

P O R T F O L I O

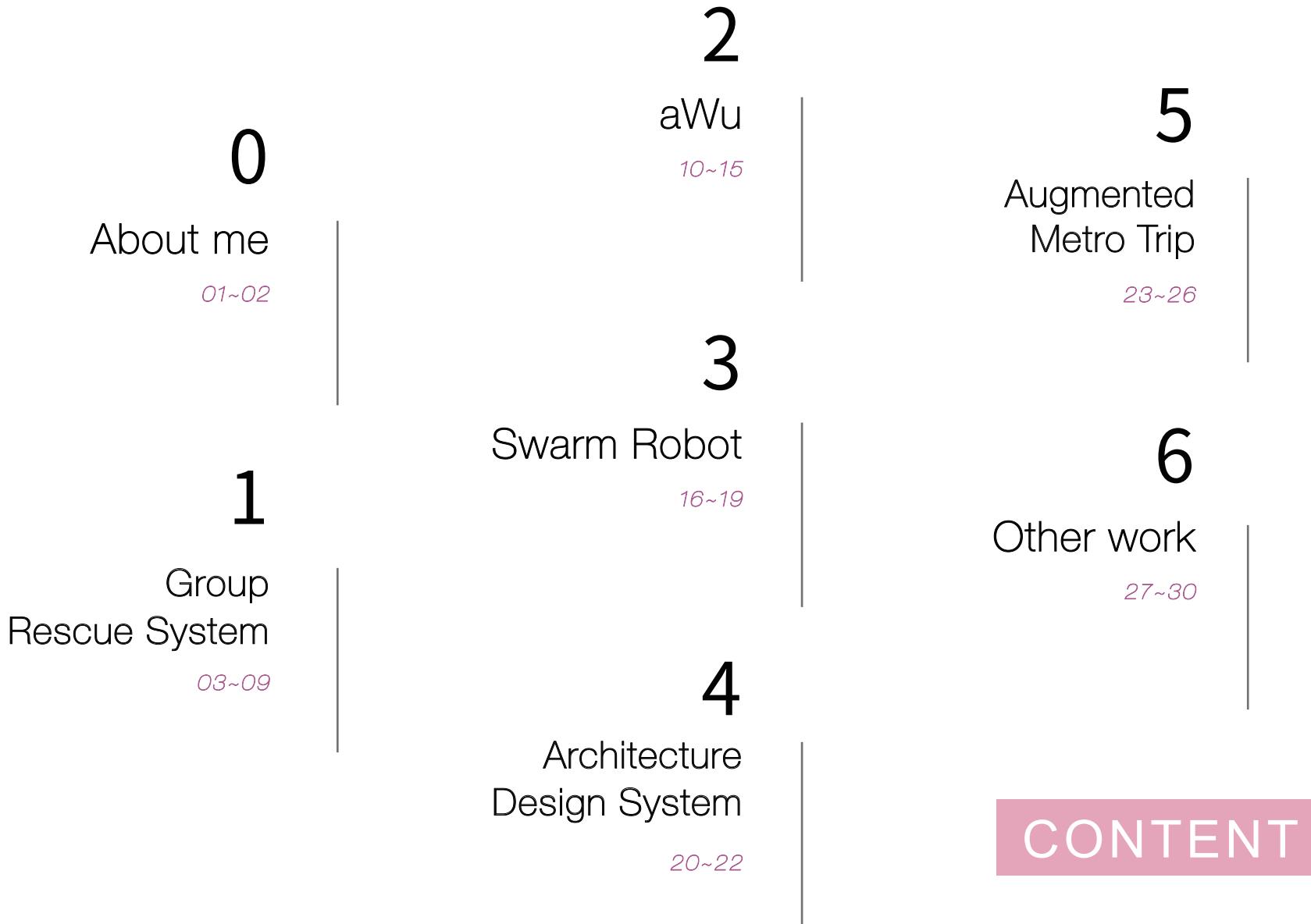
# Portfolio

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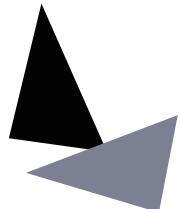
Jia Yingqi

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# About me



 Aalto University

 Msc. Human Computer Interaction

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 yingqi098@gmail.com

# Jia Yingqi



# EDUCATION

Msc. Human Computer Interaction / <i>Aalto University</i>	2021/08 - 2023.07
B.Eng. Computer Science and Technology / <i>Tongji University</i>	2016/09 - 2020.07
Industrial Design / <i>Tongji University</i>	2015/09 - 2016.07



# EXPERIENCES

Software Engineer Trainee / <i>Microtec Espoo</i>	2022/05 - Present
Software Engineer / <i>Shanghai Pudong Development Bank</i>	2020/09 - 2021/06
Future Lab / Research Assistant / <i>Tsinghua University</i>	2019/07 - 2019/10
Data Management & Bioinformatics Lab / Research Assistant / <i>Fudan University</i>	2019/03 - 2019/05

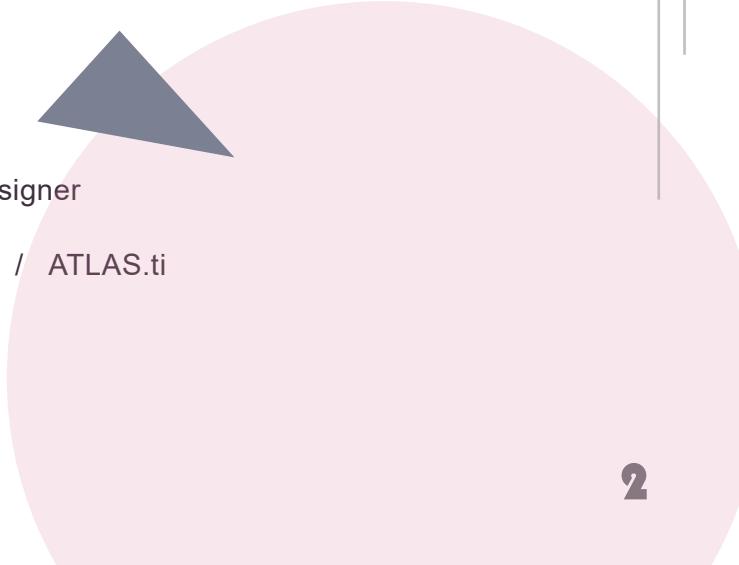
# SKILLS

● ● ● ● ●      XD / Figma / Ai / Ps / MultiBrush / TouchDesigner

● ● ● ● ○      C++ / C# / HTML / TypeScript / Python / R / ATLAS.ti

● ● ● ○ ○      SPSS / Blender / Unity / C4D / Pure Data

● ● ● ● ○      Arduino / FPGA



# 01

# Group Rescue System

2018

Disaster scene and wilds  
rescue information system

based on WLAN Ad-hoc



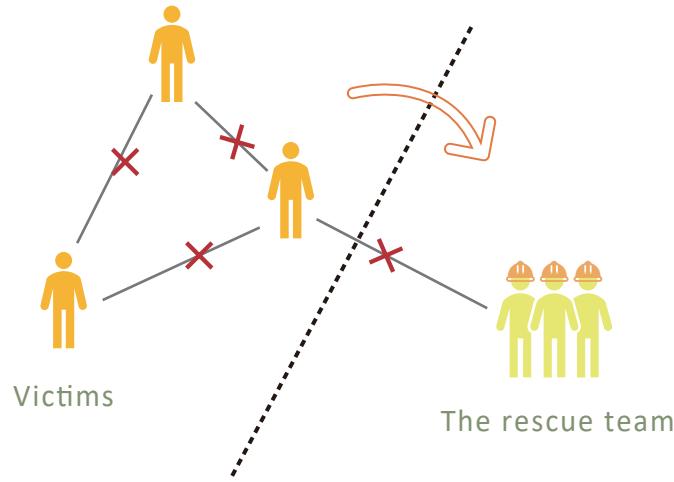
# Background

1

Victims have no direct means of communication. It's difficult to help each other.

2

Victims are waiting passively for rescue and have no means to contact the rescue teams.



3

The scene situation is complex. Only rely on the intercom information is insufficient; need the multi-angle audio-video auxiliary survey.



4

Positioning is slow, and the rescue team cannot directly locate multiple locations to deploy the rescue plan better.

