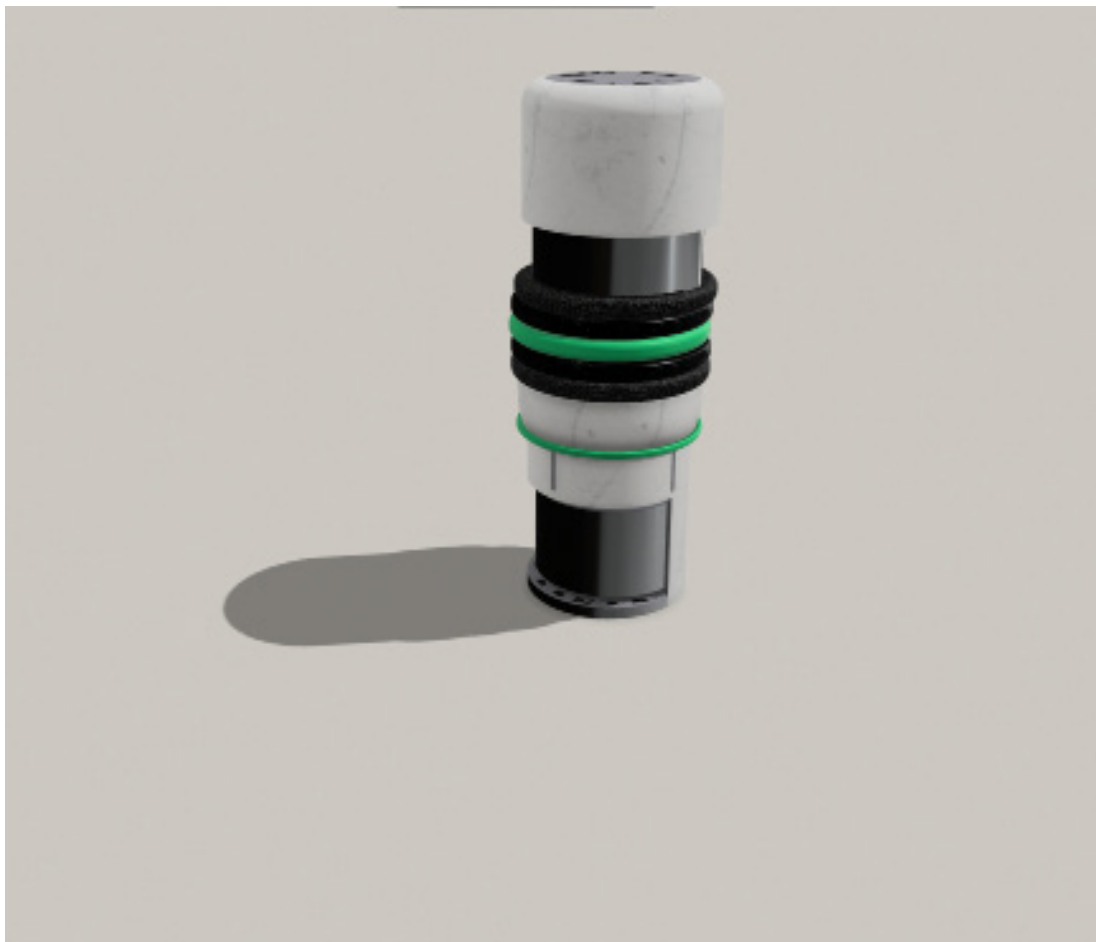
As an improvement, I aim to integrate a laptop desk with a stationary holder into the back of the chair. This addition will provide convenient storage and allow the user to adjust its position for added functionality. Additionally, I plan to include a lock mechanism for the armrests to ensure stability after angle adjustments, preventing unwanted shifts during use.

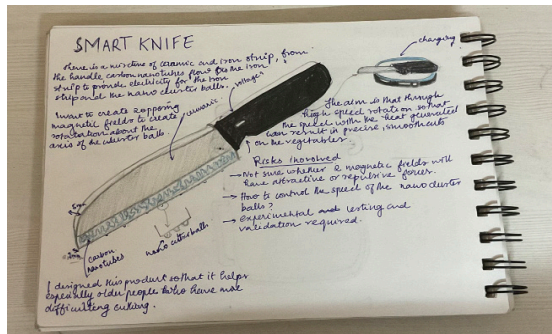
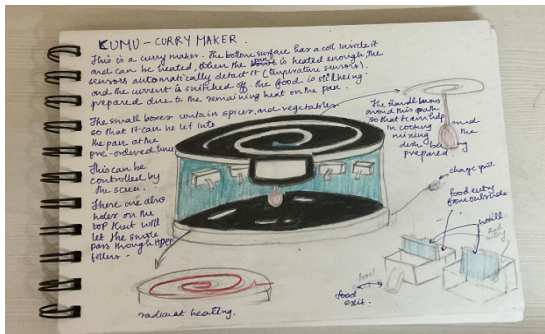
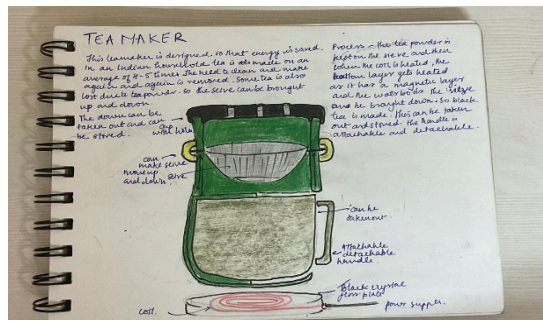
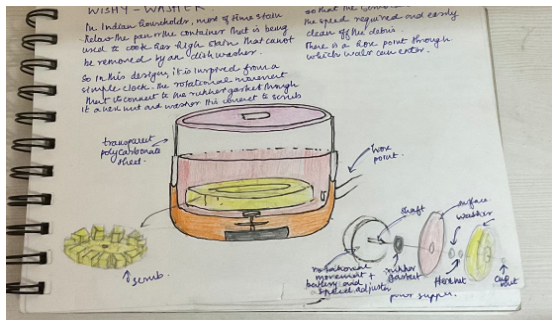


