GROUP DESIGN PROJECT 2023

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Dog product

Camera accessary for dog owners，Enhance the experience of pet owners when carrying and using cameras

FUJIFILM x University of Nottingham UK | CHINA | MALAYSIA x WY&P

Introduction

Fujifilm is a well-respected brand in the photography world, famous for its cameras and lenses which targets photographers who demand the highest image quality and performance.

As technology evolves and new trends emerge, Fujifilm faces challenges with the decline of the overall camera market and increasing competition from smartphone cameras.

Because of this, Fujifilm wants to develop new camera accessories that can enhance the capabilities and functionality of its camera to provide the best user experience to its customers and cater to new scenarios of using professional filming tools.

John Griffin

35, Cafe Owner

Chicago,USA

DOG LOVER | TRAVELING | RETRO

"I want to record every happy moment, whether it is my dog, my guests or my family, I want to leave a good memory through the camera."

Bio

John is a coffee shop owner in a non-downtown area of Chicago. He likes making friends with customers so he often chats with them. In spare time, he will practices coffee latte art and takes photos of his creations. He is a single father, and he also has a golden retriever, and he likes to take his three-year-old son and his dog outside on weekends.He would drive to the cafe in the morning with his dog and son and bring them home in the evening

Goals & Interests

- Enhance the relationship with old customers.
- Create small communities that are quiet, relaxed, and away from the noise.
- Customers can use the cafe as a gathering and party place with friends.
- Enhance the influence of the cafe, ripple to attract more customers to enter.
- Hope to record the whole process of creating latte art and share it with customers.
- Take his son and dog to the park and enjoy nature.
- Run with dog down the street on a leash and record it on camera.
- Use the camera to record the wonderful moments when your child plays with the dog.
- Take close up pictures of dogs and children from different angles.

Pain Points & Concerns

- The cafe's remote location and fixed clientele make it difficult to motivate new customers to come and experience.
- When photographing dogs and children up close, they often touch the lens out of curiosity, risking damage to the lens
- Too busy, rarely able to find time to have some interaction with customers.
- It is often happens to hold a child and hold a dog leash at the same times.No hand left, very dangerous.
- It's very difficult to get a picture of the dog at the moment it catches the Frisbee
- Hard to make latte art and shoot without someone's help.
- Combine attraction with cafe character

Motivation

Developer experience	70%
Appearance	60%
Community	90%
Attract customers	80%
Efficiency	70%

Personality

Introvert	● ● ○ ○ ○
Analytical	● ● ● ● ●
Sensing	● ● ● ● ○
Judging	● ● ● ○ ○

Brands

Marshall Nintendo FUJIFILM

Usage Senario

Cafe photo wall

Meadow and Park

Travel

Pet creative photo

Task Define

To create and design a camera accessory for the Fujifilm XT3.

01 Makes filming experiences better and more enjoyable for a defined scenario

02 Realistic and suitable for manufacture

Market research

Conducting our research is the most crucial step. It helps us identify Fujifilm's target audience, their current needs and preferences, and identify potential market opportunities for Fujifilm products.

Brand Analysis

	ADV.	DISADV.
Nikon	Good operating experience	Poor tolerance and video shooting
Canon	Reliable quality	Heavy and expensive
SONY	Wide variety	Steep learning curve
FUJIFILM	Special photo filter and good quality photos	Expensive

Conclusion : By comparing Fujifilm to other camera brands such as Canon, Nikon, and Sony, we learned that one of the competing factors of Fujifilm is the camera's special photo filters which makes the photos have a distinct feel and although the camera is small in size, it is much more expensive than its competitors.

Fujifilm's Product Analysis

Fujifilm offers a range of digital cameras that cater to different needs and budgets. Its XT Series cameras are popular among photography enthusiasts and professionals.

Fujifilm's cameras are known for their advanced features, including high-quality lenses, hybrid viewfinders, and film simulations that replicate the look of classic Fujifilm films.

When comparing and researching Fujifilm's various series of products, we learned that Fujifilm's XT series features different aesthetics within Fujifilm's camera. With all of the designs circling around Fujifilm's retro and vintage look and feel being constant with each and every camera.

FUJILM X-E4

FUJILM X-T5

FUJILM X-H2

FUJILM X-S10

FUJILM X100V

FUJILM X-T4

Pros

01 More compact and lightweight

02 In body image stabilization thus sharper images and smoother videos

03 Higher resolution LCD screen with touch functionality

04 More advanced autofocus system with face and eye detection

05 Improved image quality

01 More compact and portable design

02 Built-in 3-stop neutral density (ND) filter

03 Hybrid viewfinder that combines optical and electronic viewfinder

04 Improved autofocus system with face and eye detection

05 Improved image quality

01 Smaller volume

02 Better sensor

03 The whole camera looks more beautiful

01 Better video shooting quality

02 Better viewfinder

03 The whole camera looks more beautiful

Cons

01 Smaller battery capacity

02 Not weather-sealed for protection against dust and moisture

03 Slower continuous shooting speed (up to 8 fps)

04 Single card slot for limited storage and backup options

05 Less comfortable grip

01 Fixed lens

02 Smaller battery capacity

03 Not weather-sealed for protection against dust and moisture

04 Slower continuous shooting speed (up to 11 fps)

05 Single card slot for limited storage and backup options

01 Lower Pixels

02 No 5-axis anti-shake

03 More expensive

01 No 5-axis anti-shake

02 No reversible screen

03 Worse battery life

Competitive Analysis

Pros

01 Cheaper

02 Smaller volume (not much)

01 Larger sensor and better low-light performance

02 Shallower depth of field

03 Good autofocus

01 Larger sensors

02 High-quality 4k video recording

03 Excellent dynamic range and color accuracy

01 Better low-light performance

02 Excellent autofocus with fast and accurate subject tracking

03 4k video recording

04 Good ergonomics and comfortable handling

Cons

01 No 5-axis anti-shake

02 Worse battery life

03 Lower resolution reversible screen with limited angle

01 Larger and heavier

02 Menu system can be confusing

03 Limited lens selection

04 No built-in flash

01 Limited lens selection

02 No built-in flash

03 Autofocus not as good

04 More expensive

01 Limited lens selection

02 No in-body image stabilization

03 More expensive

High Price

Low Quality

Canon EOS R

FUJIFILM X-H2

FUJIFILM X-T4

Nikon Z6

Sony A7 III

FUJIFILM X-T3

FUJIFILM X-100V

FUJIFILM X-S10

FUJIFILM X-E4

S

Retro and classic design
Excellence image quality
Fujifilm special colors and filters
Compact and lightweight
Strong brand reputation
Committed to sustainability by using renewable energy and the reduction of waste

W

Limited tilt screen
Expensive
Autofocus struggles in low light situations
Limited battery life
Most of its revenue comes from Japan

O

Growing demand for mirrorless cameras
Offers unique features
Innovative

T

Lots of competitors
Will need to keep up with the latest technology

SWOT Analysis

Observation - Cafe 1

SHOP STYLE

Retro, Warm, Natural

ENVIRONMENT

The cafe is arranged like a garden
The menu is made of kraft paper
The decoration materials are wood and leather

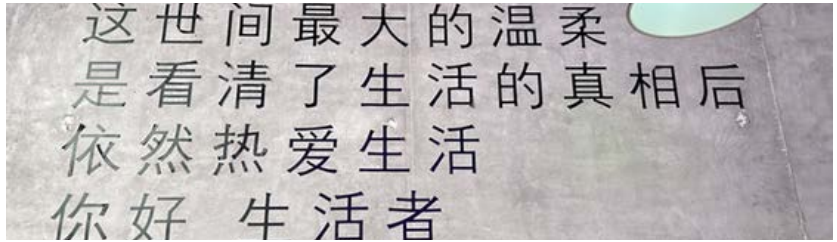
OWNER

Girl, easy-going, busy ,Not actively disturbing customers

ABOUT CAMERA

The owner is busy, she has no time to take pictures. She really wants to interact with the customer and take picture of the them but often doesn't have time.

Observation - Cafe 2



SHOP STYLE

Modern, Stylish, Minimalist

ENVIRONMENT

Modern decoration
A two-story structure
Part of ground floor is an exhibition

OWNER

Partnership, like making friends.

ABOUT CAMERA

The shop assistant told us that he haven’t taken the photos by cameras. But the picture corner in the café is created for a long time, and now it has been ignored.

Observation - Cafe 3

SHOP STYLE

Caf é restaurant. Retro, Classical.

OWNER

Family management, busy.

ENVIRONMENT

Very spacious space.
The video, books and other decorations are old
Average age of the customers is relatively older.

ABOUT CAMERA

We didn ' t see the traces of using the camera. The owner would like to record their stories with old customers through the camera.

Observation - Cafe 4

SHOP STYLE

Relaxed, literary and artistic.

ENVIRONMENT

Great sense of relax atmosphere.
Clean its minimalist decoration.
A relatively narrow two-layer structure.

OWNER

Man, loved art and created all the decorations.