- Collapses of houses caused by disasters are common in remote areas such as mountain areas and valleys.
- The base stations are destroyed, and the operator's signal is interrupted.
- Large search area, chaotic and complex building terrain structure.

# Solution

## Mobile signal car

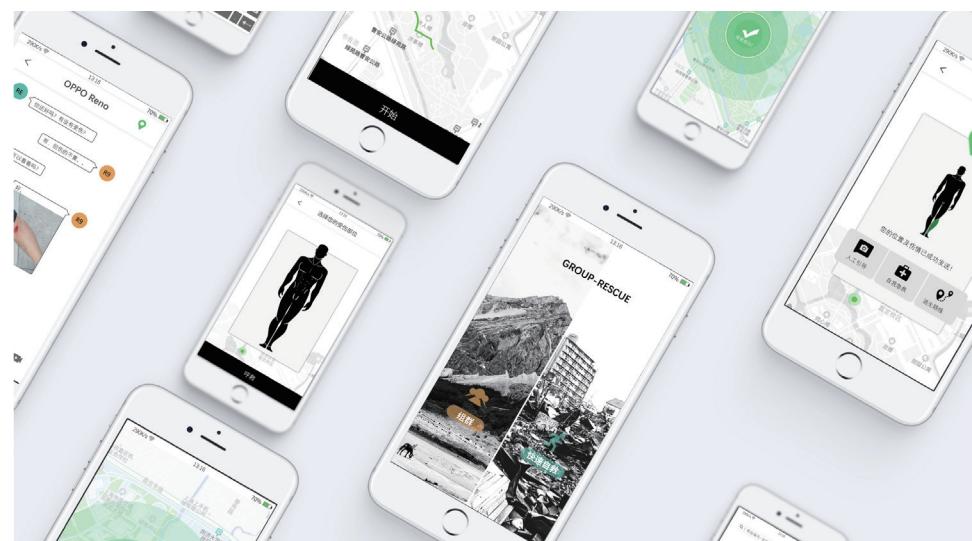
- Enhanced signal



## Box type node

- Carried by rescuers for signal enhancement

- Suitable for victims self-rescue in disaster site and field
- Used for rescuers to obtain the specific location of injured people
- Provide wild group communication and mutual rescue methods for travelers
- Provide audio and video communication to convey injury information accurately
- Connected medical care and provided manual first aid instruction
- Outdoor escape route planning services



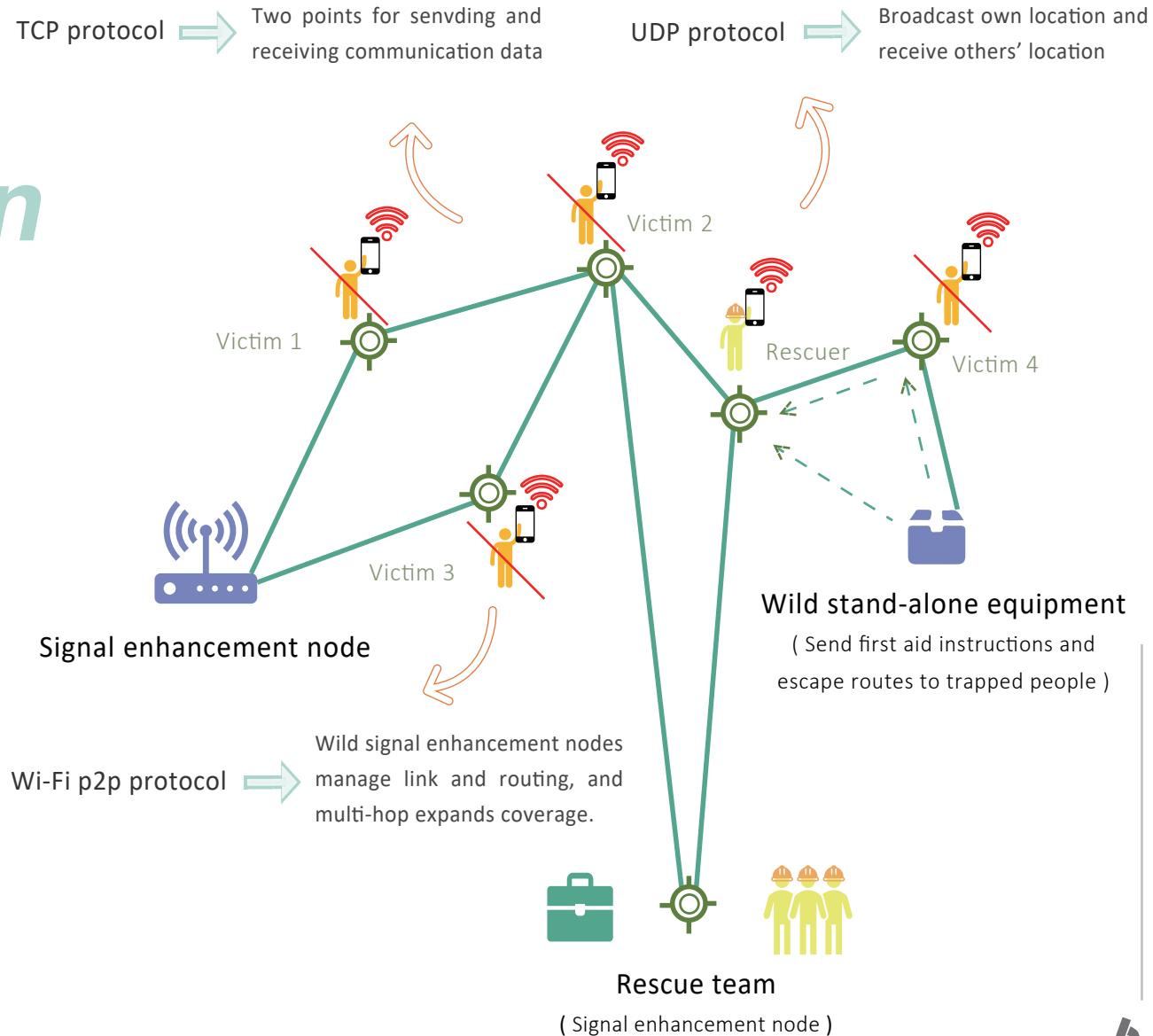
# Solution

## Point-to-Point

- Data can be transferred directly between any two points
- No data type is limited, mainly audio, video and text
- Can be deployed on mobile phones, watches or other devices

## Regional public localization

- Quick location of other members
- Location of all devices in the P2P group can be displayed on the map



# Personas

## Margo



A photograph of a woman with long dark hair, wearing a red tank top and blue shorts, climbing a light-colored rock face. She is gripping a hold with one hand and has her legs positioned to support her climb.

<b>Age</b>	23
<b>Location</b>	Sichuan, China
<b>Status</b>	College student
<b>Other</b>	New member of snail travel student club

## Shen



A photograph of a man in a light blue polo shirt standing in front of a chalkboard. He is pointing at a whiteboard behind him which displays a map of Sichuan province with various locations marked. Several children are visible in the foreground, looking towards the teacher.

<b>Age</b>	27
<b>Location</b>	Sichuan, China
<b>Status</b>	Volunteer teacher in a mountainous area

### Bio

Margo took part in the mountain climbing activity first time. The destination of the activity was Qiansongba Forest Park in Fengning Manchu Autonomous County, Chengde City. There was no cell phone signal, and she was afraid she would get separated from her teammates.



### Goals and requirements

Be able to keep in touch with teammates in time when there is no phone signal.

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### Bio

Earthquakes often occur in Sichuan, so Shen downloaded the Group-Rescue app on his mobile phone in advance. During the earthquake, he was trapped in the corner of the office, the fallen chair hurt his leg, and he could not move.



