



愛動智教育系統

**CUHK iCar Experiment Manual**  
**Experiment 3: Moral Dilemma Experiment**

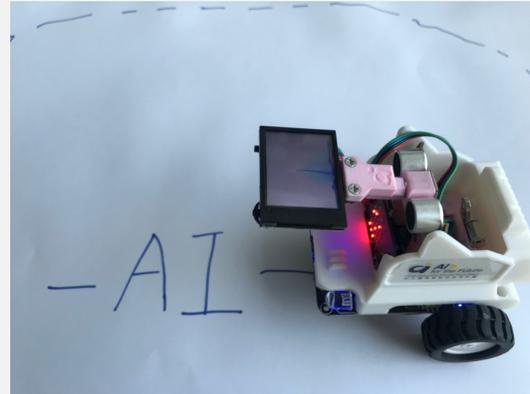
---

Code Cloning

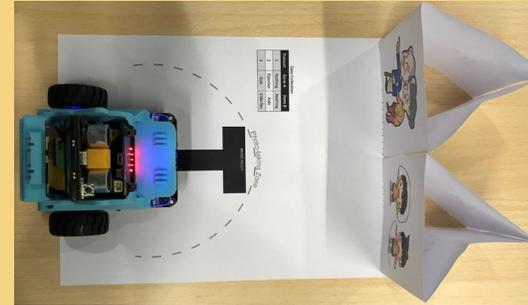
# CUHK iCar



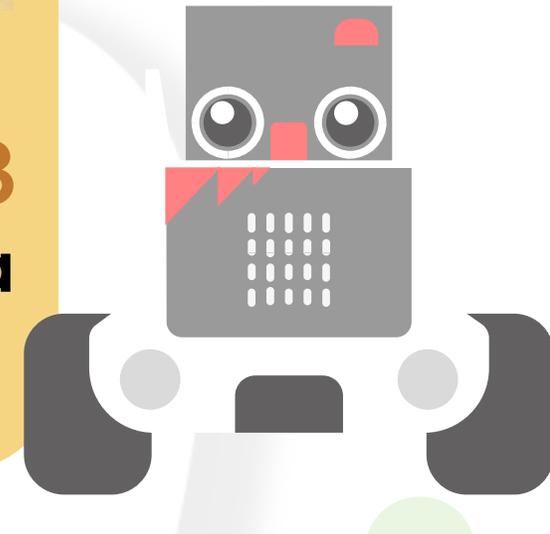
**Experiment 1**  
**Face Following**



**Experiment 2**  
**Line Tracking**



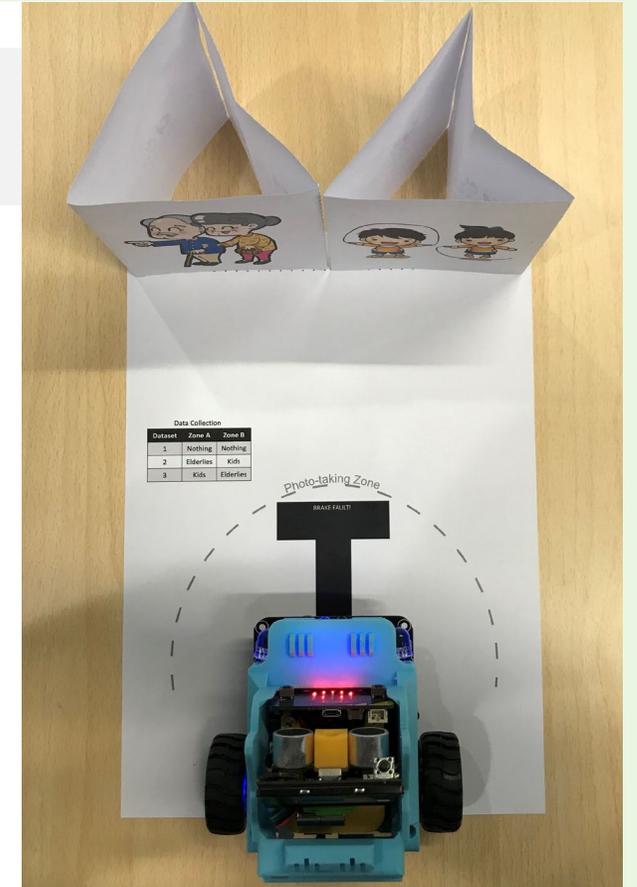
**Experiment 3**  
**Moral Dilemma**



# Moral Dilemma Experiment

## Introduction Of The Experiment

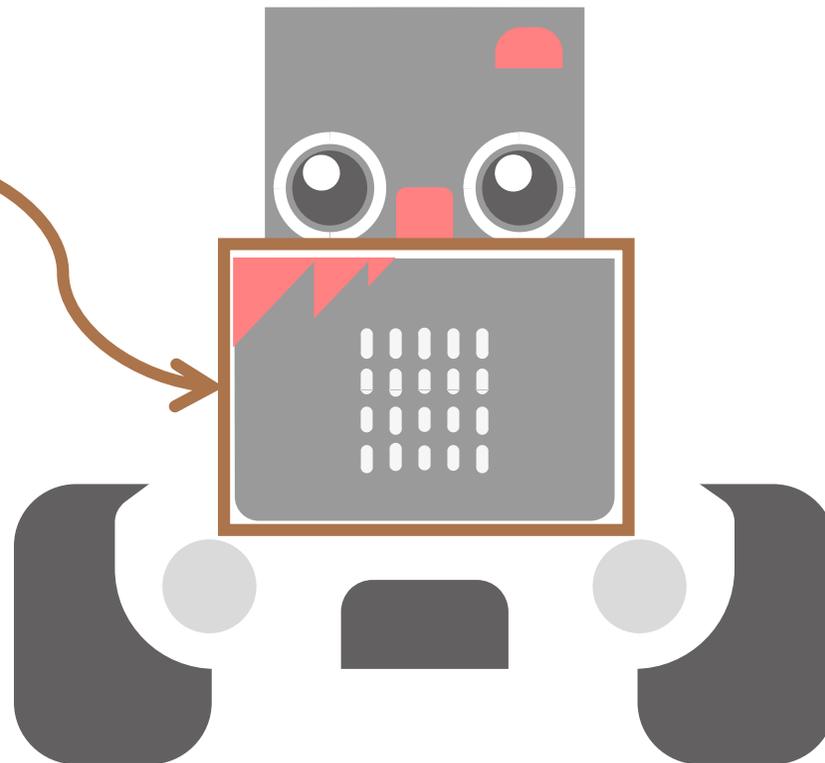