ABOUT CAMERA

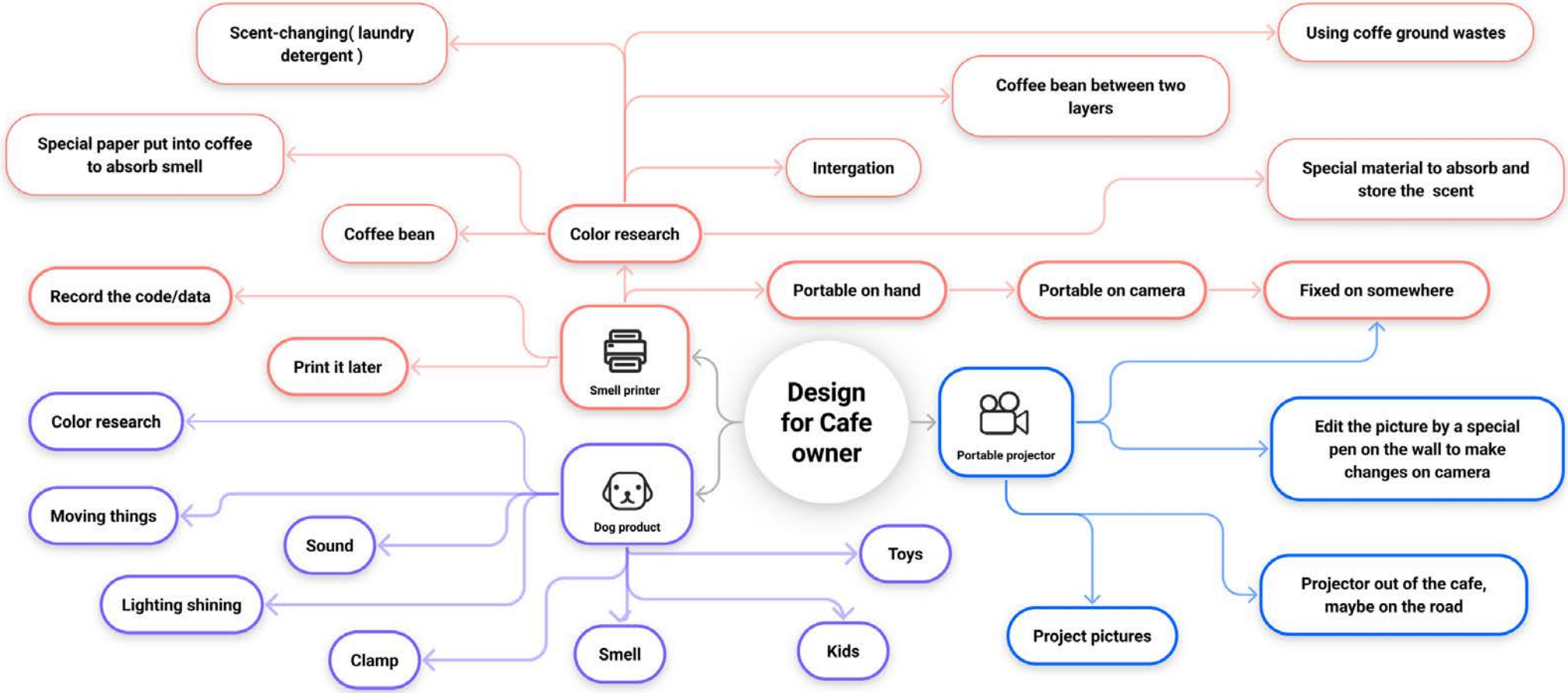
The owner is looking forward to recording a process of communication with guests. Sometimes the owner brings his dog to the coffee shop.

Pain points

- Too busy to take photo
- Pets don't look at the camera lens
- Photos have no uniqueness as souvenirs
- Can't show customers the photos taken in time

Brainstorming

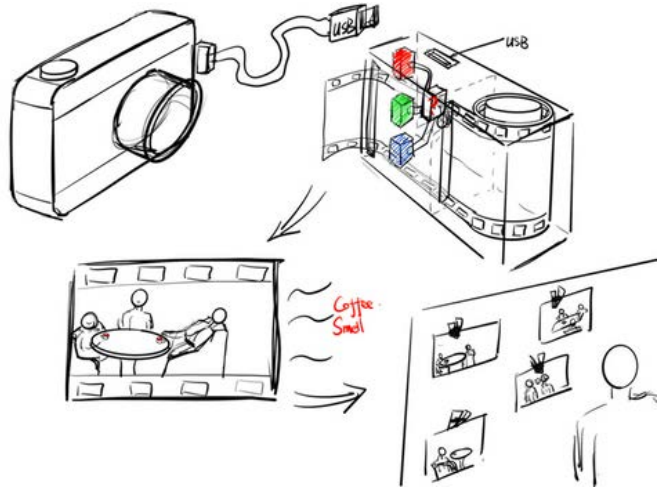
After research. we came up with 3 directions and brainstorming for ideas,each of the group members has came up with 2 ideas. Afterwards, we narrowed it down to 6 out of 10 unique ideas to present to WY&P


Scent-changing(laundry detergent)
Using coffe ground wastes
Coffee bean between two layers
Special paper put into coffee to absorb smell
Intergation
Special material to absorb and store the scent
Coffee bean
Color research
Record the code/data
Portable on hand
Portable on camera
Fixed on somewhere
Print it later
Smell printer
Design for Cafe owner
Color research
Portable projector
Edit the picture by a special pen on the wall to make changes on camera
Moving things
Dog product
Sound
Toys
Projector out of the cafe, maybe on the road
Lighting shining
Project pictures
Clamp
Smell
Kids

Direction 1 : Smell photo printer

01 **Why users choose XT-3**

- XT-3 has classical and professional characteristic.
- Inspired by the old-fashioned camera, with the modern and high-technology components
- Users who prefer the old-fashioned style and want to also have some professional performance may choose XT-3, compared to other products



02 The potential needs of target users

- May like the old-fashioned products.
- Like the printing photo rather than internet photos
- Like to record life.
- Yearn to the past, fond of recalling the past.
- Tend to approach the nature instead of living at a fast pace

04 How to tell stories better?

- If a story includes details about movement, your motor cortex would light up as if you were moving.
- It works similarly with smell. If, in someone’s story, he described the sharp smell of the pine forest high in the Andes where this family lives, your olfactory sensory areas of the brain would be active as though you were smelling the forest."
- Including realistic imagery and sensory details in stories can help grab audience's attention.

03 Observation

- In some café, owners are very willing to have chances to contact with customers, by various methods.
- For example, by focusing on the coffee, the little pets, the decoration style, and so on. This can all be presented by the pictures.
- However, in the real life, as we observed, pictures in the coffee cannot present the stories well. Customers are hard to empathize to previous moments and experience in the pictures.

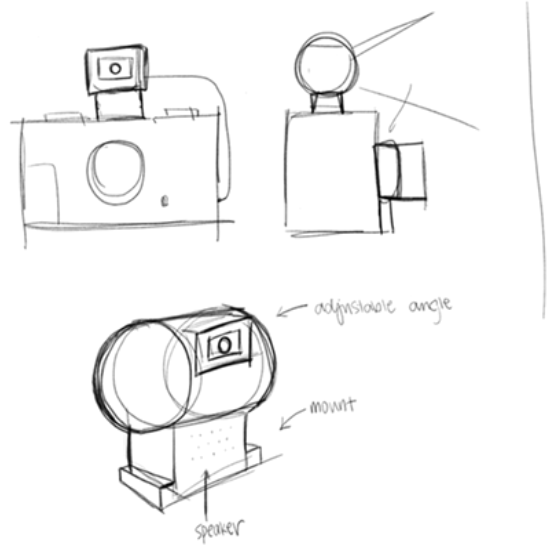
05 Connection

- How about we design an accessory for the café owner to better present the experience and stories with the customers to others.
- It can also be used as a café ID card to introduce and induce other customers to the store for consumption.

Direction 2 : Portable Projector

01 Product Description

- LED or LCD projector with built in speakers
- Mounted on the hot shoe
- Angle can be adjusted
- Projects directly from camera onto a nearby surface (e.g. wall, table, screen)



02 Why would a coffee shop owner need this?

- Adds personal touch and visual interest
- Creates a sense of community
- Designated photo station
- To transport customers to a different time and place, and create a cozy and inviting space
- Instantly share your photos and videos with others in real-time, without having to transfer them to a computer or other device first
- Portable without the need for a separate projector or computer.
- Help you see the details more clearly and appreciate them in a different way than just looking at them on a small camera screen
- Create unique and creative presentations by projecting your photos and videos onto different surfaces, such as walls or ceilings, or by using different backgrounds or filters
- Fun and interactive experience, and can create a memorable experience for your audience
- Customers may feel more connected to the shop if they their photos featured
- •Showcase the ambiance, atmosphere, or their products and menu items of the shop
- Use footage from their cameras to create promotional content

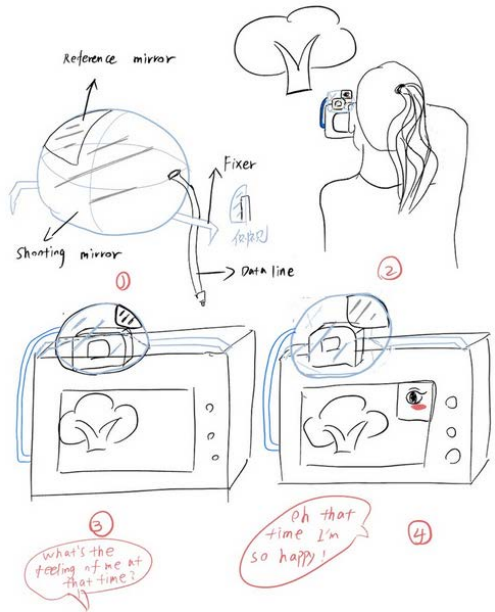
Direction 3 : Emotional Mirror

01 Inspiration

Cameras can record not only scenery but also mood. The camera is not only a device to record the scenery in front of the lens, but also to record the person behind the lens.

02 Description

The product aims to connect the scenery in front of the camera with the mood of the person behind the camera, so as to convey the richer emotion behind the photo.