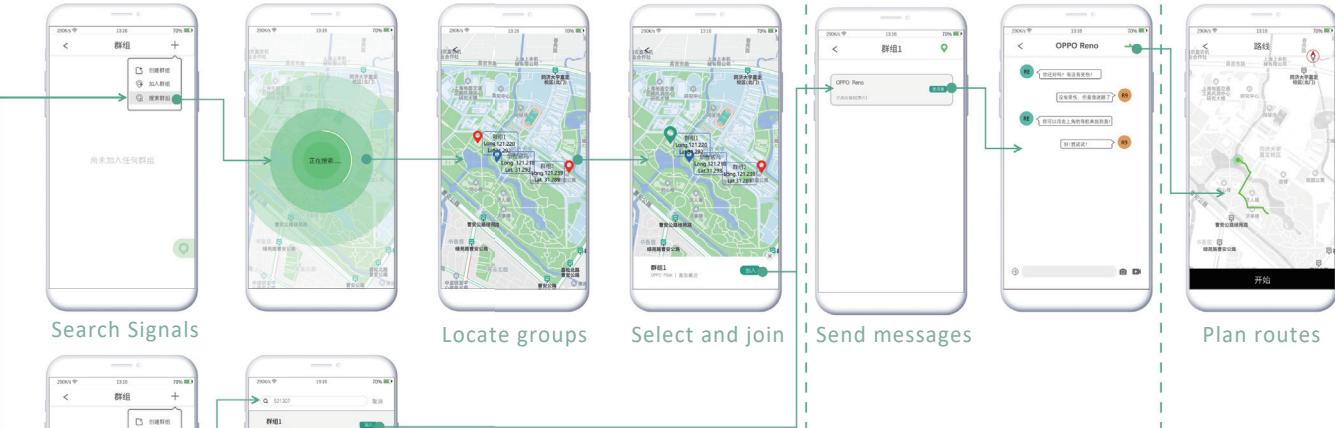
### Goals and requirements

To contact the outside world in time to get help and treatment.

# 1. Margo

Margo

Margo arrived, before free activity



Margo reunites with her friends



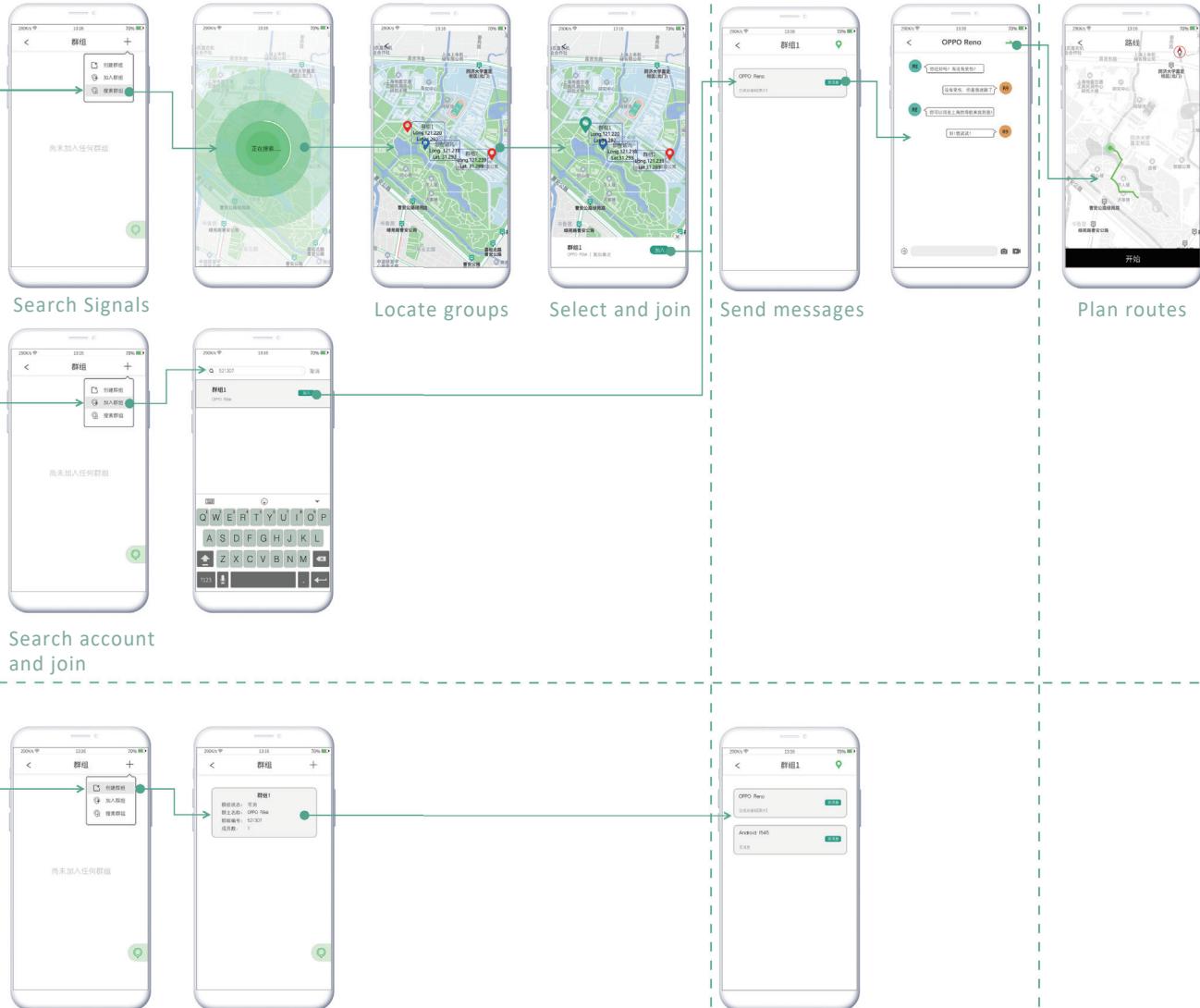
Select the group mode

Search account and join

Create a new group

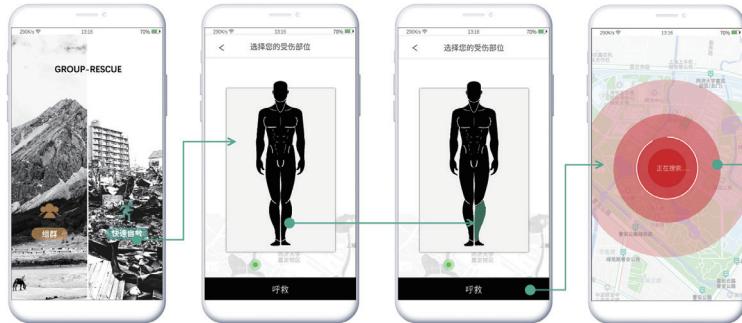
Group created successfully

Margo's teammate



Shen

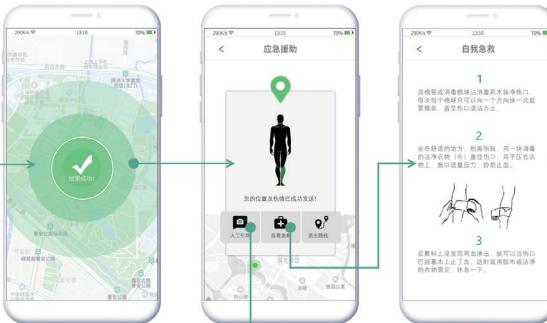
Sudden earthquake, Shen's leg injured, he needed rescue guidance



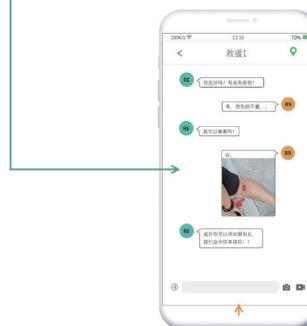
Self-help mode

Select the approximate location of the injury

Shen received timely guidance and rescue



Self-rescue information from nearby wild equipment



Both sides communicate with each other, and rescuers provide initial assessment of injuries and first-aid guidance



The victim man was located on the map

Provide route guidance to the victim's location

9

2. Shen

02

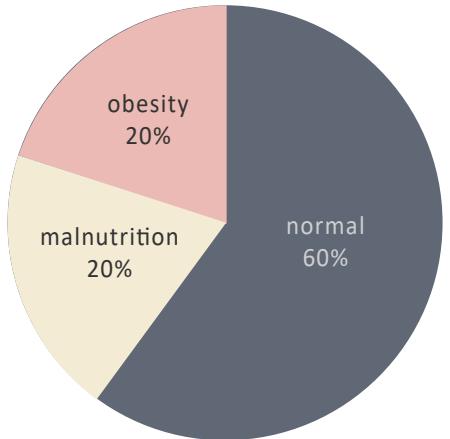


*aWu*

Intelligent Dinner Plate for Children Dietary Guidance

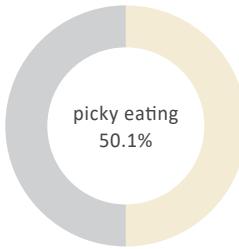
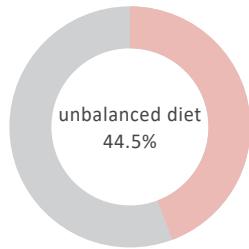
# Background