Smart Tea Maker

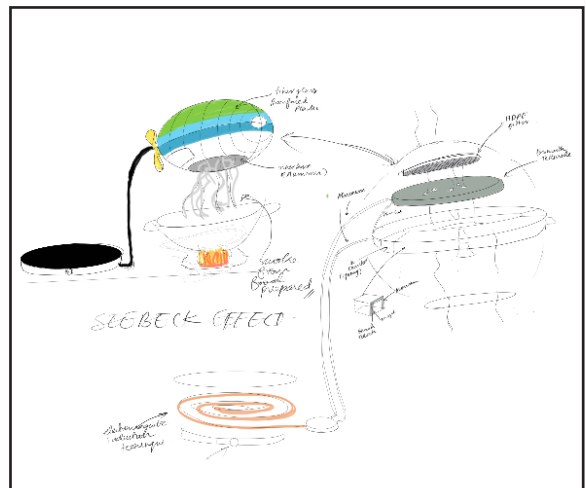
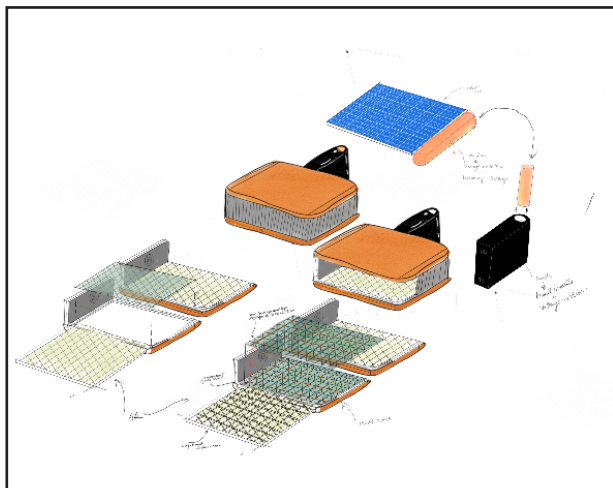
This project aims to create a novel food preparation product tailored to the needs of home cooks in India, focusing on energy efficiency and convenience. Through research, including interviews with my grandmother and others, I discovered that everyday tasks like preparing tea and curry consume a significant amount of time and energy, with tea being made multiple times daily and curries taking hours to prepare. Additionally, inconsistent electricity availability poses challenges for many Indian households.

In response, I designed a smart tea maker that integrates technology to streamline tea preparation while reducing energy consumption. The product aims to save time, reduce energy loss, and make the cooking process more efficient. After considering various ideas, I focused on a solution that is easy to use, easy to clean, and suits the unique demands of Indian kitchens. This smart tea maker offers an innovative approach to cooking by automating the tea-making process and incorporating energy-saving features, ultimately improving the cooking experience and quality of life for home cooks.

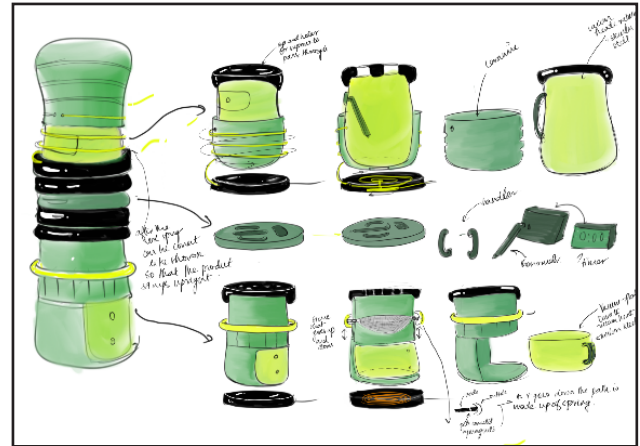
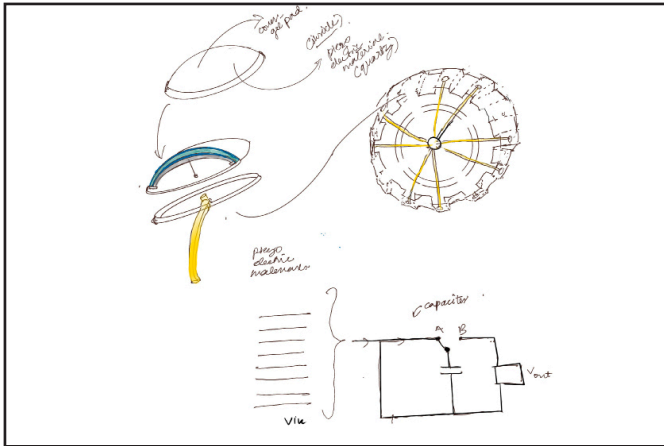




Initially aimed for novel food production product. Refined Tea Maker, Seetage, Smart Knife. Other ideas similar market-available. Focused on these three reworked designs.

