



Home robot

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Design process

Strategize

Research

Design

Present

Goals:

Robot for home
that makes life
easier.

Cross analysis,
Questionnaire

Sketches,
Draft prototype,
3D Mock-up,
Final model

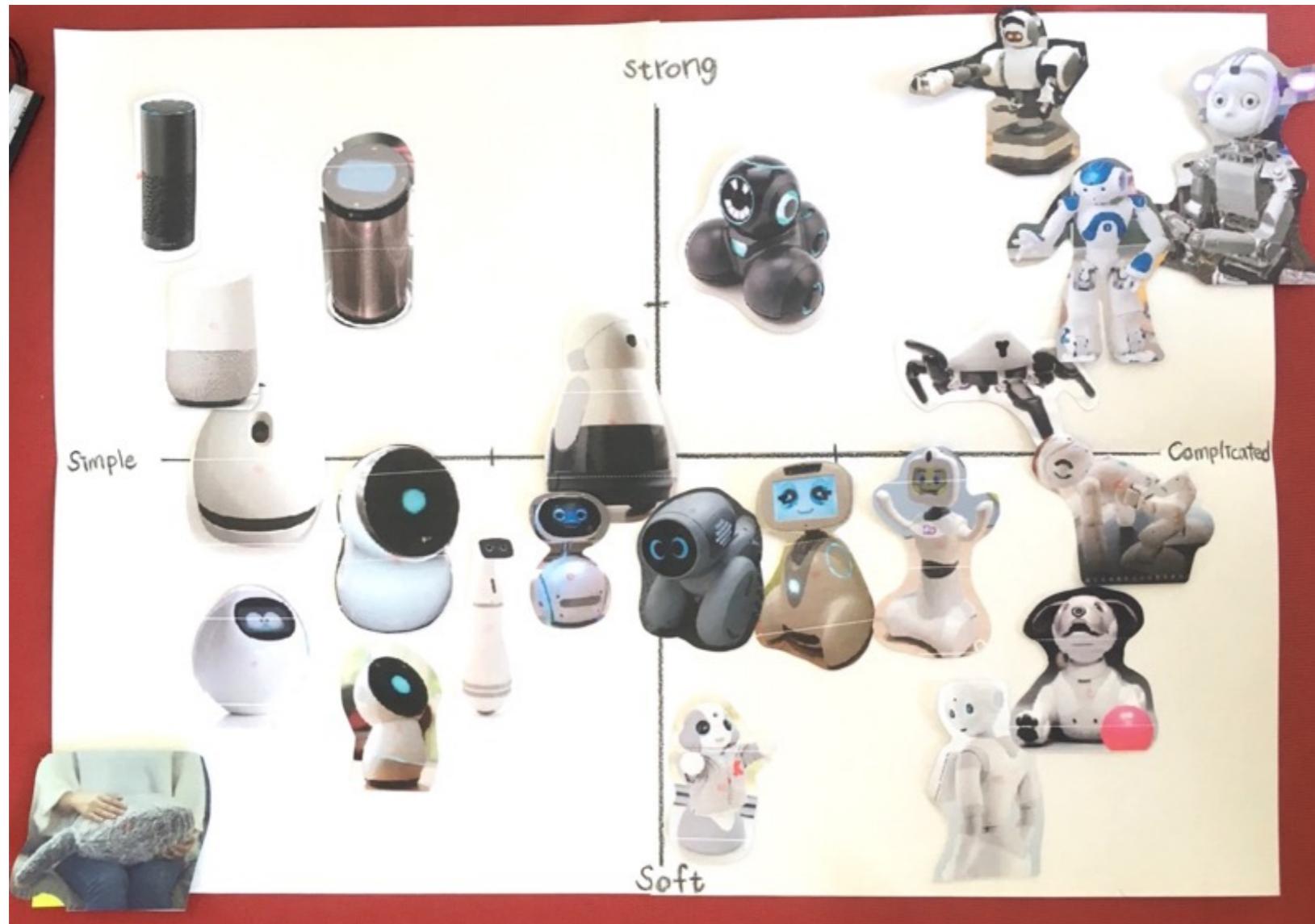
Home robot
design concept

Research-1

Analysis of robot appearance (cross analysis)

We collect different kinds of home robots that have already launched and sold to public and use cross analysis to analyze the appearance design of the robots. At x-axis are complicated and simple and at y-axis are strong and soft.





- 1) Most of the products that are already on the market are with softer appearance.
- 2) We can find out that the robots with soft and rounded appearance trying to get into your live and become family partners.
- 3) The proportion of robots with simple and complex appearance are almost 50% and 50 %.
- 4) The robot with a simple appearance tends to be the concept of the home appliance manager, and the complex-shaped robot are tend to have single function.
- 5) In the second quadrant, we see some opportunities.

Research-2

Research of users' need(questionnaire analysis)

We use questionnaire analysis to do our functional survey. We establish scenarios of different types of robots, like family service type, education and entertainment type, home care type, smart type, and then ask people to make the score of preferences and needs according to the different functions of the robot in each situation. Finally we collected 133 responses.

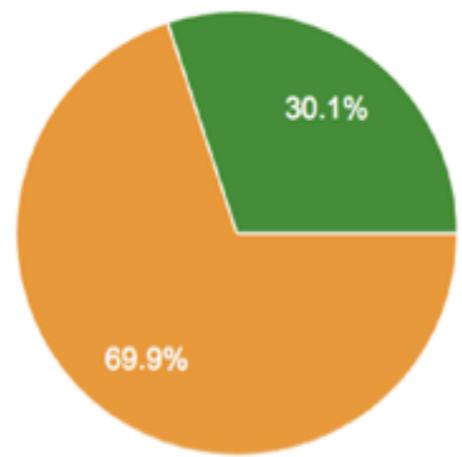
Online Questionnaire :

<https://docs.google.com/forms/d/1uiNONBINIXP64k7q7yDRI2nZTR2KaoV9Z-gULvJTFIA/edit>

Here are pie charts that show basic information and consequences of our questionnaire.