## 1 Nutrition status of urban children



Data source: Nutrition and Health Survey Report of Chinese Adolescents and Children

## 3 Children's unbalanced diet, picky eating is common, resulting in uneven nutrition intake



Research introduction: 1620 children aged 3-5 years were selected from Beijing and Shanghai by stratified sampling method

## 2

The Comprehensive Test Report on the Health Status of Students in Zhejiang Province in Recent 5 Years shows that:

- The incidence of malnutrition reached **26.80%**
- Child malnutrition is mainly the result of **poor nutrition**

## 4

Persona: Lu

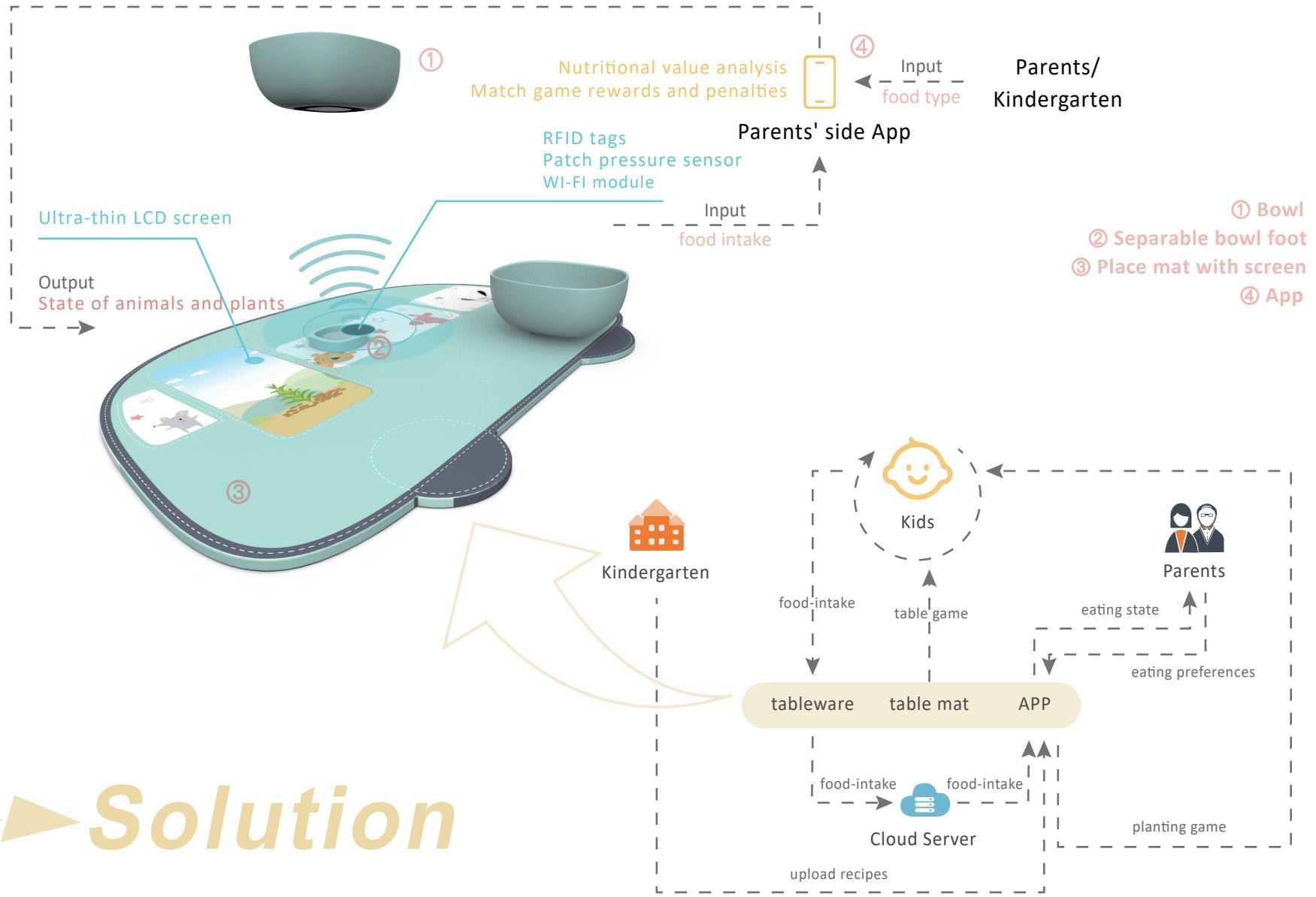


**Age** 5  
**Location** Shanghai  
**Status** Kindergarten student

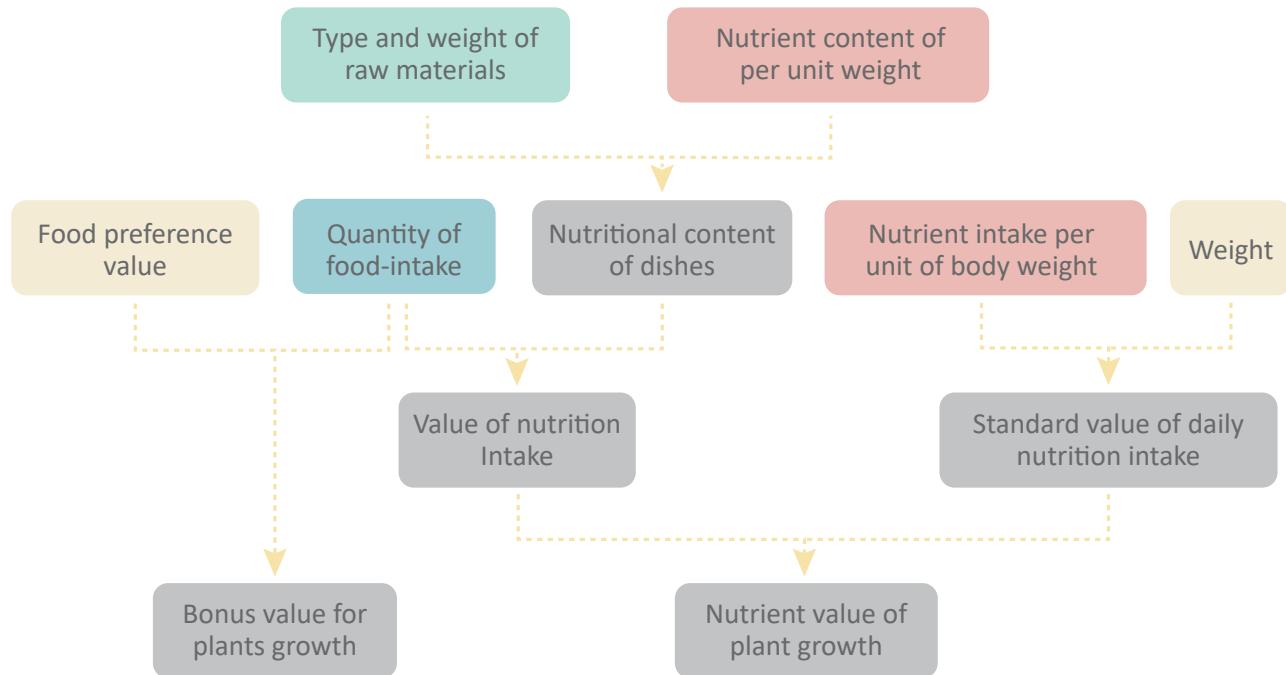
**Bio** Like meat, sweet; hate vegetables.  
Like to listen to stories while eating.  
Like to watch videos while eating.