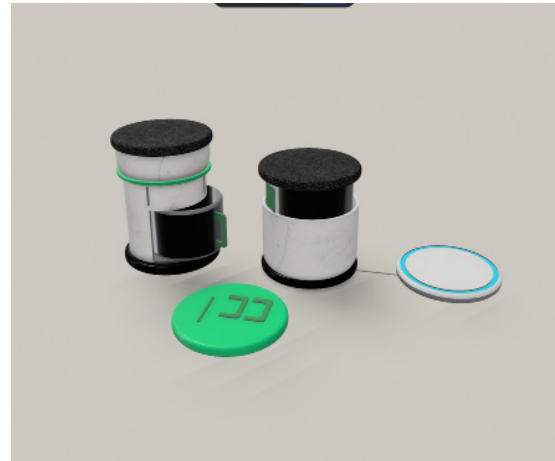


I created a two-part tea maker design to enhance the tea-making process. The top part heats milk as needed, with a yellow spring allowing the rotation of the milk container for easy mixing with pre-made black tea. This section is powered by a supply, while the bottom part is dedicated to brewing the black tea itself. Additionally, I explored innovative technologies like a cooking zepelin, where smoke rises through an aerogel-coated torus and ice cools while bismuth generates energy for heating, and a smart cutting board that uses lasers to guide cuts for preferred shapes and thickness with added safety features. The tea maker design focuses on small, practical steps to improve the tea-making experience, with future plans to experiment with non-existent technology for creating even safer and more efficient products.