Direction 4 : External GPS Receiver

01 Research

Just because the camera doesn't have a built-in GPS doesn't mean GPS isn't an option.

Some camera manufacturers make GPS-enabled phases. An external module is needed to record the location information of the image. These devices are usually wireless and plug directly into a port on the side of the camera body or consists of a module connected to the hot boot and connected to the camera using a short cable.

Canon GP-E2 and Nikon GP-1A receivers are suitable for most two popular options for modern Canon and Nikon DSLRS. Both receivers are connected to the camera's hot boots. The Canon version uses a single AA battery pool power, while the Nikon version uses a cable to connect to the camera. These are in the $250 range.

02 Competitive Analysis

Built-in GPS

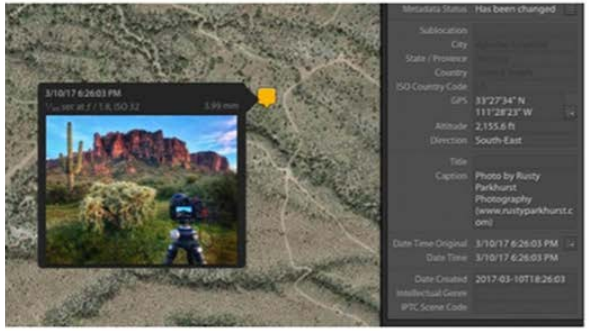
External GPS Receiver

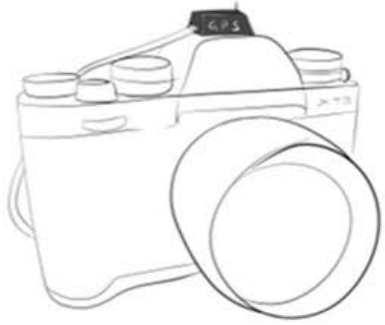
Handheld GPS

Smart Phone

	Built-in GPS	External GPS Receiver	Handheld GPS	Smart Phone
Pros	01 Relatively easy to use; Just turn it on. 02 No additional steps are required to tag photos	01 No additional steps are required to tag photos.	01 A stand-alone device that won't drain the camera's battery	01 No extra cost 02 A stand-alone device that does not use camera batteries.
Cons	01 The battery life of the camera will be shortened	01 Units can be expensive. 02 Equipment needs careful maintenance.	01 The user must take it with he/she 02 The user has to ensure that the battery is charged	01 Additional steps involve importing trace logs and tagging photos.

02 Product define





Ideation (before mid-view)

Before mid-view, we discussed our ideas with tutors and got some suggestions. According to the suggestions, we generated some new ideas and modified the previous direction.

Direction 1 : The Smell Printer

01 The café owner likes to take photos for memorizing and sharing with customers. However, photos alone can sometimes be hard to impress people.

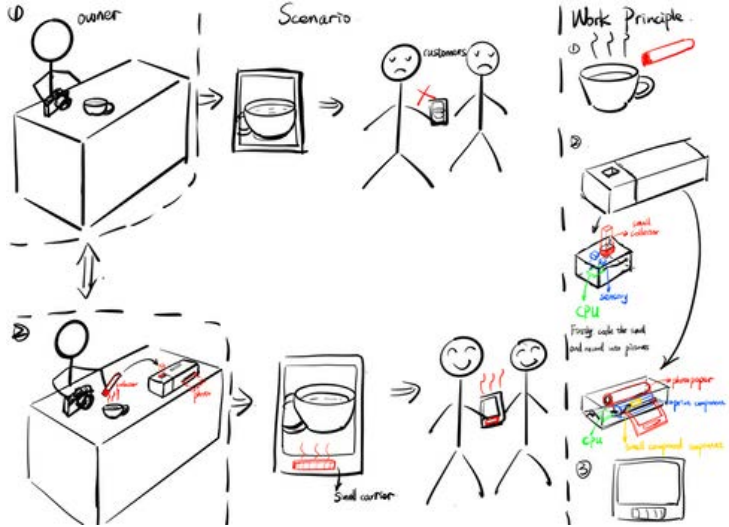
02 In this way, we decide to add new ways of communication, such as smell and hearing, to the photos, so as to better convey the story behind the photos.

03 Through research, we found that smell is more likely to be attached to photos, so we chose to make a smell printer.

Idea 1

01 Main principle: use basic cartridges to compound smells. In 2005, Thanko launched P@D Aroma Generator, a USB device that comes with 3 different cartridges for different smells.

02 Story ： people sometimes cannot empathize the emotion or the experience just by the visual photos, so how about we design a camera accessory that can help users to record the visual scene and the smell to increase the ability of empathizing.

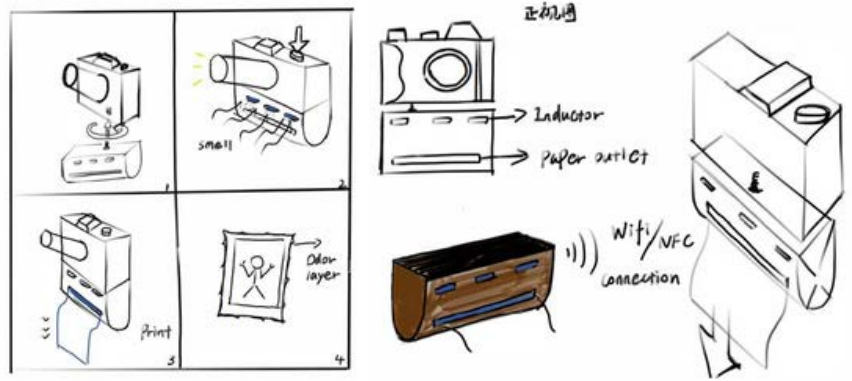


Idea 2

01 Wireless connection

02 The built-in chip memory bank of the accessory will record the ambient odor of each photo taken and store it in the memory bank. During printing, the electronic odor will be transmitted to the photo paper, concentrated, sealed and printed out

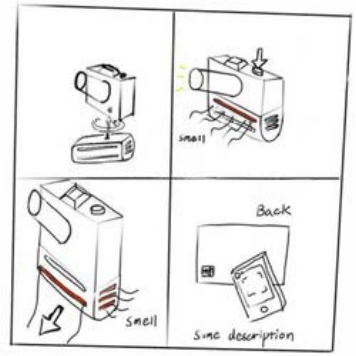
03 Instead of real-time printing, you can use accessories to print photos while viewing albums. At this time, the accessories will retrieve the smell from the memory bank and print out photos with the smell of the moment

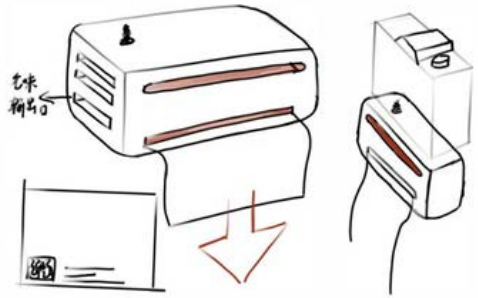


Idea 3

01 The front sensor can double gather the surrounding air and can sense the smell of the environment and store it in the memory bank when taking photos.

02 The printed paper is made of special materials, which have a strong ability to absorb flavor. After selecting the print button, the air outlet of the printer itself will emit the fragrance of the time and become more intense as the photo paper with odor comes out, giving users a stronger sense of experience.





Direction 2 : Dog product

01 In this project, we interviewed some students who had dogs at home and had cameras. A common problem was that when they used cameras to take pictures of their dogs, usually the dogs would not look at the camera...

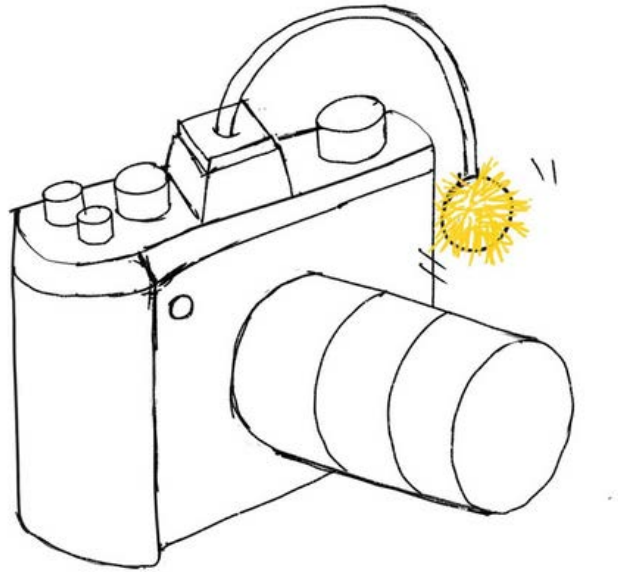
02 Connection to persona: Our persona is a coffee shop owner who owns dogs and takes them out with her kids on weekends

03 The lens of a camera is like a dilated pupil. In the animal kingdom, animals don't look directly into the glasses of other animals

Idea 1

A yellow ball was hung on the camera. This small ball will sway with the camera or wind, capturing the dog's line of sight and making it face the camera for easy photography.