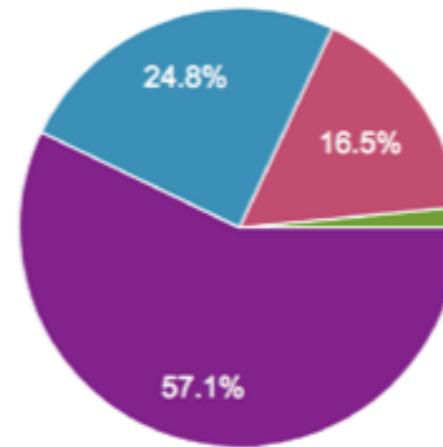
Your gender ?

- Female
- Male



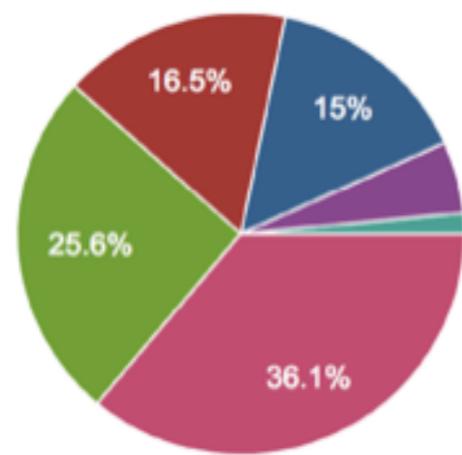
Which robot is most interest to you?

- 【Family Service Type】 Including vacuum cleaners, cleaning robots,...
- 【Education and entertainment type】 Including electronic pets, LEGO rob...
- 【Home care type】 Includes limb di...
- 【smart type】 Includes voice chat,...



How old are you?

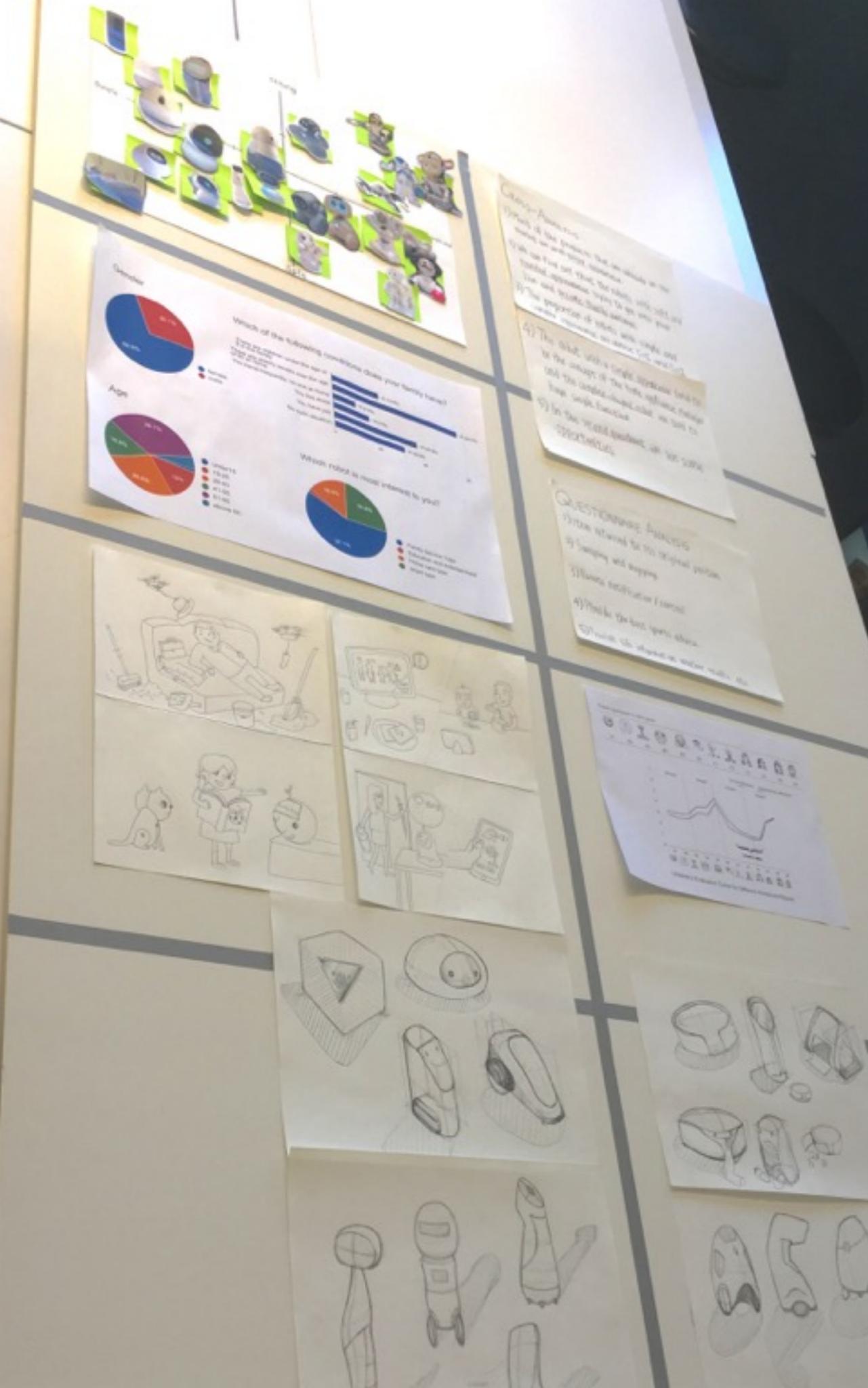
- under 18
- 19-25
- 26-40
- 41-50
- 51-60
- above 60