In rural India, many farmers without electricity use trucks similar to 5000 kg tractors. If a tractor moves at 40 km/h for 12 hours daily, exerting 49,000 N force on each tire, and each tire contains a piezoelectric quartz crystal generating 0.1323 C charge when stressed, eight devices connected to a 1200 F capacitor produce a total charge of 1261.44 C. This can power an induction pan (3000 W) for 0.42 hours. Multiplying by four devices, resembling tractor wheels, extends the time to 3.37 hours, comparable to the average 3-hour kitchen time for an Indian home cook.

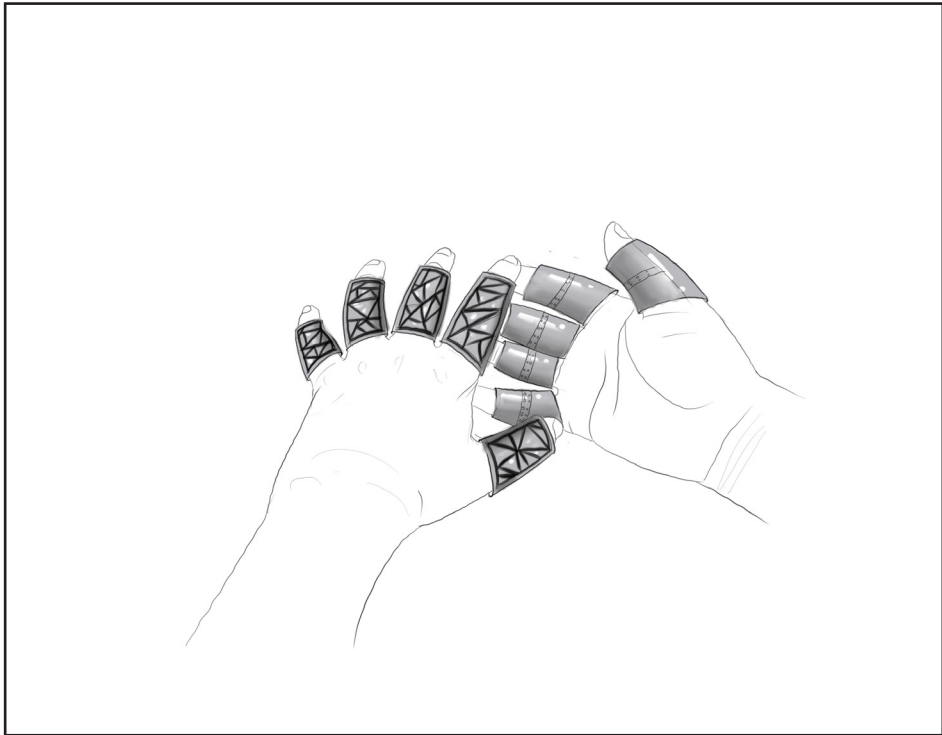
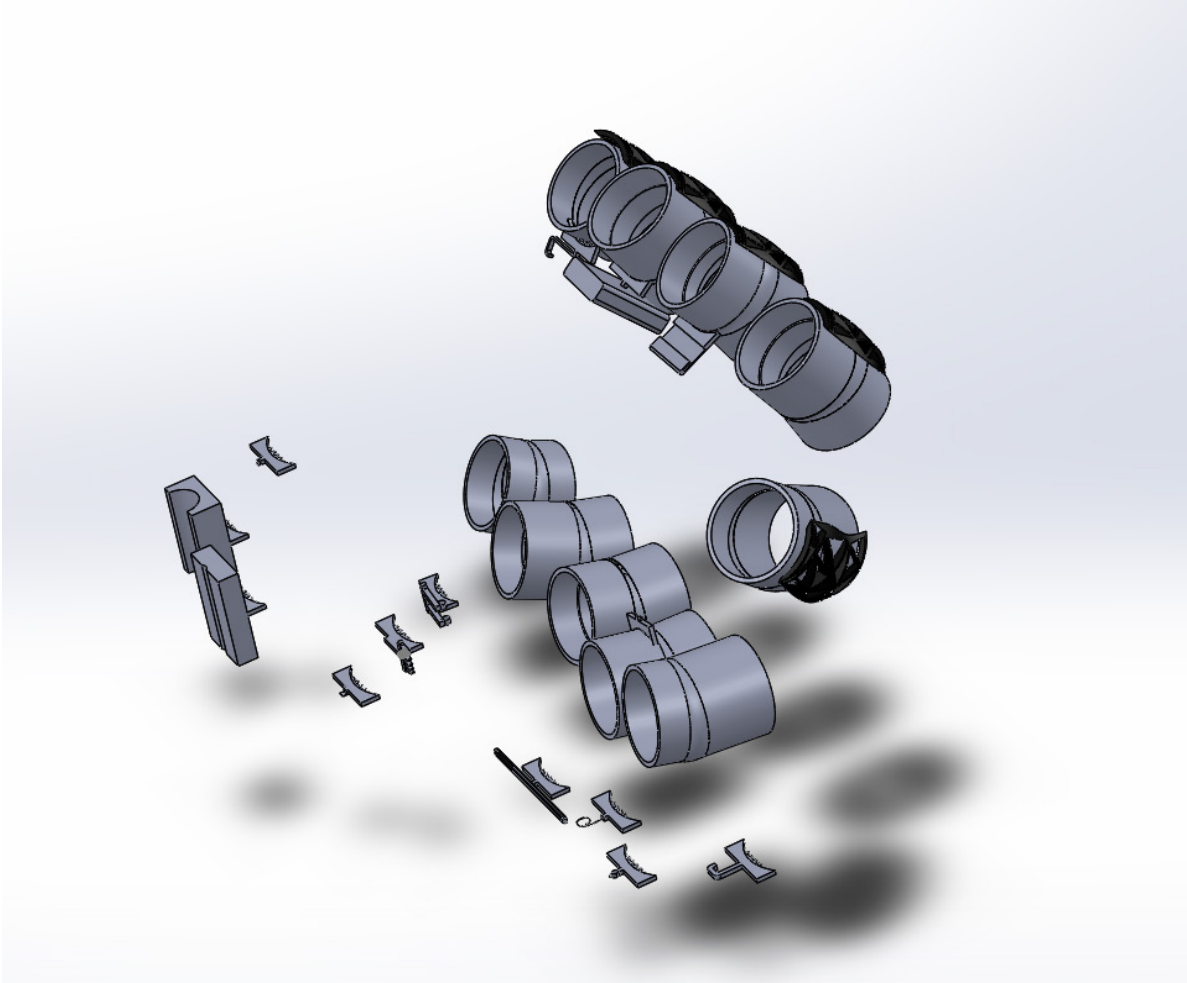
The goal is to create a cylindrical capacitor that stores this energy, allowing it to power appliances via Bluetooth or wires. The top part of the capacitor connects to the container through a designated hole, with a thermometer and timer sending signals to the phone when the milk boils. The design also includes detachable handles to prevent interference during spinning, with the heating function in the bottom part similar to an induction pan.

