

Industrial/UX/UI Design

PORTFOLIO

Liwen Liang

2022-2023



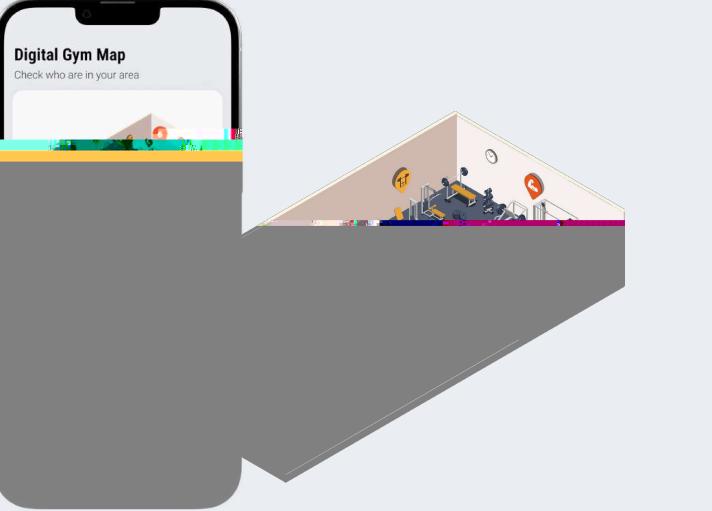
Hi, I'm Liwen!

Contents

01

Empowerfit

Oct. 2023-Dec. 2023



02

Minds in Motion

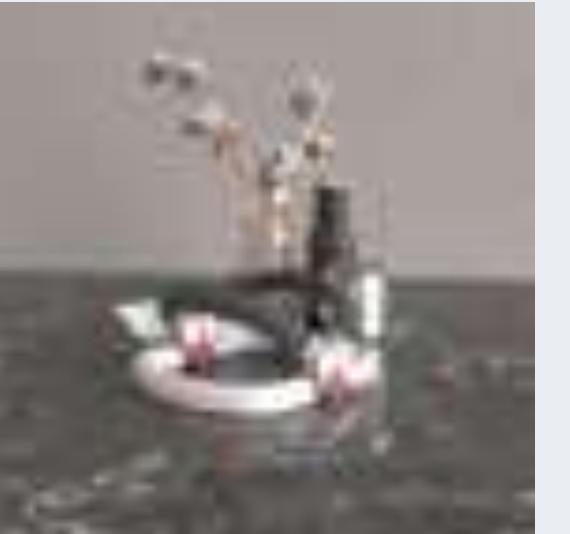
Aug. 2023-Nov. 2023



03

Motor Imagery Rehabber

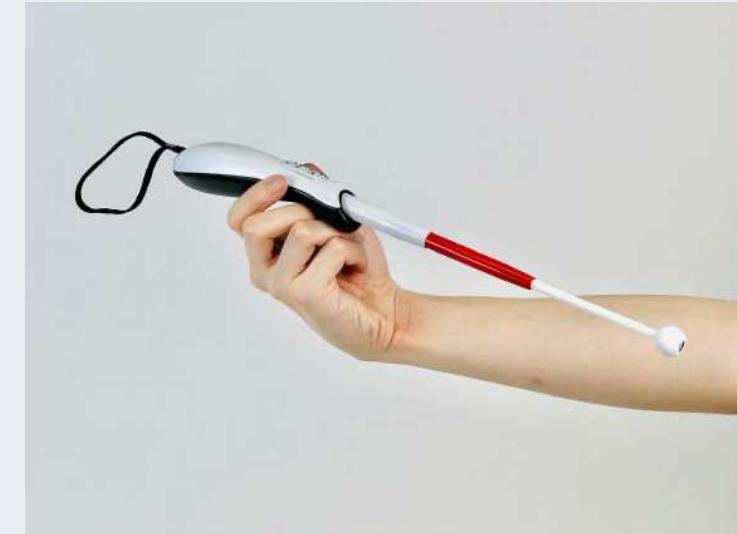
Feb. 2023-May. 2023



04

Prometheus

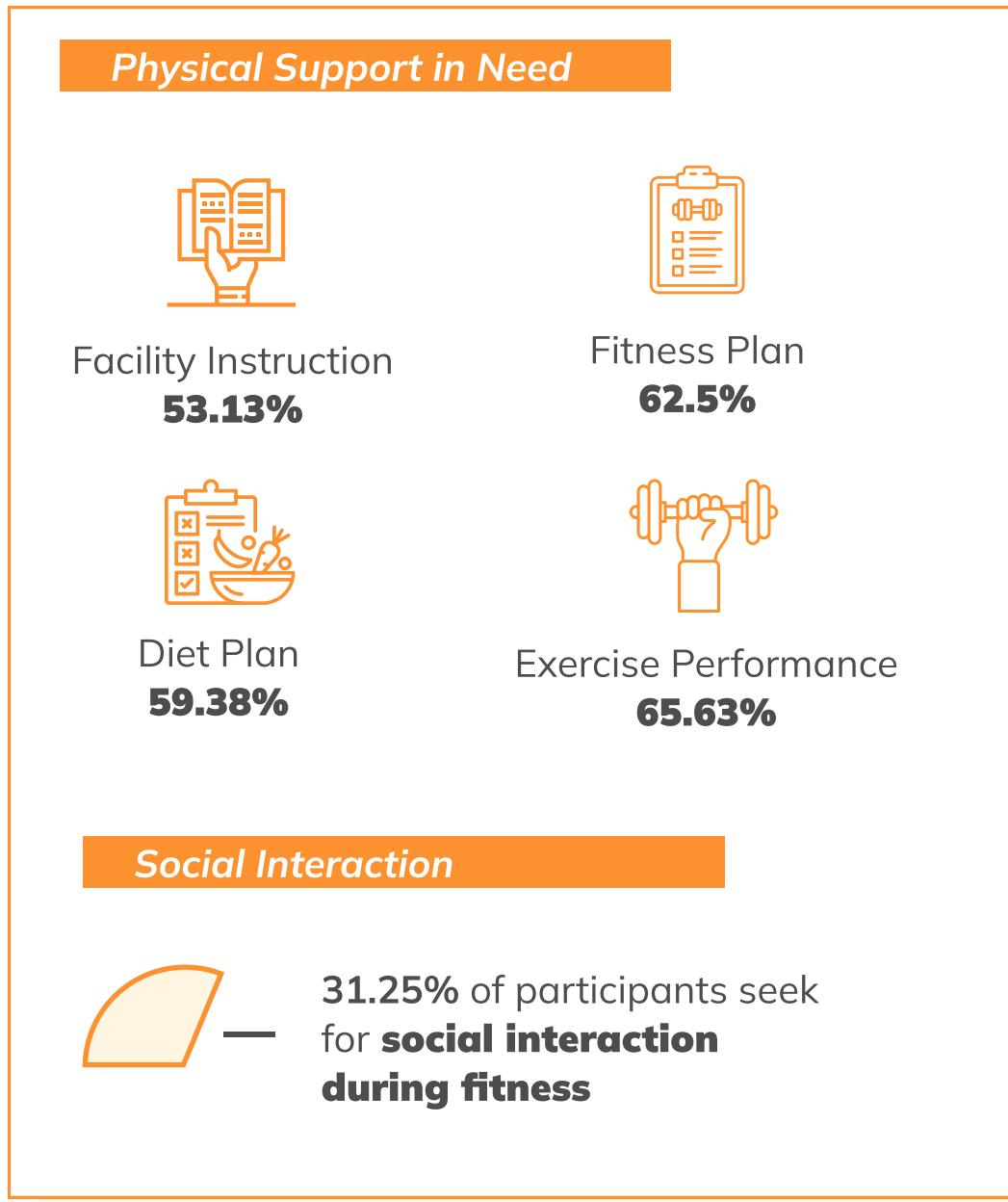
Sep. 2022-Nov. 2022



EmpowerFit

This is a gym where **Everyone Can Be A Coach**. The project aims to improve the communication and interaction to meet the user **practical and emotional needs**.

1. People has both physical and emotional needs in gym

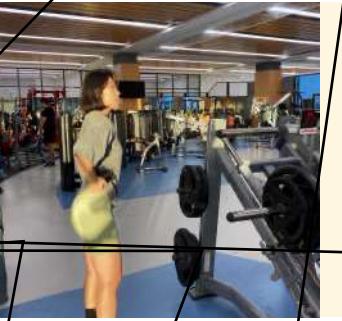


2. Exercising is a way for people to manage their anxiety and increase confidence level

User Interview

Digging deeper into user needs

With the quantitative information obtained from the previous questionnaire survey, I decided to **focus on the practical and emotional needs of the gym users** in the user interviews to further explore their needs. I also designed an interview guide based on these two dimensions.

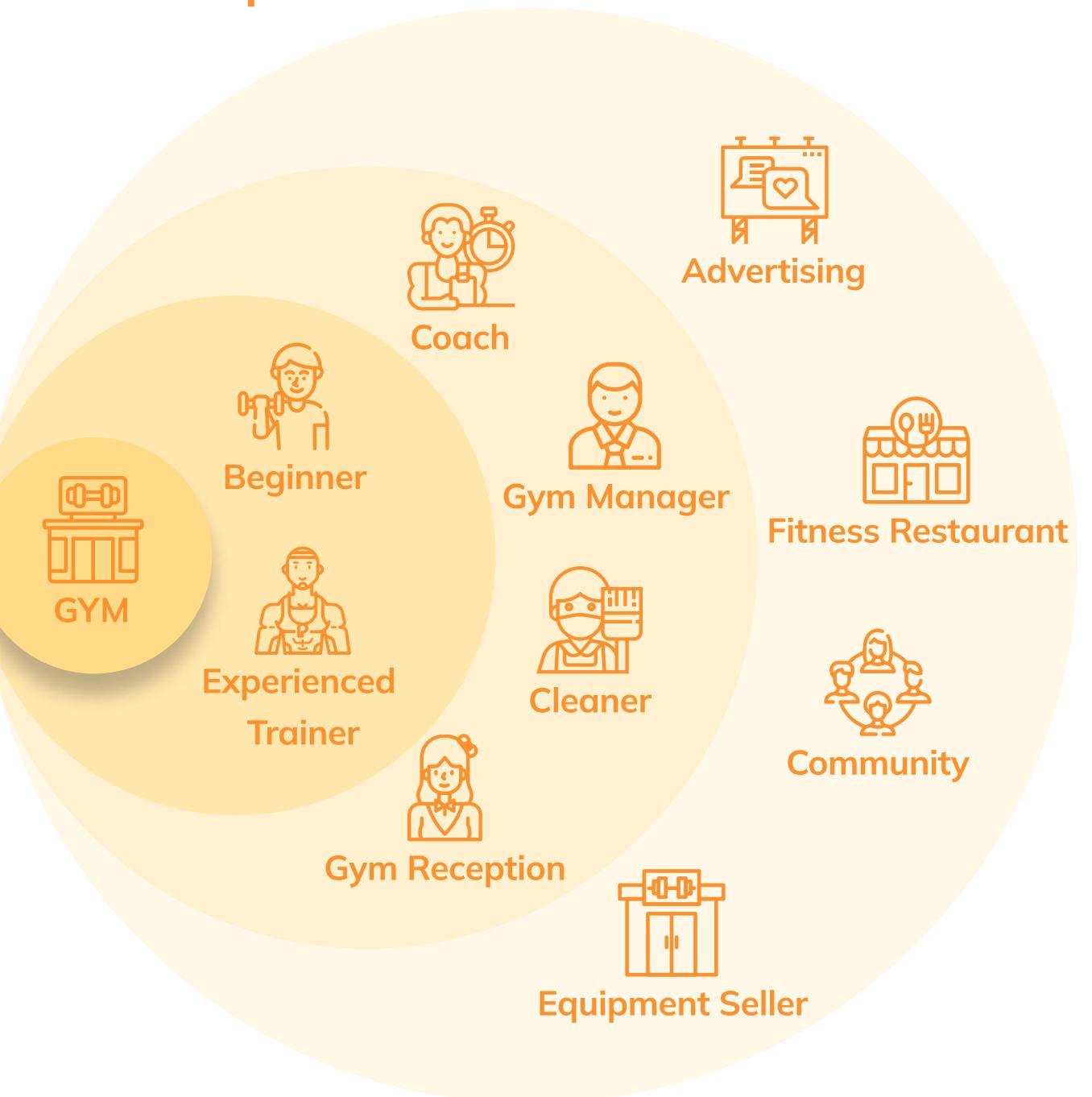


"I started to get fitness knowledge is through the video platform, but from the paper into the actual thing will still have some difficulties. From the training itself, **I still do not know how to efficiently arrange the training, and the diet plan is not very scientific**"

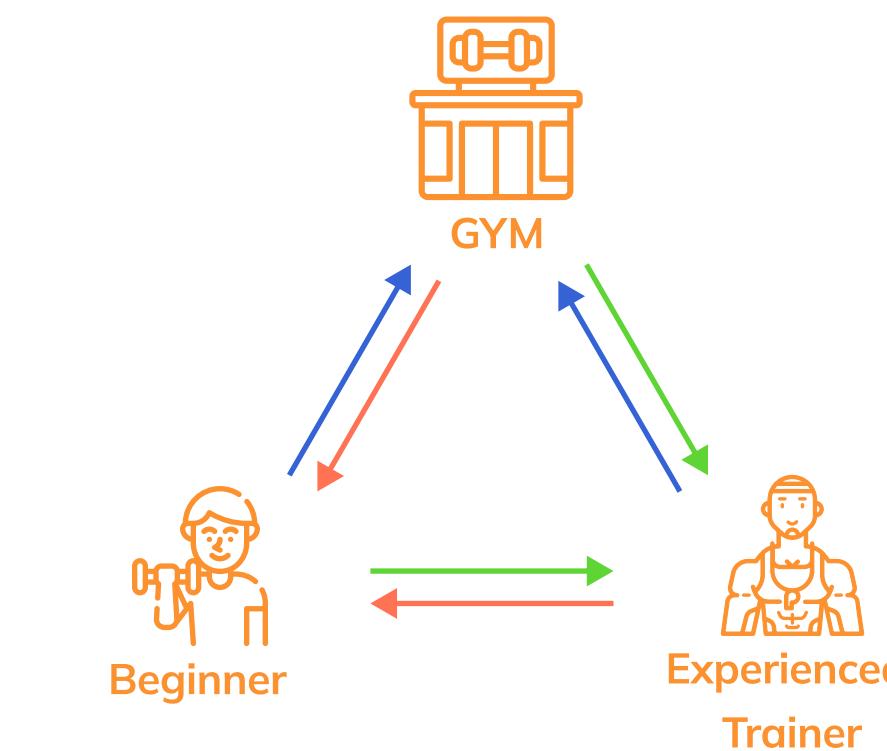
User Journey

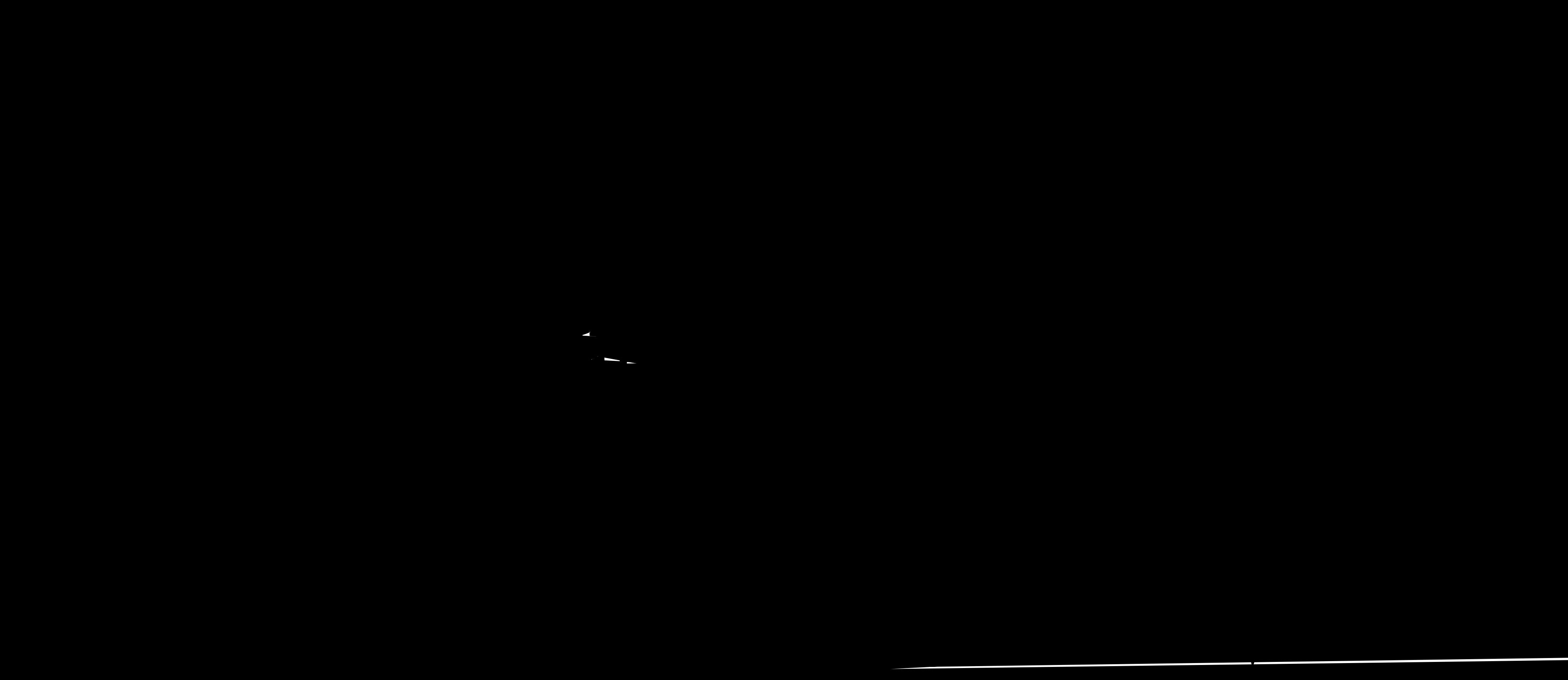
Experience the current gym from the user's perspective

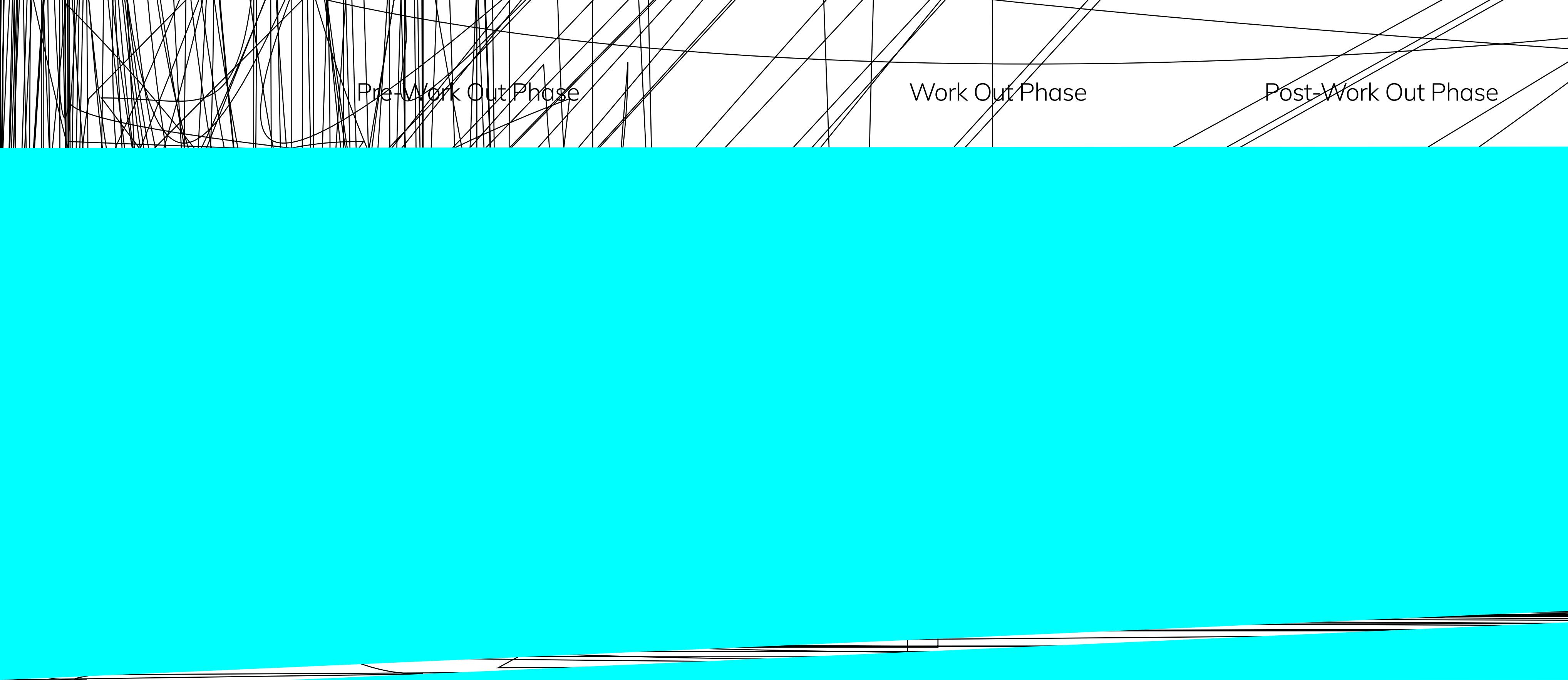
Stakeholders Map



Key Stakeholders Value Map







Pre-Work Out Phase

Work Out Phase

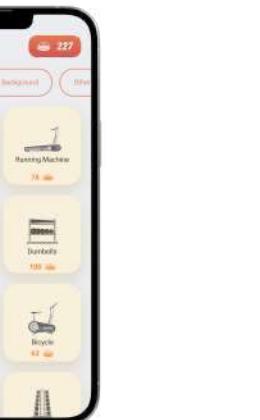
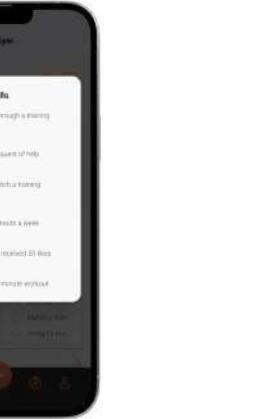
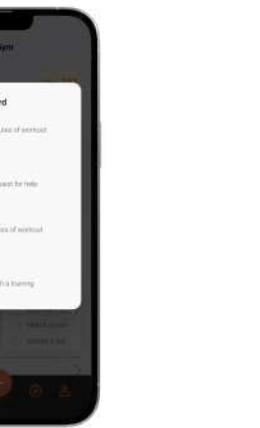
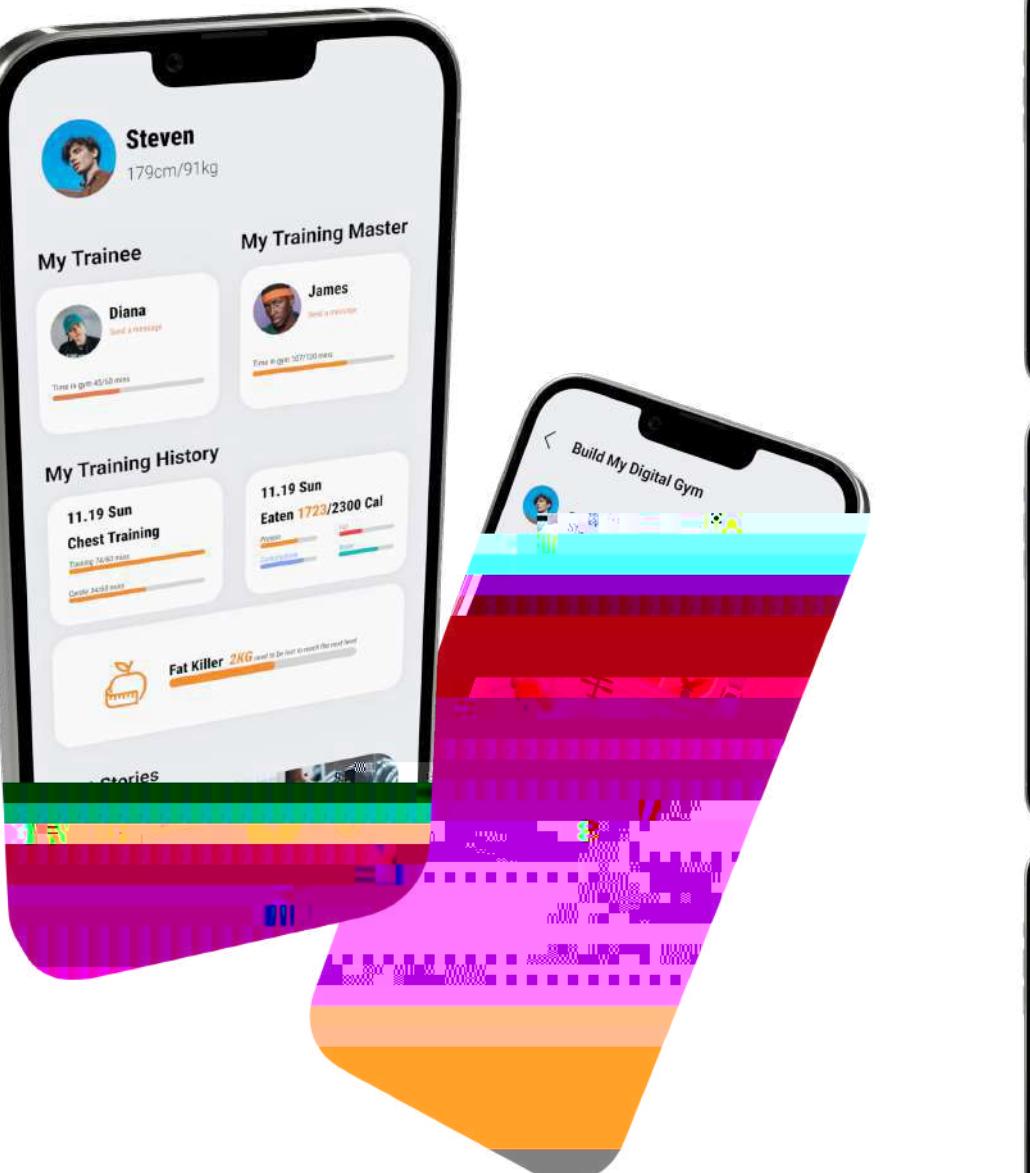
Post-Work Out Phase



Record fitness process and get digital reward

4

The App has the function that can record the fitness process including user's body data and photos, which will **help users see their progress so that they can keep doing exercise**. Users can get digital reward by completing the given tasks which related to fitness and helping others.