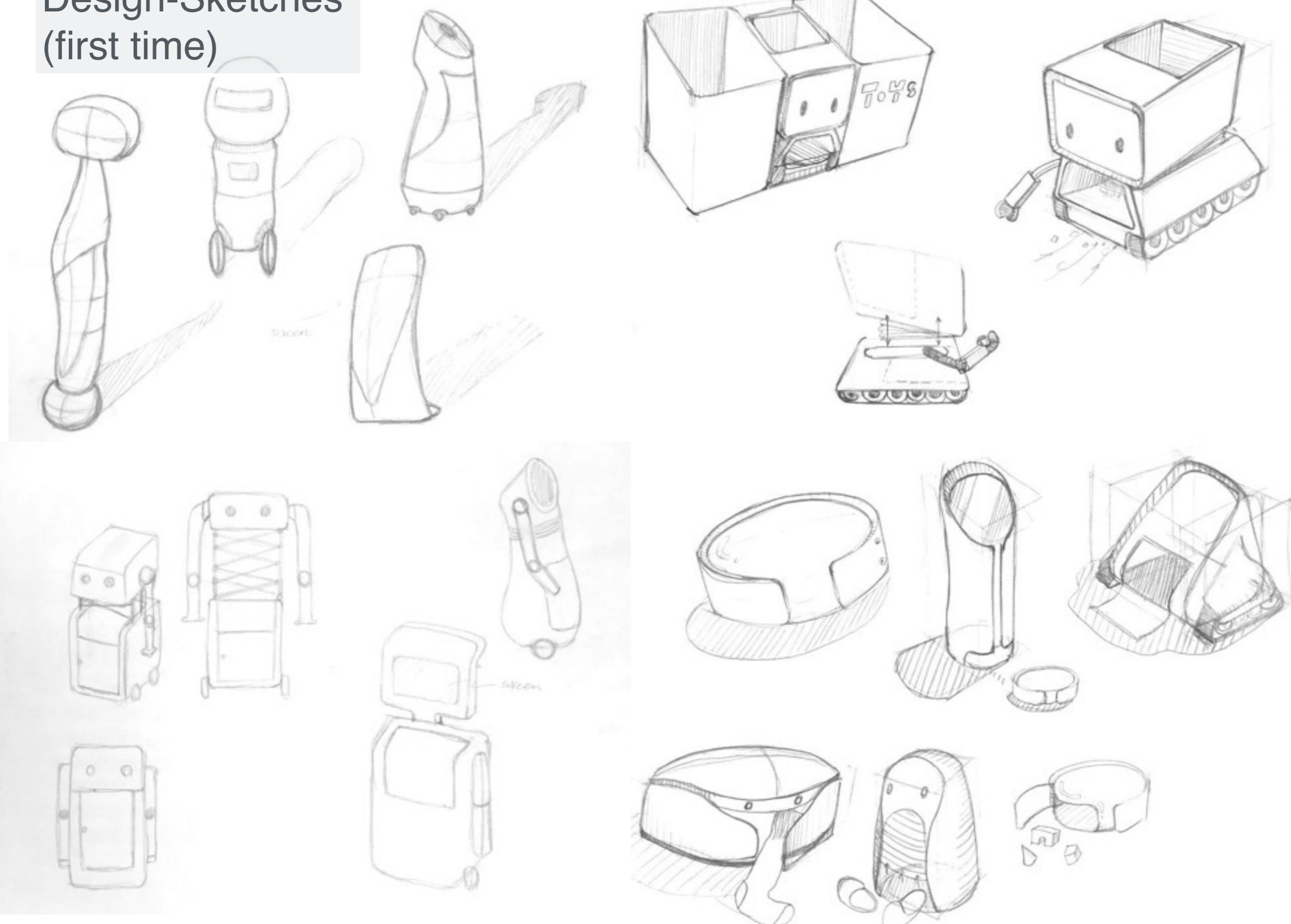
We calculated the average scores of users' preferences and demands for each function. We choose the function whose score is above the average score and then used demand score to subtract the preference score and obtained the difference. From the comparison of the smaller values, it can be seen that the following five functions are more acceptable to general public:

- 1)Item returned to it's original position.
- 2)Sweeping abd mopping.
- 3)Remote notification / control.
- 4)Provide the best sports advice.
- 5)Provide life information : weather, traffic, etc.