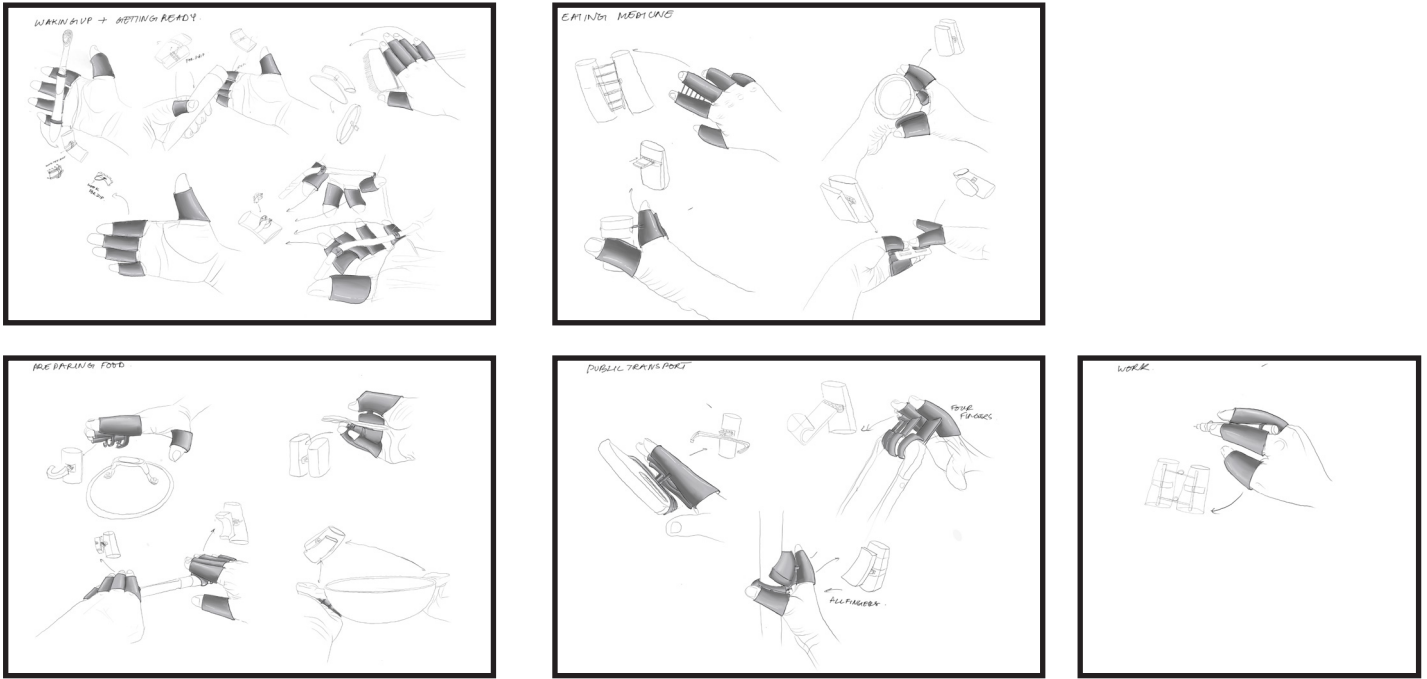


The tea-making process involves placing tea powder on a sieve and pouring water into a smaller cup, with the glass ceramic bottom heated by a piezoelectric capacitor and power supply. Springs help push down the sieve, and after preparing black tea, a handle allows easy removal and storage. The same bottom part is used for boiling milk, featuring an integrated thermometer and timer that automatically turns off the power supply when the milk boils. The flask-like cap retains heat for extended warmth. The top part, where the black tea is poured, uses springs for thorough mixing. Future upgrades include a sieve lock for strength control and UV lights for self-cleaning, saving time and energy by retaining heat after the power turns off. These enhancements aim to improve user-friendliness, offering personalized tea strength and easier cleaning in a compact design.

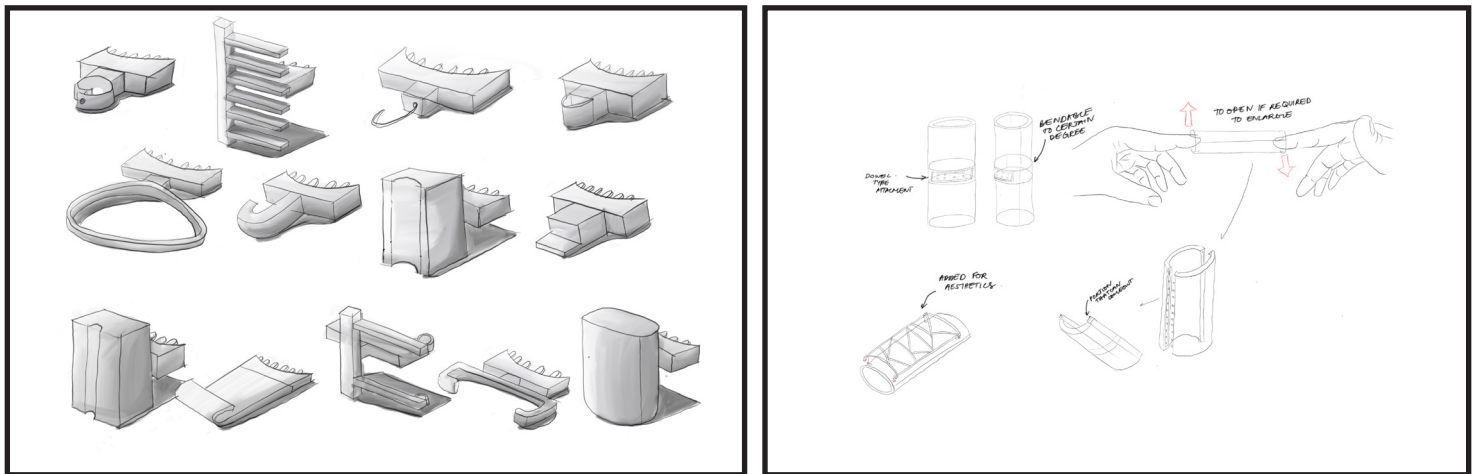
Artirings

Arti Rings are a wearable solution designed for rheumatoid arthritis patients, aimed at simplifying five key daily activities: getting up and getting ready, taking medicine, cooking, commuting to work, and working. The rings feature detachable magnetic attachments, controllable via a smartphone, to assist with these tasks. The design prioritises both functionality and sustainability, using minimal materials, and ensures a modern, discreet appearance, helping users to perform daily activities with ease while avoiding the stigma of traditional assistive devices. A key reason assistive devices fail is their medical appearance, which can cause stigma. Customisable, attachable designs transform the device into a jewellery-like accessory, reducing negative feelings and encouraging arthritis patients to use it confidently. My research found that successful assistive devices focus more on power grasps than precision grips. The attachments are designed to help arthritis patients use everyday items like a toothbrush or comb without straining muscles or joints, minimising bending.