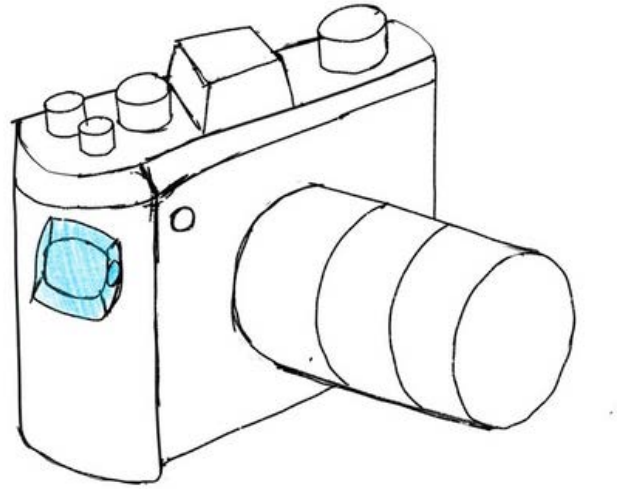
Storyboard



Idea 2

A rubber sounder was installed on the side of the camera. When the device is pressed, it emits a special sound to attract the dog's attention.

Storyboard

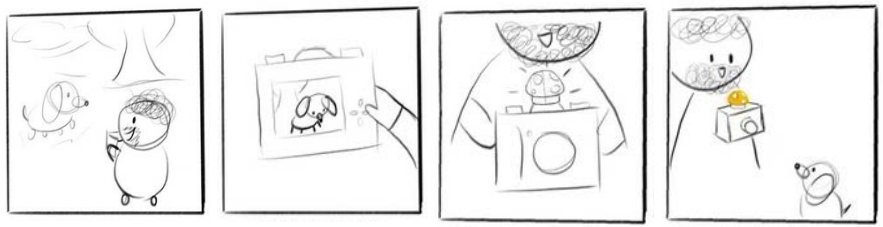


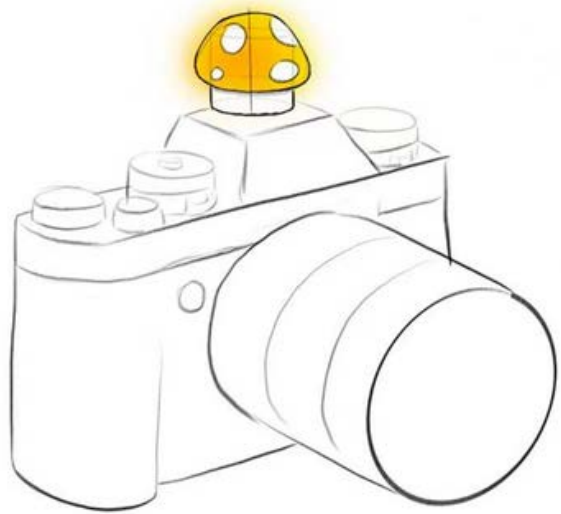
Idea 3

Attention grabbing camera accessory
Research:

- light blinks slowly
- yellow light can be easily distinguished by dogs
- has a clicking sound so it is not too strong/harsh

Storyboard





Idea 4

The idea is to use a clip attached to the hot shoe that can change direction. Attach objects that your dog normally enjoys to the top of the camera to attract the dog's attention and distract them from the lens that makes them anxious.

Storyboard

Direction 3 : Portable Projector

01 Creates a sense of community.

02 Customers may feel more connected to the shop if they their photos featured

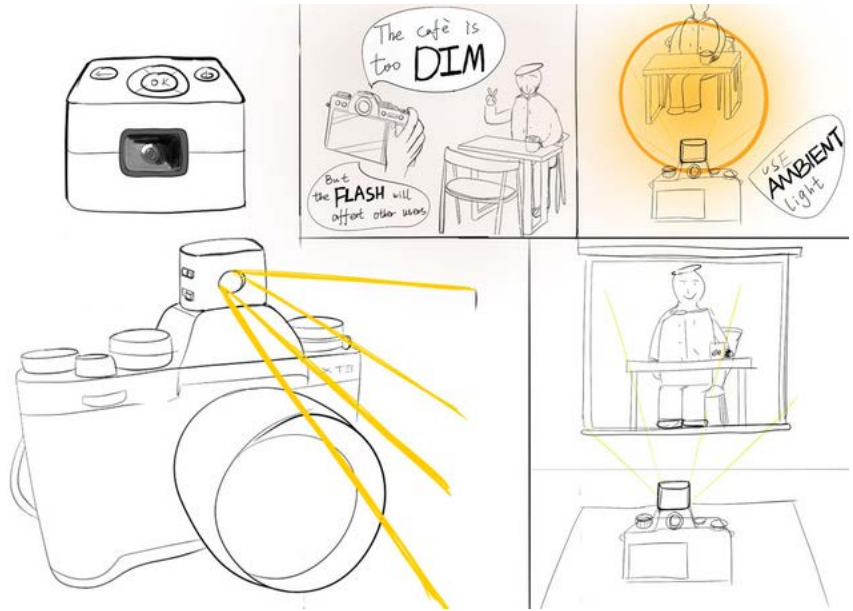
03 Designated photo station

04 Create unique and creative presentations by projecting your photos and videos onto different surfaces, such as walls or ceilings, or by using different backgrounds or filters.

Idea 1

01 In our research and field visit, we found that most cafes use dim lights to create atmosphere. However, the use of light in a cafe will affect other guests. So, a soft light source is needed. At the same time, ambient lights such as sunset lights and space lights that create atmosphere are used by many young people to take photos.

02 The idea is to combine a floor lamp with a tiny projector for a variety of functions.



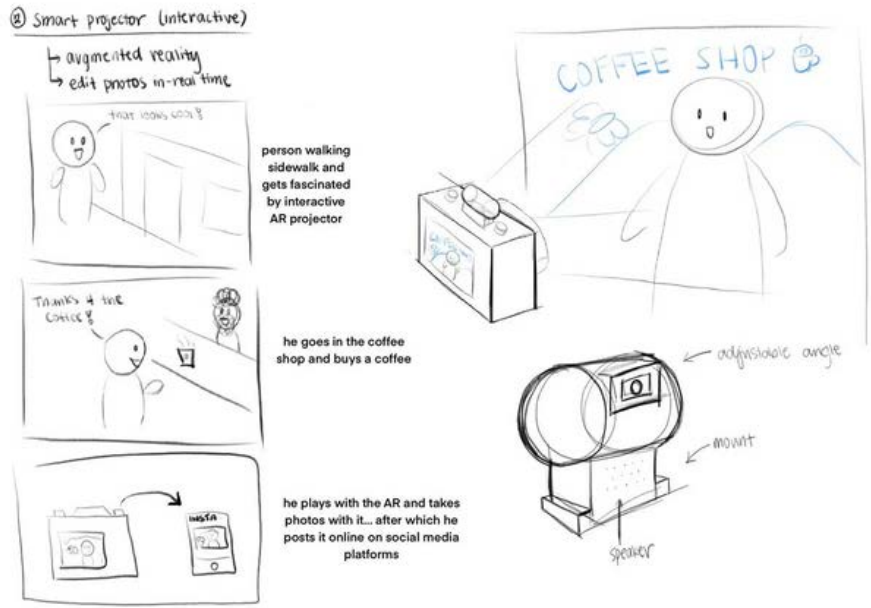
Idea 2 : AR projector photobooth

01 To take photos or videos with virtual objects/backgrounds overlaid onto the real-world environment.

02 Overlays virtual objects or background onto the image in real-time

03 Ranges from simple props to more complex 3D models

04 Photo sharing options: to allow users to share their photos or videos with friends and family.

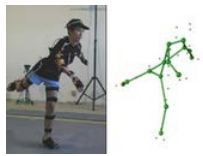


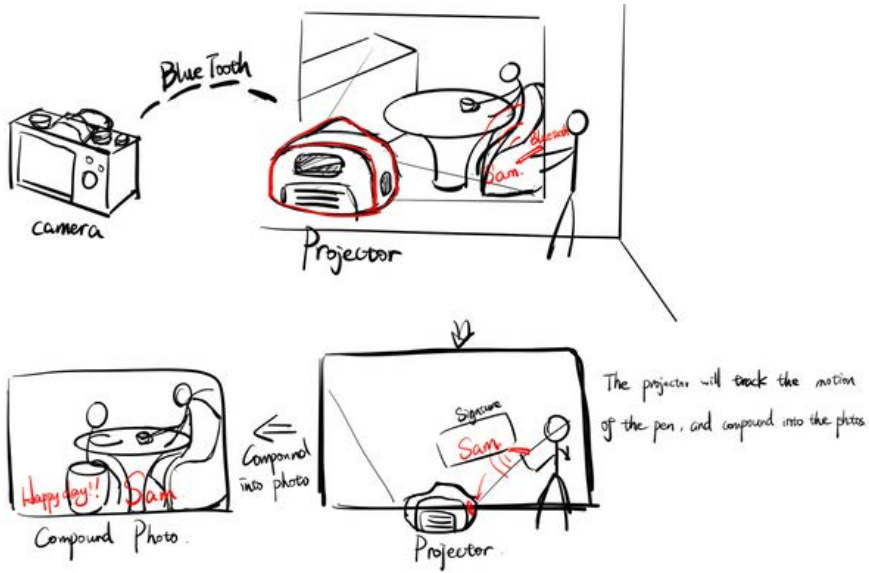
Idea 3 : Motion capture projector

01 Motion tracking technology. Motion capture, the process of recording the movement of objects or people.

02 Story: in our observation, we found some caf é owner would like their customers to write something on the message board. So why don ' t we design a projector which can record the handwriting by motion capture.

03





Ideation (after mid-view)

In the midview, WY&P suggests us to choose Direction 2 - Dog camera accessory. So, we begin new brainstorming based on it. Each member has sketch a new concept based on it.

Idea 1 : Fisheye Filter

In the interview, we found that dog owners are often troubled by their dogs' inability to focus on the camera.
We want make the process of taking photos more interesting.
So, I think if we can use some funny filter to entertain themselves.