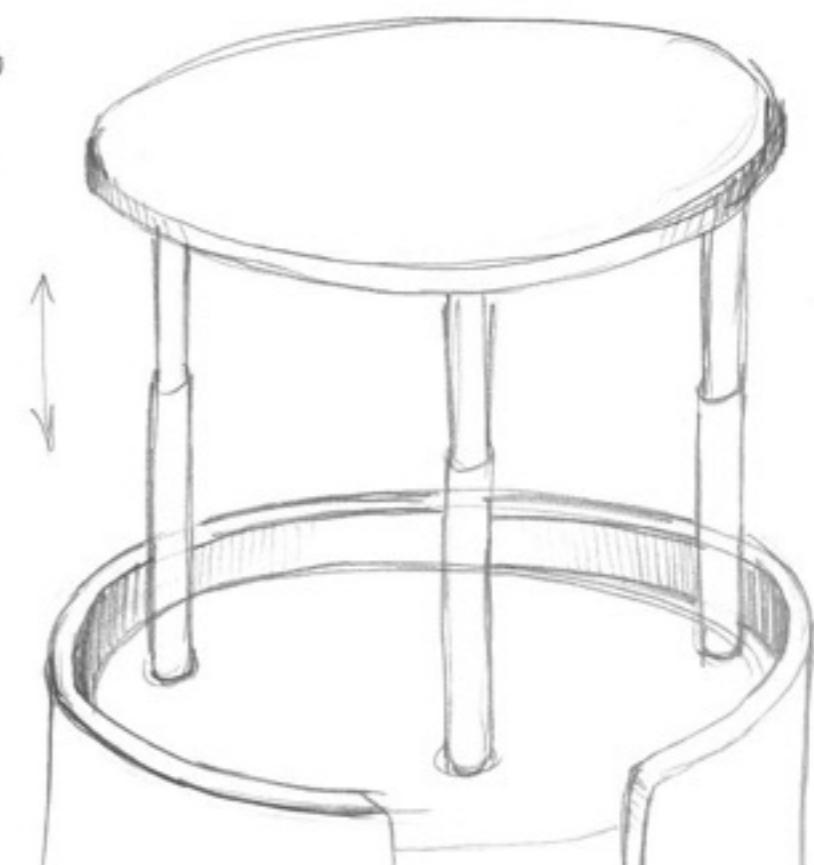
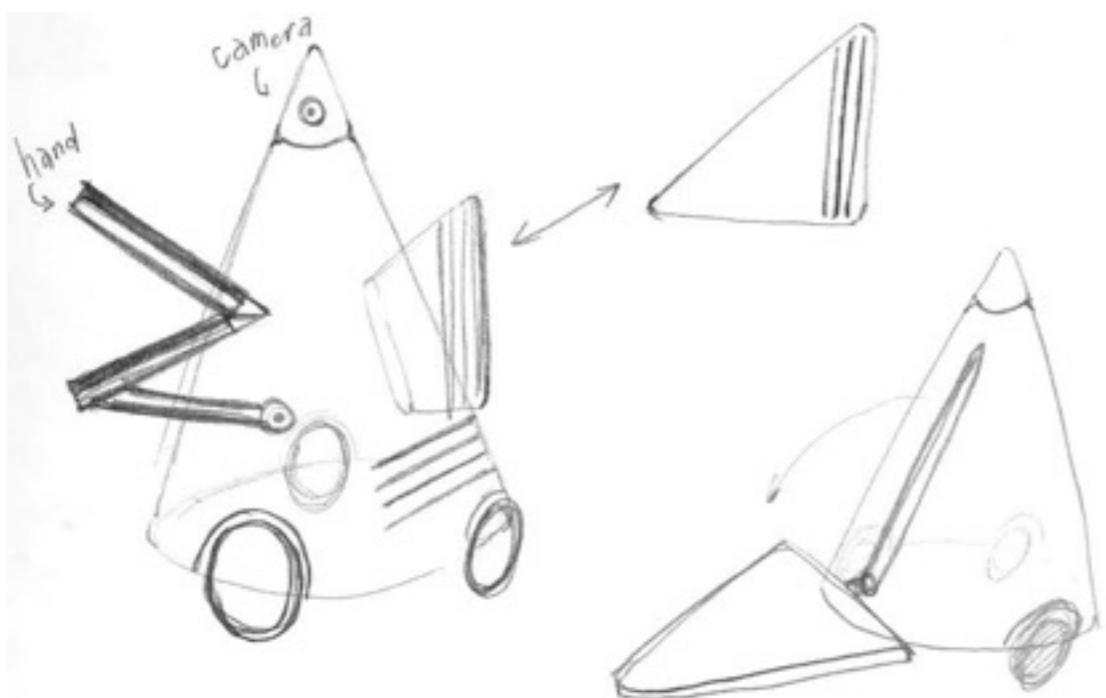
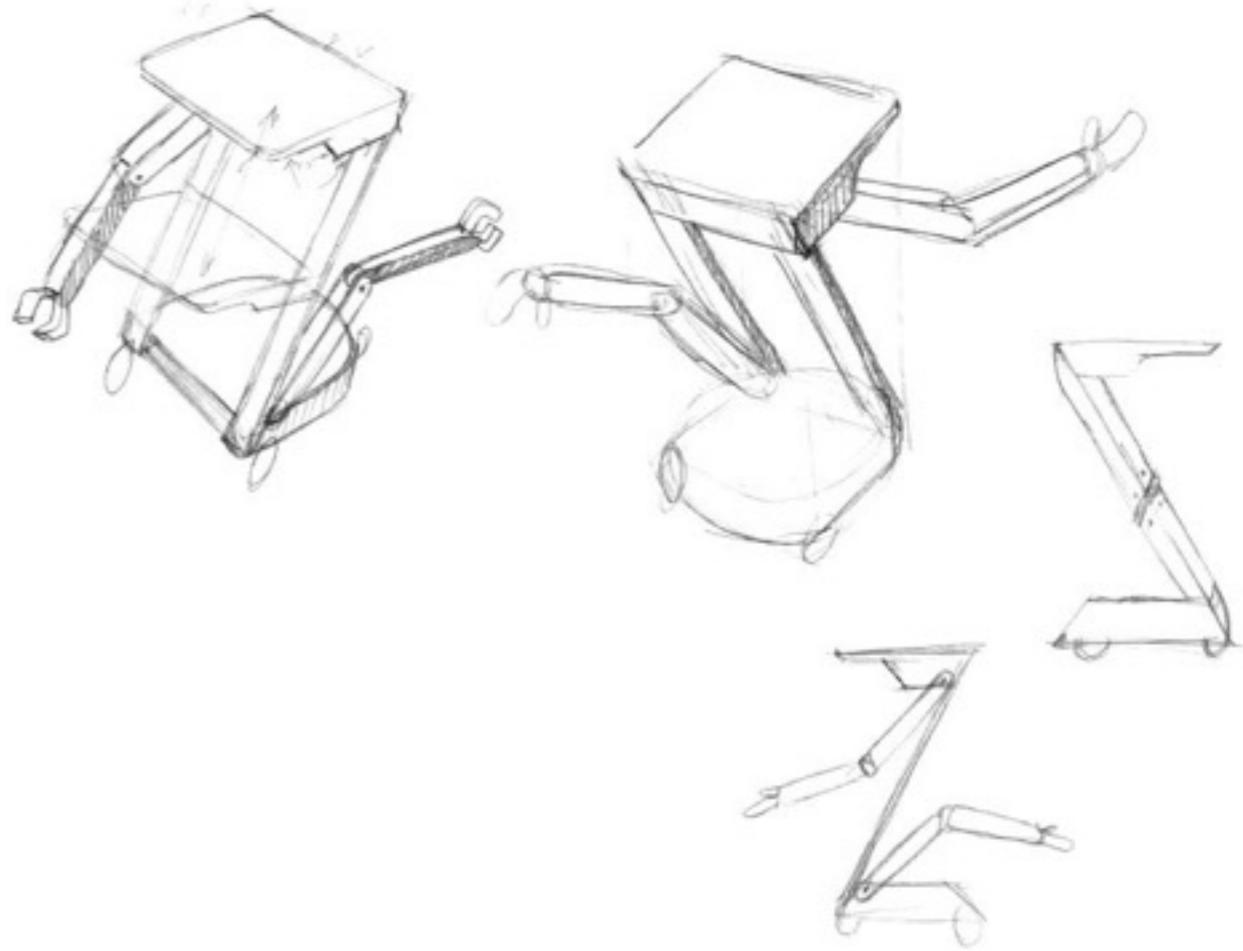
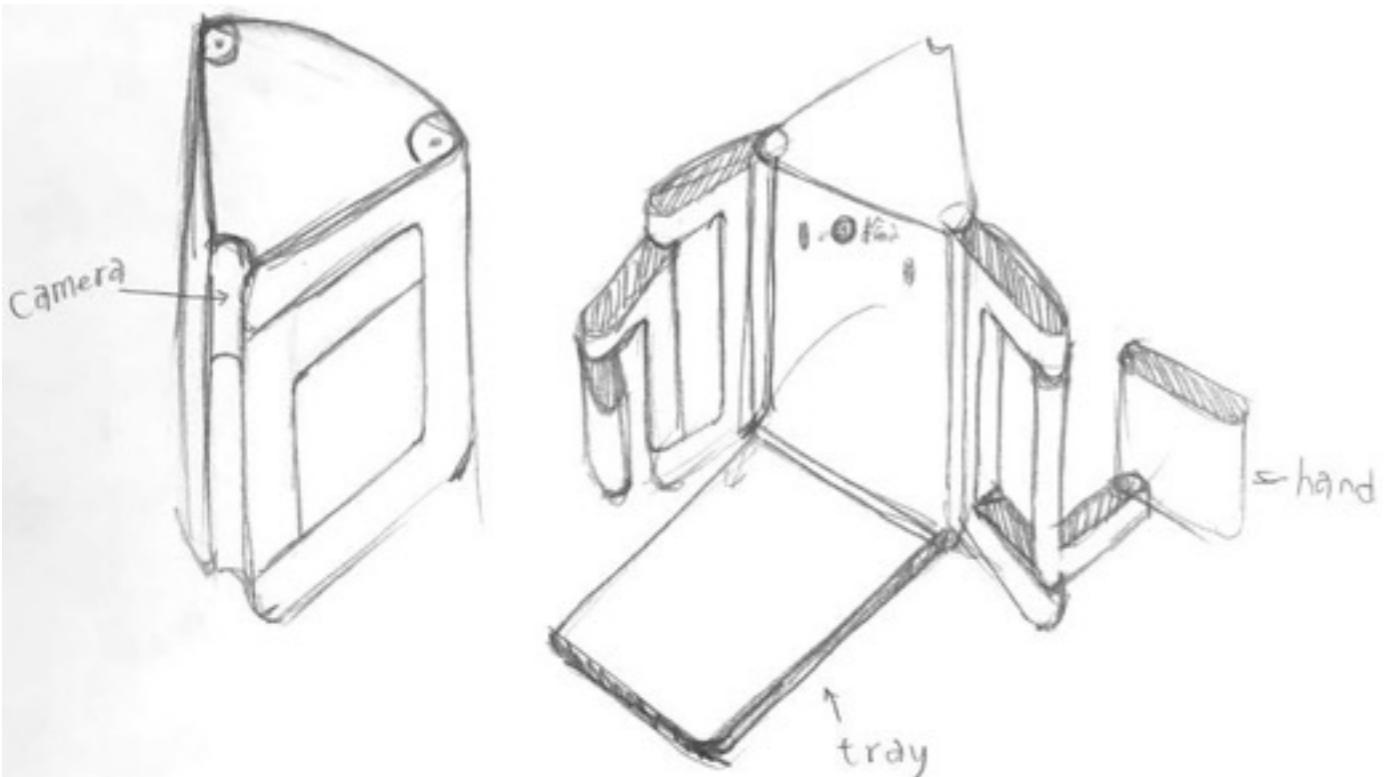
First presentation