*What if we use interactive methods to get kids to eat balance?*

# *Solution*



# System Operation Process



Default standard data  
 School input data  
 Parent input data  
 Sensor data

Quantity of Food-intake + Balanced Level of Eating ==> Animal/Plant Growth



# Conversion Method



ordinary state



calcium deficiency

- Leaf margin dehiscence
- Die at growing point

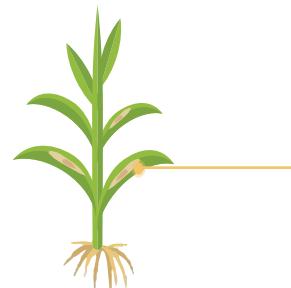
- Few and short roots
- Few new roots
- Old roots come brown

1

Lack of essential elements (e.g. calcium)  
==> Stunted growth of animal / plant



ordinary state



Long-term lack of nitrogen,  
phosphorus and other elements

- Too weak resistance
- Suffer from leaf blight

2

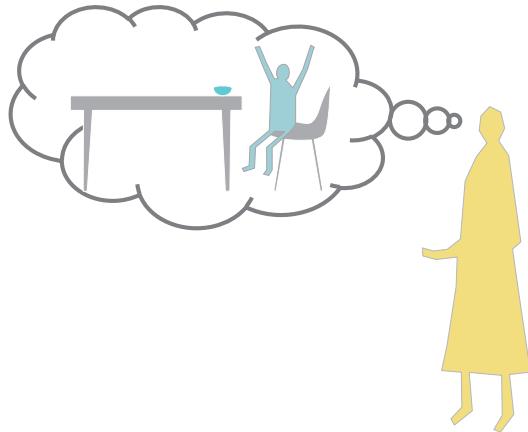
Chronic lack of essential elements (e.g., phosphorus)  
==> Stunted growth of animal / plant



3

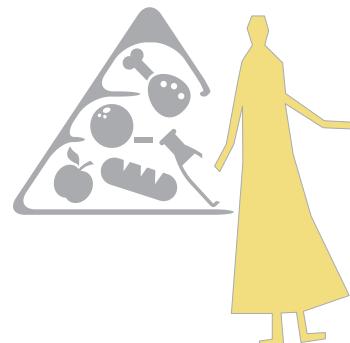
Balanced diet with a normal level of nutrient intake  
==> Healthy growth of animal / plant

14



What did my child eat today?

1



Is the nutrition enough?

2



What should I have for dinner tonight?

3

How can I make my child like eating?



15

Storyboard

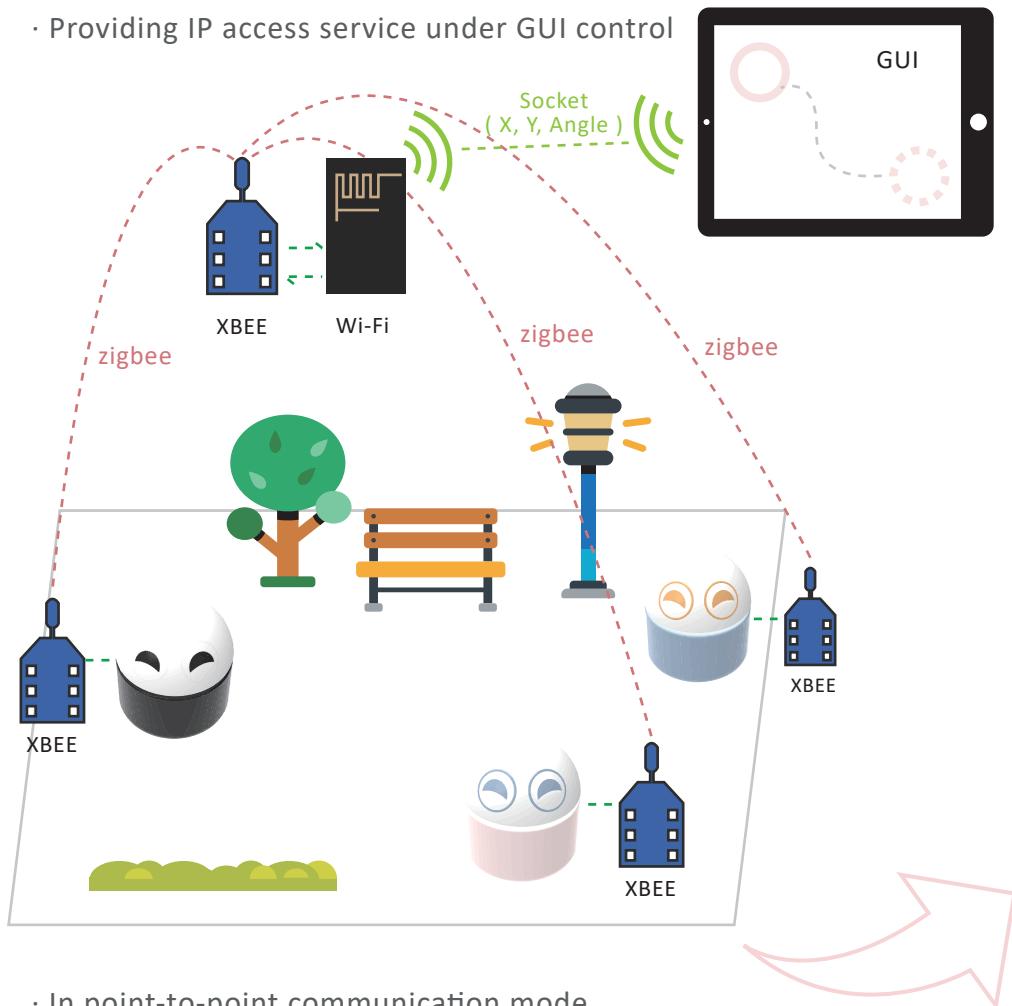
# Swarm Robot

· *Narrative Interactive Applications of Swarm Robot*



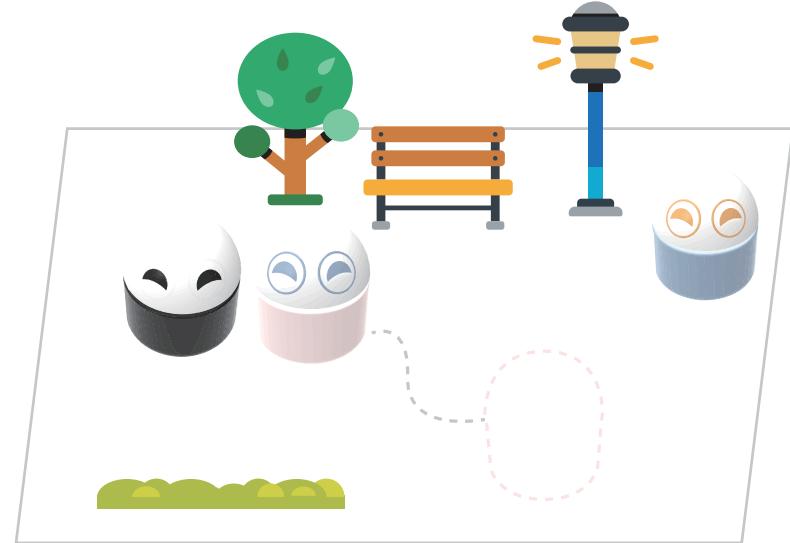
03

- Wi-Fi is in AP mode
- Providing IP access service under GUI control



- In point-to-point communication mode
- A central node XBEE sends and receives packets from a Wi-Fi module through a serial port and sends them to the destination address XBEE

## Communication Principle



- Robot receives instructions from the GUI and makes corresponding movements

## Color variation



- 416 Chinese were asked to choose which colour best fits each emotion.

## Eye patterns



## Motion designs

Emotion	Motion
Calm	Continuous smooth linear motion
Happy	Quick movement or rotate / Circular movement
Surprise	Quick movement or rotate / Move toward other robots or objects
Sad	Slowly move far from others / Slow, repetitive, small-angle rotation
Angry	Quick vibration / Quick move far away from other robots
Disgust	Quick move far away from other robots or objects
Fear	Fast, discontinuous movement / Move far away from other robots or objects

- 403 participants chose the fittest eye pattern-emotion associations, and we evaluated their choices on a 7-point Likert scale.