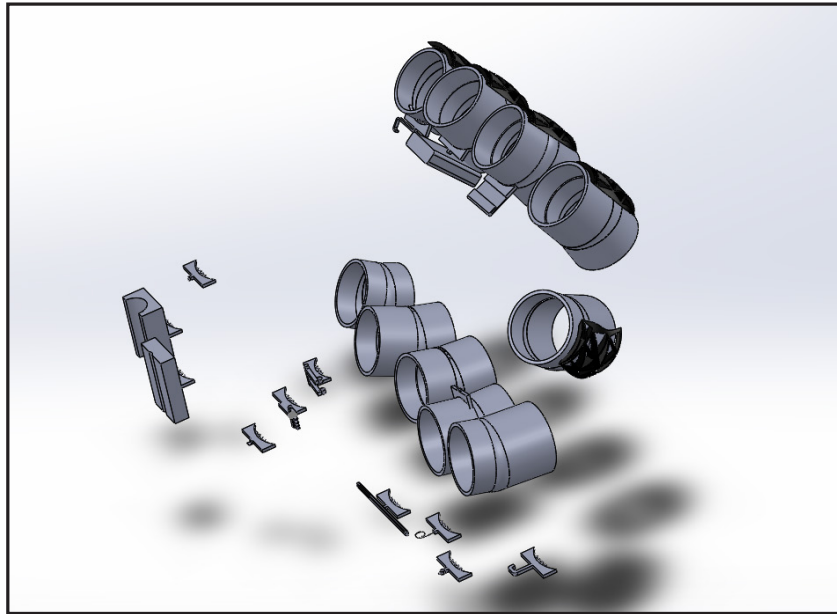




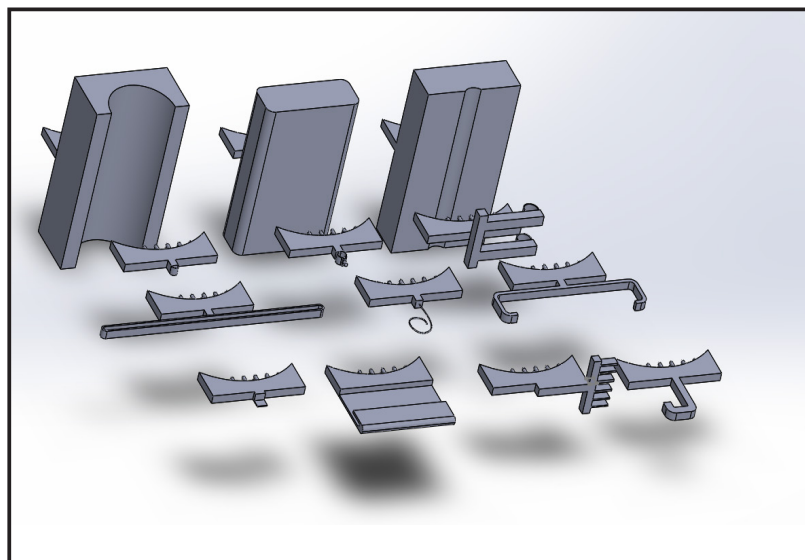
My research found that successful assistive devices focus more on power grasps than precision grips. The attachments are designed to help arthritis patients use everyday items like a toothbrush or comb without straining muscles or joints, minimising bending. The design allows limited flexibility in the dowel portion of the ring, which can be heated to help relax the joints. In the other portion, movement is minimal, reducing bone deformation. The canal-type ring restricts excessive movement, potentially slowing joint deformation in severe rheumatoid arthritis (RA) cases, alleviating stress and reducing further damage.



Typical assistive devices use attachments to connect products with a thinner diameter, like a brush, to wider ones. In my design, I've eliminated the need for excess material by creating attachments only for the fingers. This reduces material use, cutting both cost and weight, as assistive devices are typically 43 times more expensive. The sketches show how each attachment helps the user. Made from neoprene, a material used in protective gear, it provides grip and acts as an insulator, protecting against burns during cooking. "One size fits all" does not apply to assistive devices. Therefore, I've added an adjustable portion that extends with the push of a button to accommodate swelling increases or to customise the size of the rings, user simply needs to push the square button.



The final design features a customizable attachment at the upper part, which is specifically crafted to make the assistive aid appear more like a fashionable accessory or piece of jewelry. This design is particularly aimed at addressing the stigma often associated with assistive devices, especially for women, as arthritis predominantly affects them. Approximately 60-70% of people with arthritis are women. By making the device visually appealing, it can be worn in public without drawing negative attention, helping to normalize its use. The attachment is a dowel-type design with magnets at both ends, enabling easy attachment and detachment. All attachments are stored in a box, with a larger magnet for convenient removal, which helps prevent the device from being stigmatized. The magnetic system also allows for easy customization, as each attachment can be magnetized or demagnetized in the desired space, making it effortless to wear.