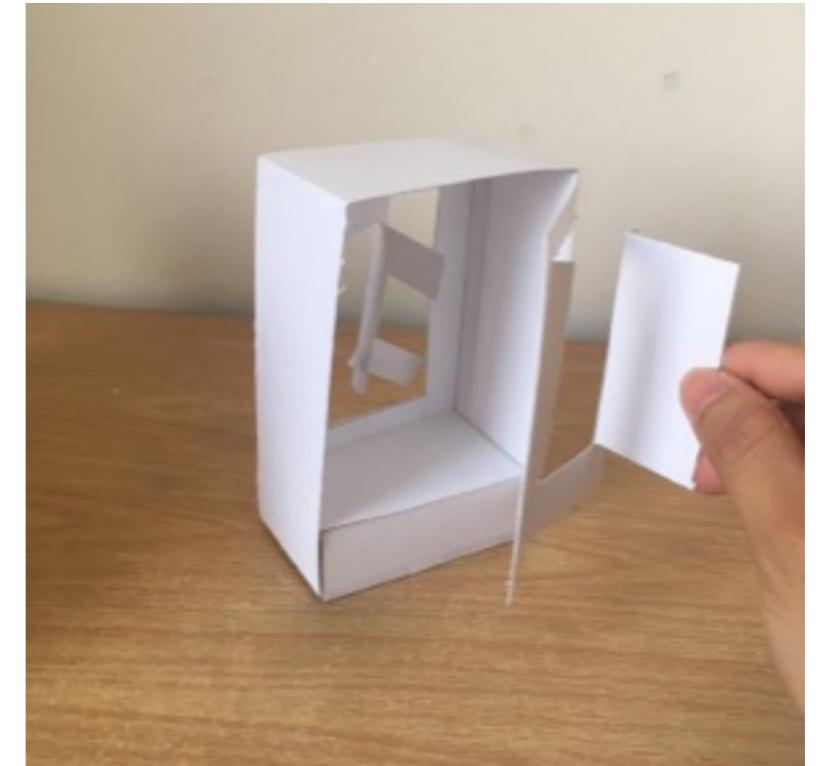
Design-Sketches (first time)



Design-Sketches (second time)