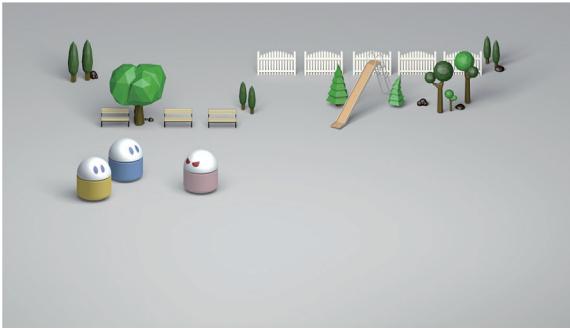
- Eye patterns design used Daniel and Adam's research result on cross-cultural eye-widening and eye-narrowing theory about human emotions as a reference

## User experiments & Results

# Robots animations

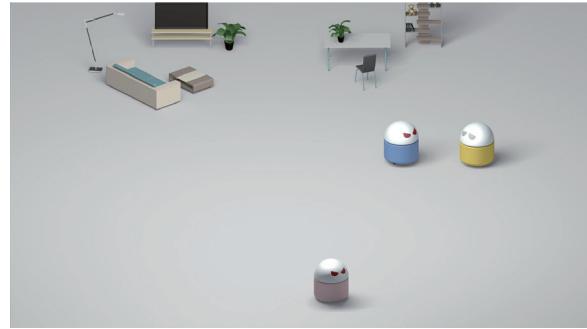
for effectiveness tests of emotion expression on robot emotion parameters selected before

1



A story about a conflict between a couple (played by A, B), after C shows up, A leaves sadly

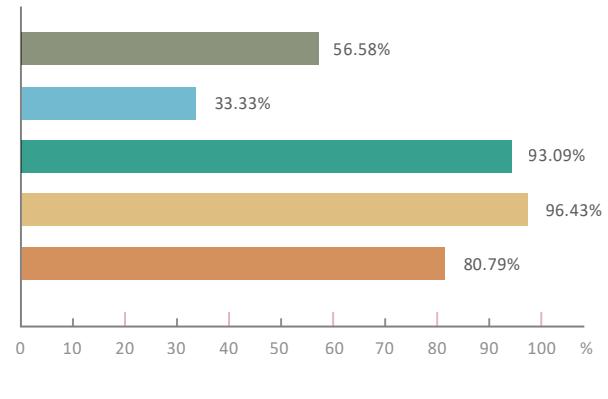
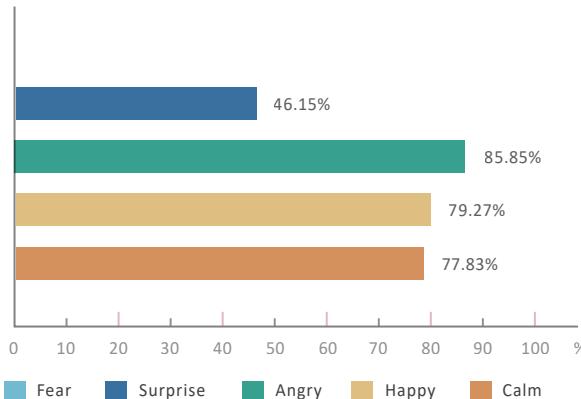
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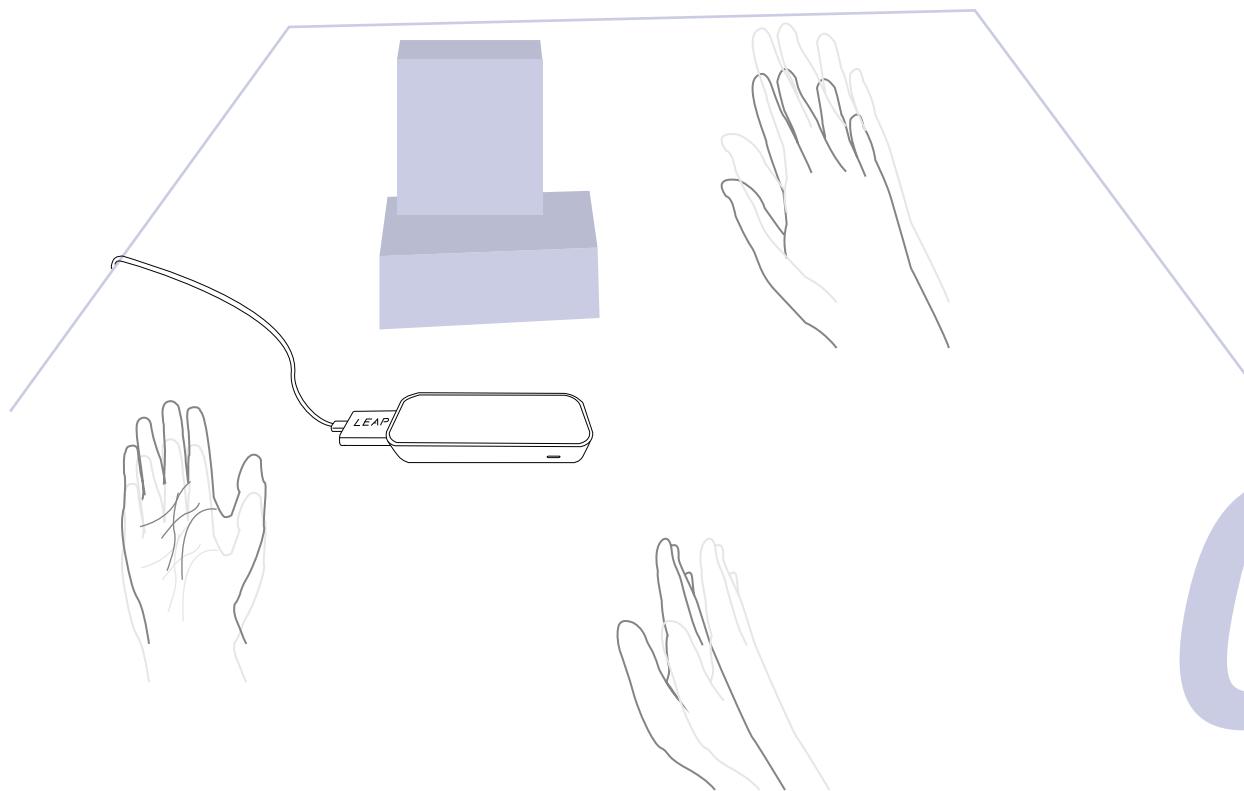


A story starts with B quarrelling with A and story ends in B reconciling with A under the mediating help of C

## Emotion accuracy

judged by 38 participants ranging from 18 to 35 years old  
(18 of them were 16-22, 13 of them were 23-28, 5 of them were 29-35)