Digital gym map and pre-recording tutorials

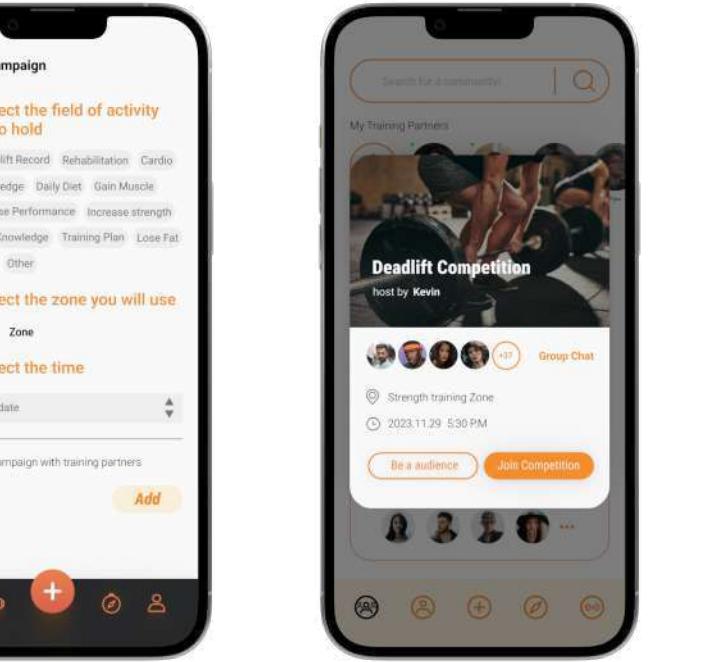
5

The App has the **digital map section which allows user to see the real time status of the gym** so that users can arrange their time more easily. And App also **provide the pre-recording tutorials** to user in case user can not get help from others.



Everybody can host an activity

Every user can host a fitness activity by using the App. They just need to **fill the details about the activity then send the notification to the community**. The activity can be small tutorial or large workshop.



In terms of the spatial layout of the gym, there is a dedicated sharing area and lounge in the gym in order to facilitate communication and sharing between different users. Each user can hold a workshop or experience sharing session in the sharing area. The lounge provides a place for trainers to socialize while meeting their nutritional needs.

7



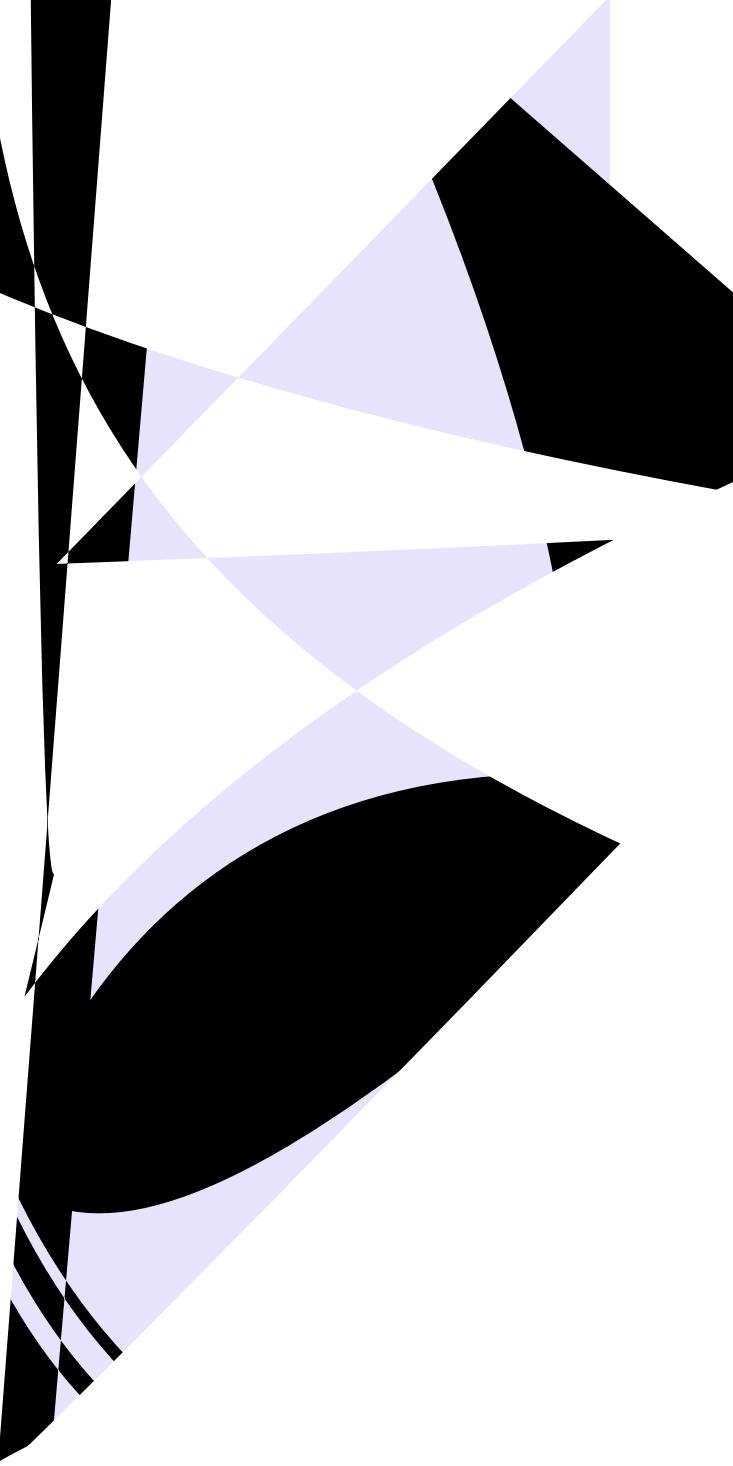


Combining traditional Chinese kids' sports and AR technology

Interactive

Design

22 N



Background

Kids' Challenge in Digital Age

In today's digital age, the rapid development of technology has created a complex environment for children.

Digital stimuli

Children are exposed to various forms of digital stimuli, such as:

• Screen time

• Social media

• Video games

• Educational apps

• Streaming services

• Smart devices

• Online education

• Digital art

• Virtual reality

• Augmented reality

• Online communities

• Digital communication

• Digital privacy

• Digital citizenship

• Digital health

• Digital safety

• Digital literacy

• Digital well-being

• Digital rights

• Digital responsibilities

• Digital inclusion

• Digital exclusion

• Digital divide

• Digital equity

• Digital accessibility

• Digital affordances

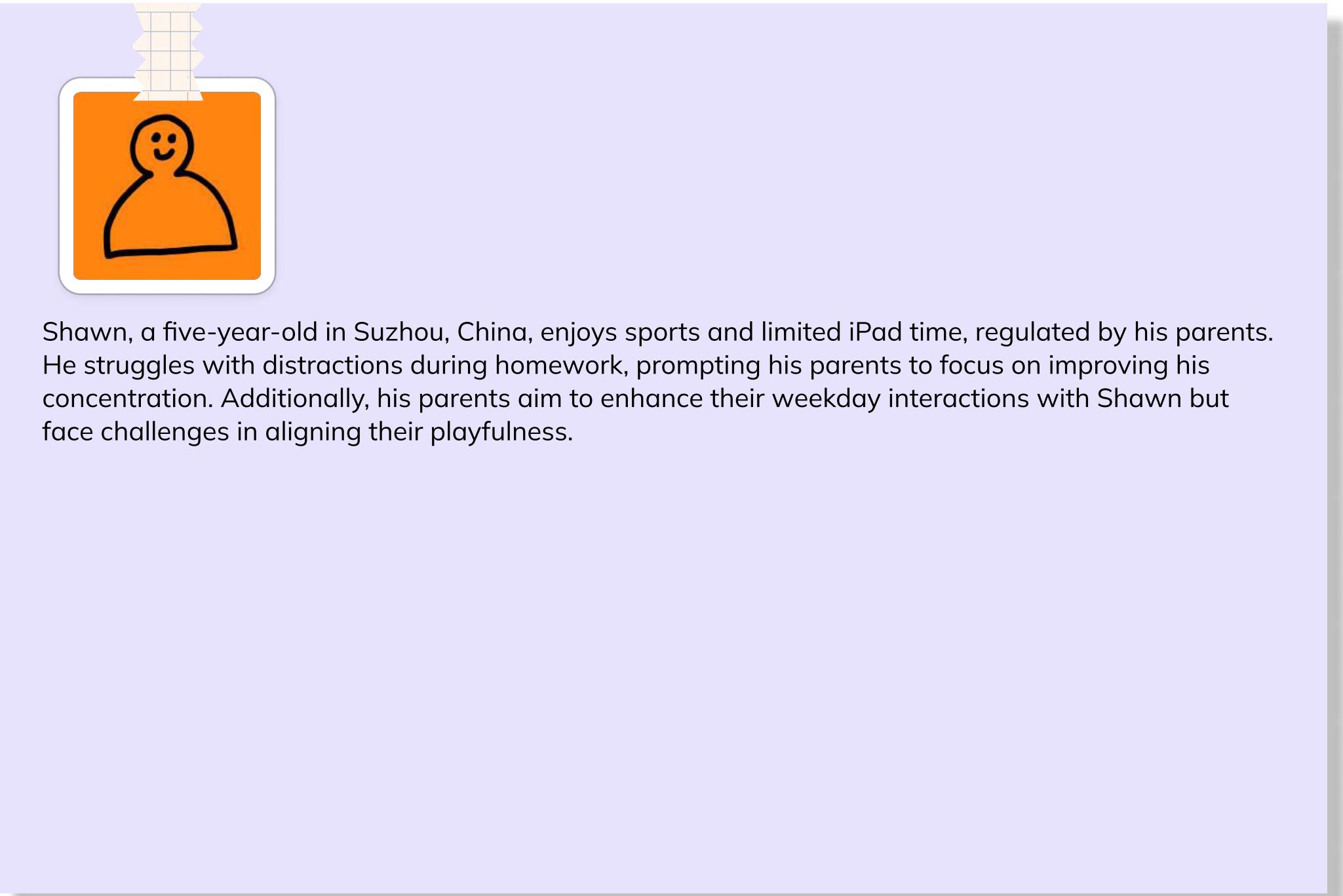
• Digital challenges

• Digital opportunities



User Persona

Considering that the age gap between children can be too big, resulting in a wide gap between the physical and mental levels, I limited the target users of this program to **4-6 year olds and their parents**.

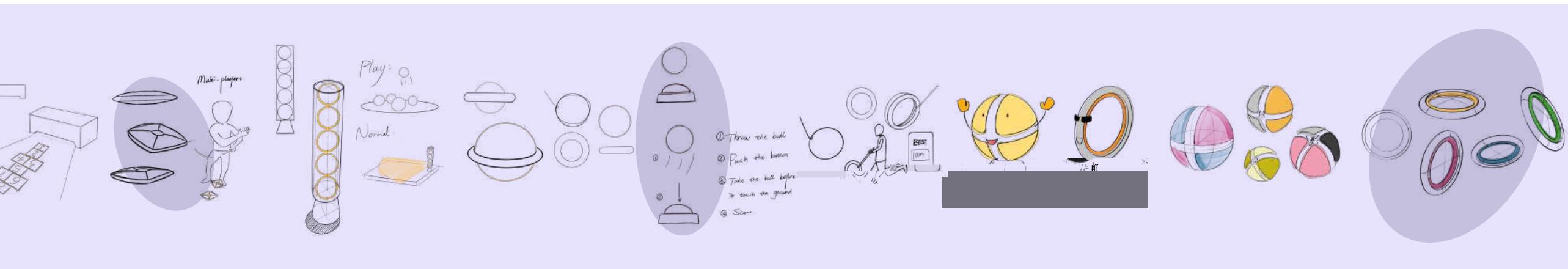


**improve children's
attention span and
enrich the parents-kids
interaction through
physical play?**

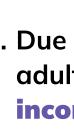
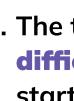
Story Board



Initial Ideas & Rough Sketches



Test & Adjustment

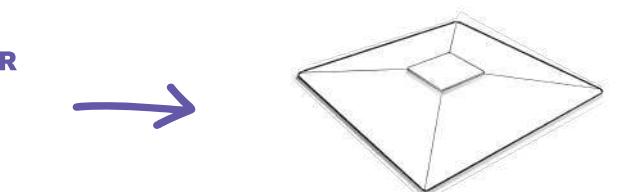


1. The traditional **iron ring** is **too thin** which makes it **difficult to handle** and not so easy for kids to get started

2. Due to the difference in height between children and adults, the **fixed handle length** may cause **inconvenience in operation**

3. In game "throw and catch", the **sphere** will **run around anywhere** which will **interrupt the game process**

4. In the process of trying out the game, I thought **AR gameplay can be added to increase user interaction**



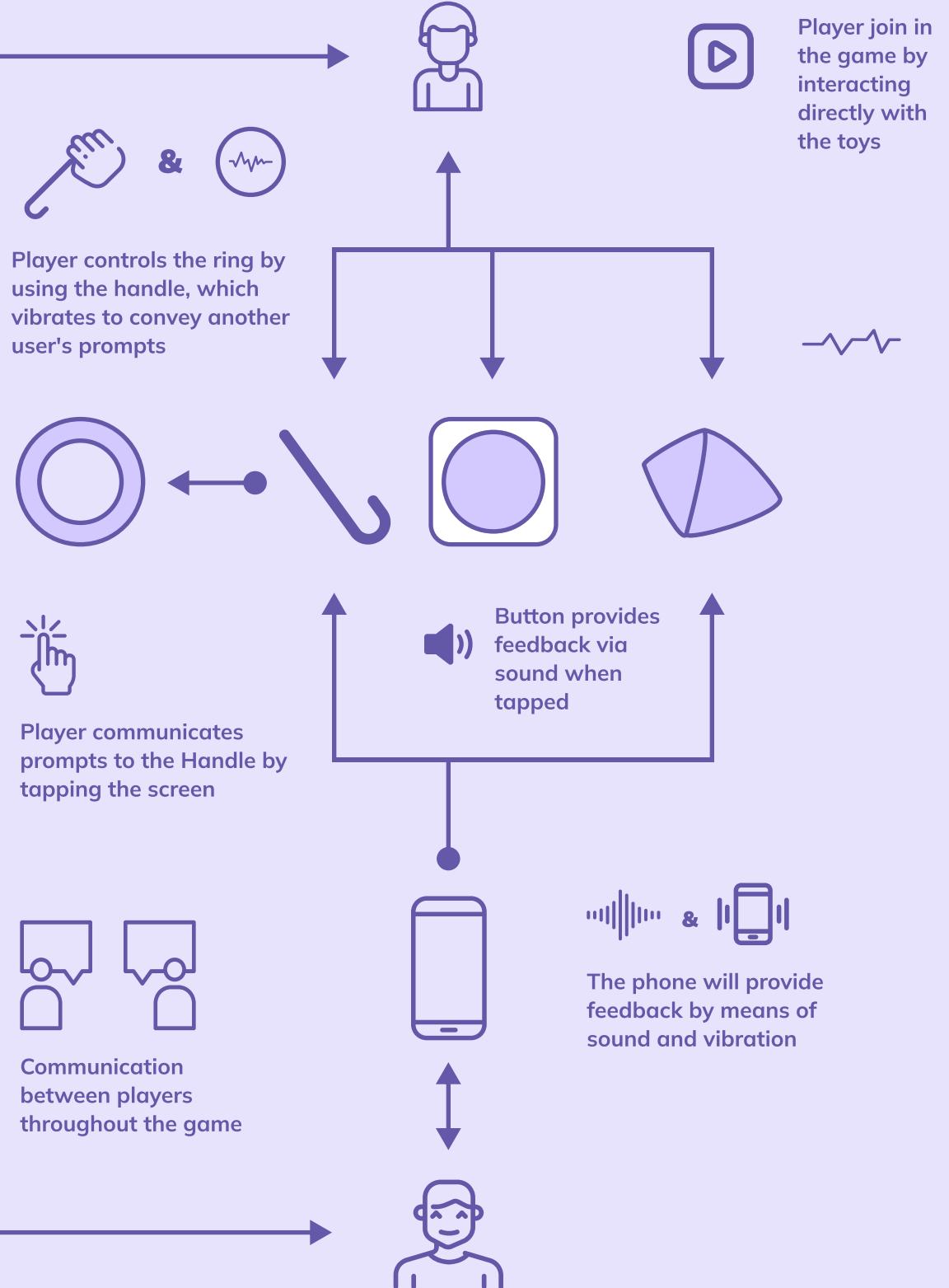
#Difficulty Grading

1. The ring takes a **split structure**, and together with a low degree of difficulty in getting started, with increased proficiency users can choose to separate the ring

#Adjustable

2. The telescopic structure of the handle ensures that it **can be used by users of different heights**

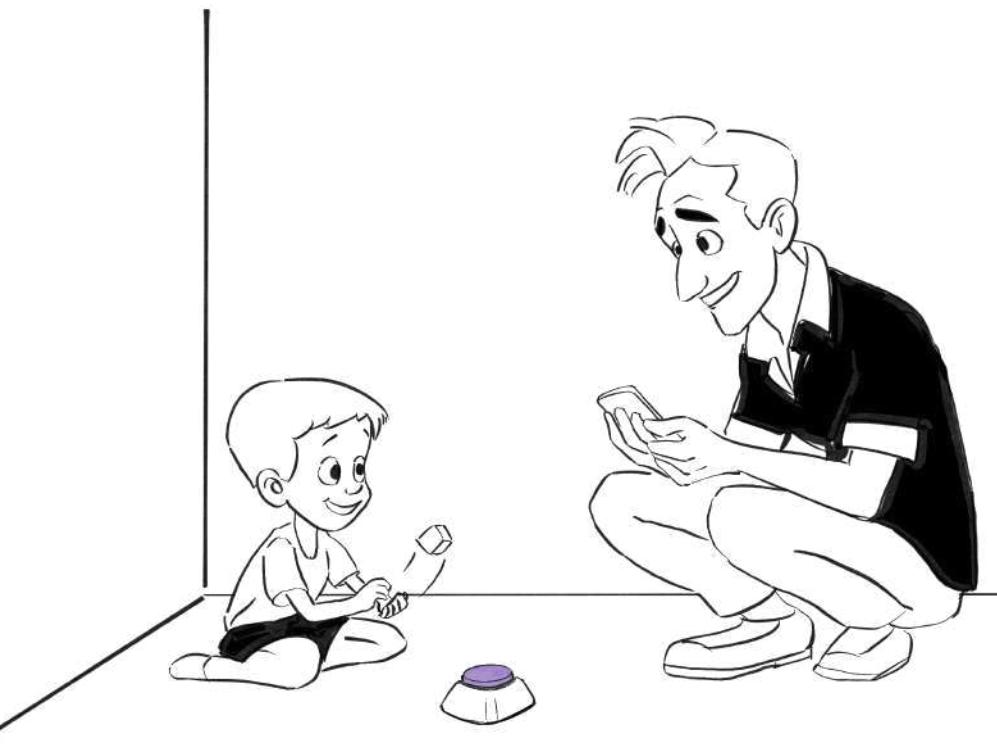
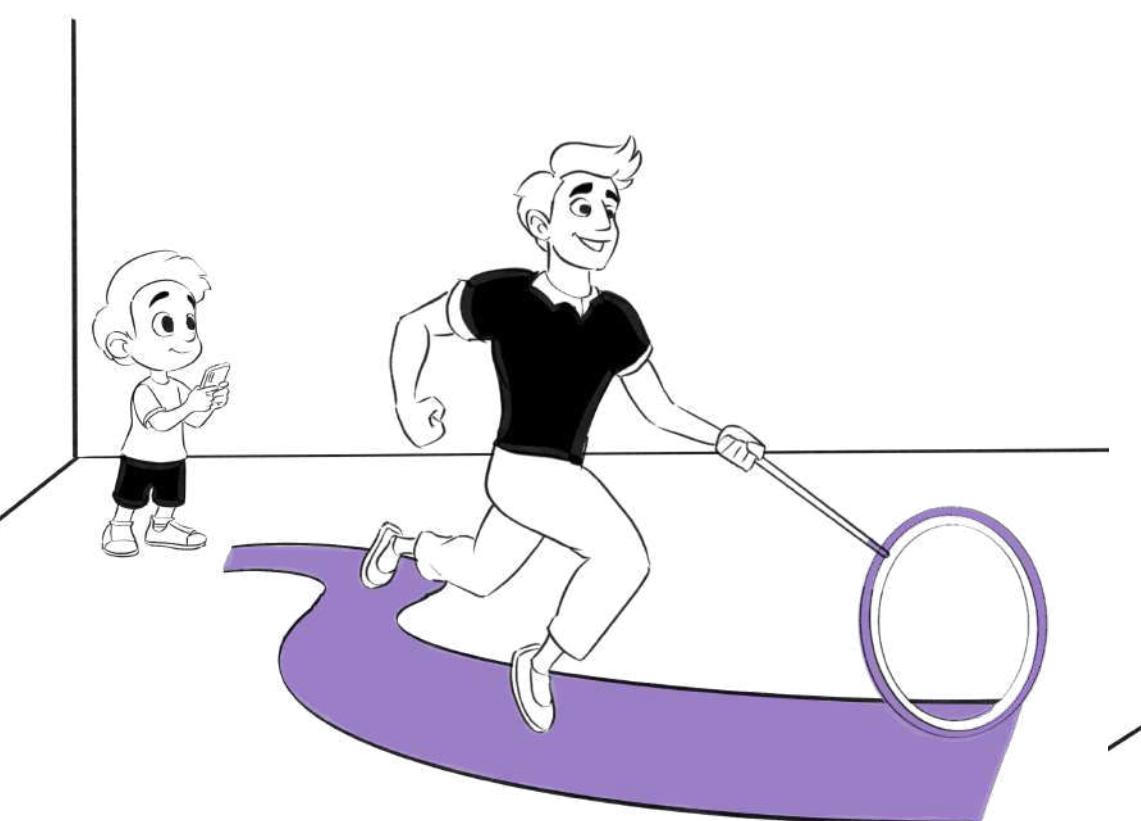
3. Buttons are used as the **feedback** in the game "Throw by sound after"





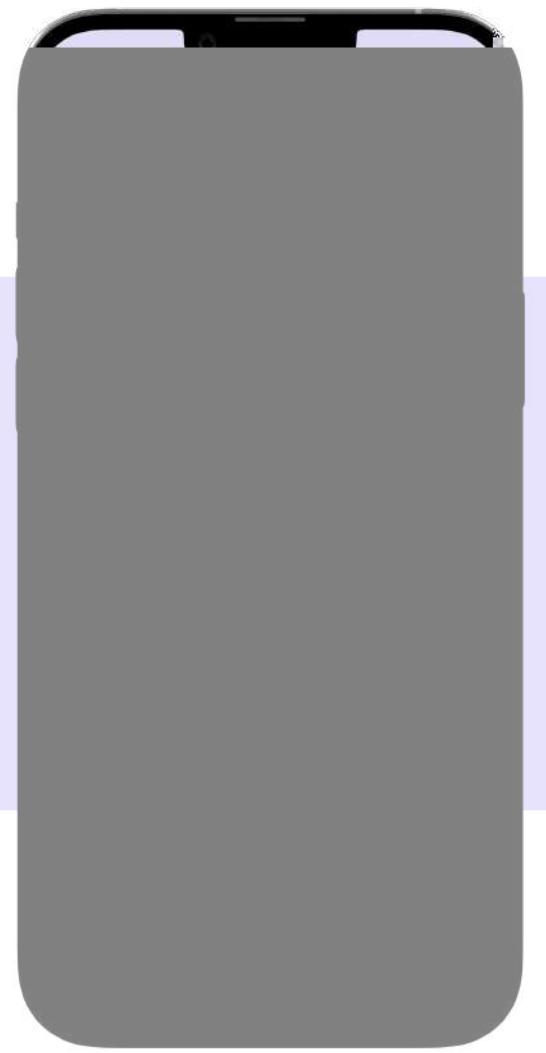
Parents and children can choose from different games through the app

1



2





Levels of varying difficulty



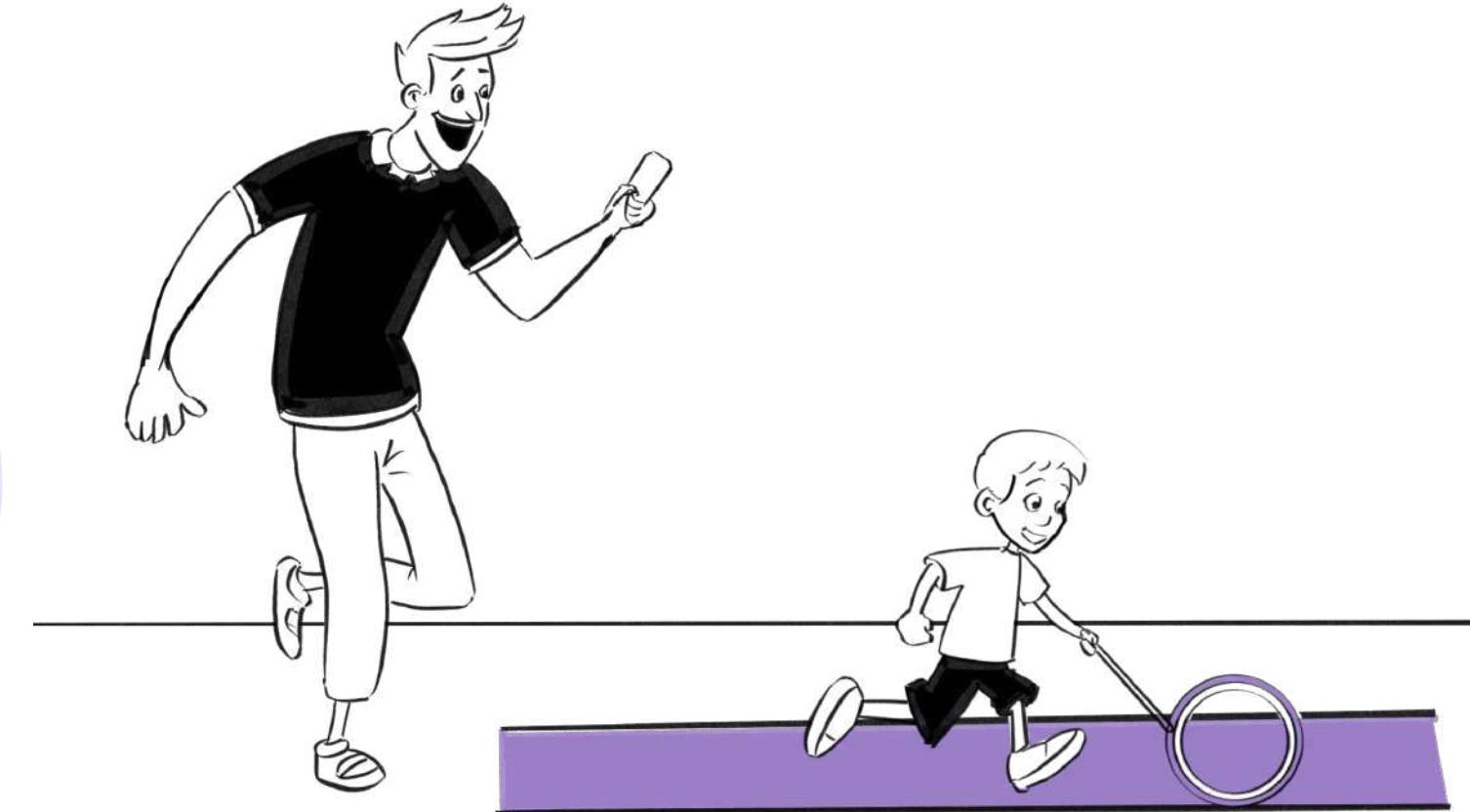
The journey will be longer with more curves and obstacles in the way.