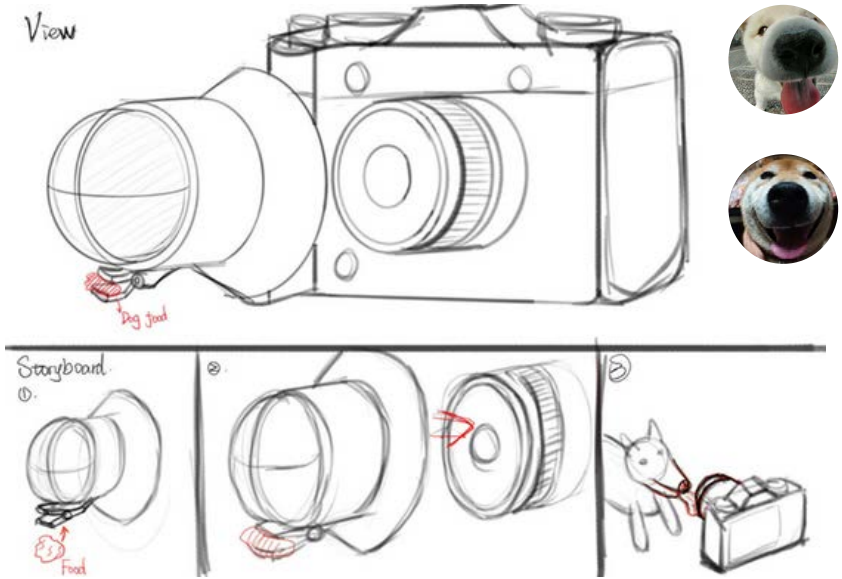
Research

Interesting lensing effects:

- Magnifying Glass effect
- Zoom Effect
- Fish-eye effect

Things that dogs like to lick :

- Magnifying Glass effect
- Zoom Effect
- Fish-eye effect

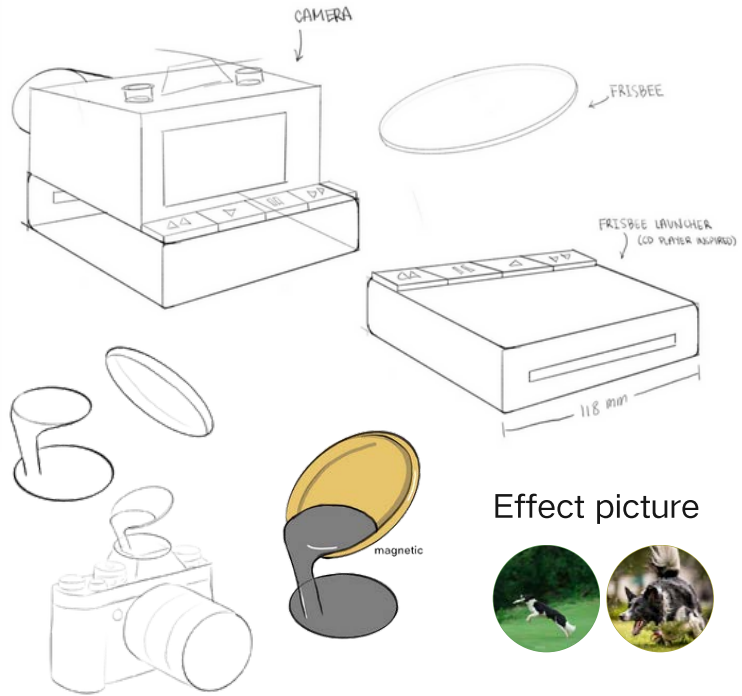


Idea 2: Mini Frisbee Launcher

The aim of this accessory is to capture a raw reaction of a dog trying to catch a frisbee. This shows the dog natural behavior.Owners can put anything inside the product from a frisbee, to a ball, and even dog treats!

Research

- Dogs are very playful and feels trapped/uncomfortable when they are forced to sit still for a photo. They find cameras strange and intimidating
- By using a toy to distract your pet’s attention can help them forget about the camera and reduce their fear
- Always have the camera ready and to work fast to capture images so the dog doesn’t get bored

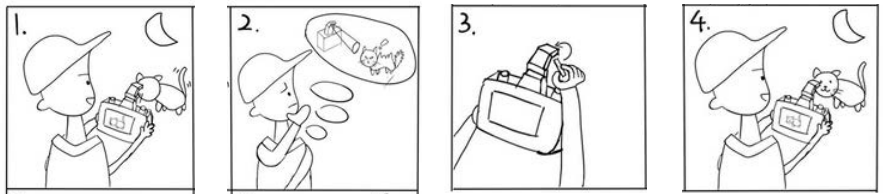


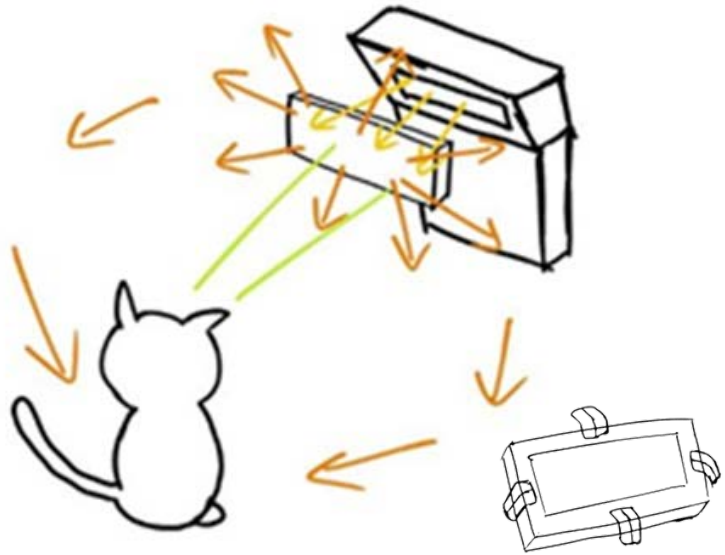
Effect picture

Idea 3

Our persona is a pet owner. When he is taking pictures of his cat, he sometimes wants to turn on the flash because the light is dim. However, he found that cats instinctively resist light sources, and pointing a flash directly at a cat can cause irreversible damage to the cat's eyes.
How to make the flash work without damaging cat's eyes?

Storyboard



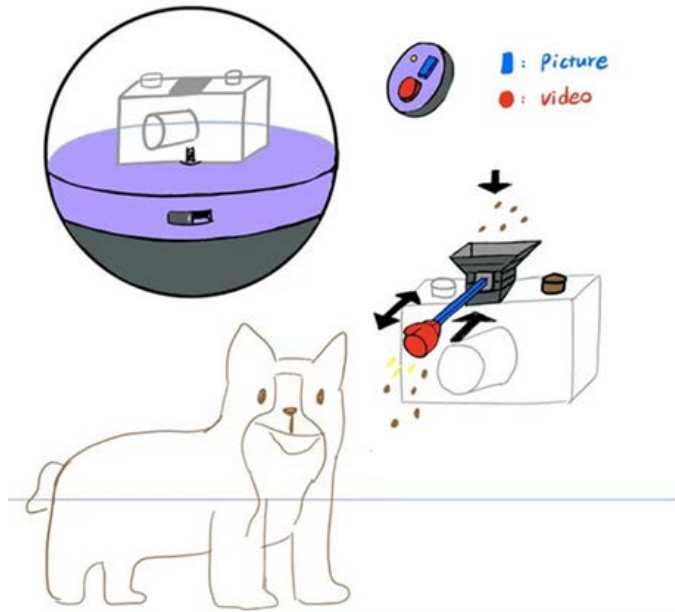


Idea 4

In the interview, we found that dog owners are often troubled by their dogs' inability to focus on the camera.

A camera accessory that rewards dog during interacting with the camera to prevent the fear from the lens. The appearance is inspired by tumbler.

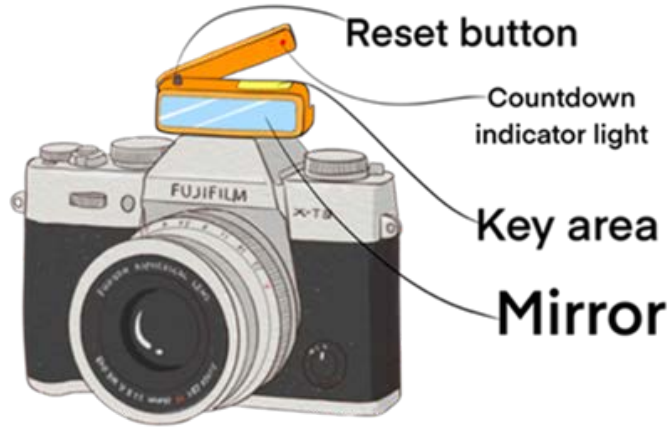
Storyboard



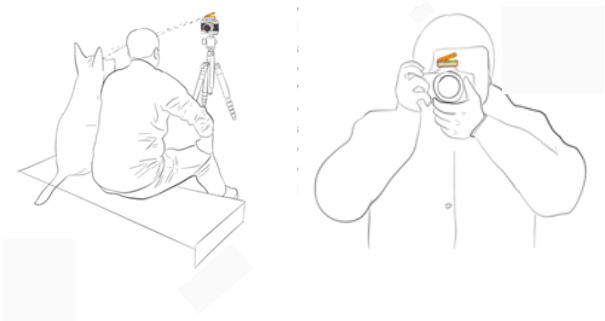
Idea 5: Intelligent timer

In the research, it was found that most cameras had poor feedback on timing photos

The idea is a visual countdown device that allows us to better understand the countdown time while taking a selfie, while using a mirror to determine if we are in the right position.