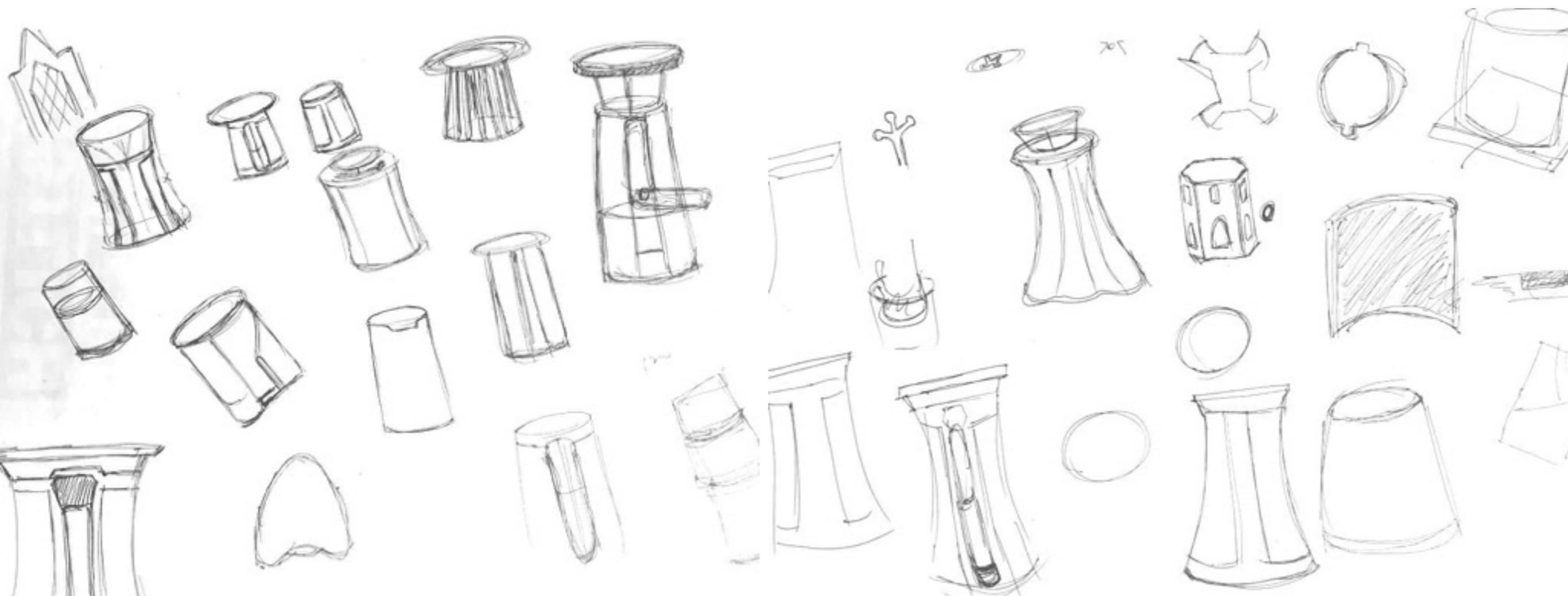
Draft prototype



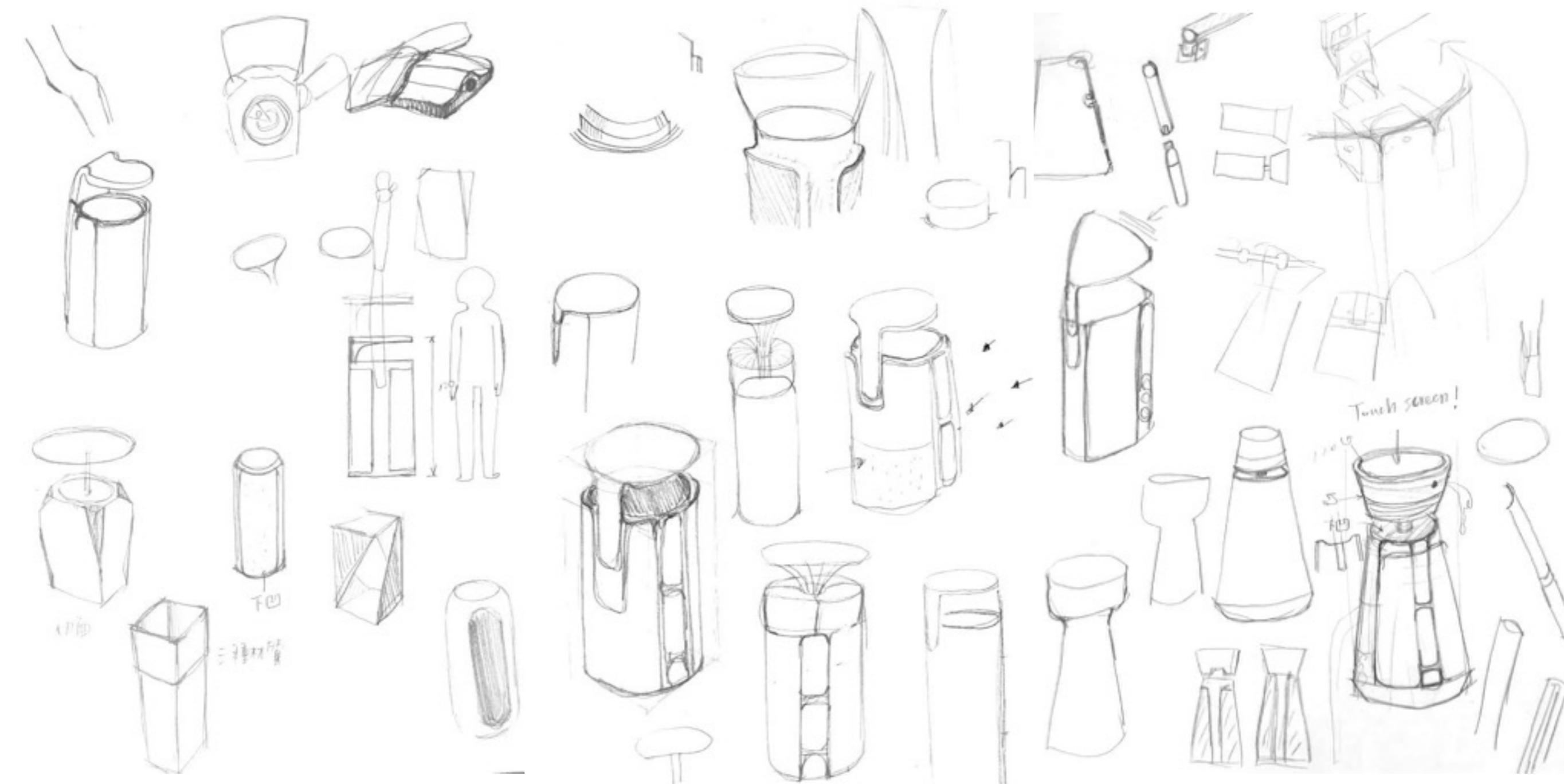
Design-Sketches (third time)