Users can draw on the toys to make them look the way they like!

3

In other conventional modes users can also use the phone to record the game records of different players, and users can compare game scores with each other.



Multiplayer mode to add more fun



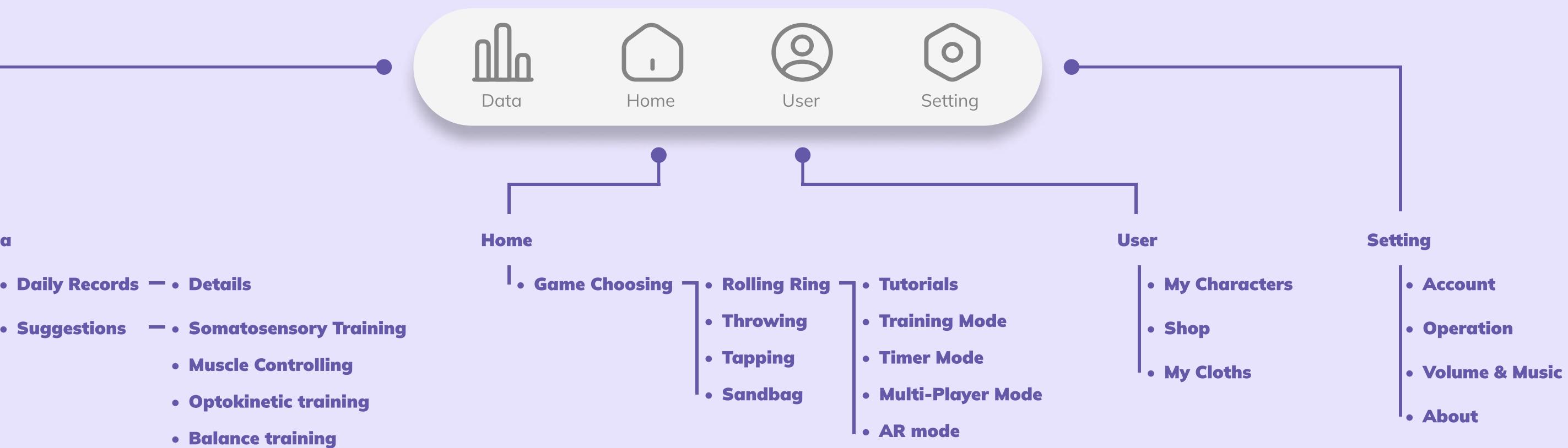


Avatars and progress tracking

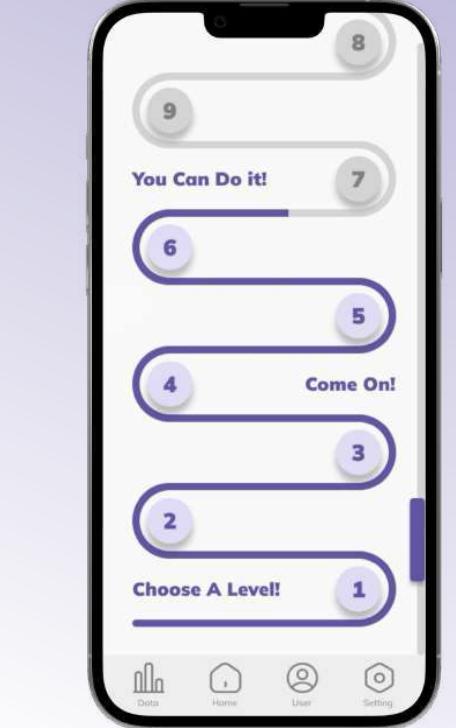
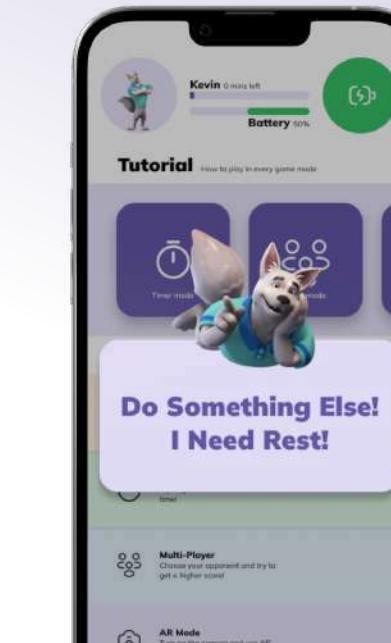
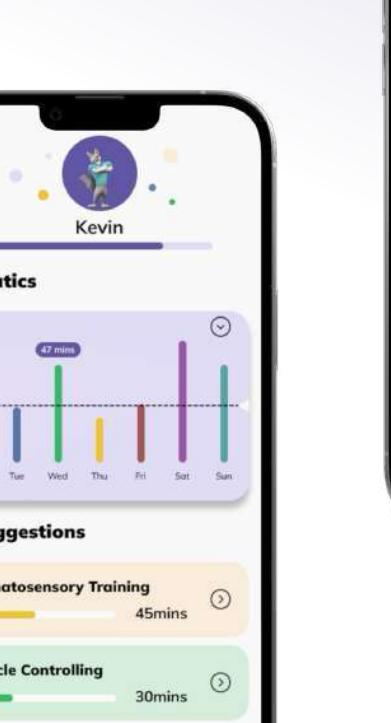
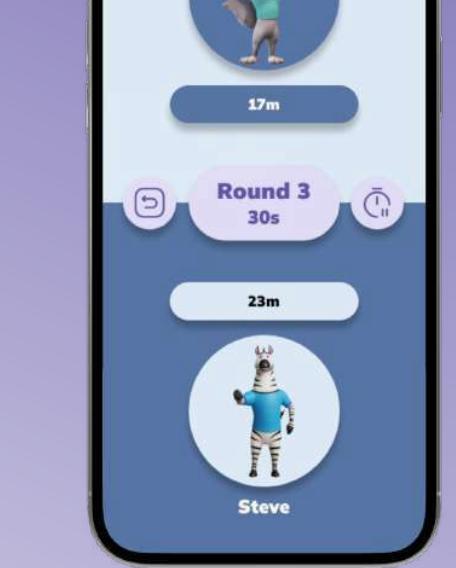
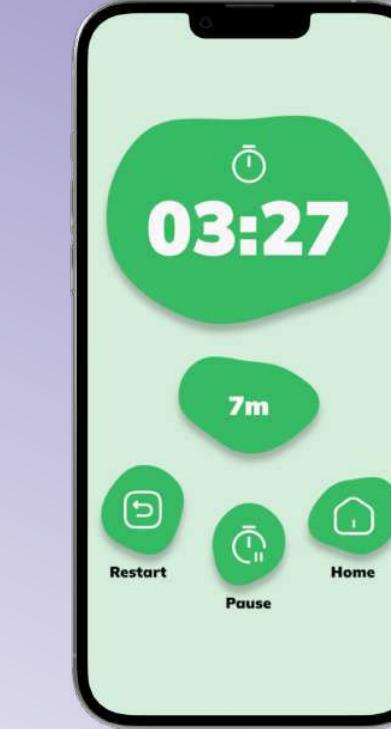
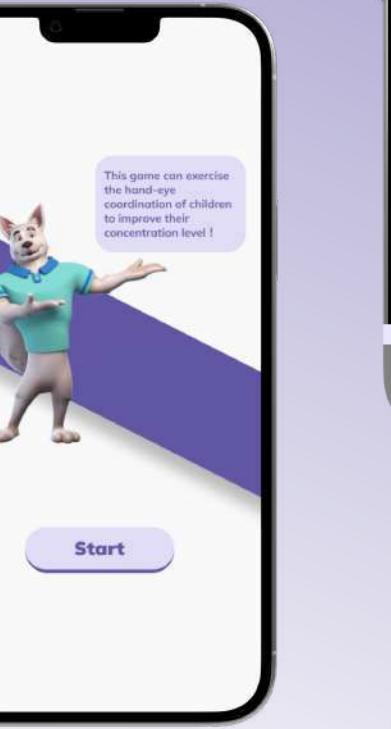
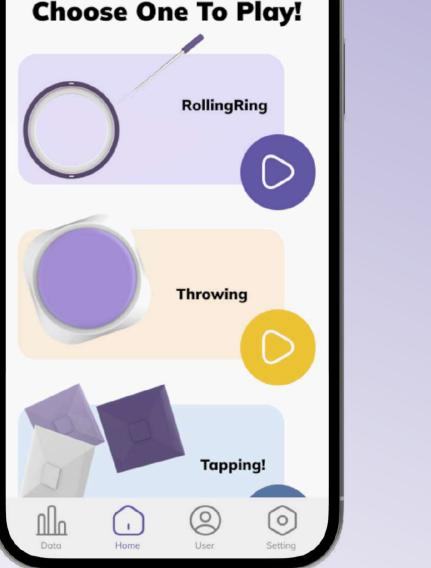
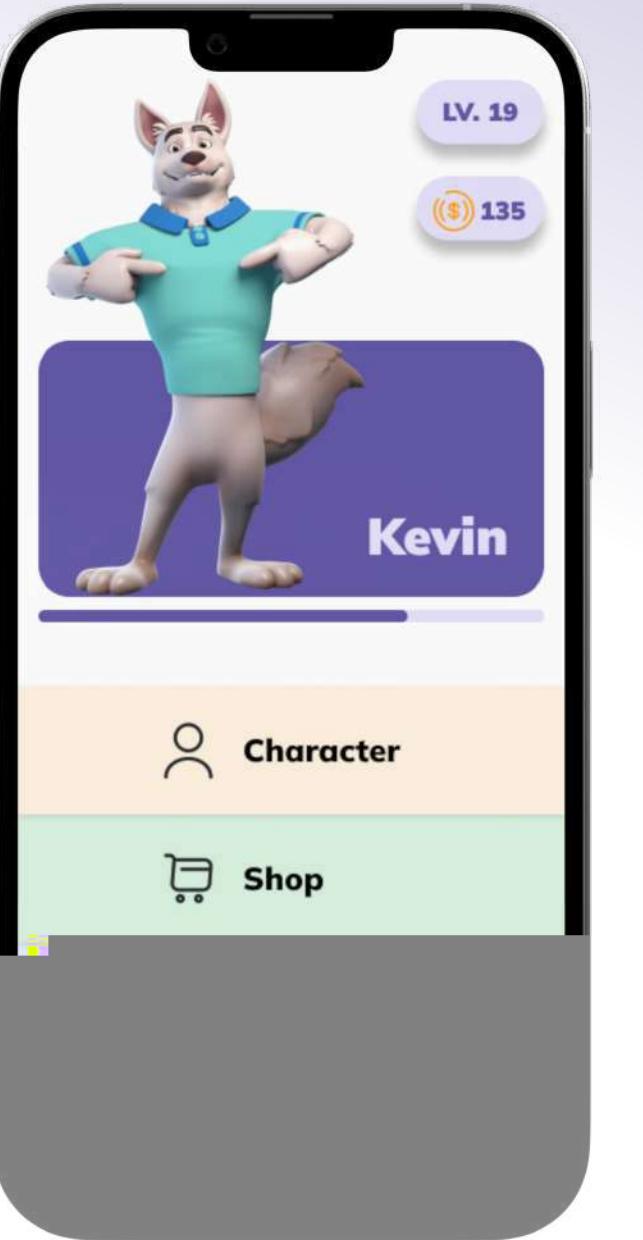
In the selection of avatars, each character represents a certain aspect of the attention level and the app also has a record of the duration of the child's attention training and suggestions.



Information Architecture



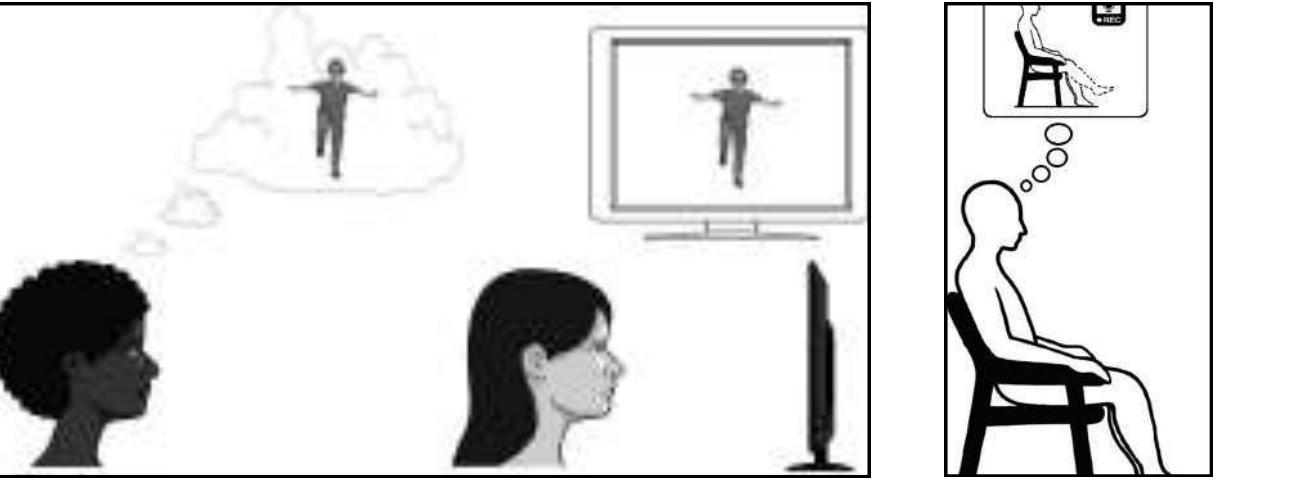
User Interfaces



Motor Imagery Rehabber

This is an EEG cap which focus on **Motor Imagery** field. This project improved the user acceptance towards EEG cap by **optimizing its structure and appearance**

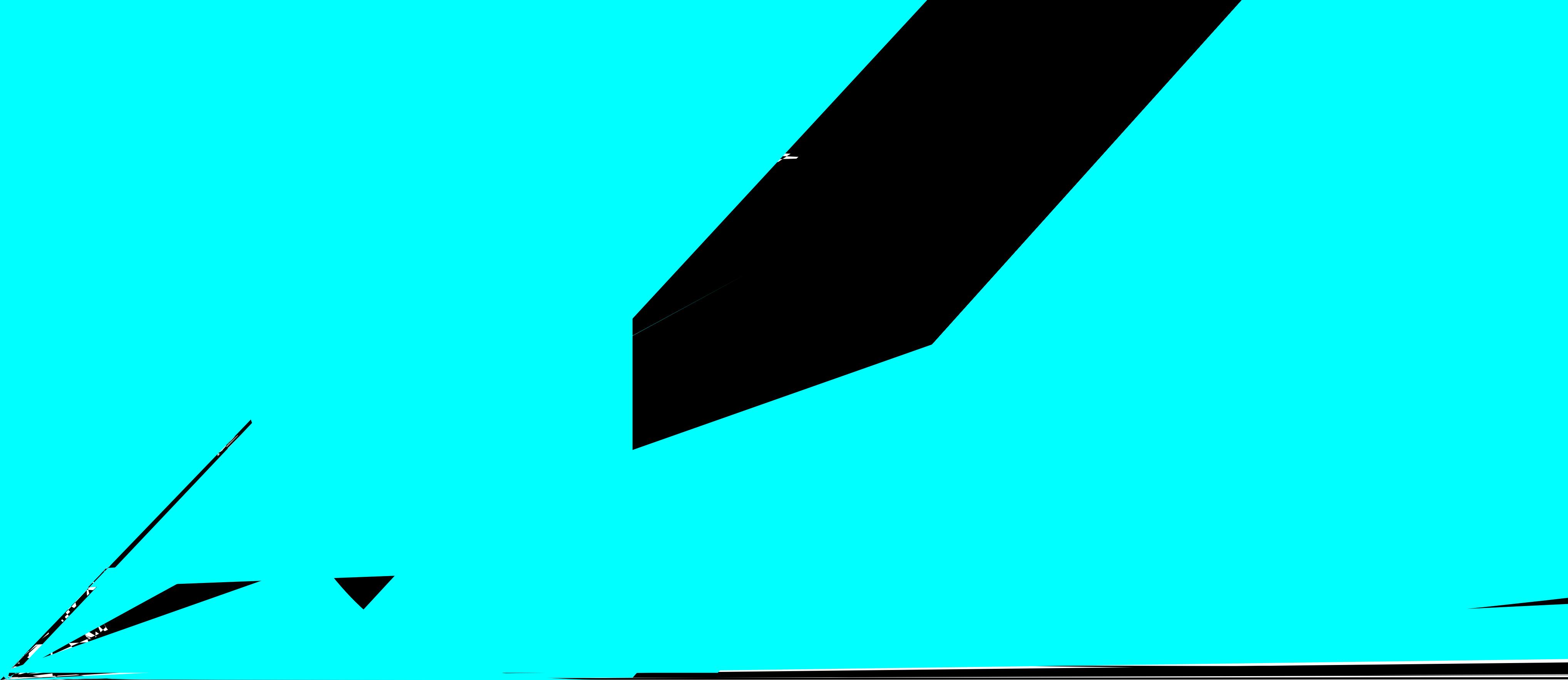
What is Motor Imagery(MI)?



Motor imagery(MI) can be defined as **a dynamic state during which an individual mentally simulates a physical action**

MI is a **rehabilitation technique** that offers a means to restore lost motor function in stroke patients when used in conjunction with conventional physiotherapy procedures

Brain Computer Interface - Hardware Foundation for MI



1st User Study

User Study Process

1st User Study

- Aim
- User Study Procedures
- User Interview
- 1st Round Ideation

2nd User Study

- Improvement
- Questionnaire Design
- Data Analysis
- Result

Aim

The aim of this user study is to **investigate the users' acceptance of the current saline EEG cap** and collect their views and opinions about the EEG cap.

Procedures to Wear an EEG Cap



1 Prepare the electrodes of the EEG cap



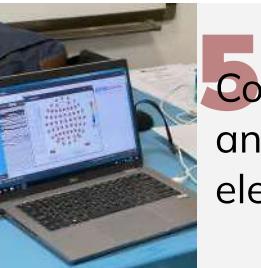
2 Measure the data of head



3 Put on the EEG cap



4 Adjust the EEG cap by replenishing saline



5 Complete given task and pay attention to electrode quality



6 Take off the EEG cap and clean briefly

Interview

I interviewed each of the five volunteers after completing the brain cap experience for them. The interviews were

Questionnaire:

1. Your first impression of the name "EEG cap" (for participants with Chinese nationality)
2. What are your expectations for the EEG cap (what features you imagine the cap should have)
3. What are your main concerns about wearing the EEG cap?
4. Do you think the EEG cap is easy to wear?
5. Do you think the EEG cap is easy to remove?
6. What is the psychology of wearing the EEG cap in public?
7. When did you feel uncomfortable (or painful) wearing the cap?
8. Are you comfortable with the placement of the electrodes?
9. What is the main source of discomfort?
10. How do you think the EEG cap can be improved to increase its acceptance of the public?
11. How do you think it takes to get rid of the disease?

12. What do you think it takes to get rid of the disease?







Renders



Details

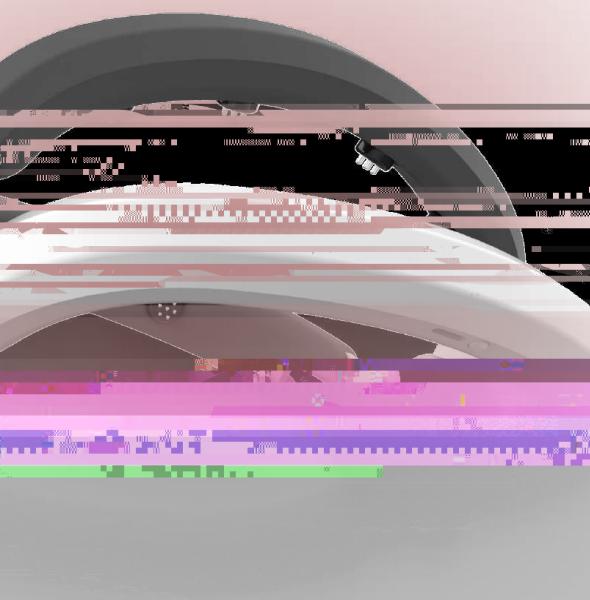
Because this cap focuses on capturing MI EEG signals and capture MI EEG signals, this is why this cap traditional EEG caps.

The appearance of the cap

By doing this it can minimize user resistance to brain caps and increase their acceptance.

Additionally, it has brought by the original name.

to effectively that is very different from



Easy to Adjust

Customizability

Reflection

Virtual Reality BCI Rehabilitation System

4

Prometheus

This is a blind cane which designed for **visual impaired** people. This cane can be used for **navigation purpose** when VI user want to take subway.

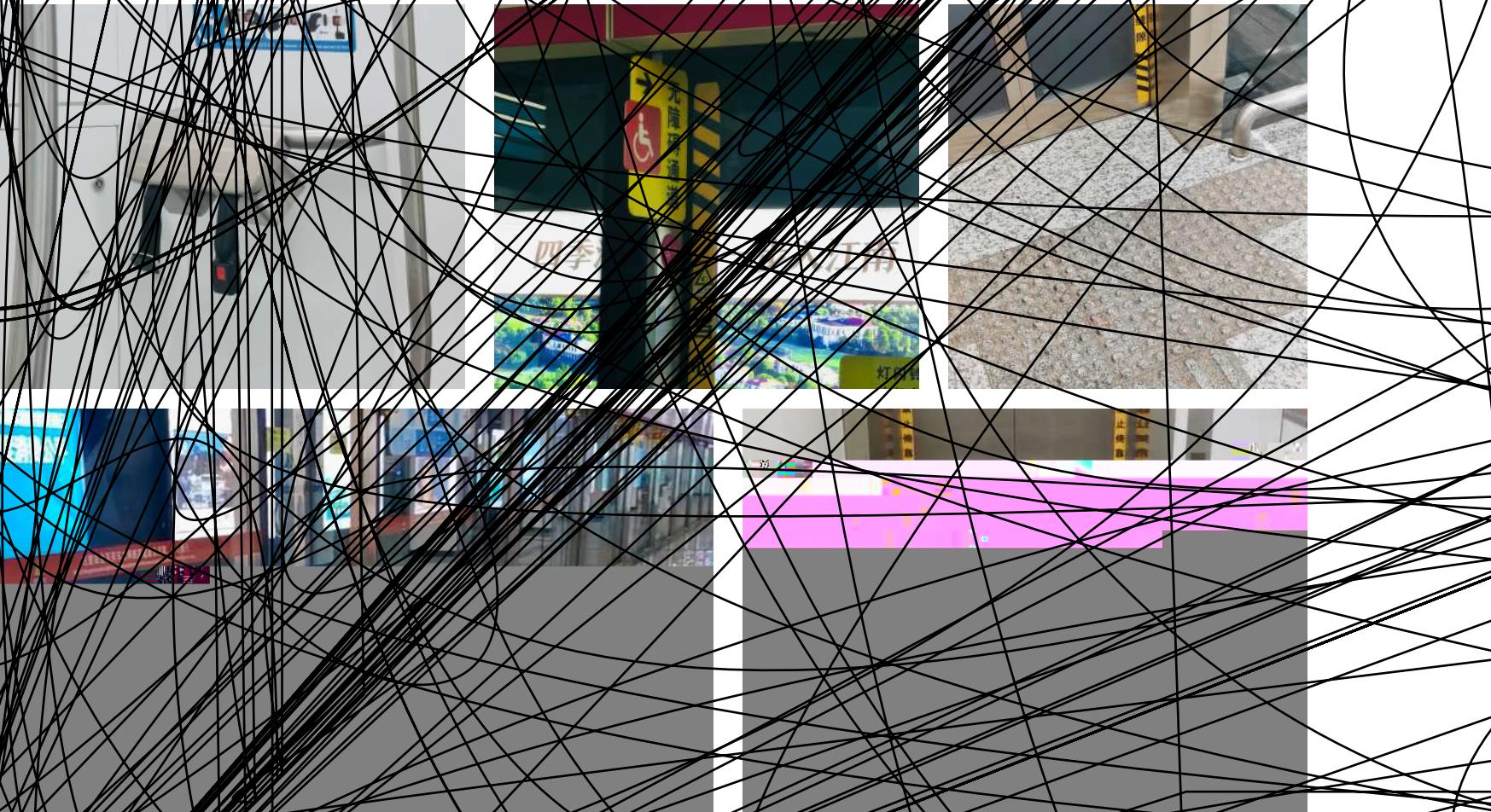


our distance vision impairment.
Therefore **17.21 million** people with visual
impairment are estimated to have low vision.

here on

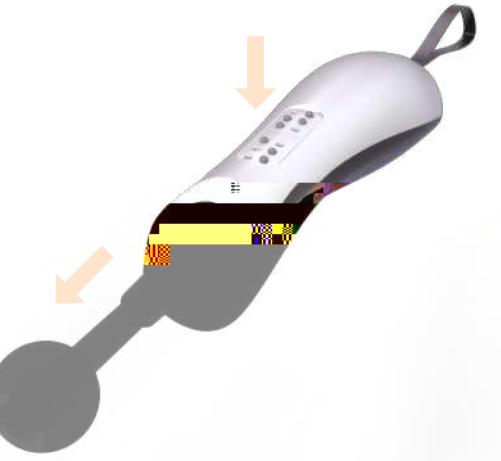
Environment Observation

I went to a subway underground station and did an environment observation. The aim of this step is to find current and potential problems existed in the underground station.



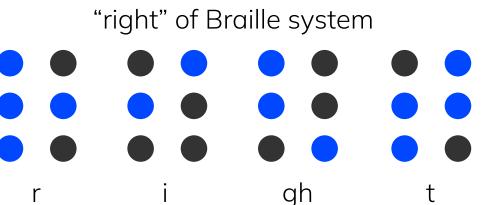
User Journey

The User journey shows how the emotions of visually impaired people change during a subway trip.



This cane generated 3 basic features in terms of **detecting, informing and vibrating**. These features guarantee that the MVSI could safely take the underground with less problem.

The length of the cane has been reduced as well. The normal blind cane can not work well in underground environment because of the **crowded space**. The reason why I keep the stick part is because the stick could **remind others the blind identity**.