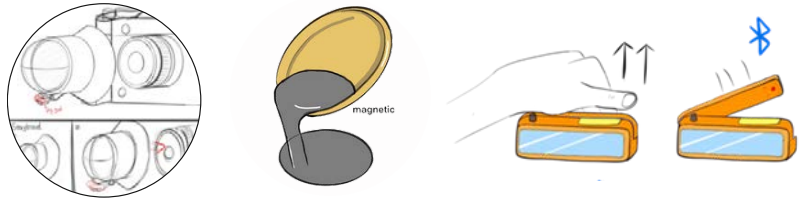


Using scenario



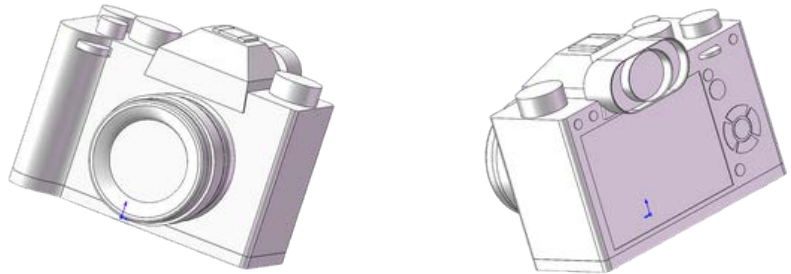
Summary

After ideation, we discussed about these five ideas and decided to choose Idea 1, 2, and 5.



CAD Model of Camera

Based on the appearance of XT-3, we made CAD models with solidworks



Iteration

Here we show how our first three ideas evolved step by step into the final product, and we'll show models, prototypes, drawings, and more of different versions of each product.

For the initial direction: Smart timer, after verifying feasibility and discussion with the tutor, we abandoned the idea and settled on a new direction: the dog camera bag. The following pages explain the details.

The final three directions are: Fisheye filter cover, Luncher and Camera bag.

Product 1 : Fisheye Filter Cover

Version 1

CAD

Prototype

Disadvantages:

- It has complex details, which is hard to clean.
- It is inconvenient to place treats.

Version 2

Prototype

Improvement:

- It is more stable to place treats.

Disadvantages:

- It is inconvenient to use the clamp.

Version 3

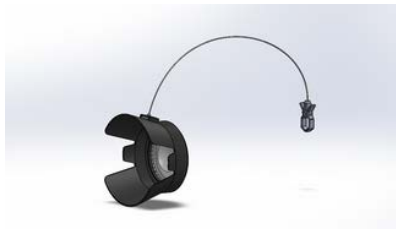
Improvement:

- It has complex details, which is hard to clean.

Disadvantages :

- It is inconvenient to place treats.

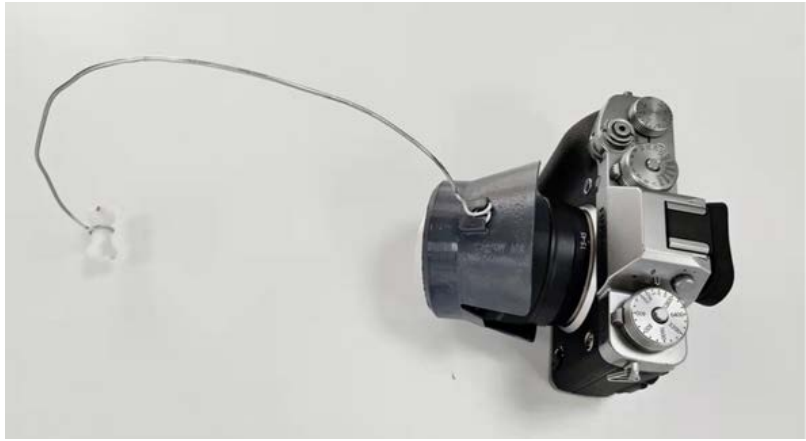
Final Version

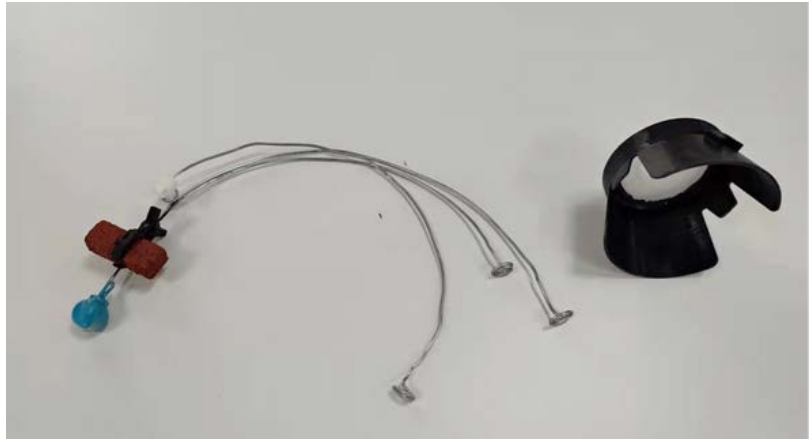


Improvement:

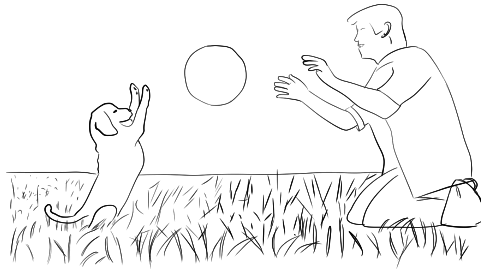
- It is able to control distance.
- It has alternative hanger.

Prototype

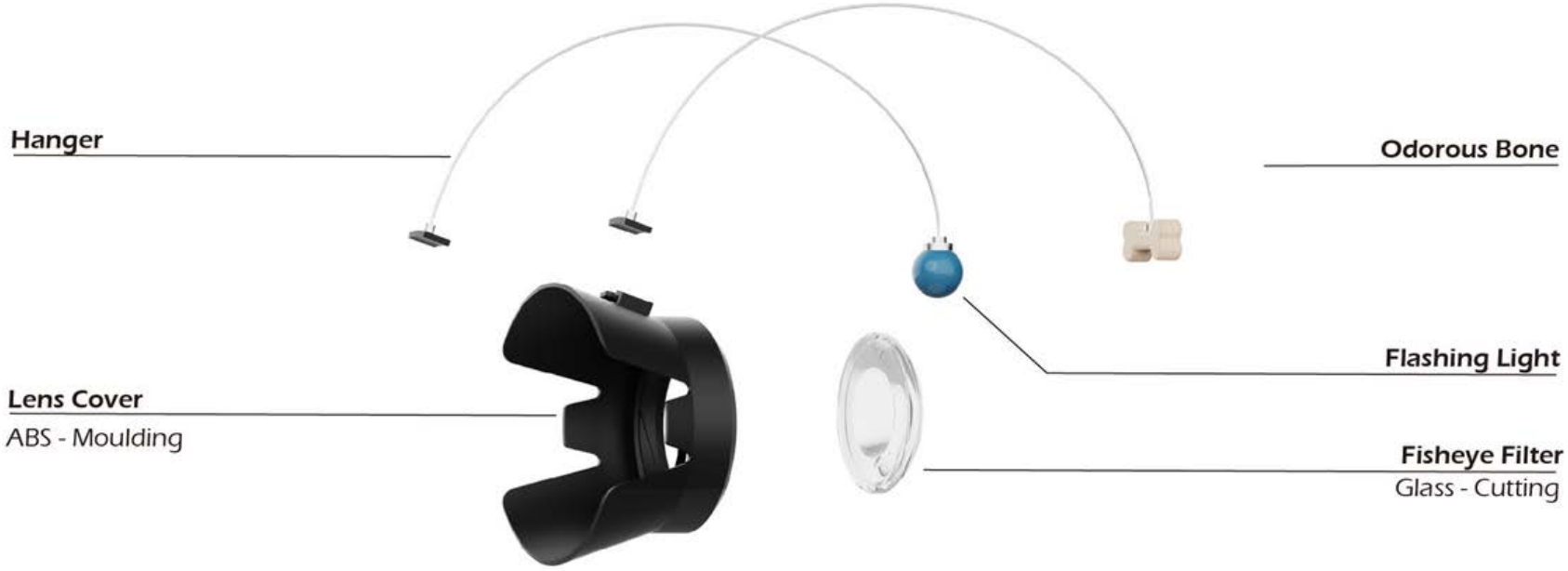




Using sceranio and Storyboard

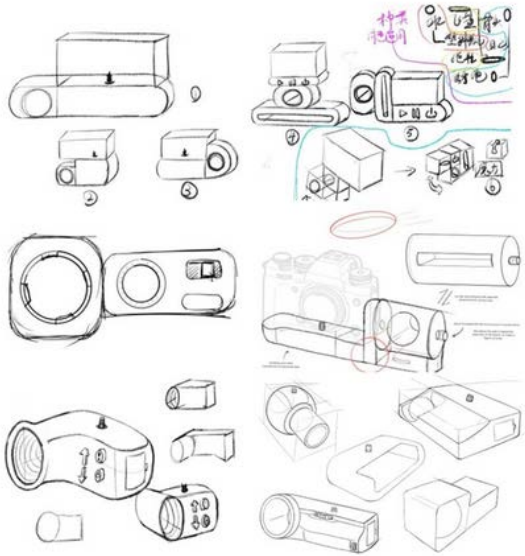


Materials and Manufacturing

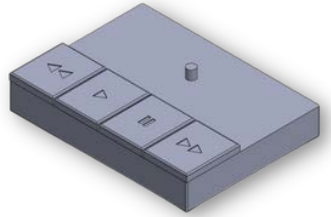


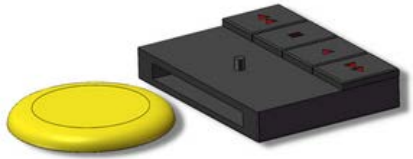
Product 2 : Second Design Launcher

Sketch



Version 1





Improvement:

- It has retro music player inspired

Disadvantage:

- It can only be used for frisbees.