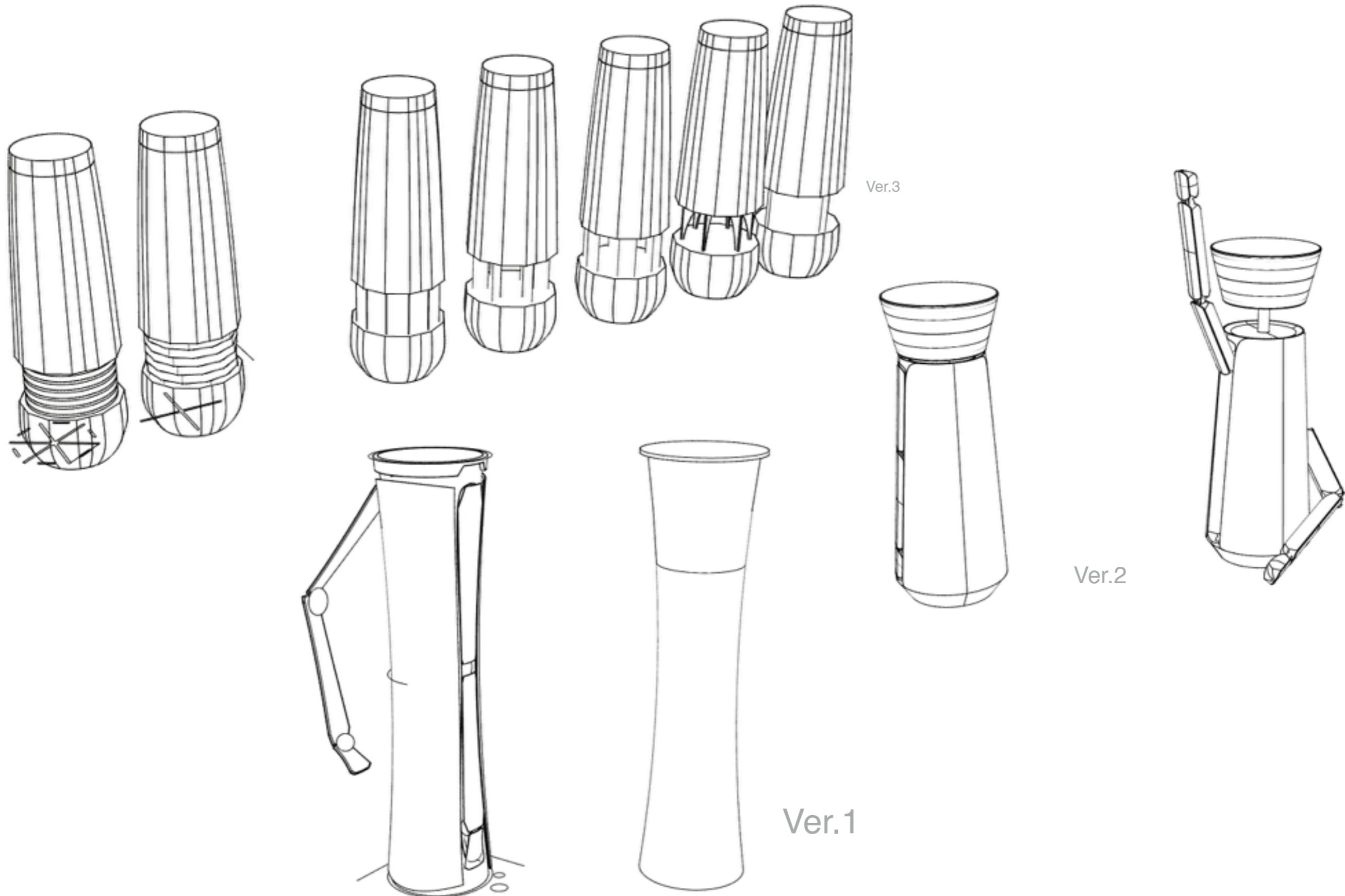
Design-Sketches (third time)



Design-Sketches (third time)