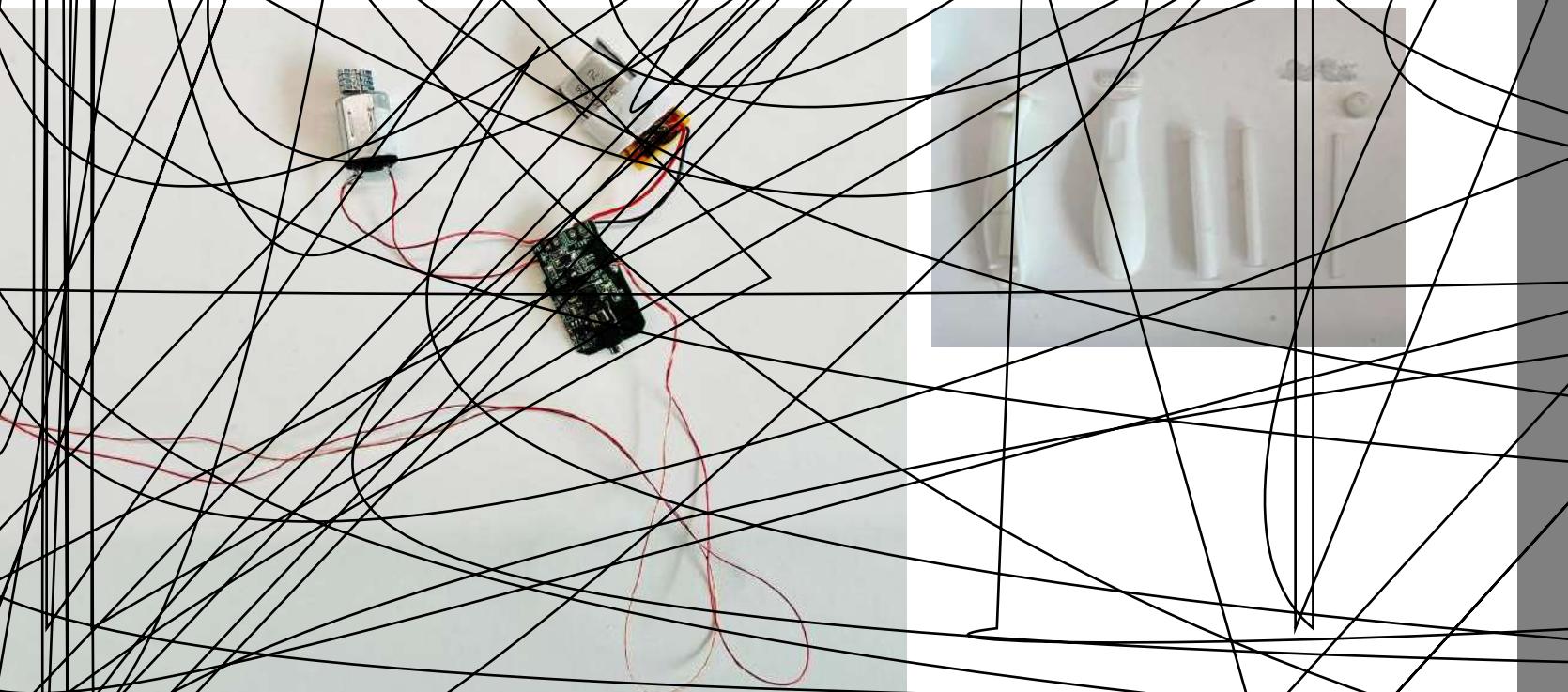
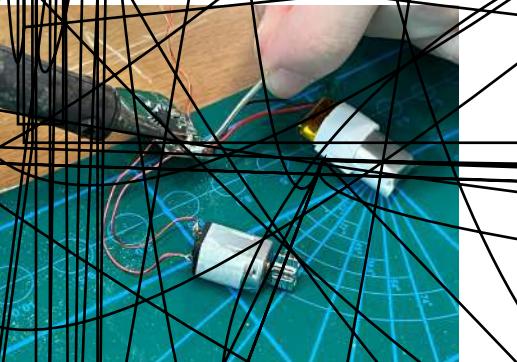


The Braille system is integrated as an information reporting unit. Users could tell the destination to the cane. The AI system could identify the voice and content. **The cane could report the necessary information by this Braille system.**

Model Making

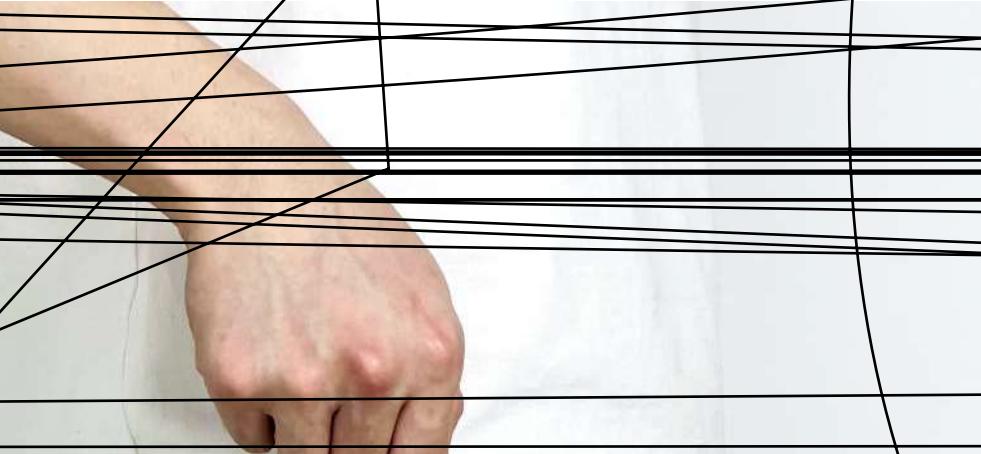
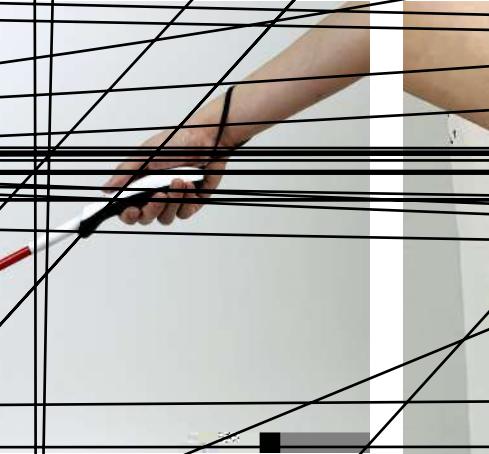
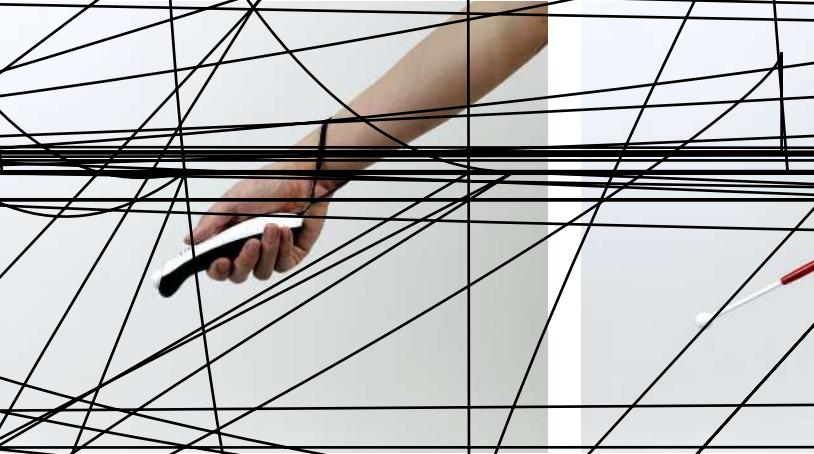
During the modeling process I used

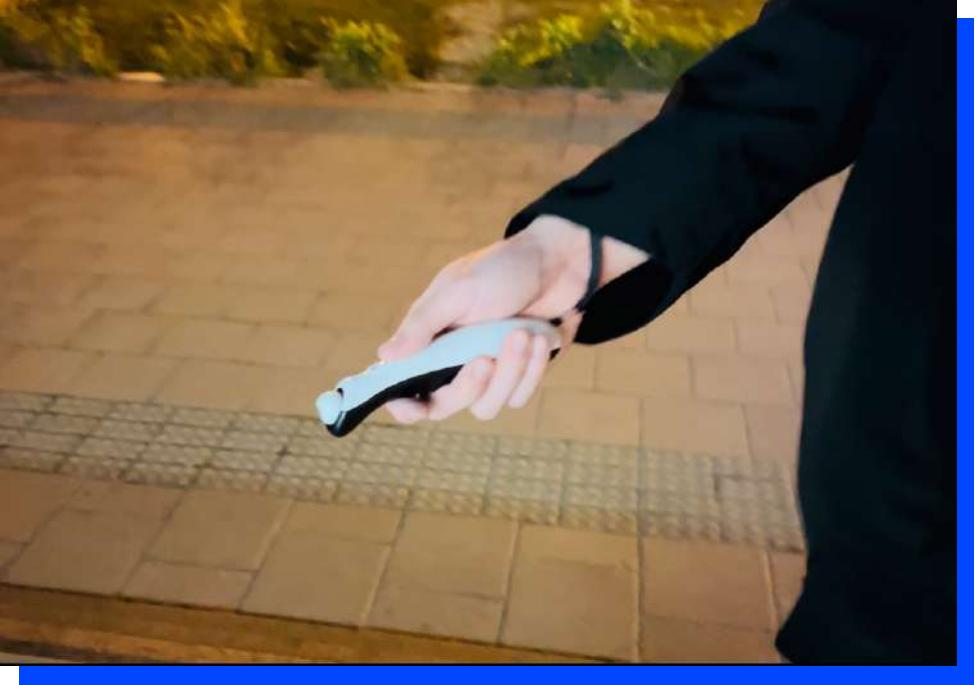
the



to create the external frame of

the





1 Enter the Station

The cane works when the user arrives at the subway station. A camera at the front detects the environment in front of the user and guides him or her in real time.

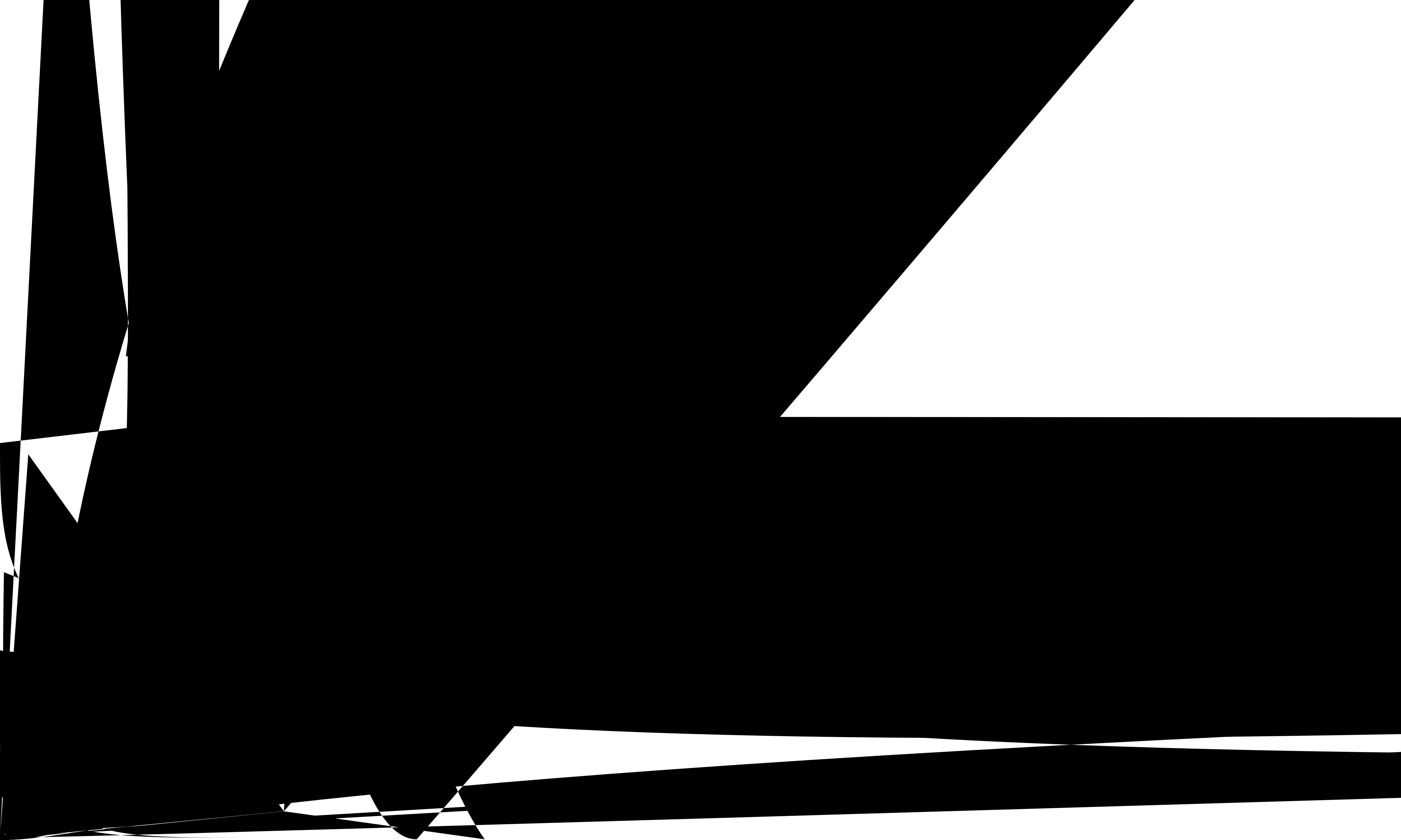


3 Remind the Barrier

When there is a terrain obstacle ahead, such as stairs, the cane informs the user of the obstacle through the Braille system as well as vibration.