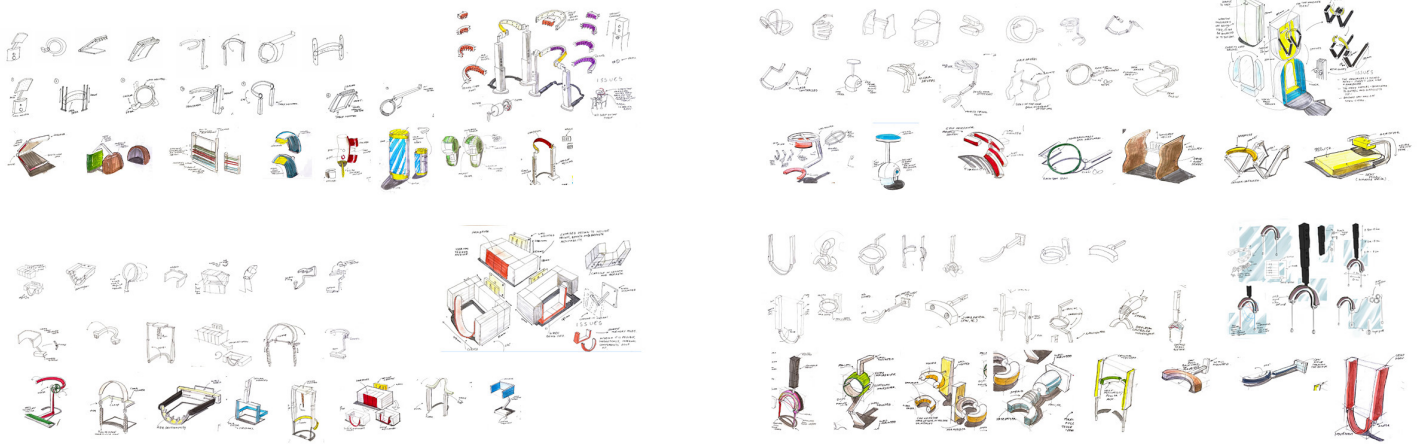


As part of future evaluation and improvement, I plan to incorporate a heating element into the curved part of the device. This addition would help reduce joint stiffness and pain by providing localized heat, making the device more comfortable and promoting flexibility and ease of movement, especially when worn for extended periods. The overall design is also aimed at reducing bone deformation when used at an early stage, helping patients maintain independence for a longer period.

Inclusive hair drying product

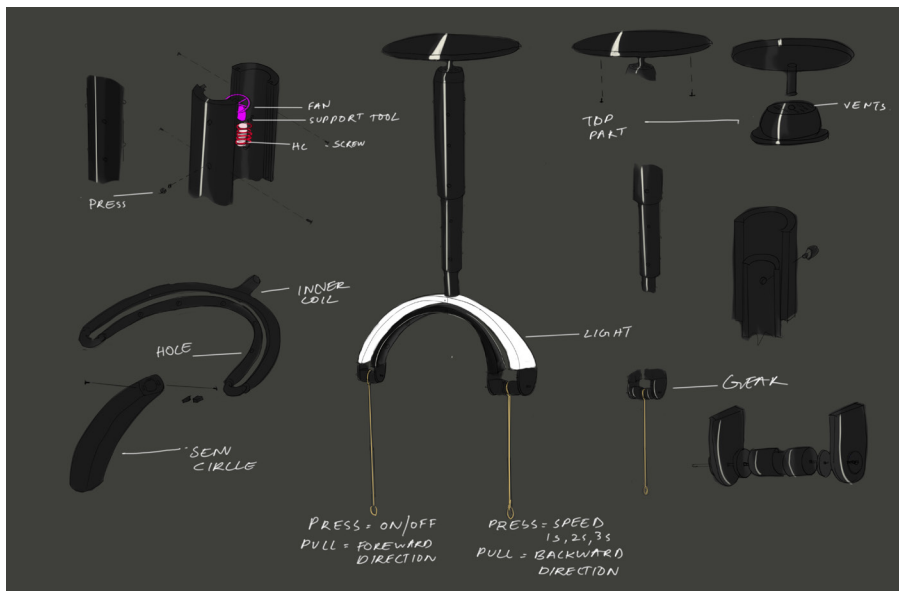
This project focuses on designing an inclusive hair-drying solution specifically for individuals with rheumatoid arthritis (RA), addressing the physical challenges posed by joint pain, stiffness, and reduced mobility. By combining user-centered research with innovative design, the project aims to create a hands-free, ergonomic, and aesthetically pleasing hair dryer. This solution enhances accessibility, minimizes joint strain, and empowers RA patients to perform daily tasks independently and comfortably.



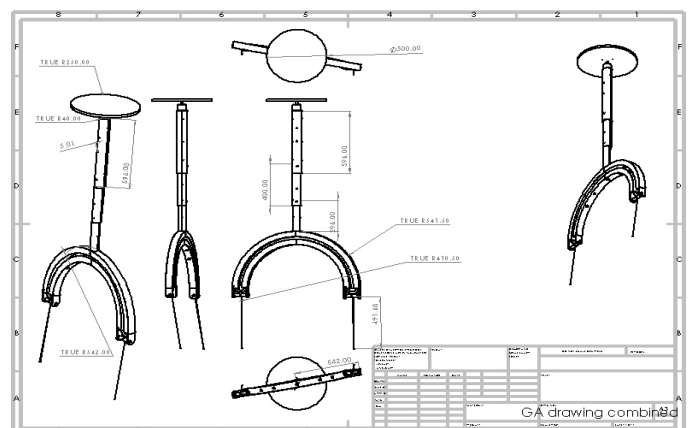
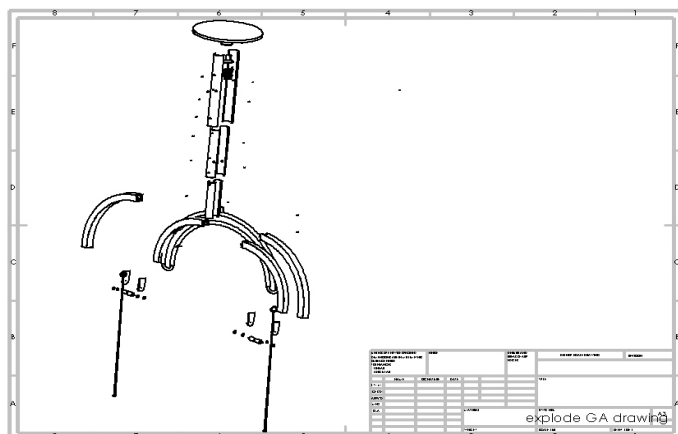


The design process progressed through four key stages. Stage 1 began with video observations of RA challenges, generating creative but impractical ideas. Stage 2 incorporated 5th to 99th percentile anthropometric data to ensure usability. Stage 3 involved disability simulations, providing insights into feasible postures and movements. Stage 4 analyzed hairdryer mechanics to integrate essential components.