Version 2

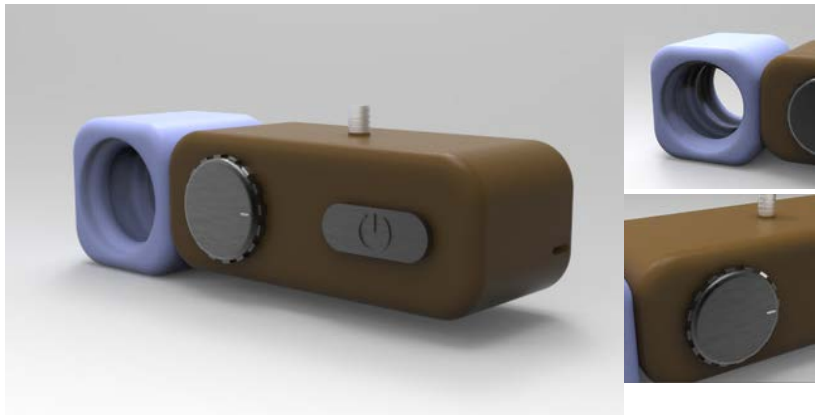
Improvement:

- It has wheel motor mechanism.
- It has Improved button signier.

Disadvantage:

- Ilt lacks aesthetic shape.

Version 2



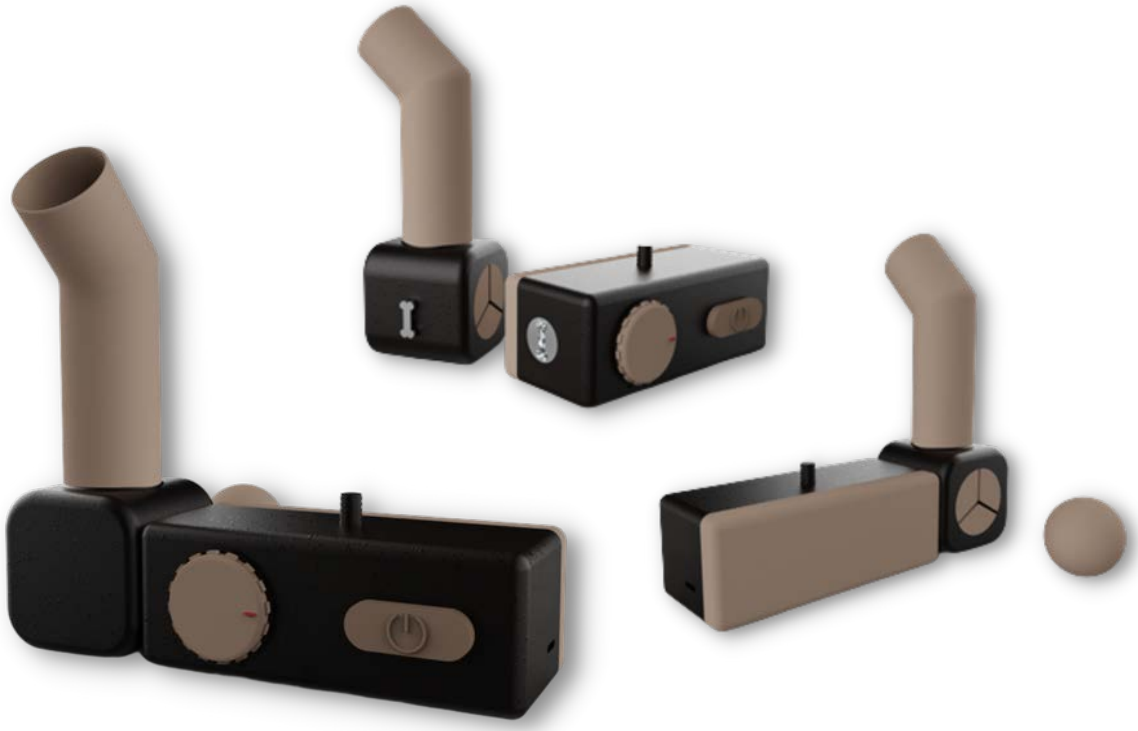
Improvement:

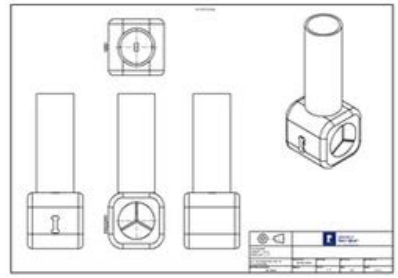
- It can control various motor speed.
- It has different attachments.

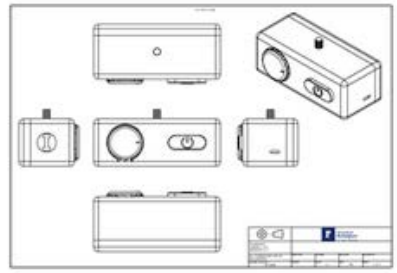
Disadvantage:

- It should be more playful.
- It can not change the direction of launching.

Final Version







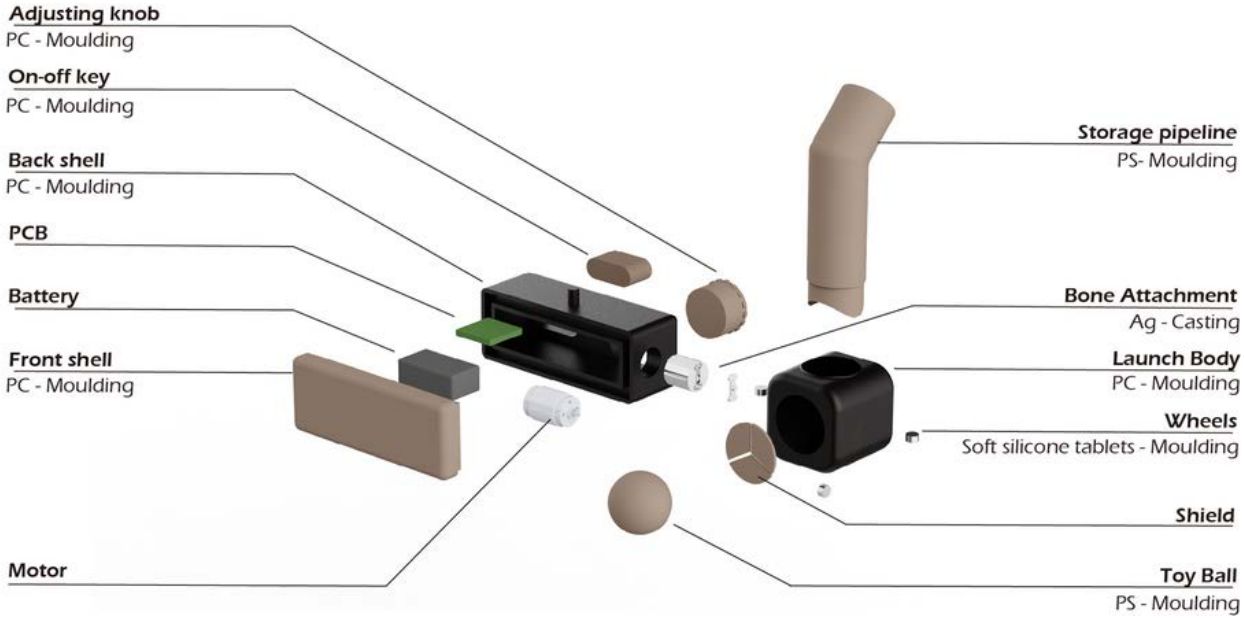
Improvement:

- It can store more balls.
- It has a silicon guard cover.

Prototype

Using sceranio and Storyboard

Materials and Manufacturing



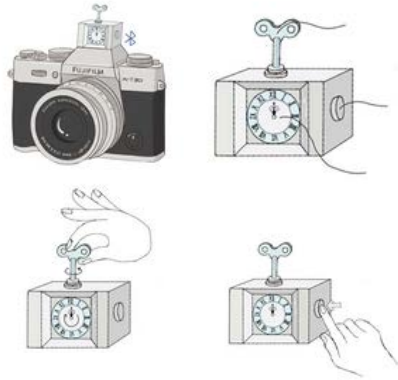
Future work

Consideration:
We want it can not only launch the frisbee, but also the toy bond dogs like.
But we still need to consider if we can also use the storage bin like the ball launcher we have done.