4 Detecting & Vibrating

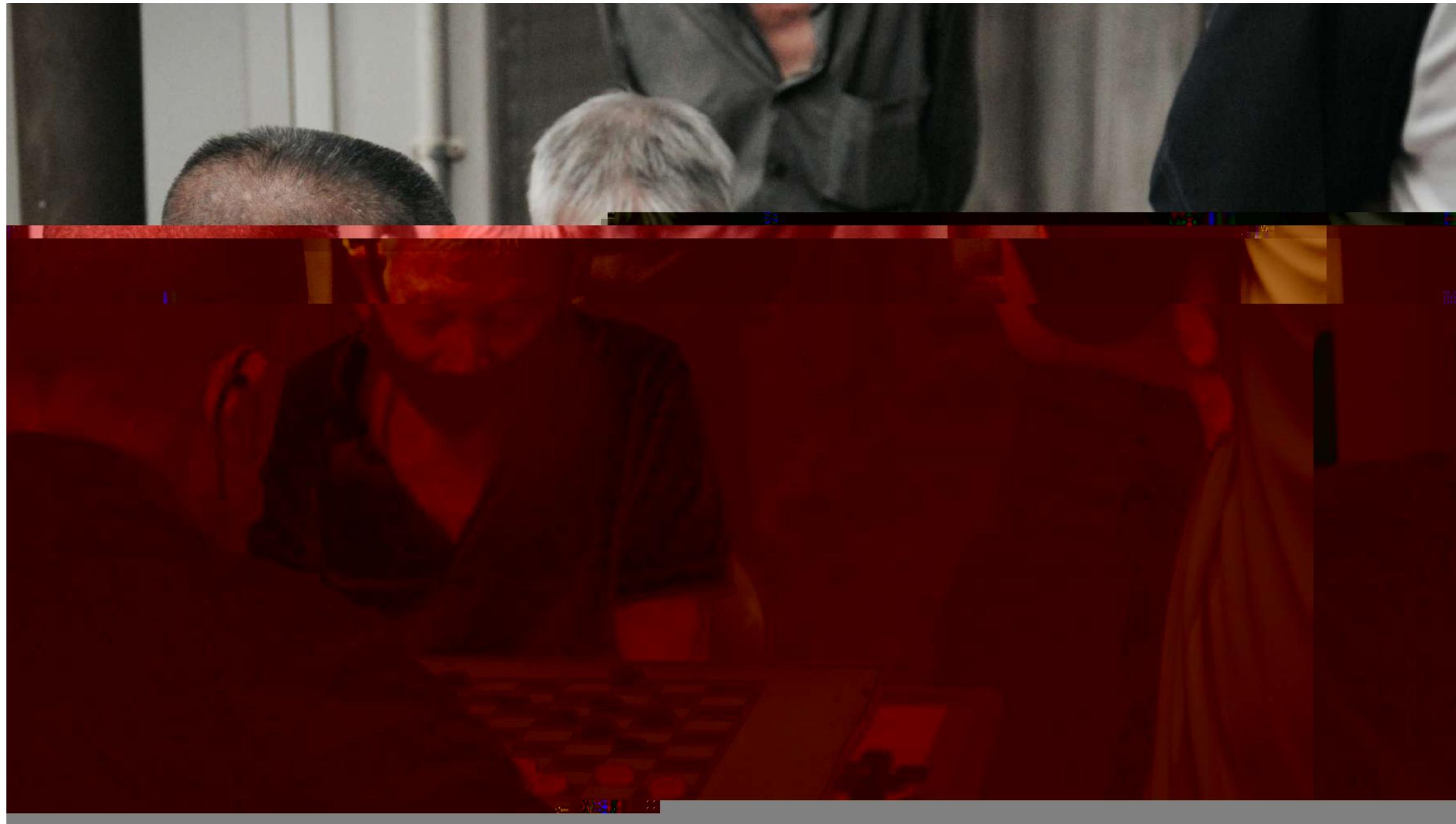


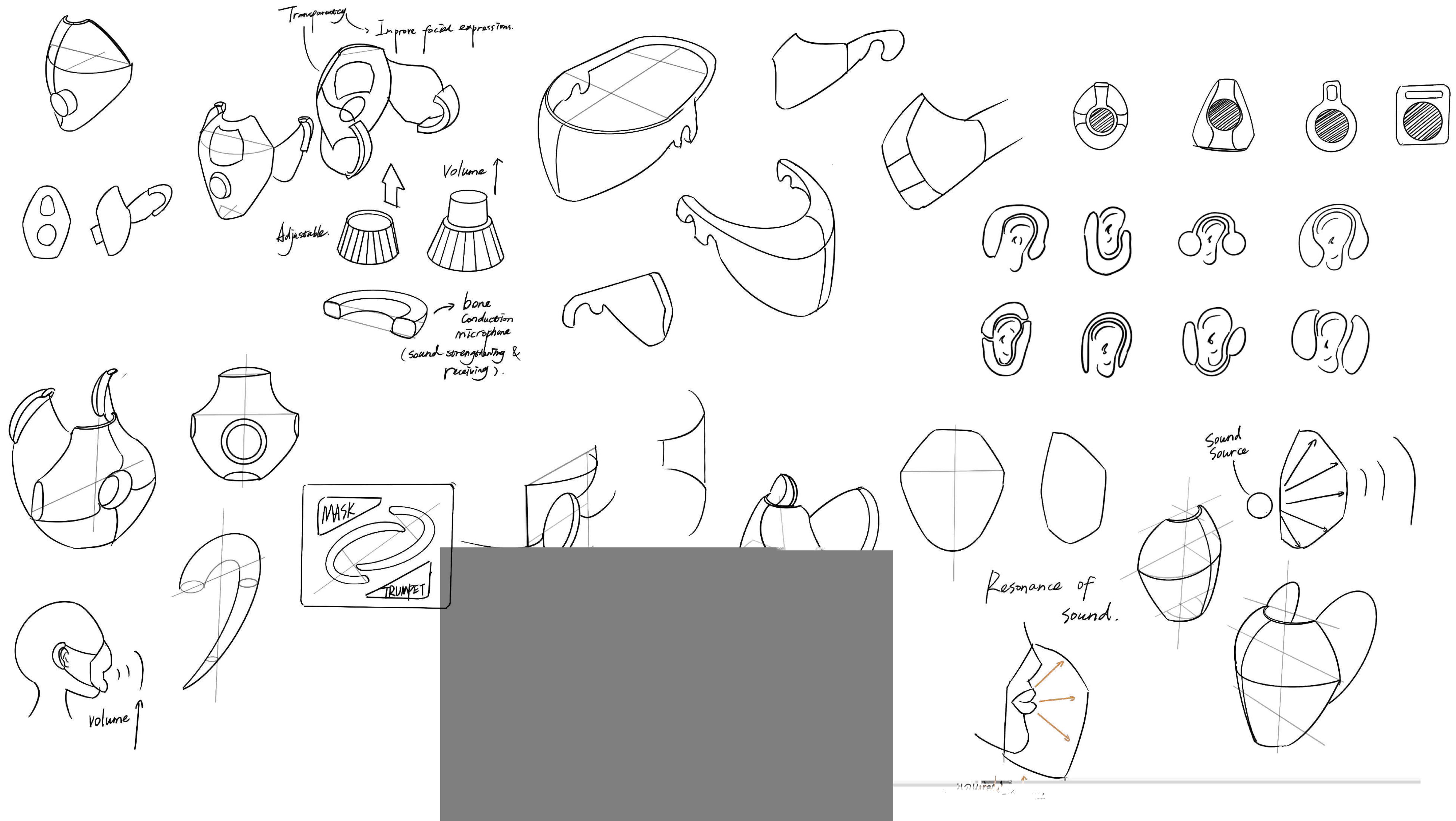


Ready to Talk

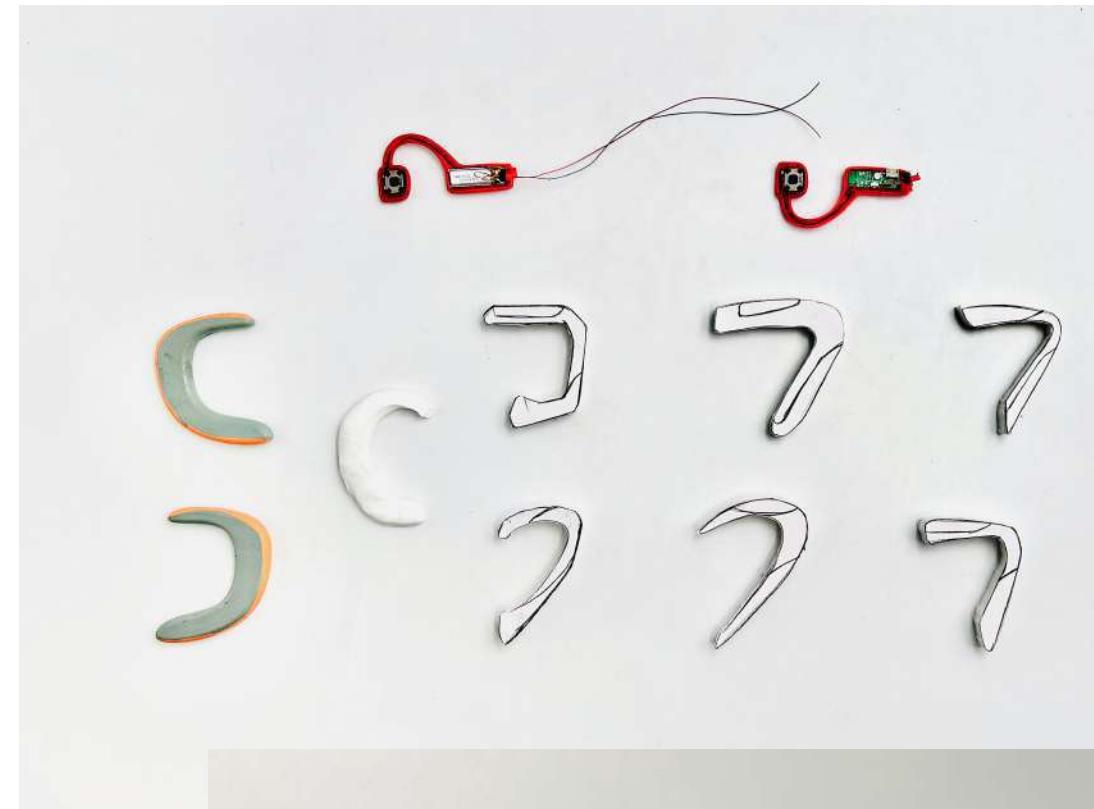




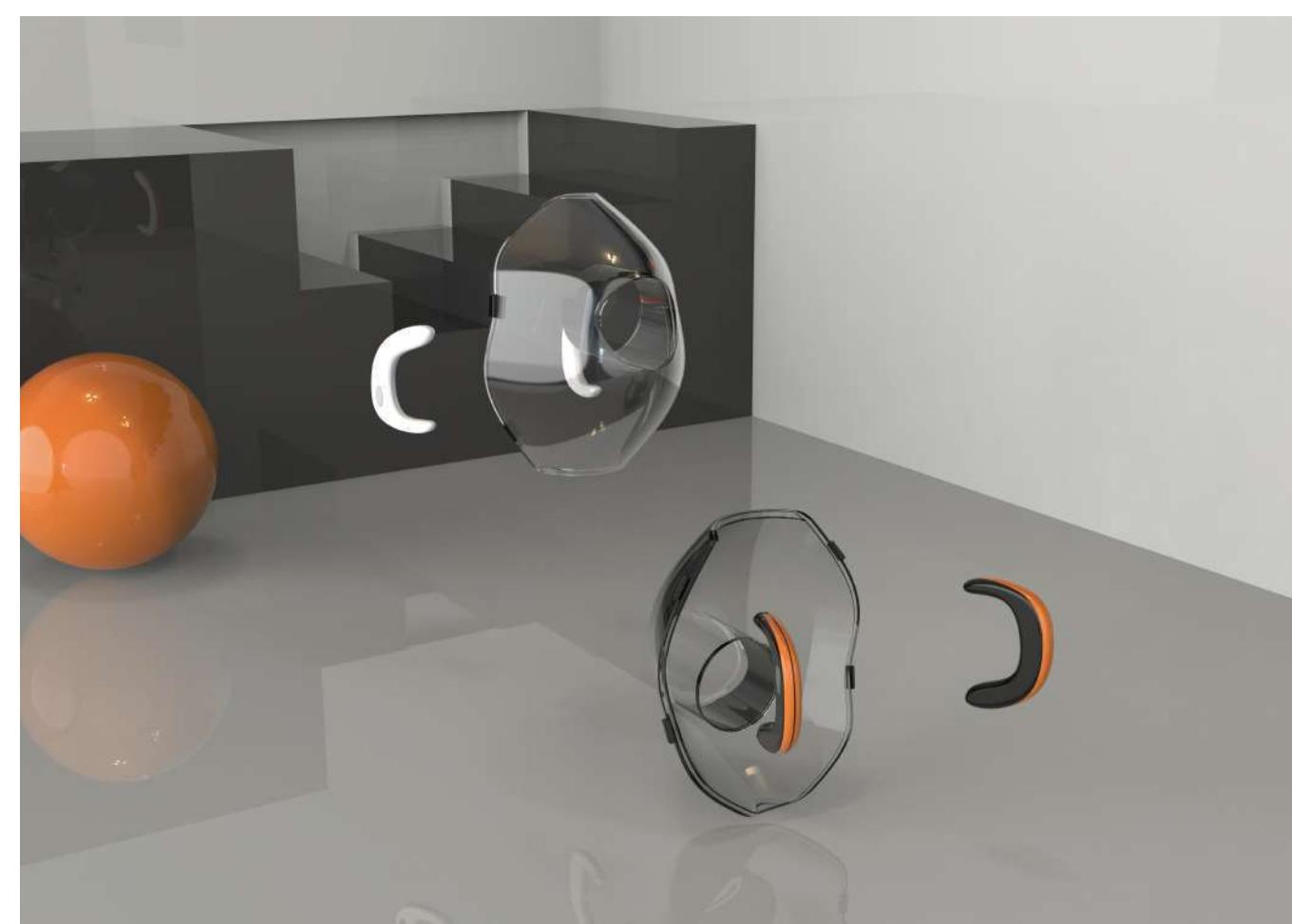




Function & Form Test



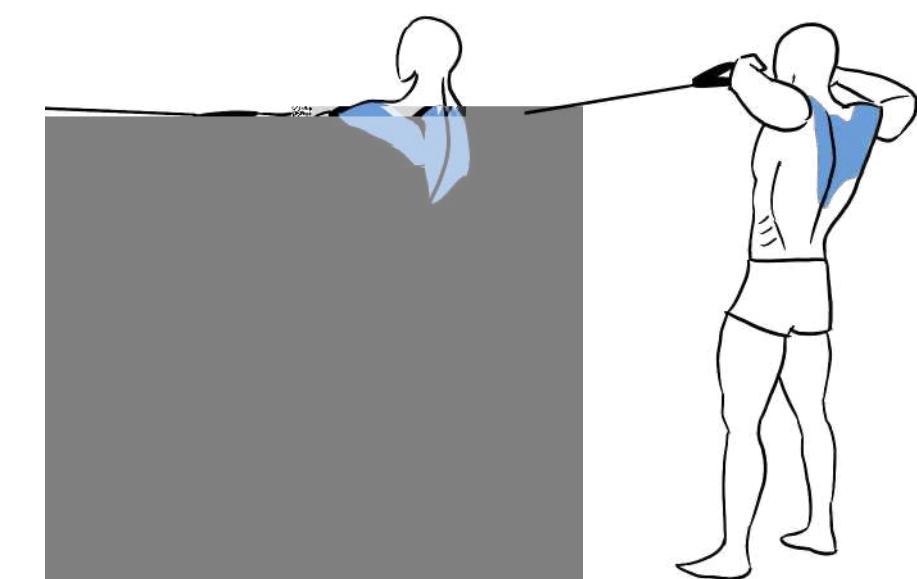
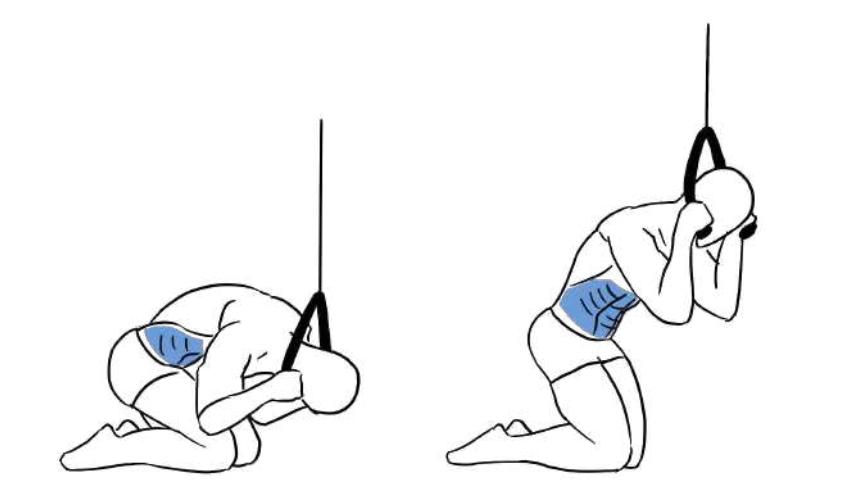
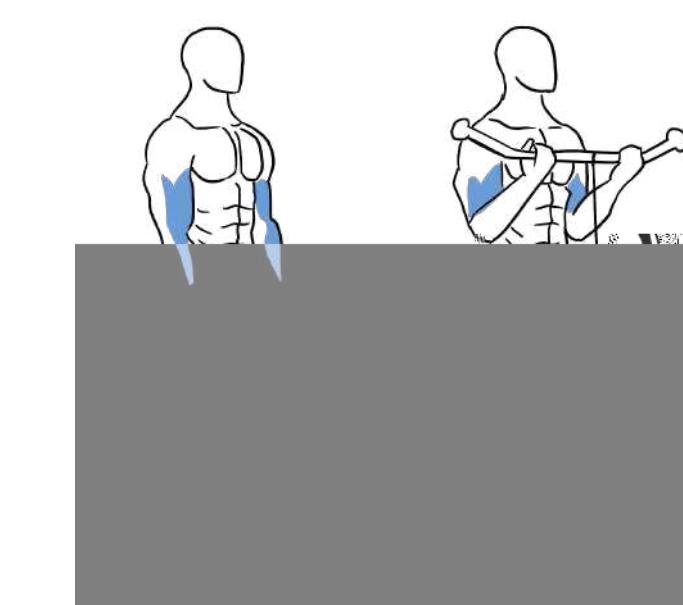
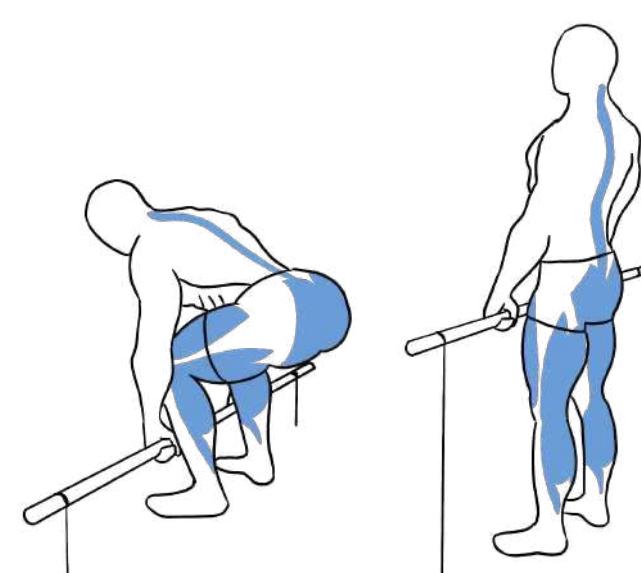
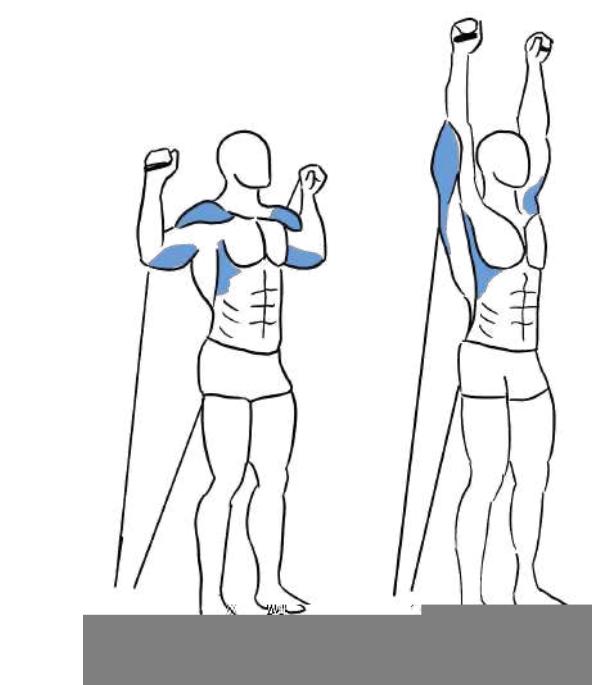
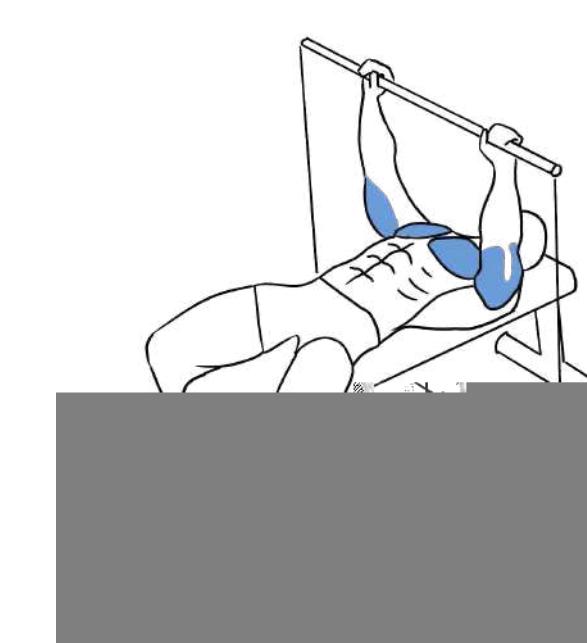
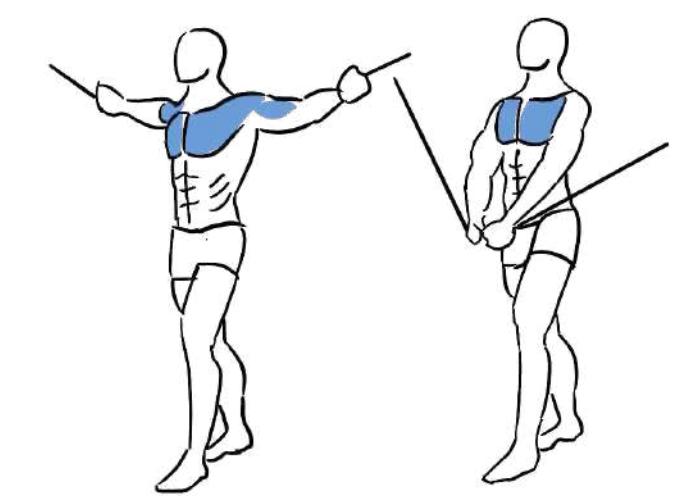
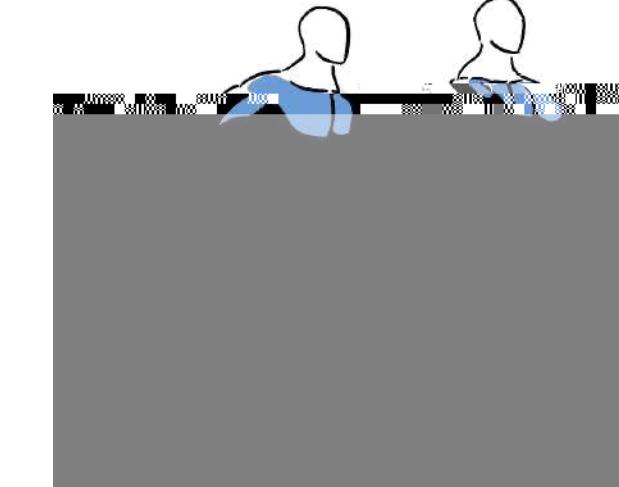
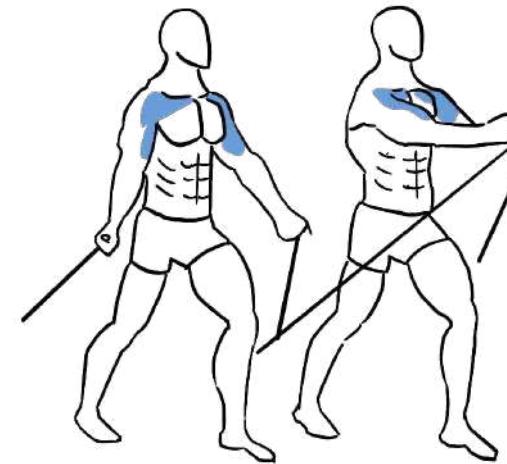
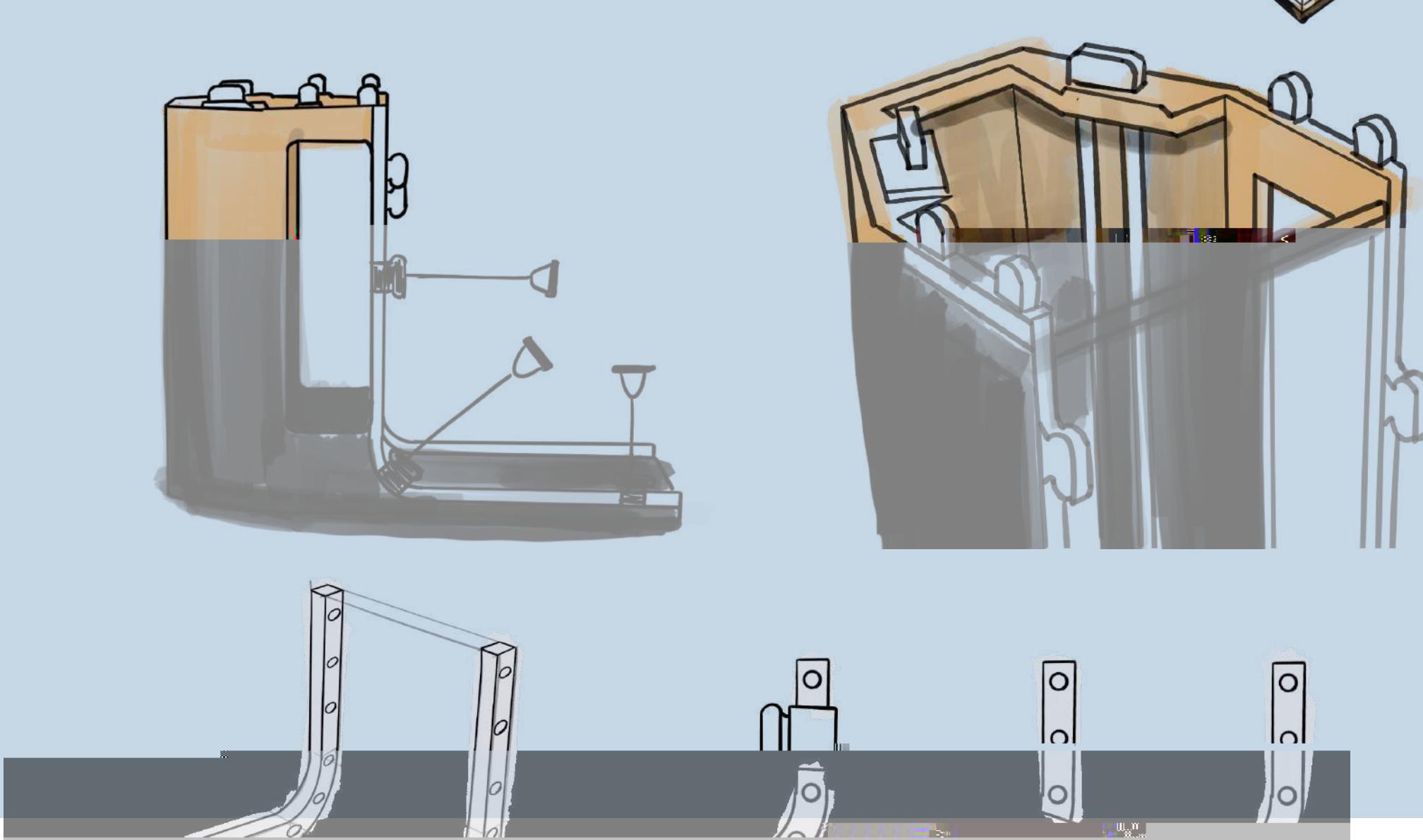
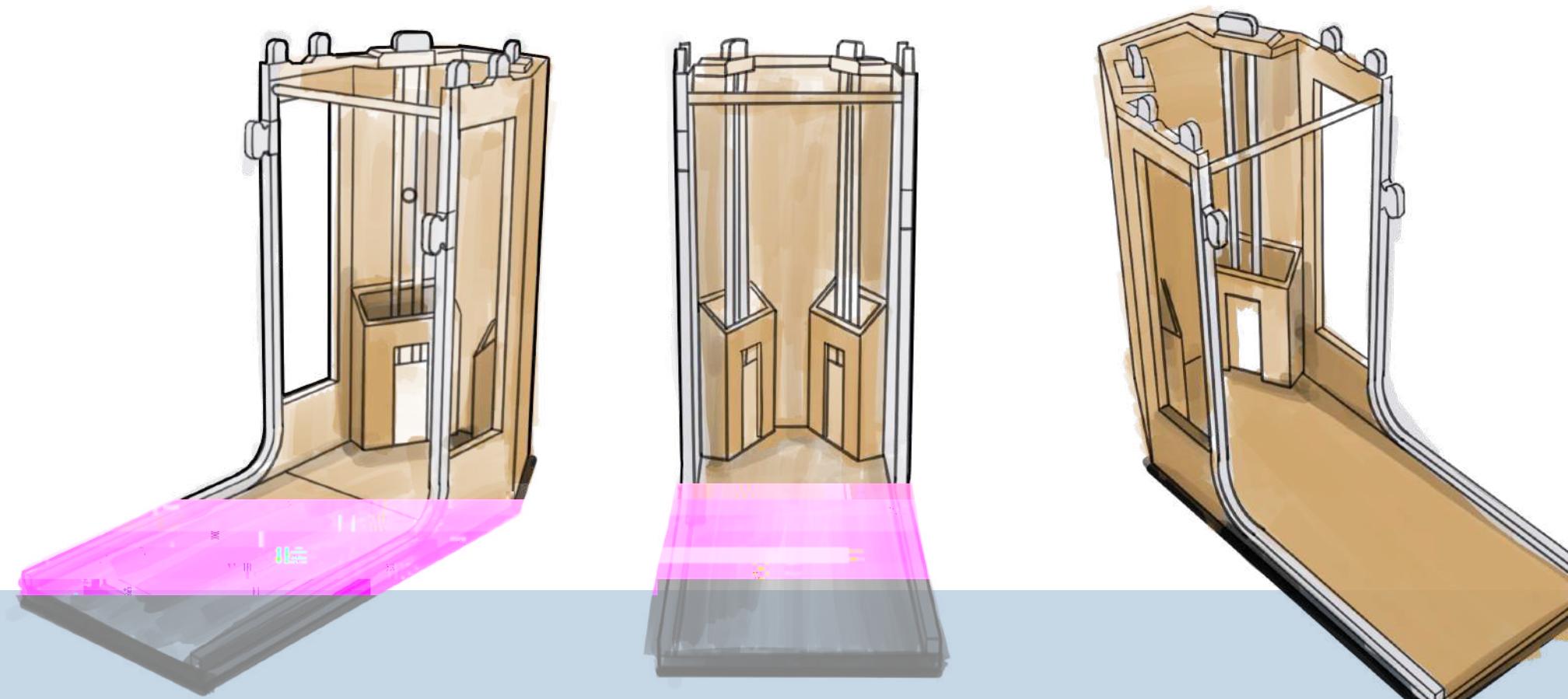




Ll-wer

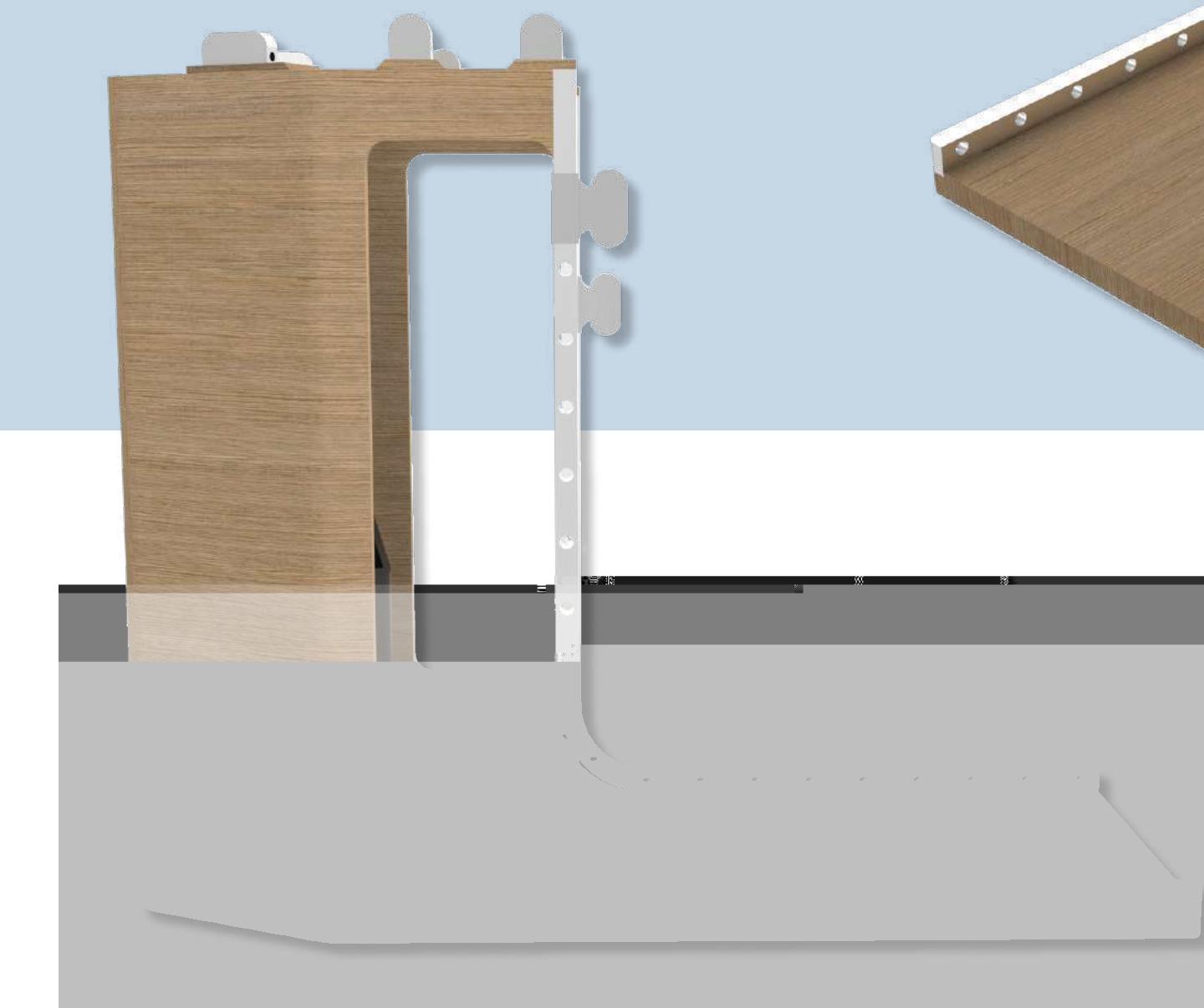
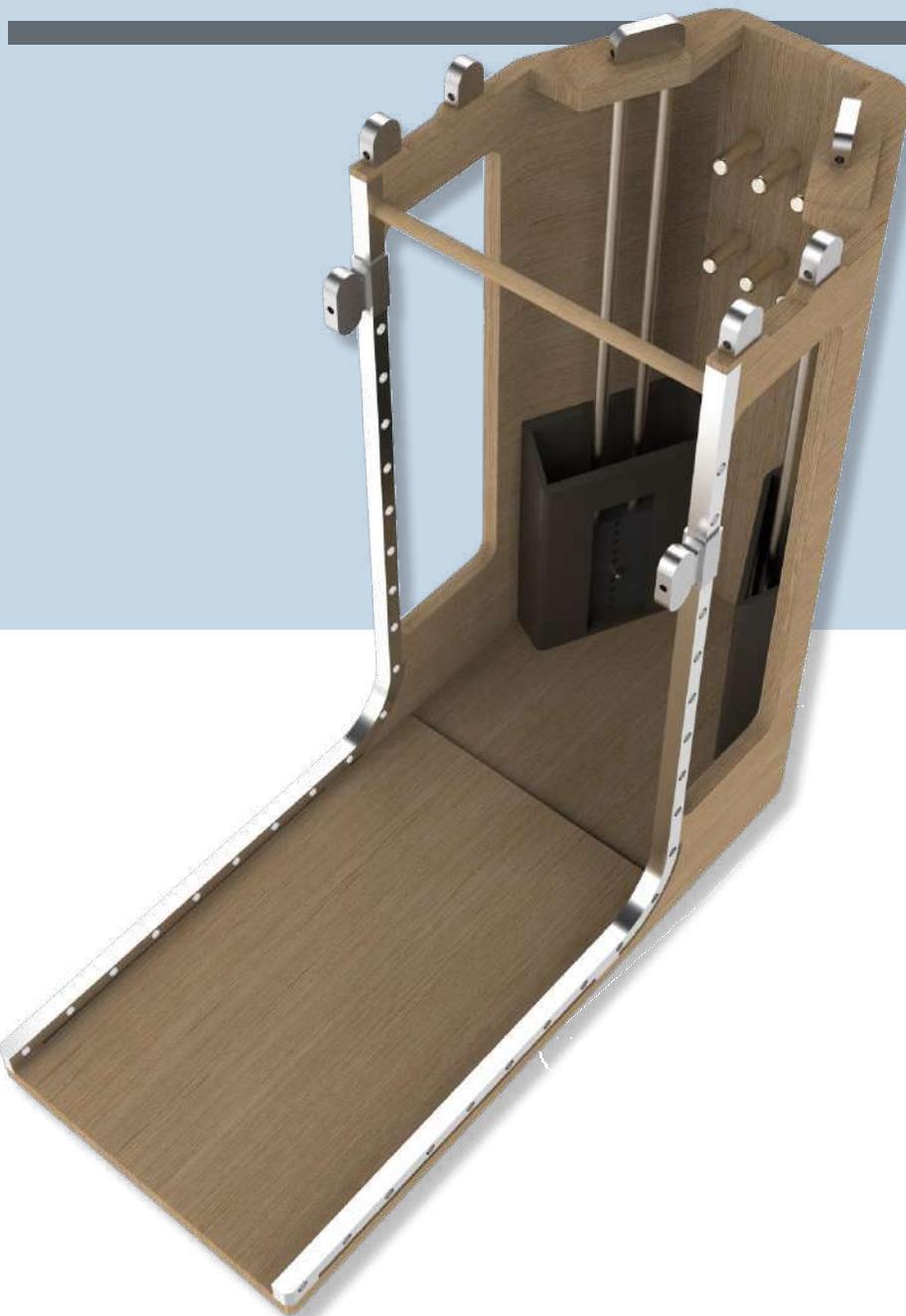
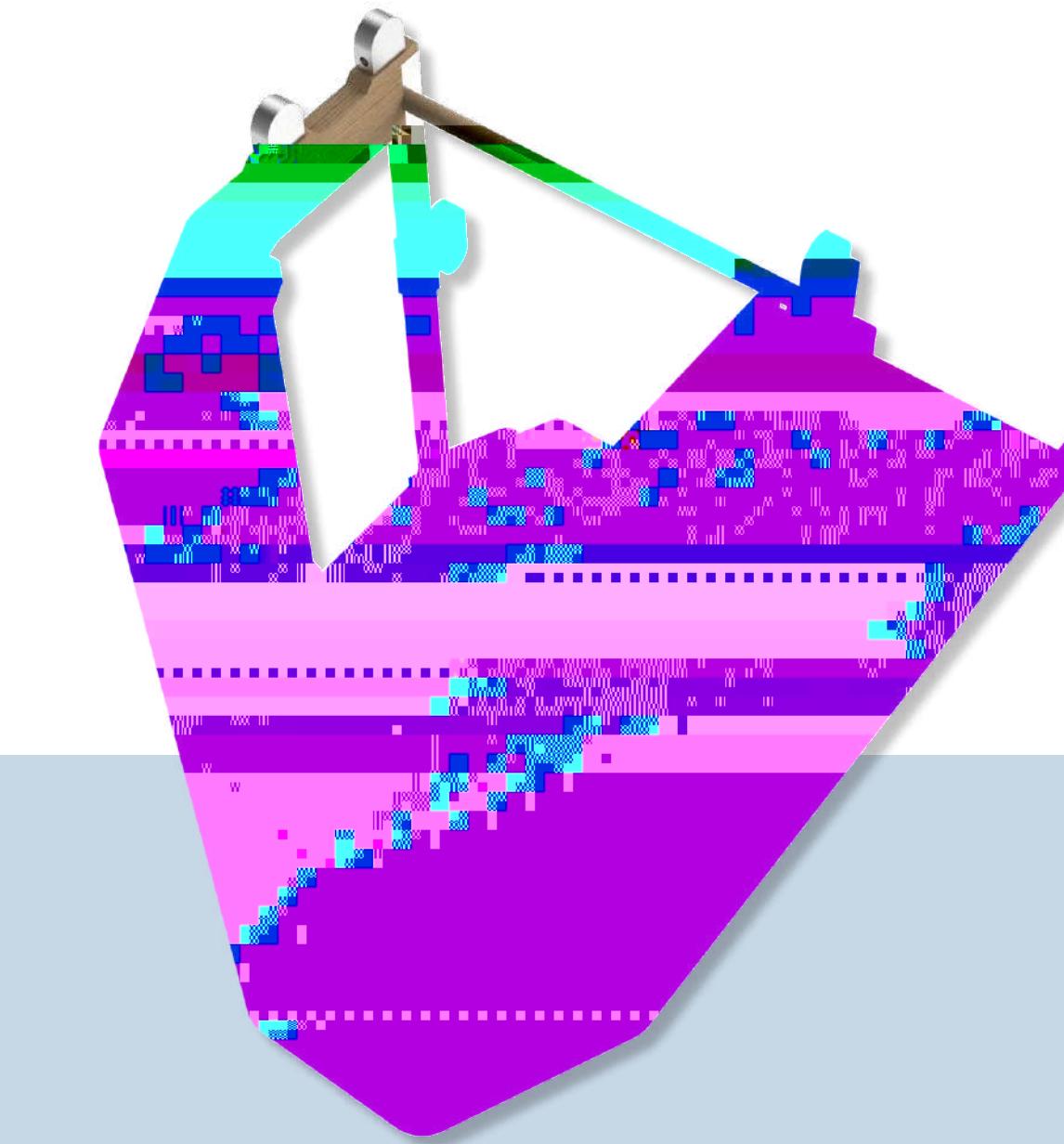
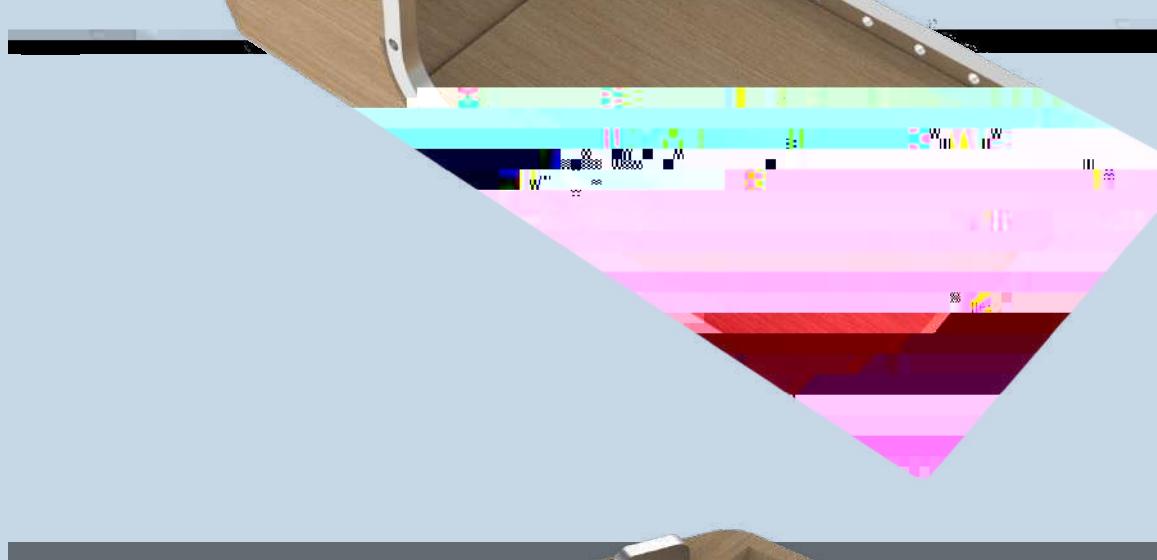