At each stage, a pros-and-cons evaluation refined the design, ensuring practicality and user-friendliness for RA patients.

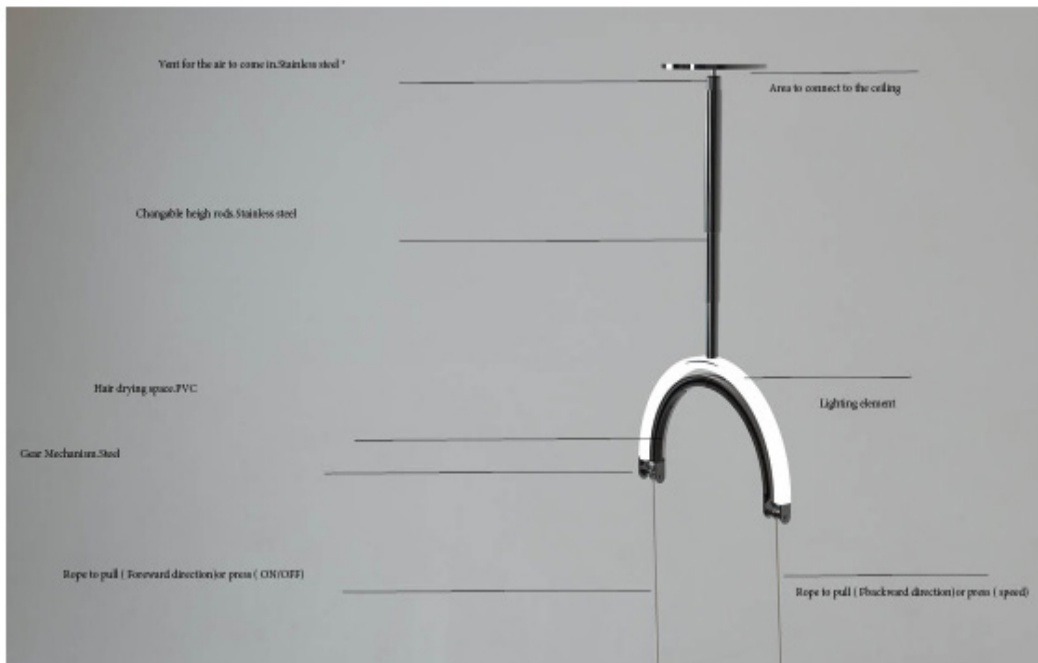


The final design features a hands-free hairdryer tailored to RA patients, with an integrated lighting mechanism for aesthetic appeal. Its inner semi-circle has five strategically positioned air holes, ensuring even air distribution across the hair while minimizing the need for manual adjustments. The product's height-adjustable, user-friendly design reduces strain on inflamed joints, offering a practical solution for those with limited upper body mobility. General Assembly (GA) drawings provided technical specifications and detailed layouts of the product components.





A detailed CAD model brought the concept to life, illustrating its functional and ergonomic elements. The rendered version showcased the product's polished design, emphasizing its practical and aesthetic features aimed at improving the daily lives of RA patients.



The low-fidelity prototype focused on testing core functionalities, including the gear joint mechanism, adjustability, and airflow distribution. Each iteration ensured the design met the unique needs of RA patients, combining ease of use with innovative solutions for accessibility and comfort.



Hobby project - Art wall



I wanted to create something that would inspire both students and staff as they enter and leave the school. As a passionate painter, I was excited when the school approved my mural idea. With help from a professional painter and a student, the project came to life. The artwork symbolizes untapped potential, emerging from beneath a cloud layer, inspiring growth and exploration. It reflects the school journey as nurturing a seed, where effort leads to beautiful outcomes. Initially planned for another wall, the mural was moved to the entrance for greater visibility, setting an uplifting tone for all who enter.



The process of creating the mural involved several careful steps. First, I created gridlines using powder and thread to ensure accurate proportions. Then, I drew the main picture with chalk as a guide. I painted the background with multiple layers, ensuring each layer dried completely before adding the next coat. This process was repeated until the background was fully set. Afterward, I added the final details to complete the artwork. To ensure durability, I applied enamel, again allowing each layer to dry before proceeding to the next, ensuring a long-lasting finish.



Hobby project - personalised gift



As a farewell gift for a teacher who was leaving the school, I created a unique keychain made from multiple messages written for him by students. I began by cutting small pieces of paper, carefully burning the edges to give them a rustic look. On each piece, I wrote heartfelt messages from the students, then added a few small paintings and my own personal quote to make it more meaningful. The paper was carefully divided into two colors: light beige for the students' words and light grey for the teachers' messages, creating a distinct yet harmonious design.



To assemble the keychain, I made small holes in the corners of the papers and inserted a guitar string through them, ensuring the pieces were securely tied together with knitting thread. The result was a sentimental and creative gift that incorporated not only the messages of those who had worked closely with the teacher but also some inspiring artwork and quotes, making it a heartfelt keepsake that would always remind him of his time at the school.