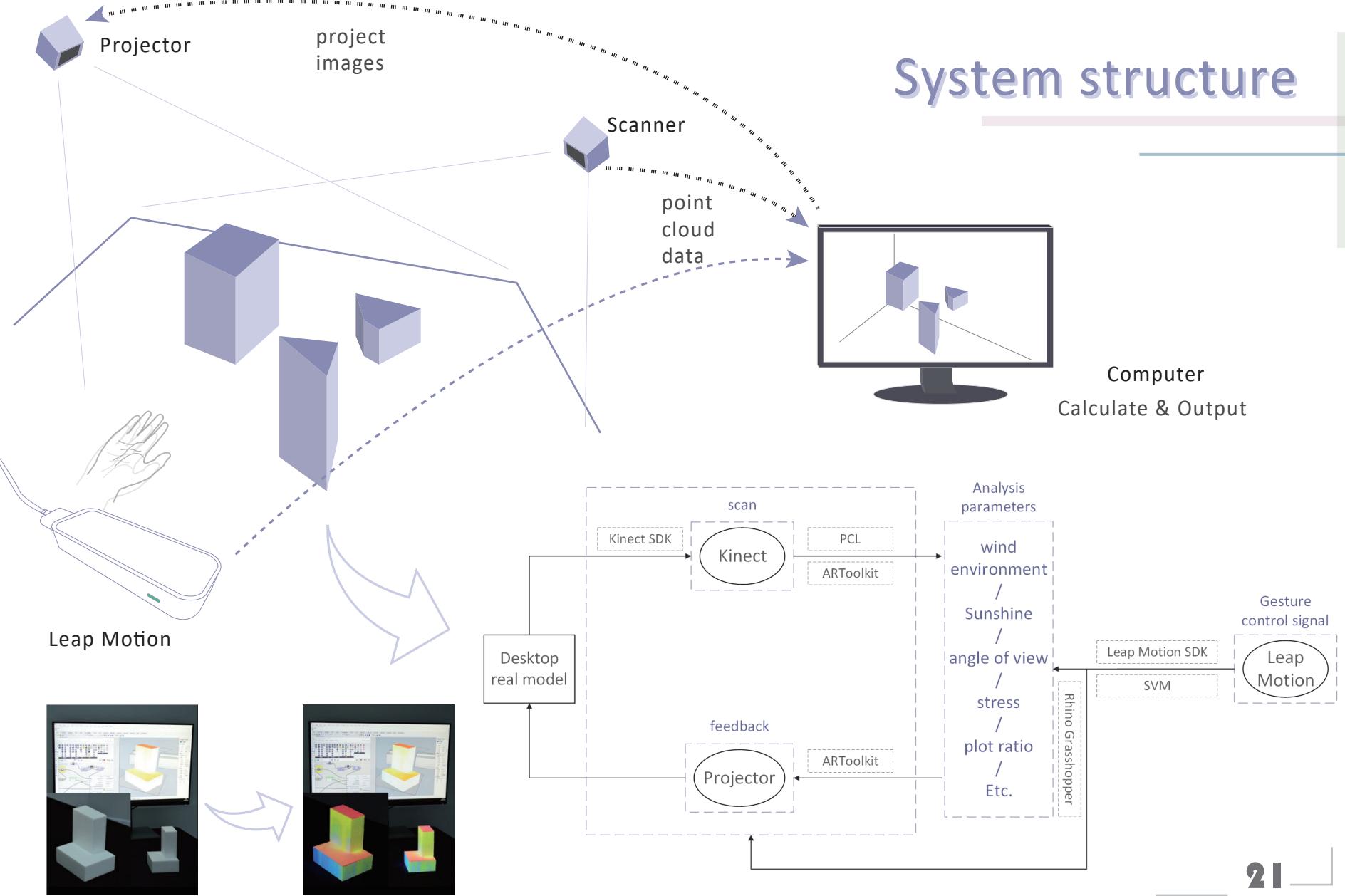


# 04

## *Architecture Design System*

*A MR and Gesture Control-based Computer-aided*

# System structure

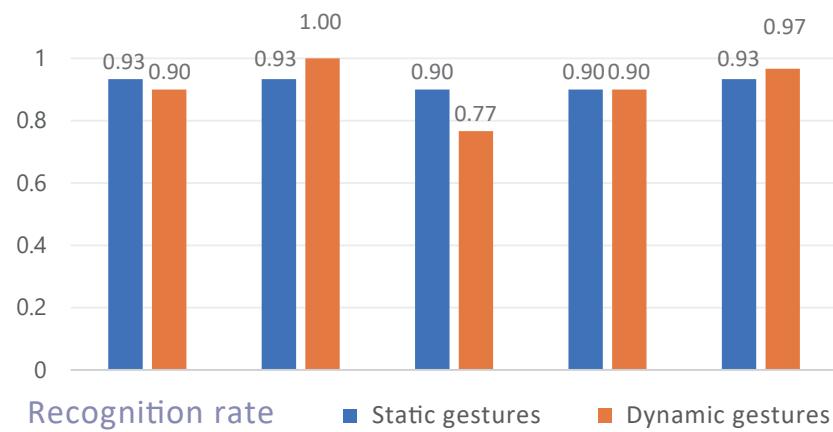


# Gesture definition



## Algorithm

- Summarize speed thresholds for different dynamic gestures
- Get the frame images with Leap Motion SDK
- Add bone feature data to optimize SVM recognition results
- 5×2×30 classification tests
- Accuracy of gesture recognition increased more than 3.3%



05

# Augmented Metro Trip

*· Enhanced metro journey experience in Helsinki  
based on HSL APP*



# Persona

**Name** Jenny

**Age** 22

**Occupation** International Student

**Hobbies** Grow flowers, travel

**Devices used** Android full screen phone



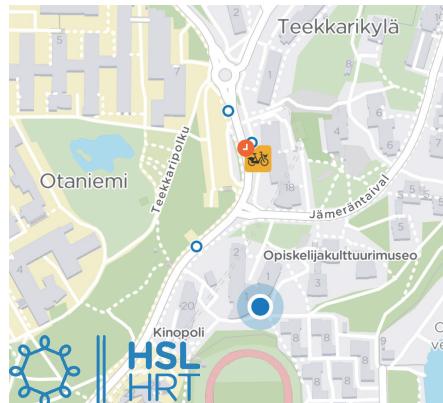
**Route tendency** From Espoo to Helsinki to explore new different destinations



**Time availability** Generally 20-30 mins on metro



## Goals/Needs



It's so boring on the metro each time I went out by myself as it's black inside.

I'm so curious about the scenery outside along the road. I wonder if there are any shops or sights I can look around. There are no store introductions or recommendations that can be found on HSL while checking the route.

## Technology familiarity

Using mobile phone



Video games



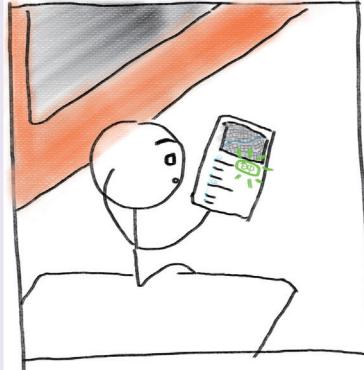
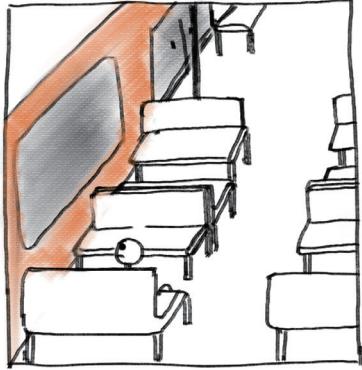
Basic IT skills



Social networks



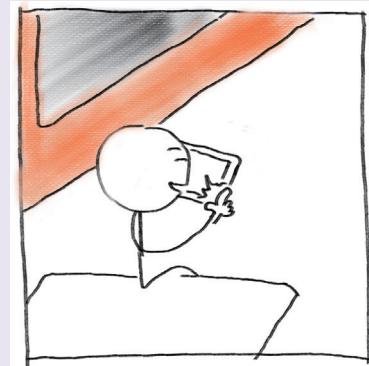
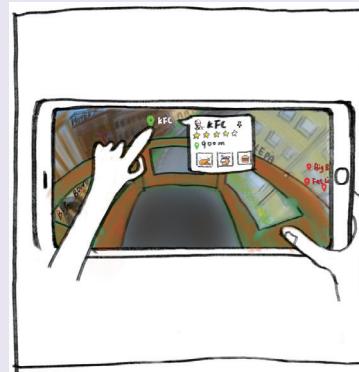
# Storyboard



**1.** There's no view out of the window.

**2.** Notices the "EXPLORE" button on right side of navigation page.

**3.** Click the button.



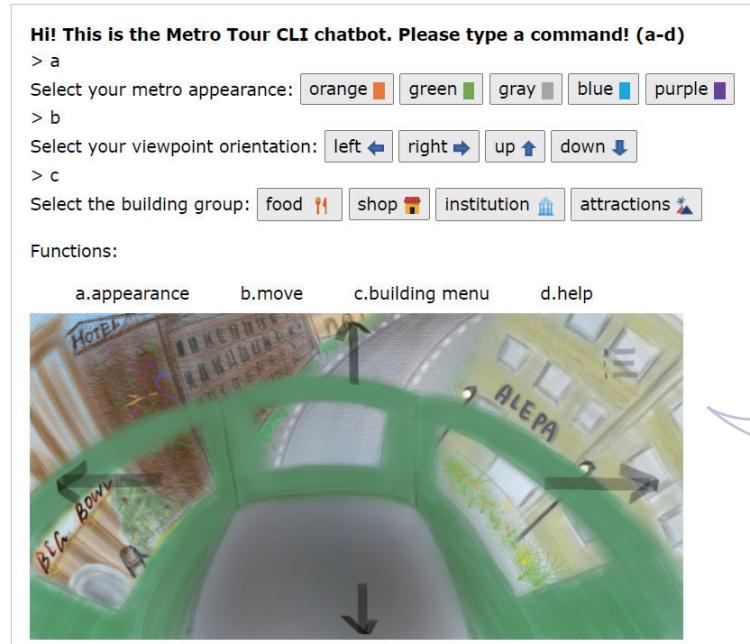
**4.** Page detail.  
Padding left/right like driving  
to view street scene.