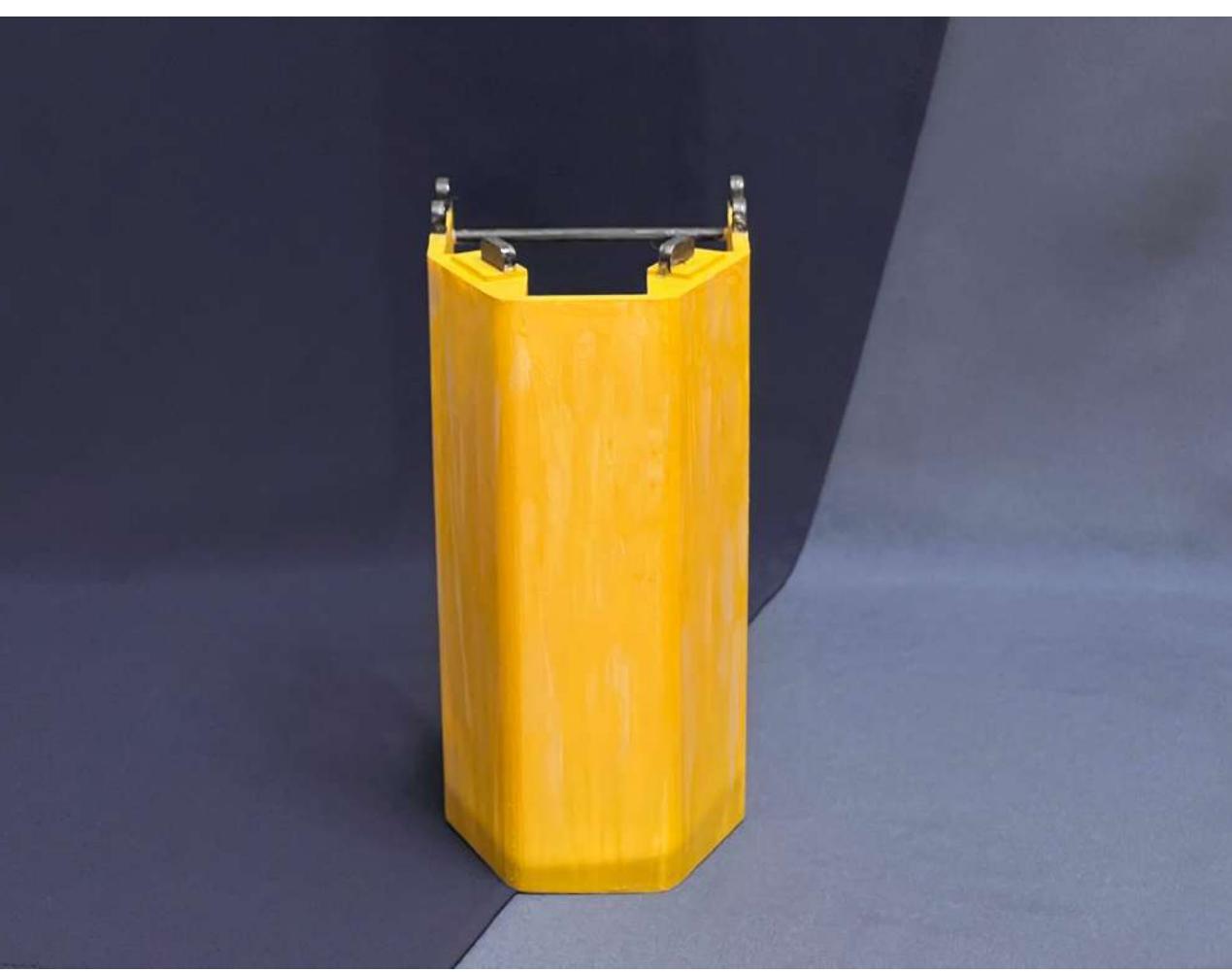
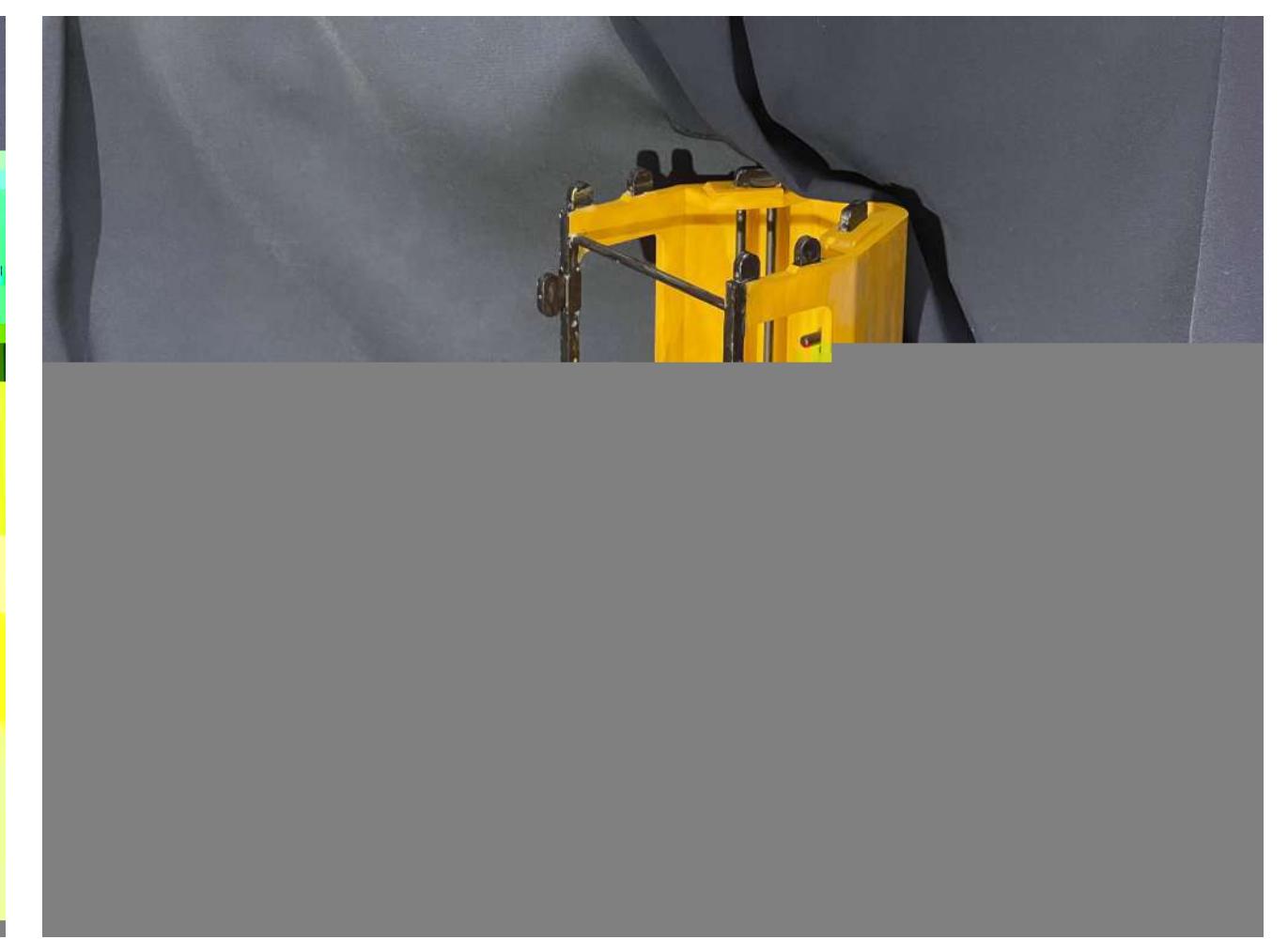
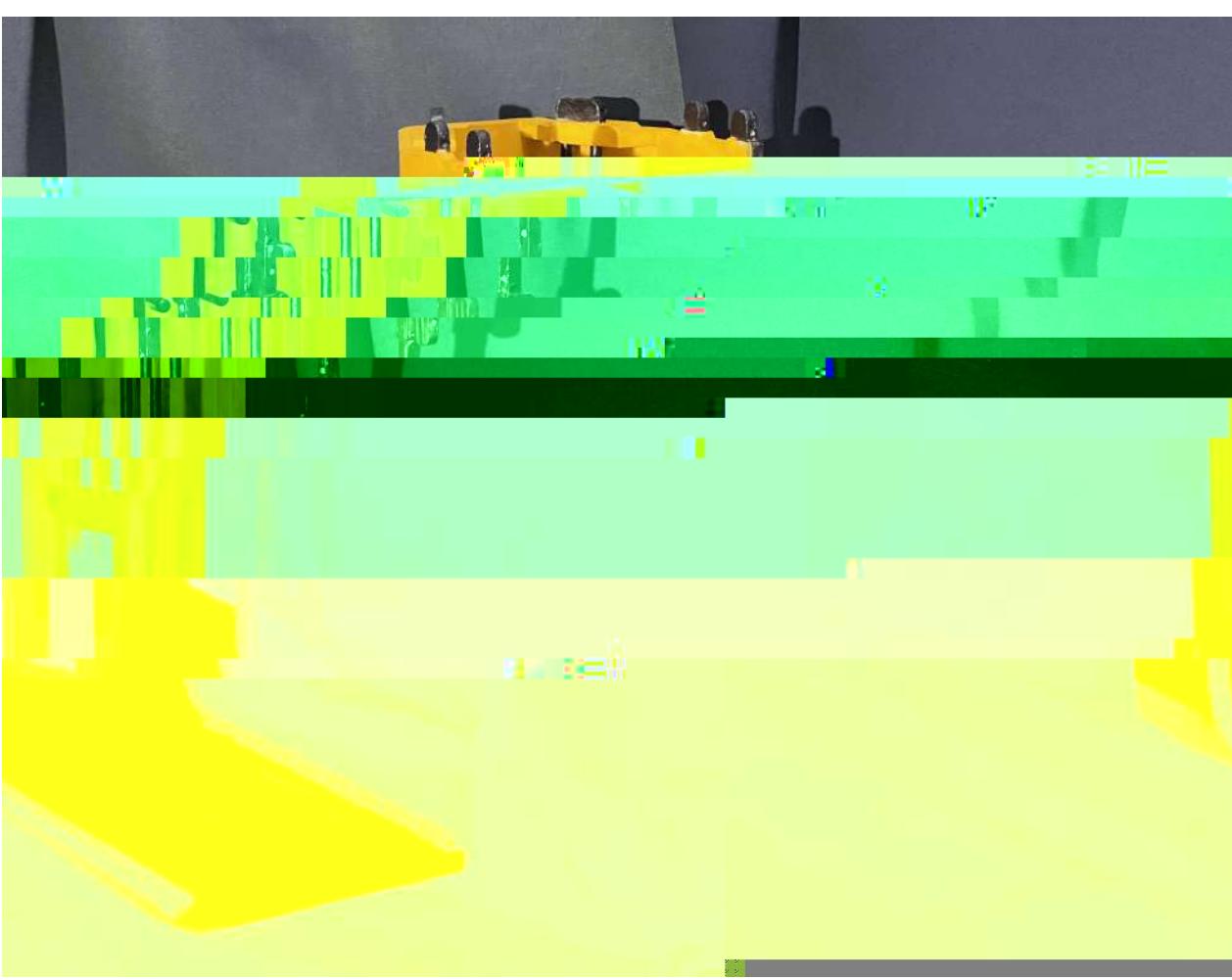
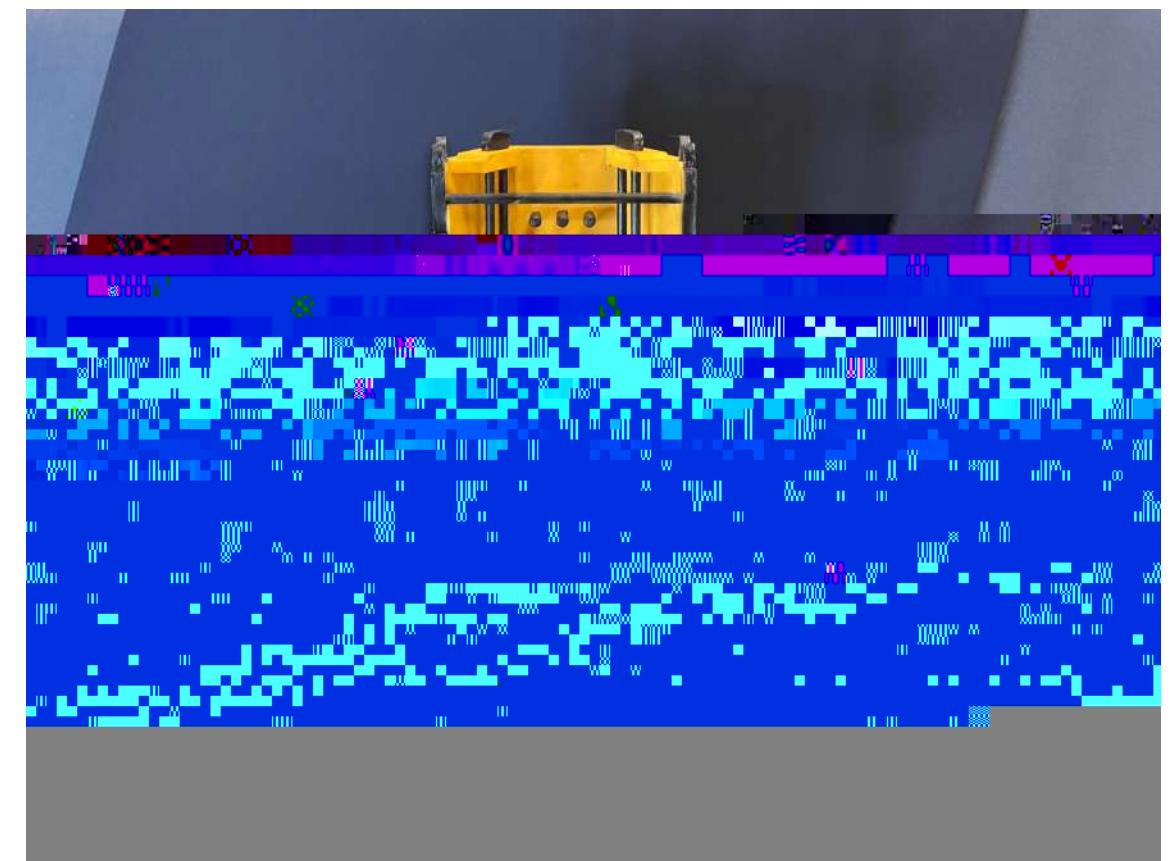
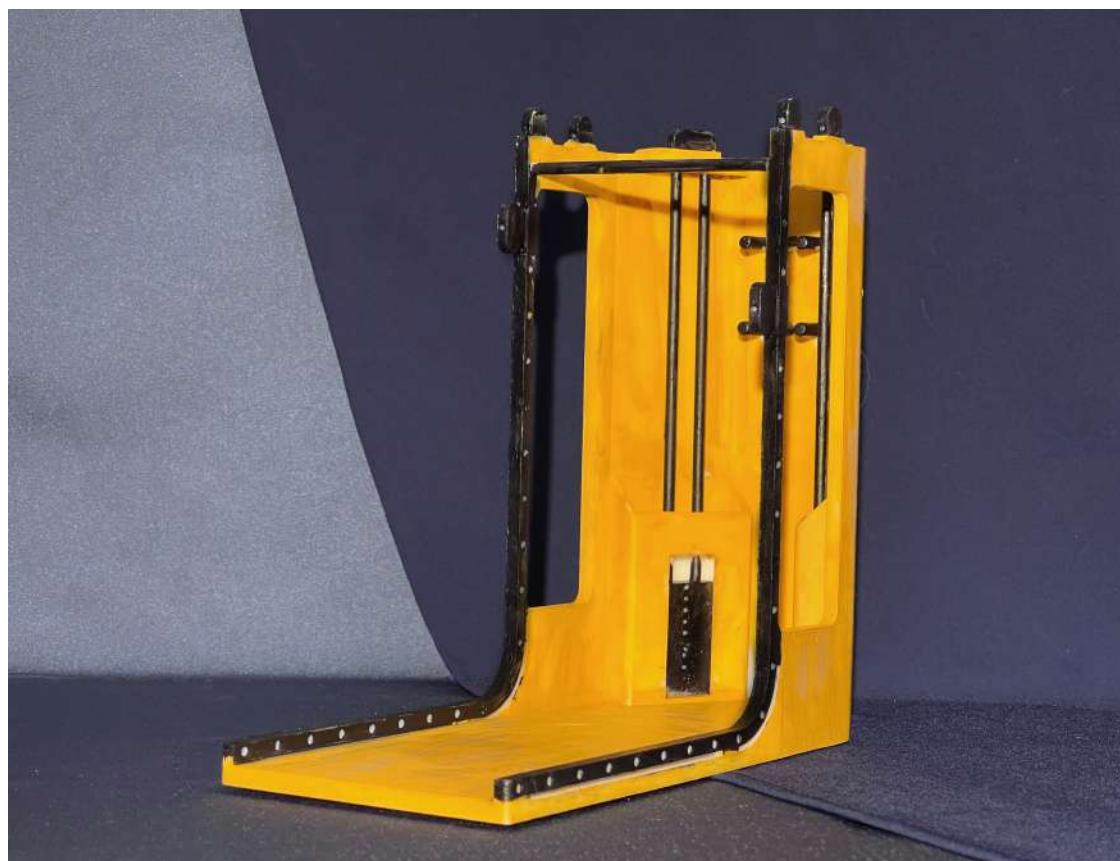
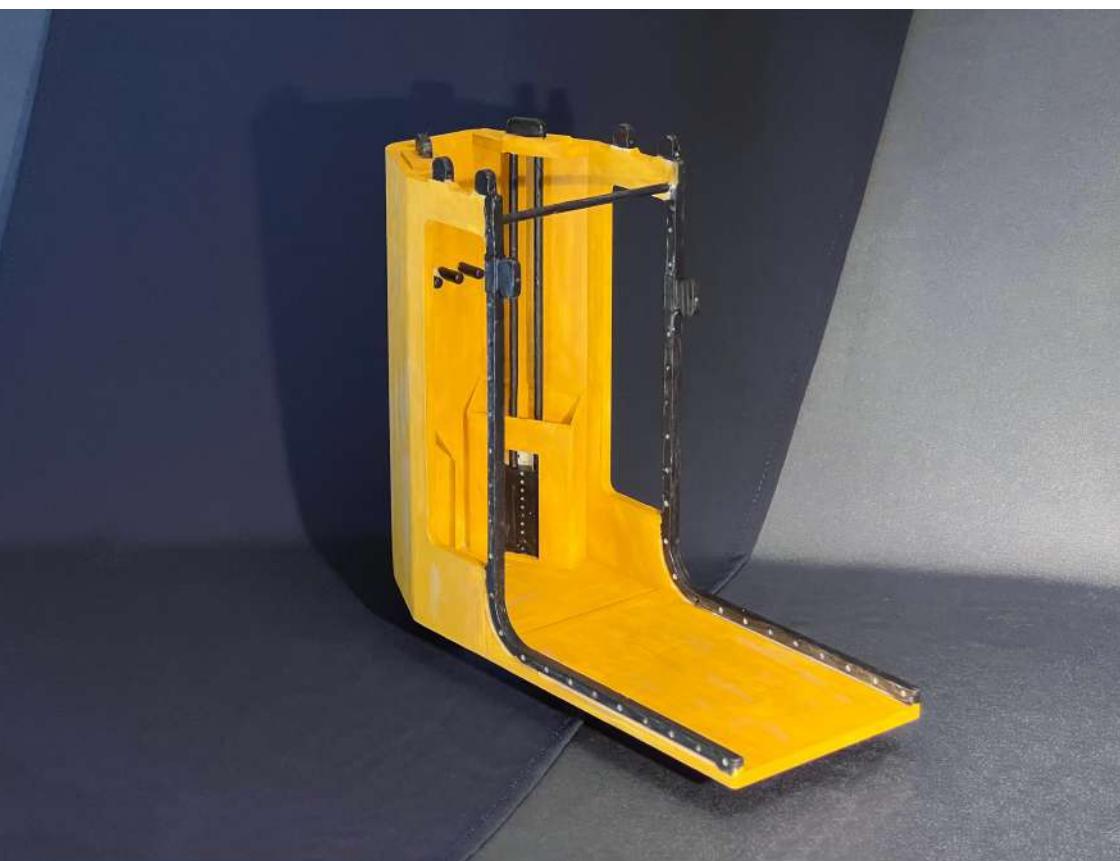




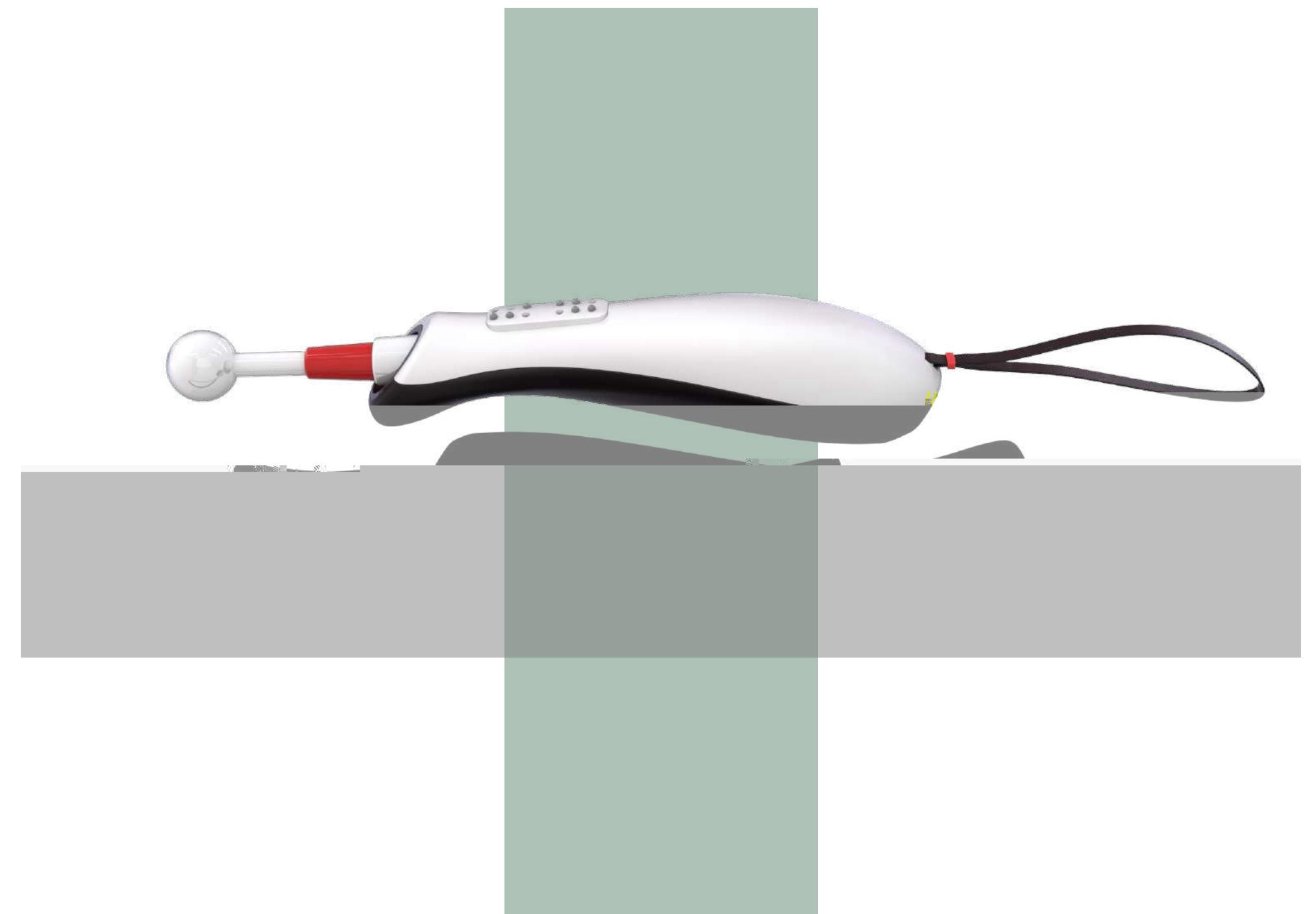
The design process for this project took into account as many sports positions as possible. The prototype for the project was derived from a cable machine in commercial gym. In order to allow the user to complete as much movement as possible with the device, the unit was redesigned with sliding rails. The newly designed slide is L-shaped, which increases the adjustability of the whole device and thus adds more types of movement.