Product 3 : Camera bag

The Initial Design

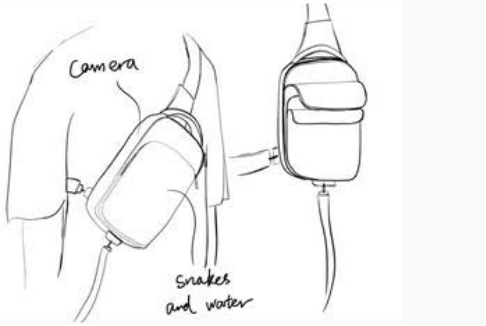
Introduction: This is a wind-up auxiliary time-lapse photography device. It connects to the camera via Bluetooth and is placed on the hot boot lid. When the user wants to use time-lapse photography, he can turn the spring on the device to adjust the countdown, which is displayed by the clock below and synchronized with the camera. When the preparation is complete, press the button on the side, the countdown starts to flow, and the camera takes pictures after the countdown is over

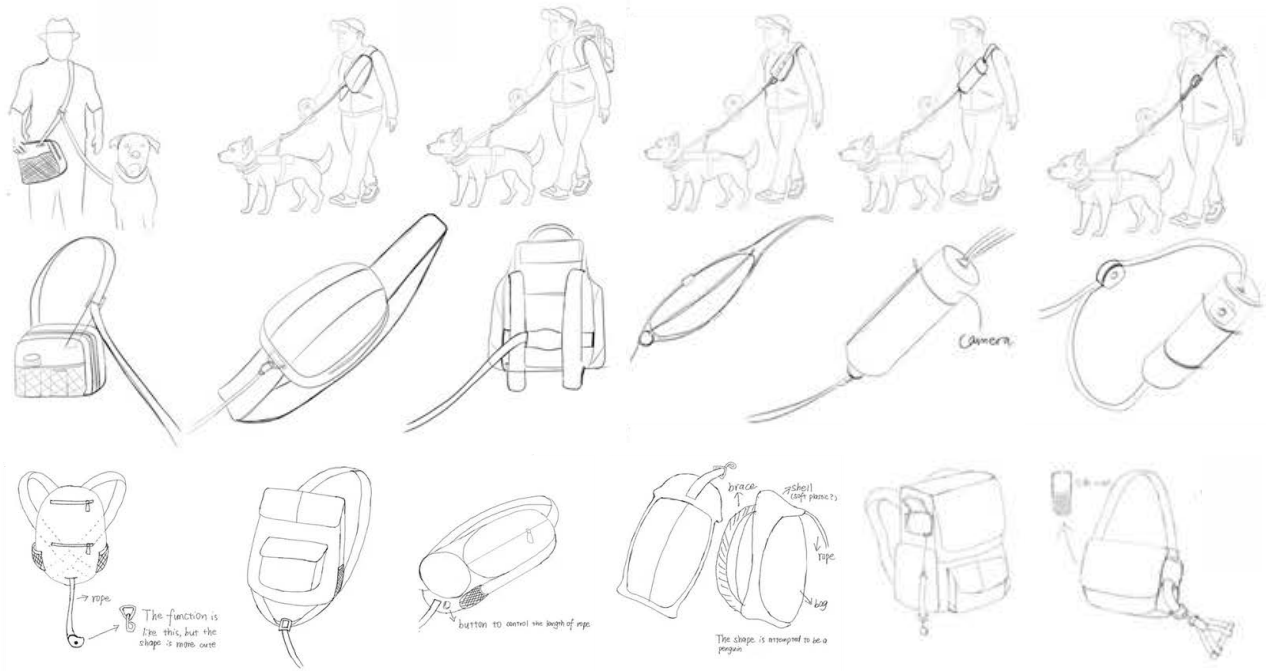


Disadvantages

- The design goal is wrong. Users can do time-lapse photography without using the product.
- The device cannot be used with an external flash

Sketch


camera
snakes and water
snakes and water
camera
hole


camera
rope
The function is like this, but the shape is more cute
button to control the length of rope
brace
shell (soft plastic)
rope
bag
The shape is arranged to be a penguin

Version 1

Improvement:

- It has detachable dog leash.
- It has big volume and carry space.

Disadvantage:

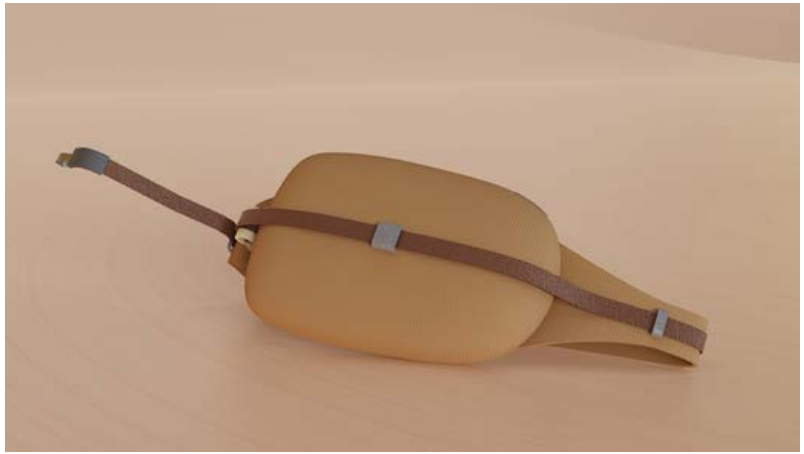
- The leash position makes bag unstable.

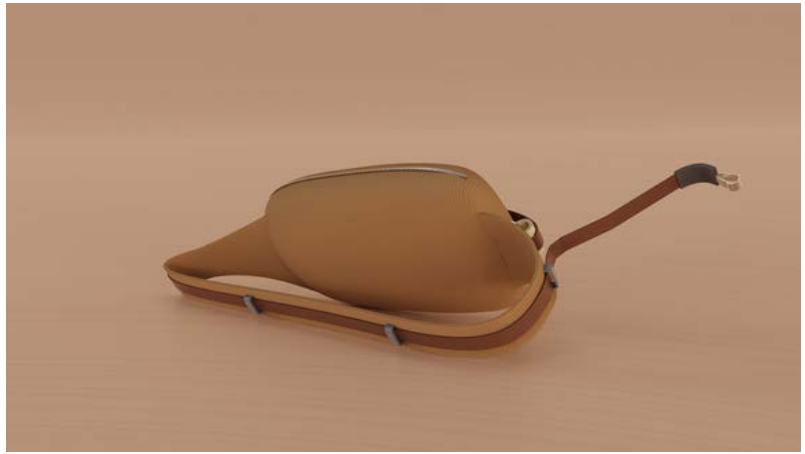
Version 2

Disadvantage:

- The force is concentrated in one point making the bag unstable.

Final version



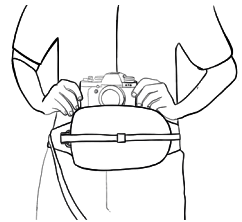


Improvement:

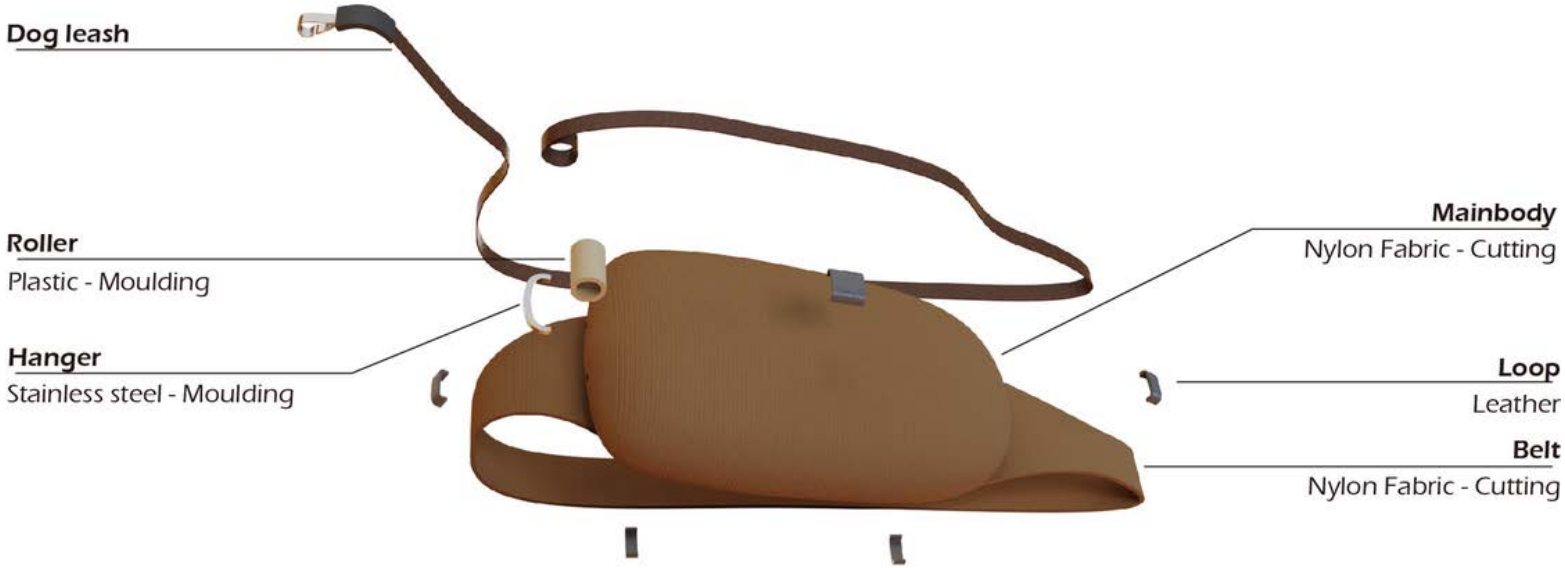
- The fanny pack is designed to distribute the force evenly across the entire waist for greater stability.

Prototype

Using sceranio and Storyboard



Materials and Manufacturing



Reference List

https://www.fujifilm.com/us/en
https://electronics.sony.com/
https://www.usa.canon.com/
https://www.nikonusa.com/en/index.page