Design-3D Mock-up





Home robot

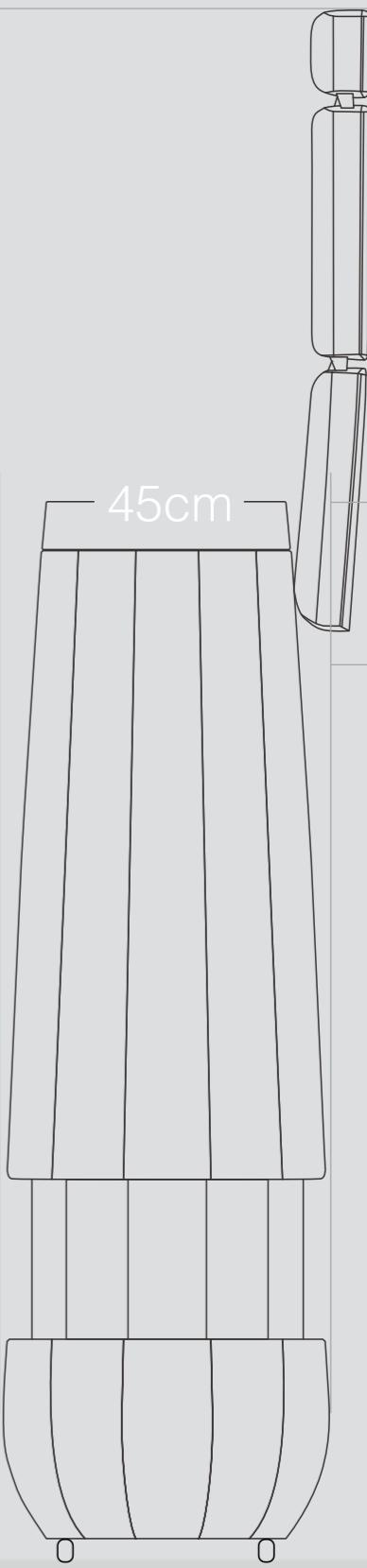
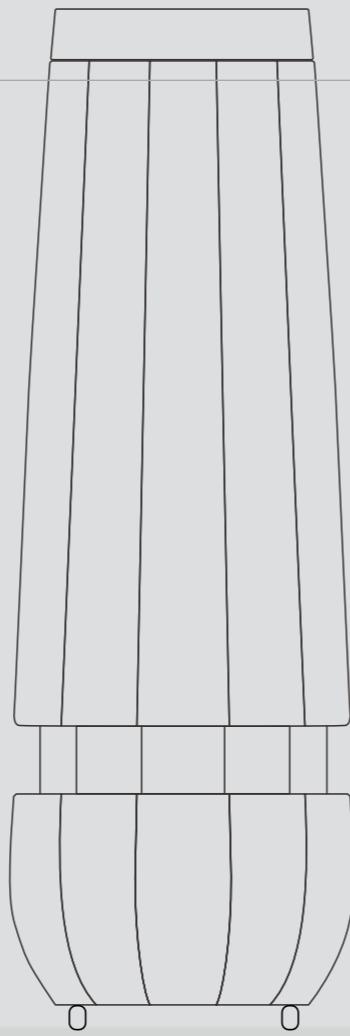
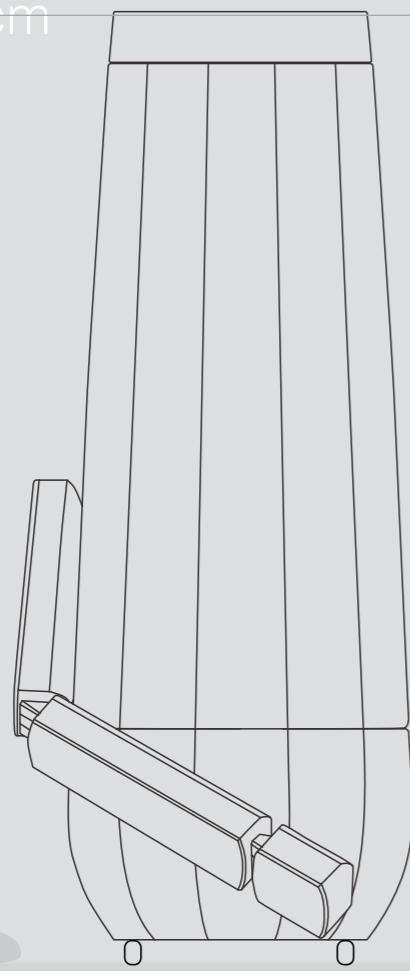
Final design



200cm

130cm

110cm



Slide mechanism

In order to reach different height from floor to the highest 200 centimeter.



Tool changer

- Vacuum grippers
- Three fingers hand
- Beanbag grippers



Living assistant



14:45
Mon, 9 July

25° 27°
10m/s

Speaker



Camera

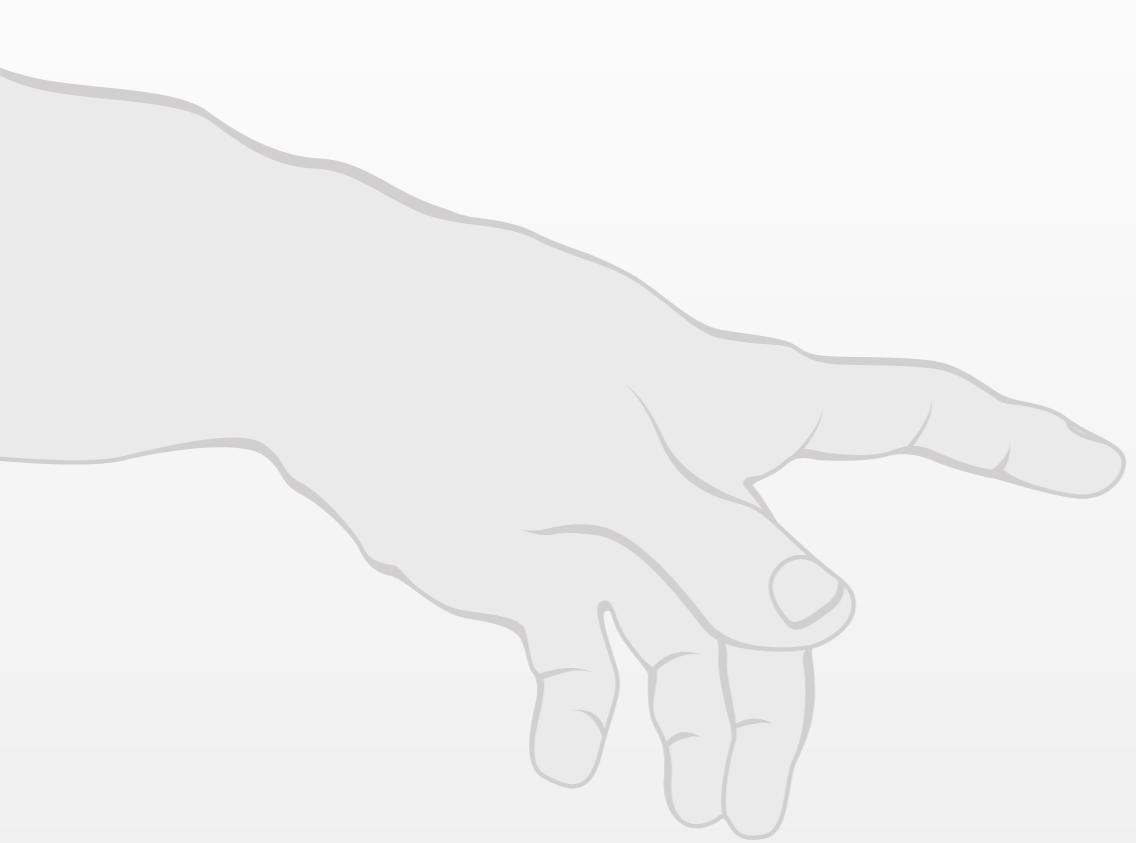


Lighting respond



Screen angle adjustment





Object location tracking

Combine with security system robot can scan and track the object through image recognition. Also RFID can be added in the system to help user find their everyday object such as keys, cellphone even their cats.





Security system

Final prototype