Final Product





Prometheus

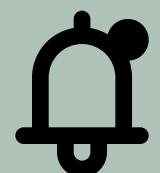


Interview



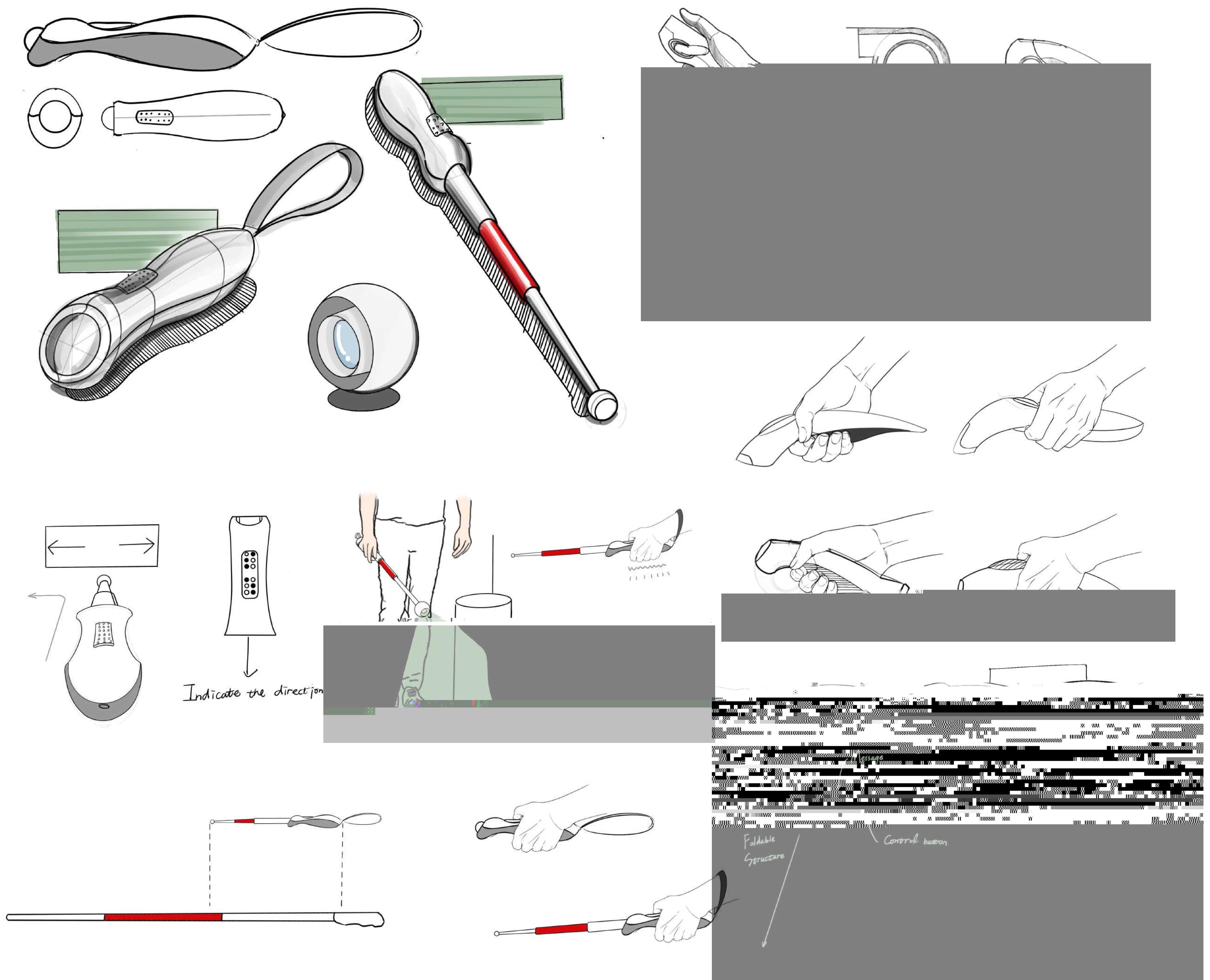
Victor Andrews

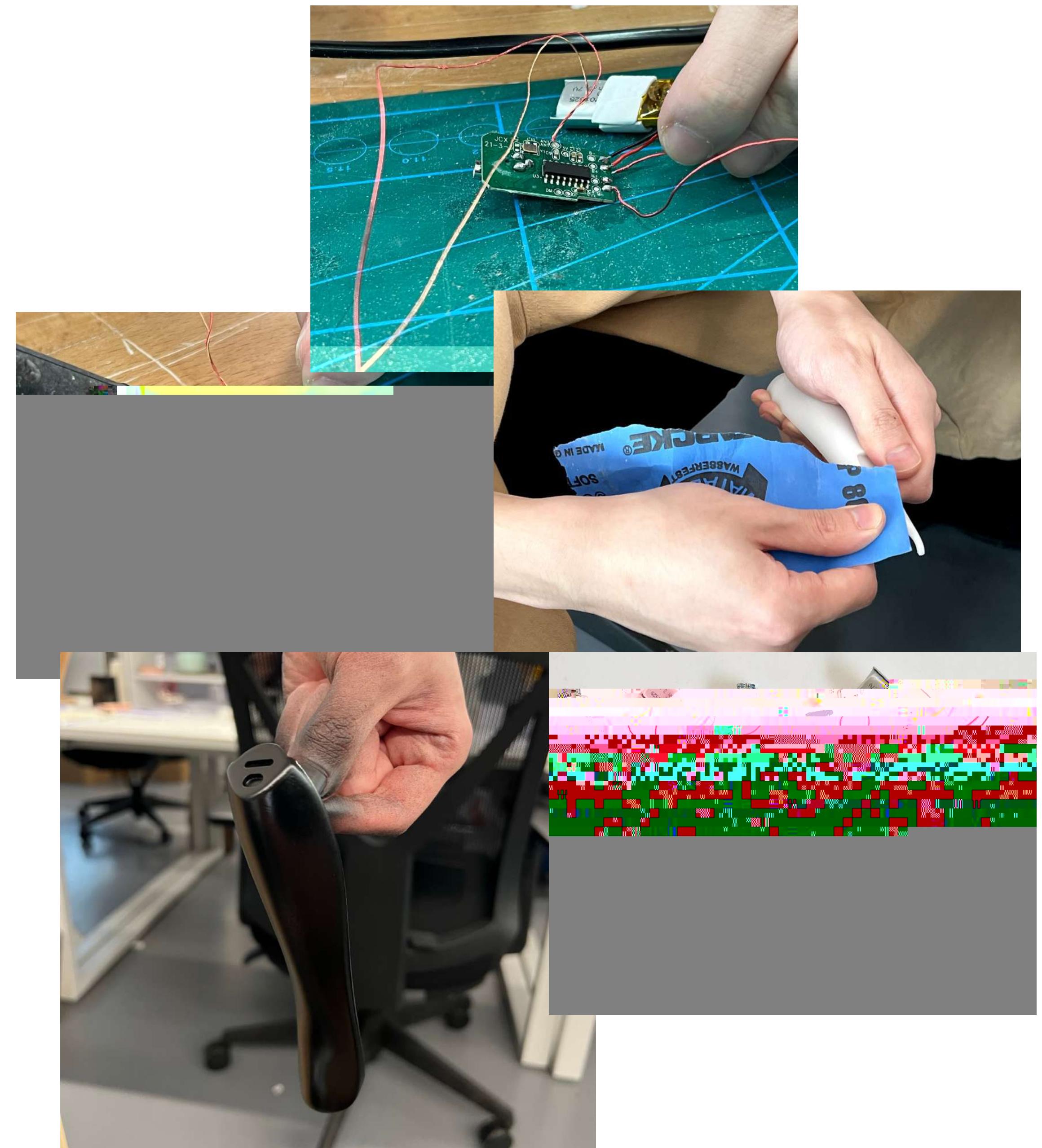
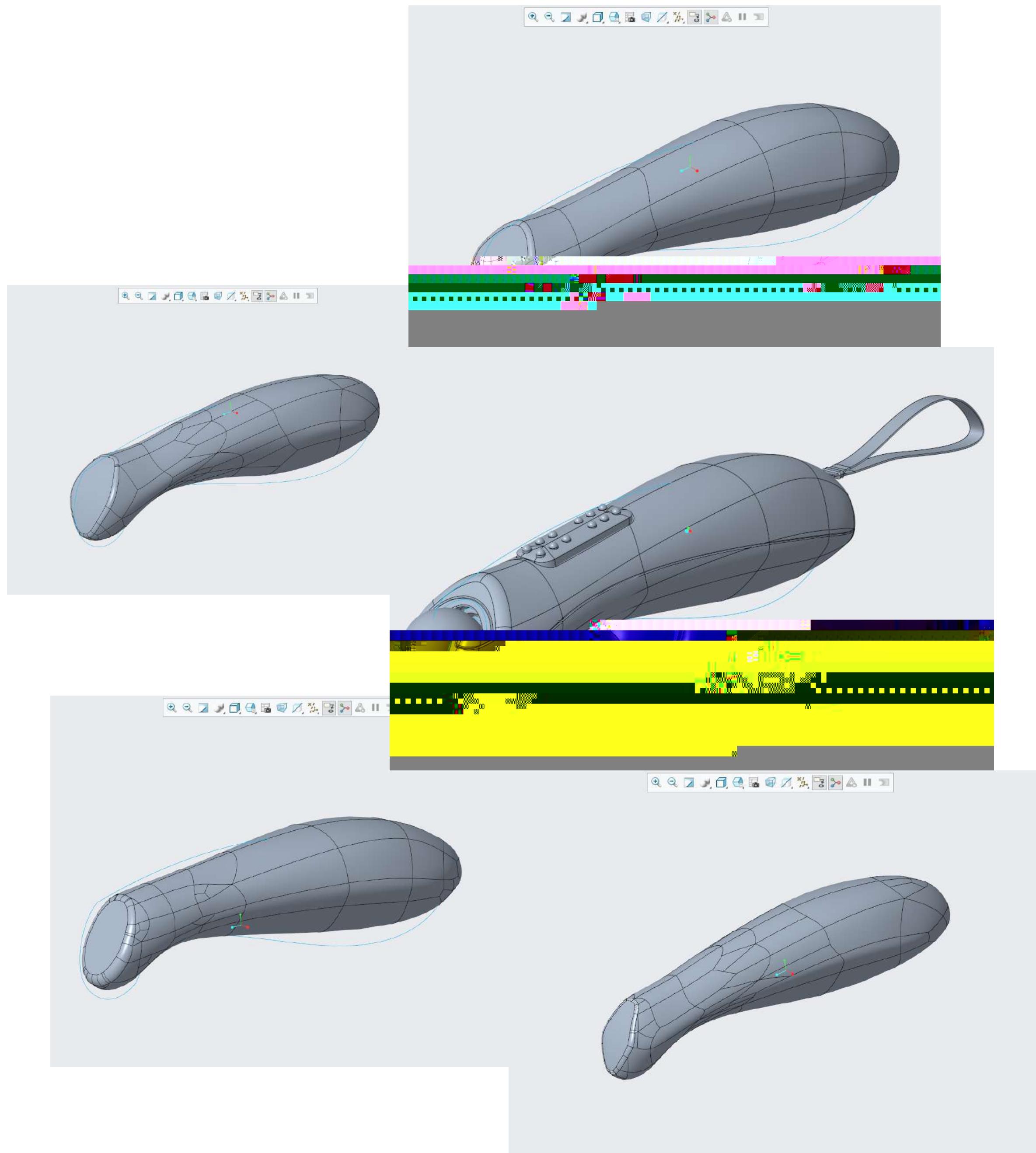
"I've always been legally blind, had vision in my right eye. But about 10 years ago, my vision started getting very blurry. And since that time, it's kind of been a gradual decrease."

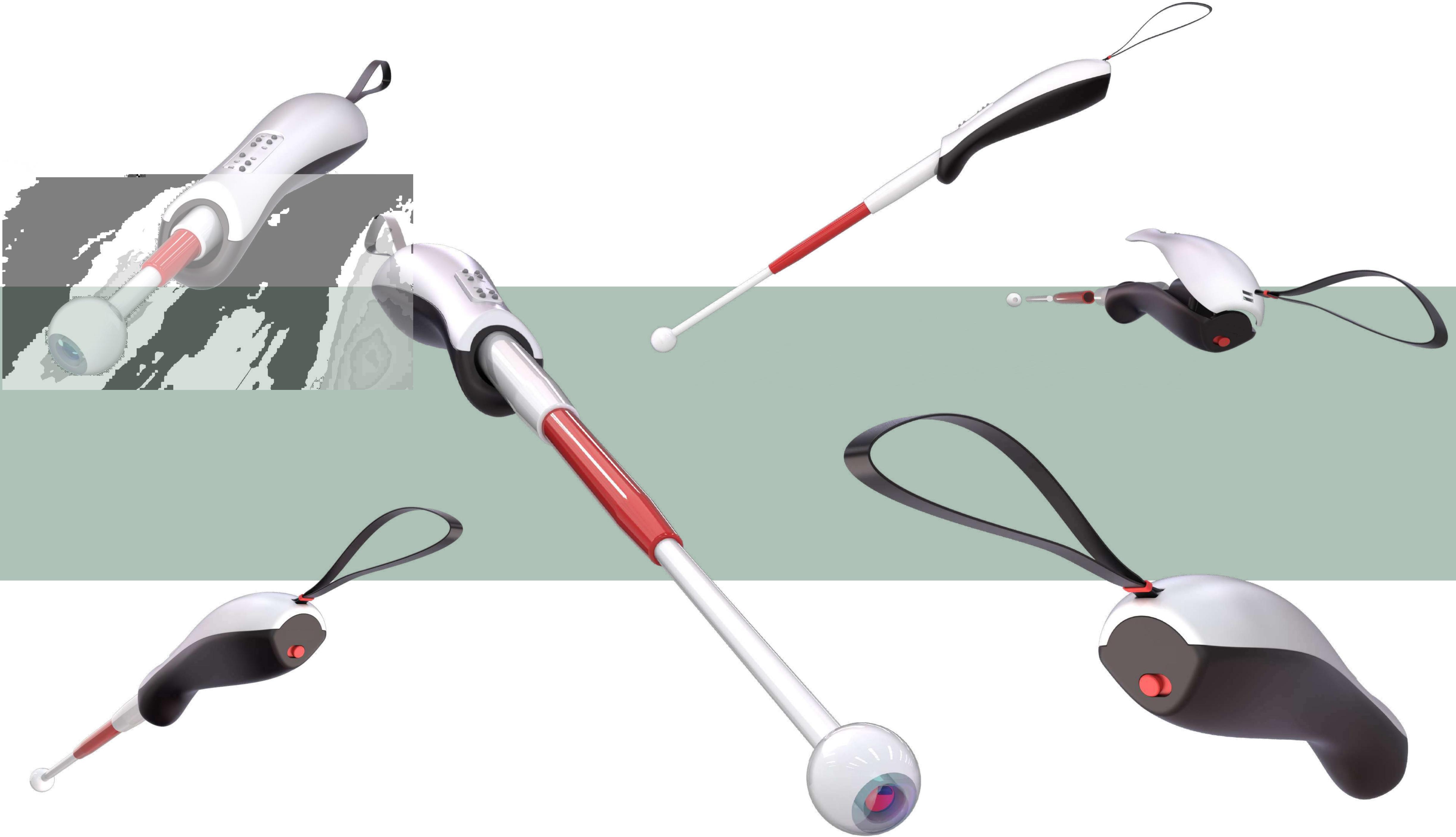




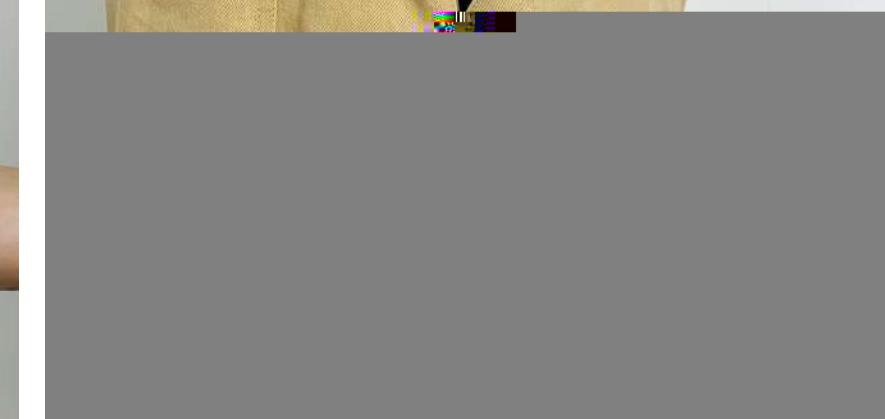
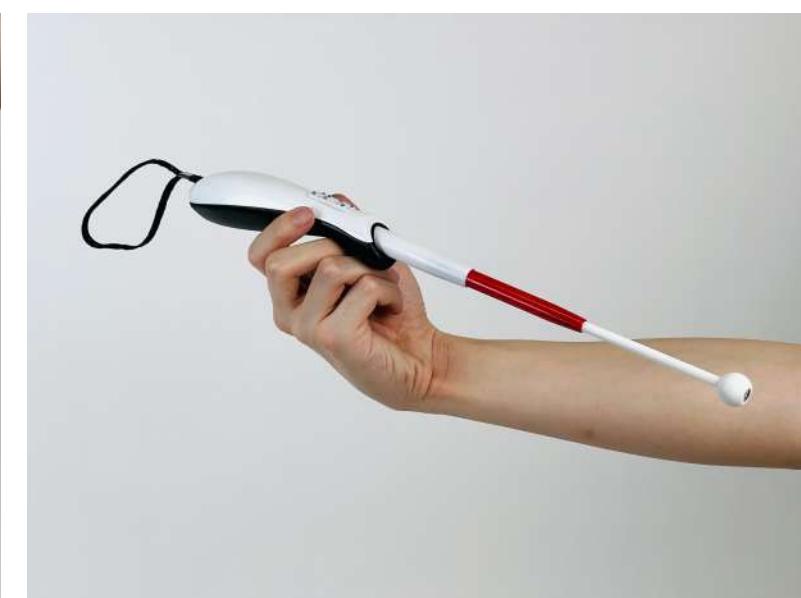
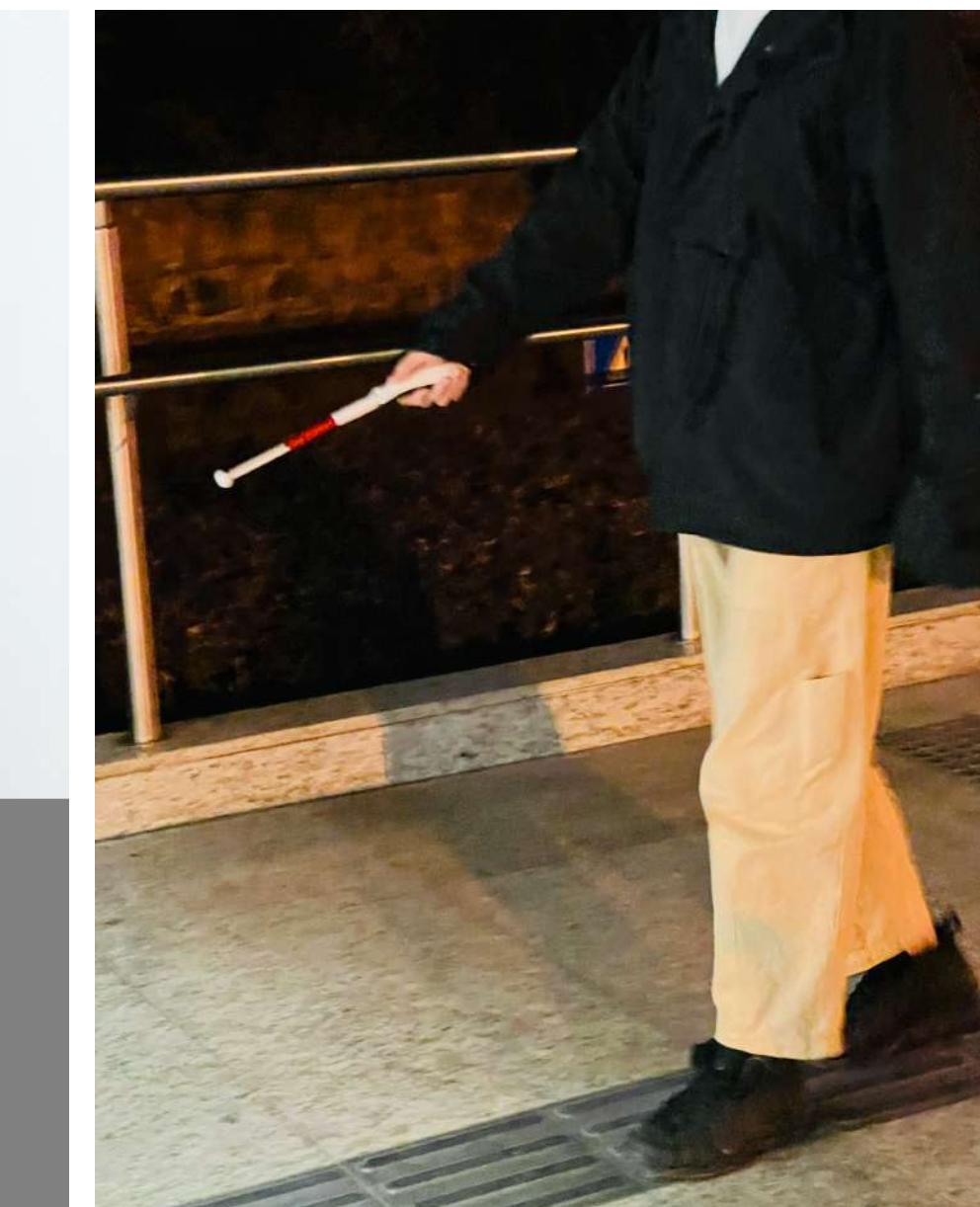
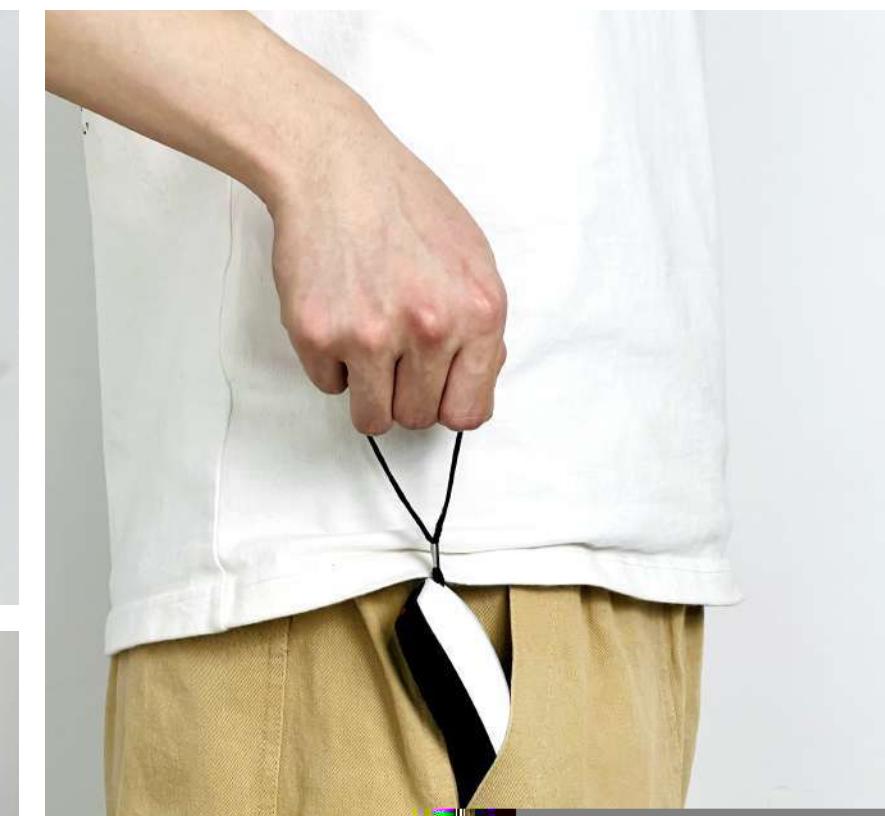
Form Test











LIGHOT

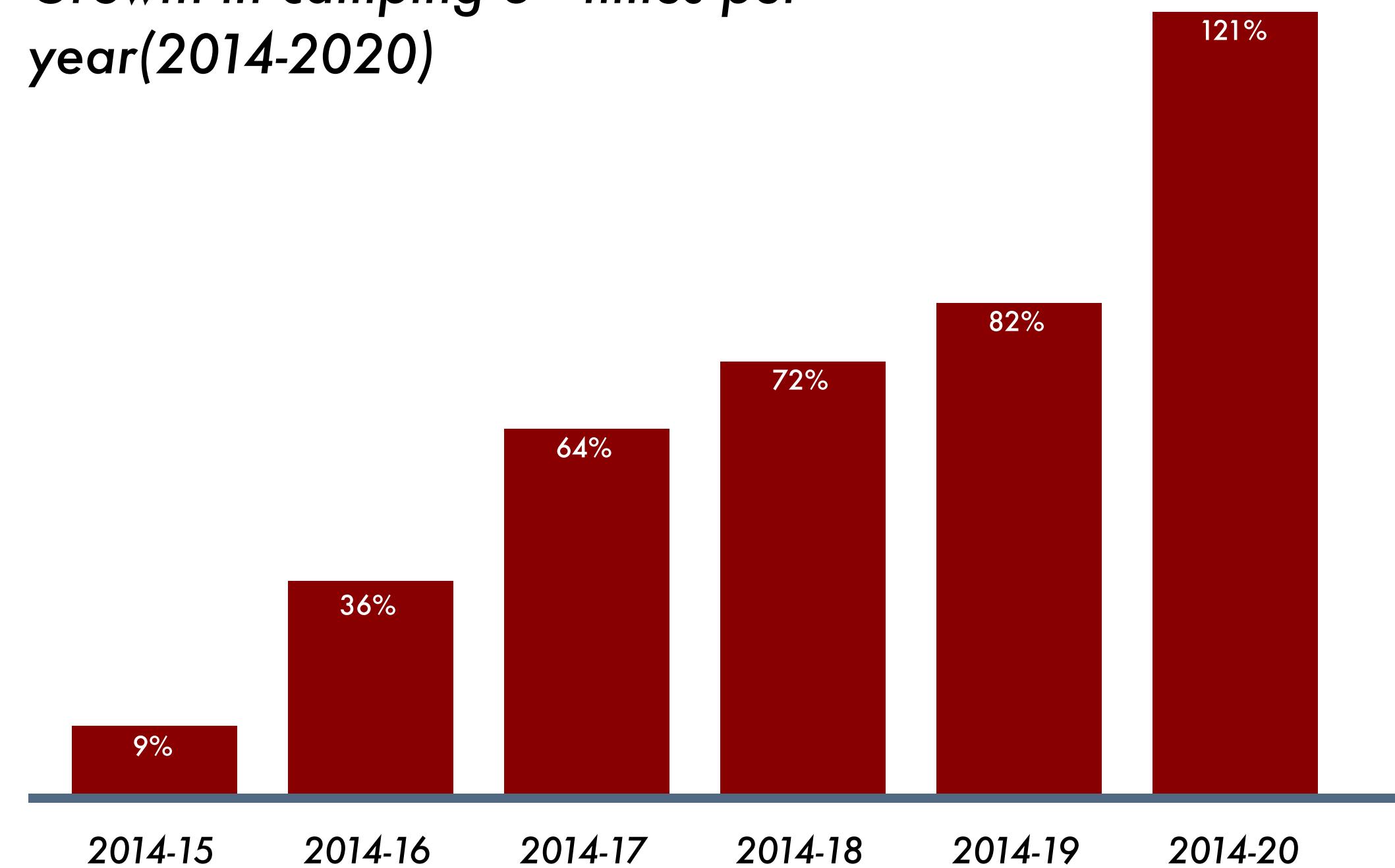
This project focus on the camping, which is becoming an increasingly popular lifestyle.