**5.** Click "KFC" to check detail.

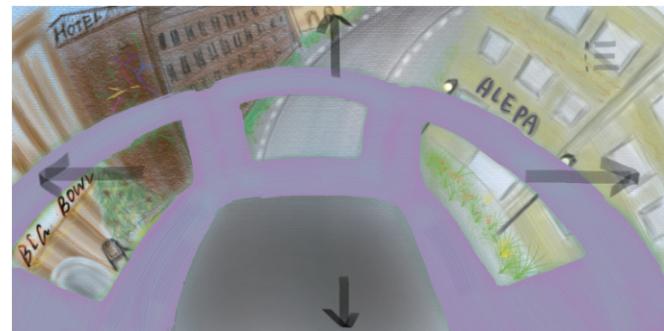
**6.** BINGO!!!

# Solution

Prototype in CLI chatbot: <https://users.aalto.fi/~jiay2/climenu.html>



1. After chosen a trip line on a navigation app, the users can select their own metro appearance as they are in the sightseeing room on the front of the metro.



2. Users can directly swipe screen to steer the viewpoint to the direction they are interested in.

left right up down

3. Provide a menu, link to a list of shops or buildings along the way.



06

# Other Work



BOLAN

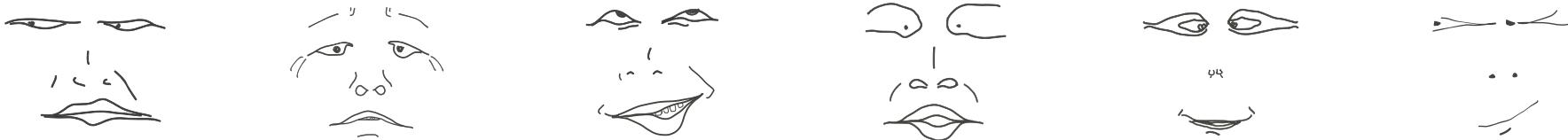
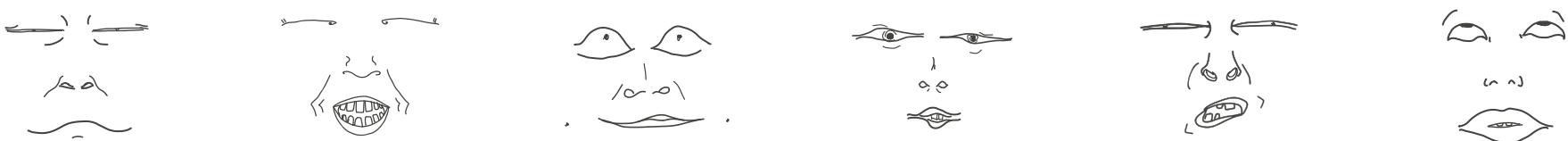
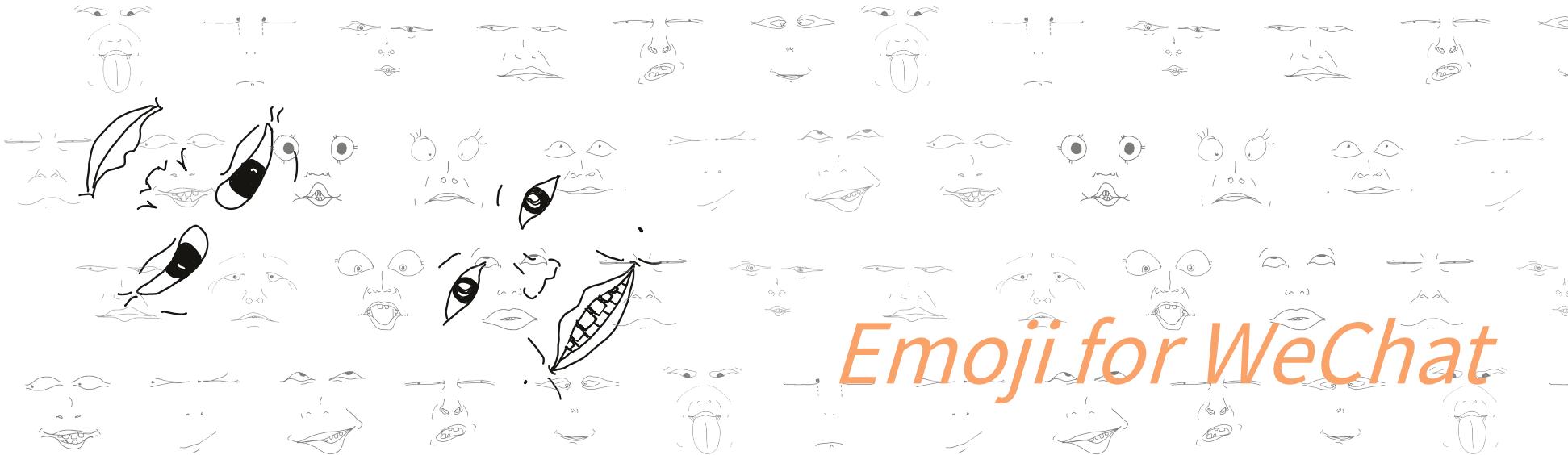


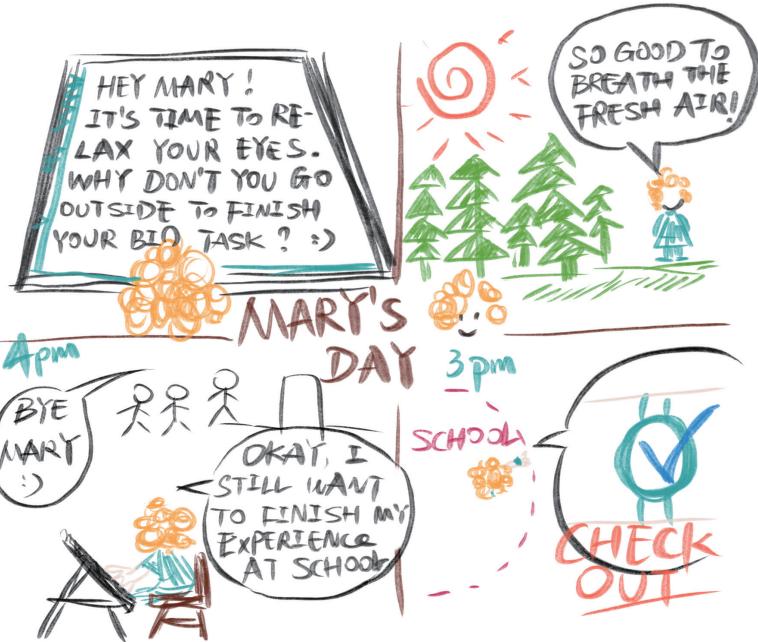
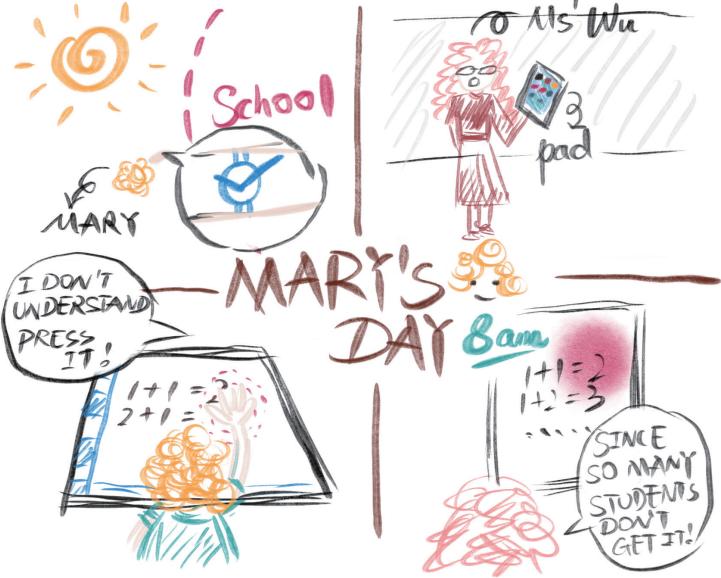
# VR Sketches

—*The Cave*



# Emoji for WeChat





# Mary's day





The End