This project aims to integrate leisure elements to improve the camping experience while solve problem which might be encountered during the trip.





Growth in camping 3+ times per year(2014-2020)



Interview



"After I had a bad snowboarding accident, I started looking for comfortable camping gear suitable for someone with a back injury and mobility problems. But not only that, aesthetics are important to me, so I wanted great functionality but I always wanted it to look good. In my search I realised there was a bit of a gap in the market. I started writing about comfy and stylish camping gear and was amazed at how quickly it took off and the phenomenal response!"

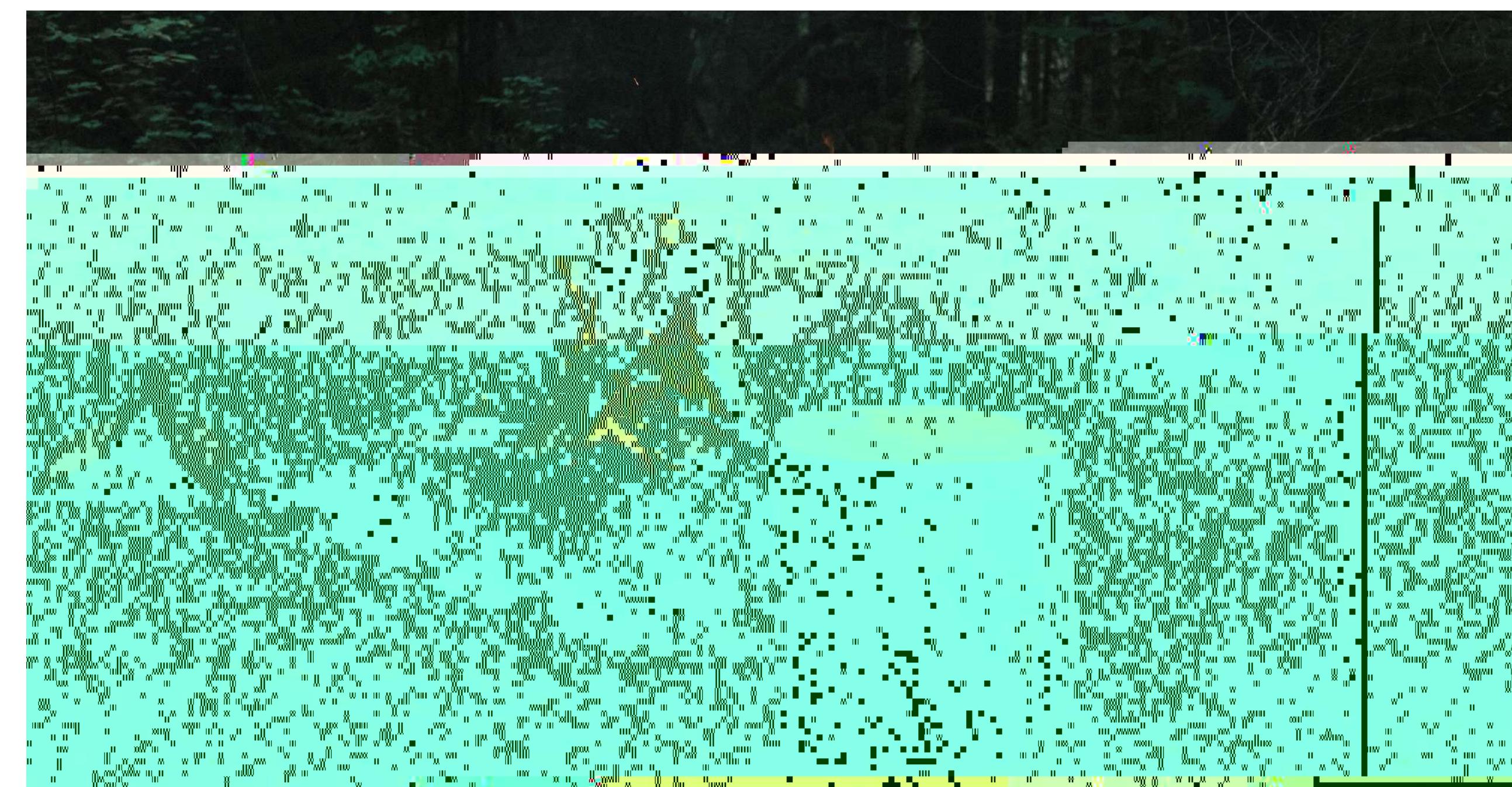
"Modern life is extremely complicated and can at times be overwhelming to navigate, a walk in the park or woods however is as simple and as natural as can be and is a great antidote to our tech-connected lives."

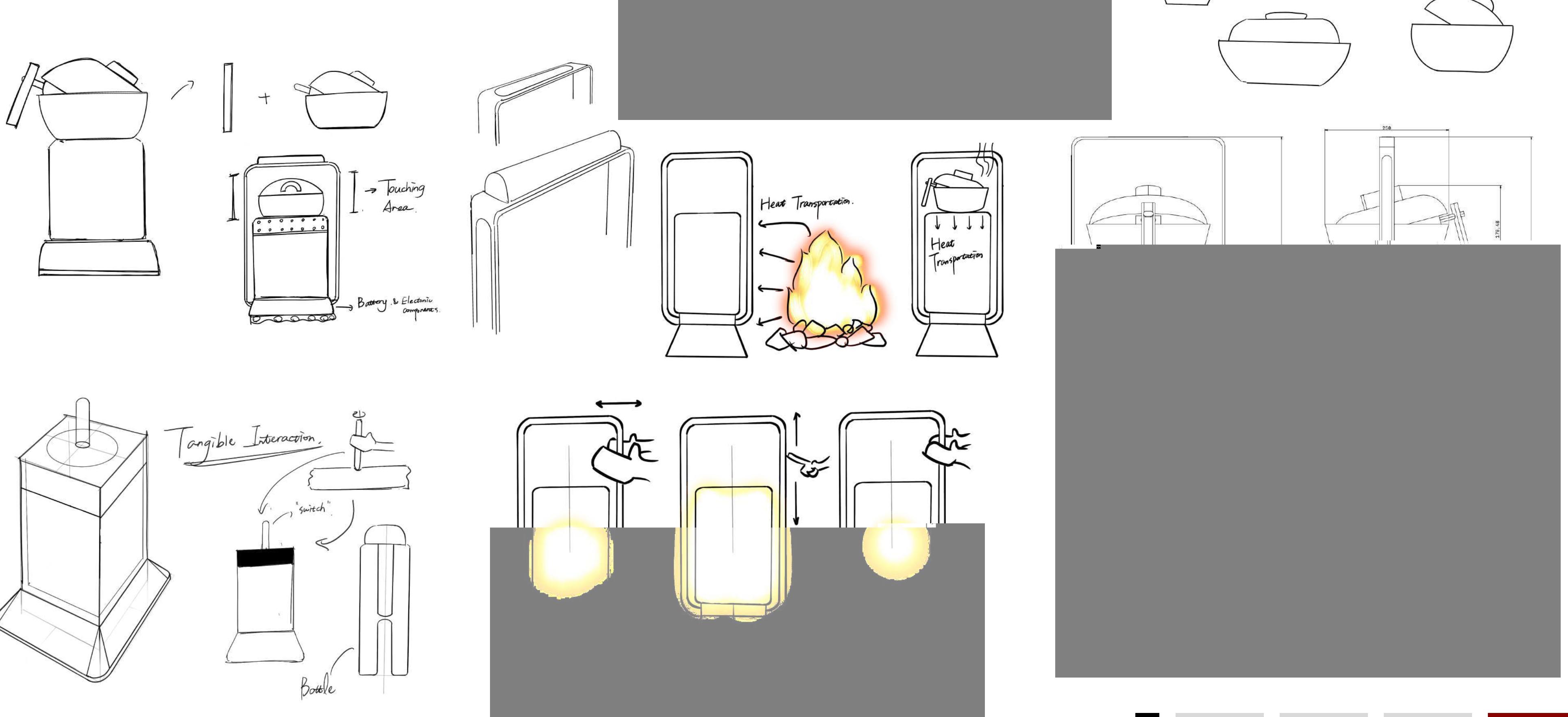
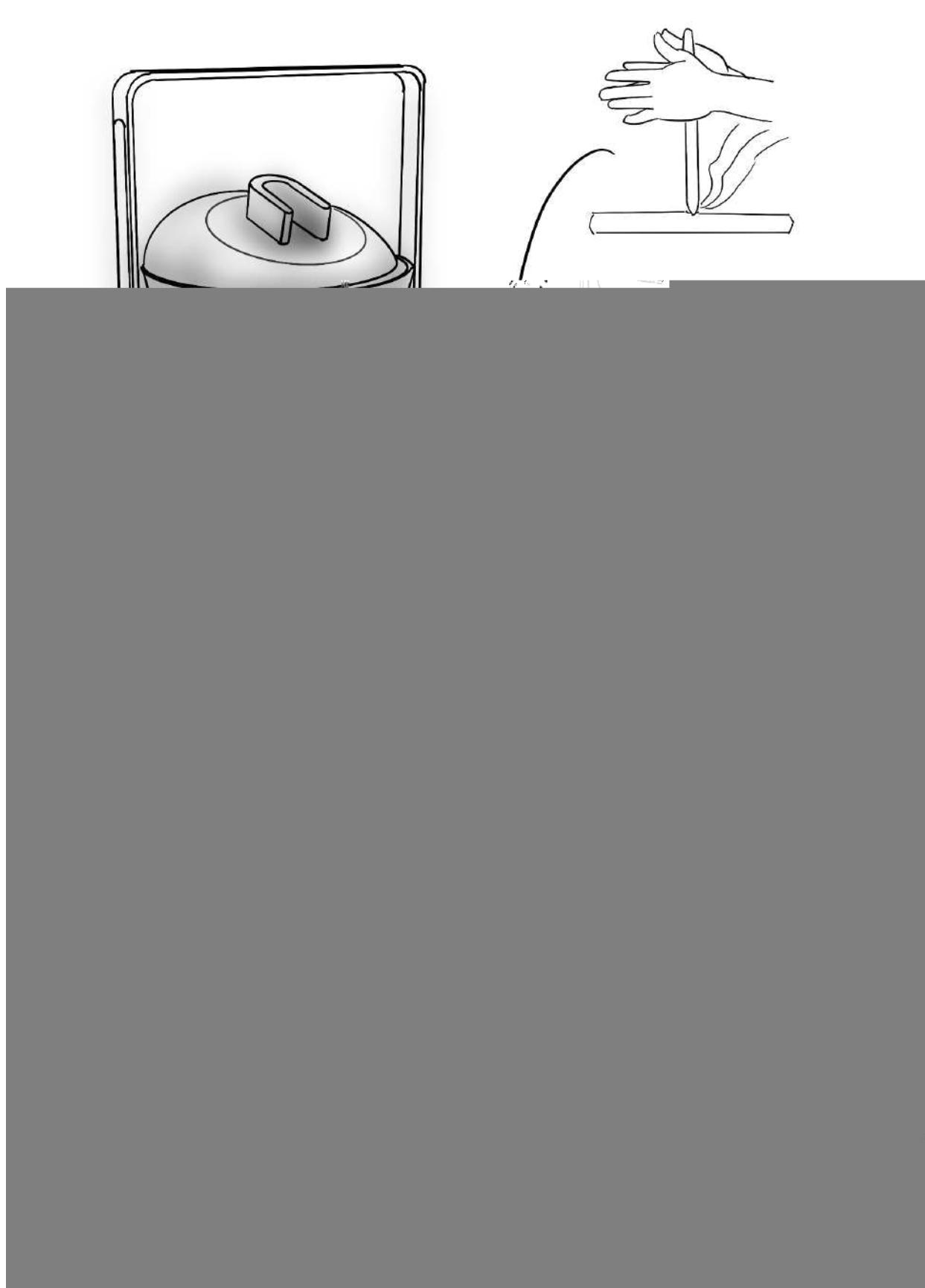
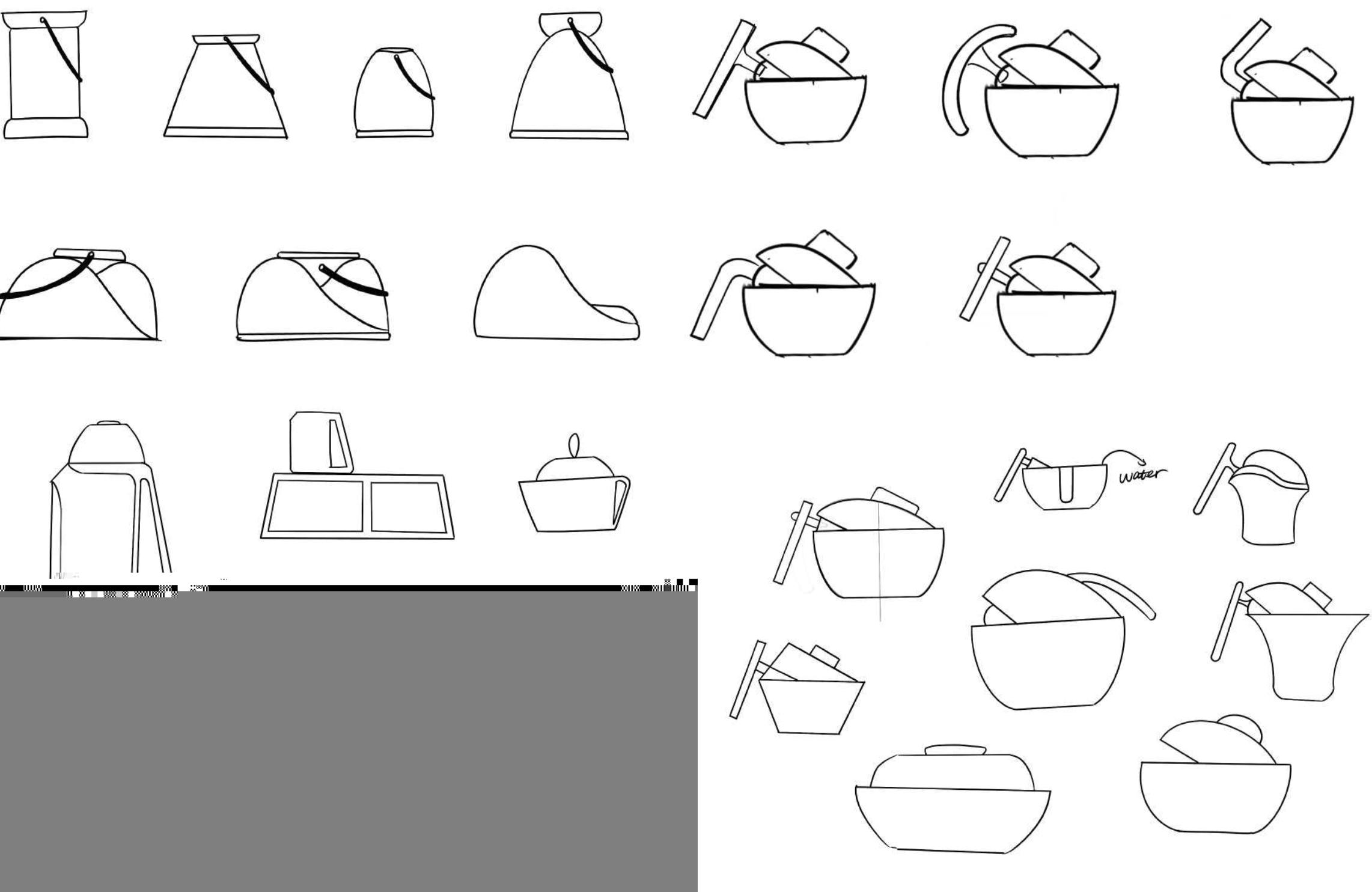
Shell
Editor of Camping
With Style

"Many people have tried camping and have been put off, usually because they had a tiny tent they couldn't move in and ended up on a flimsy roll mat or air bed that deflated in the night leaving them cold, tired and uncomfortable."

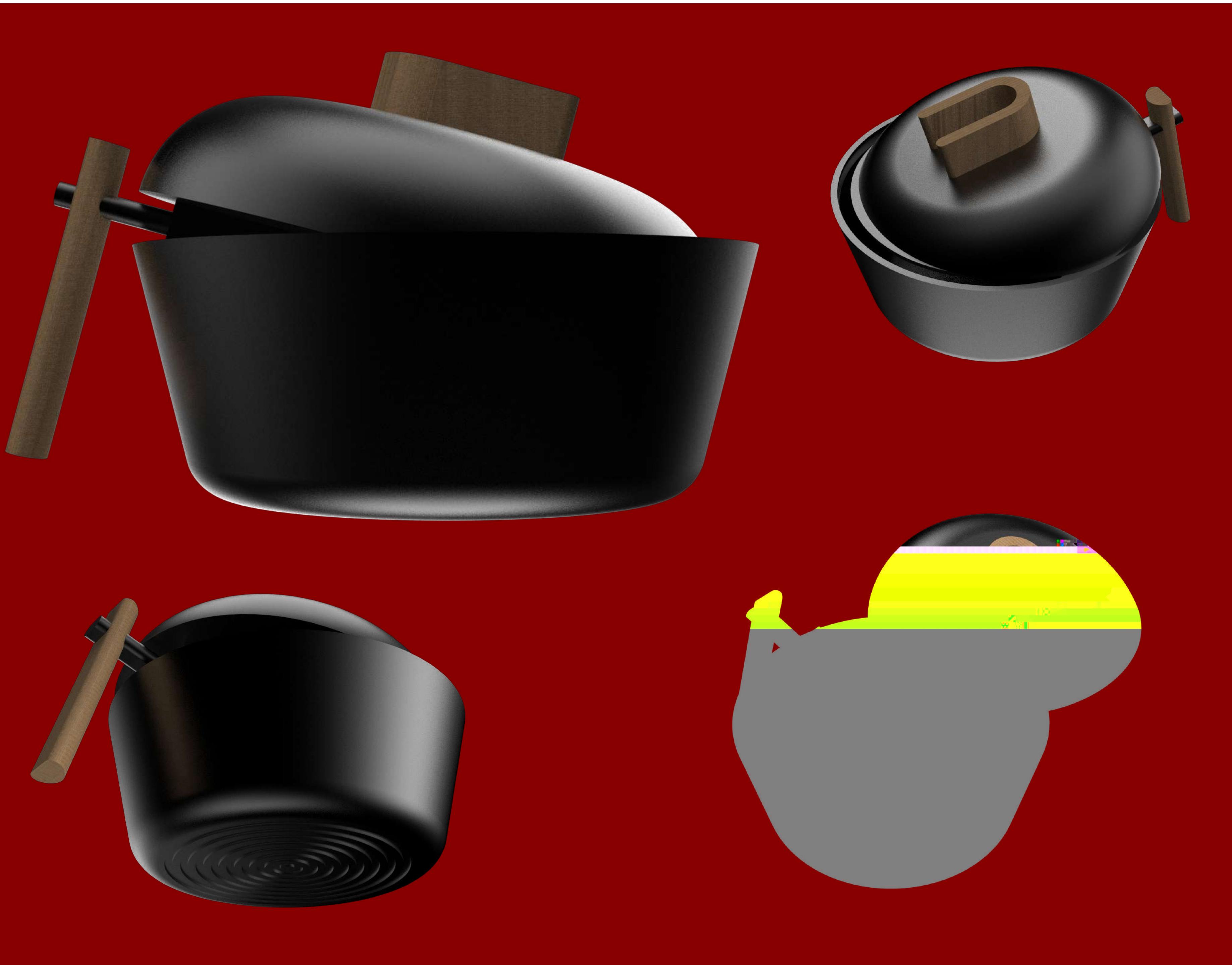


When camping, people have a lot of water needs (such as drinking water, making tea, making coffee, etc.), but when camping people do not have immediate access to water of drinkable quality. Therefore, it is necessary to treat the water when camping.

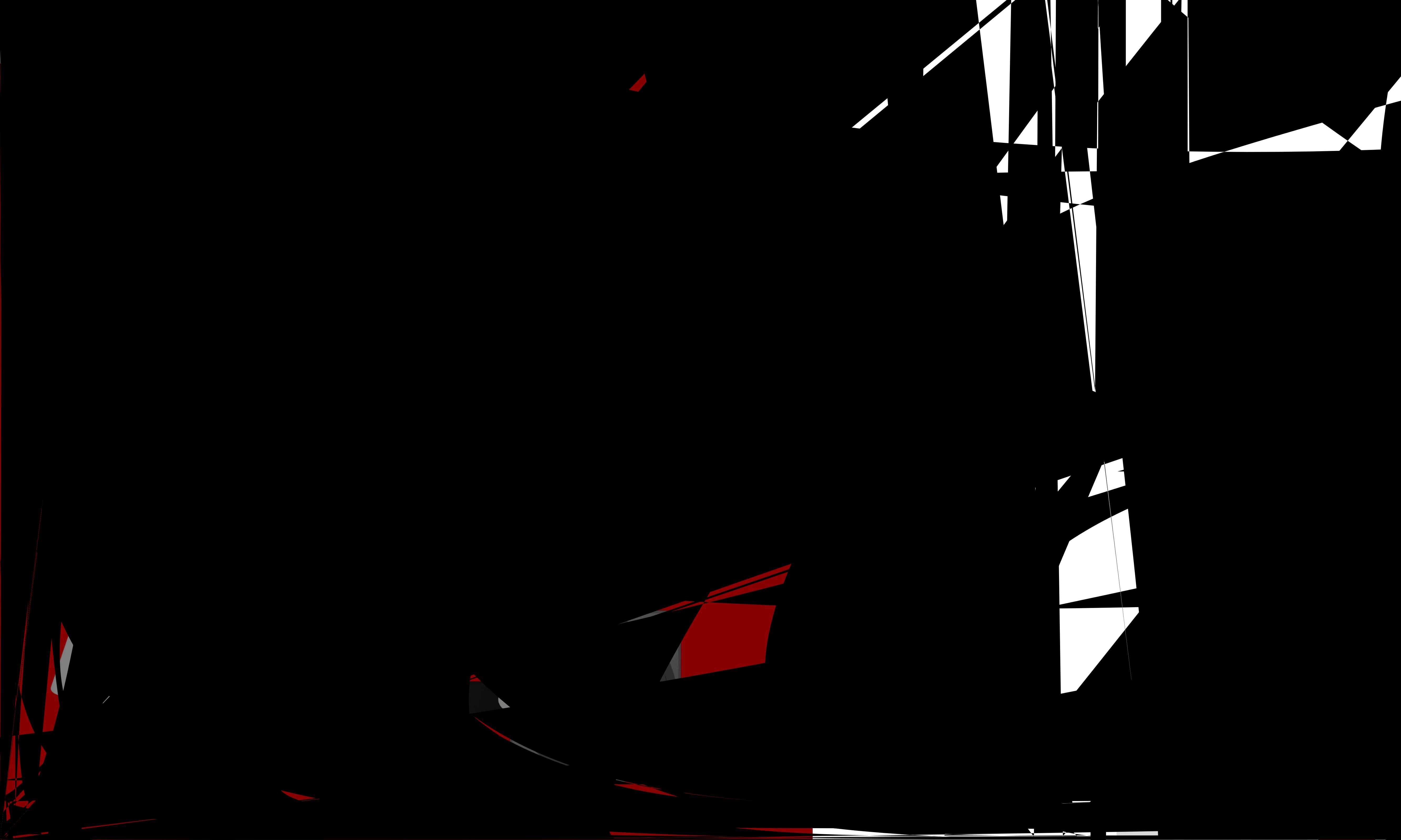








The overall shape of the kettle is inspired by a traditional Chinese tea set: the lidded bowl tea. The body of the kettle and the lid create a visual imbalance. At the same time the spout of the kettle and the style of the bottom are also borrowed from tea plates. The circular hole in the center of the kettle can be used to prevent the water purification module or the tea module.





PS: the luminous effect of the model is only a demonstration model,
the rendering effect is different from the modeling





PS: the luminous effect of the model is only a demonstration model,
the rendering effect is different from the modeling