This experiment simulates the predicament of the failure of the self-driving car brake system, leaving it with two options: turn left or right while there are children and elderlies in front of you, which one will you choose to evade?



# Download Program To micro:bit

Evade\_kids.hex  
OR Evade\_elderlies.hex  
OR Random.hex

- 📄 Evade\_kids.hex
- 📄 Evade\_elderlies.hex
- 📄 Random.hex

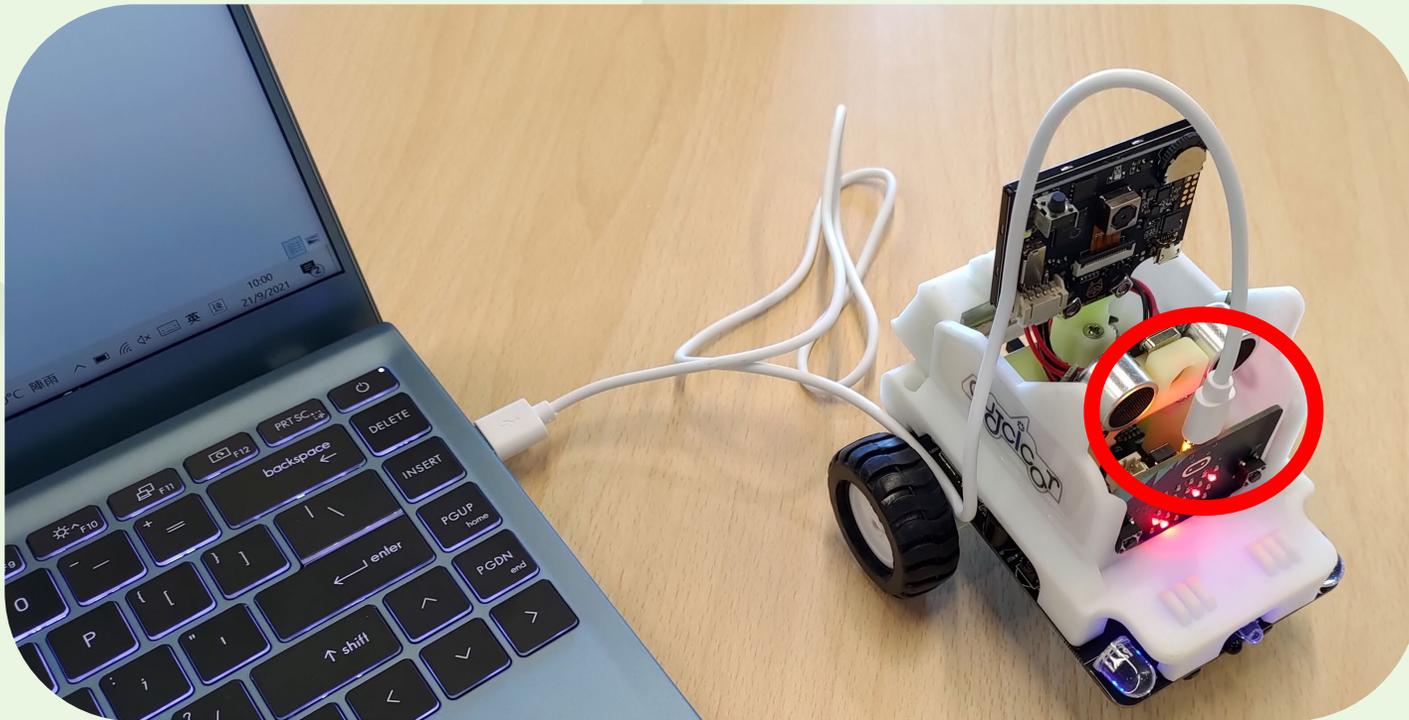


## Method 1

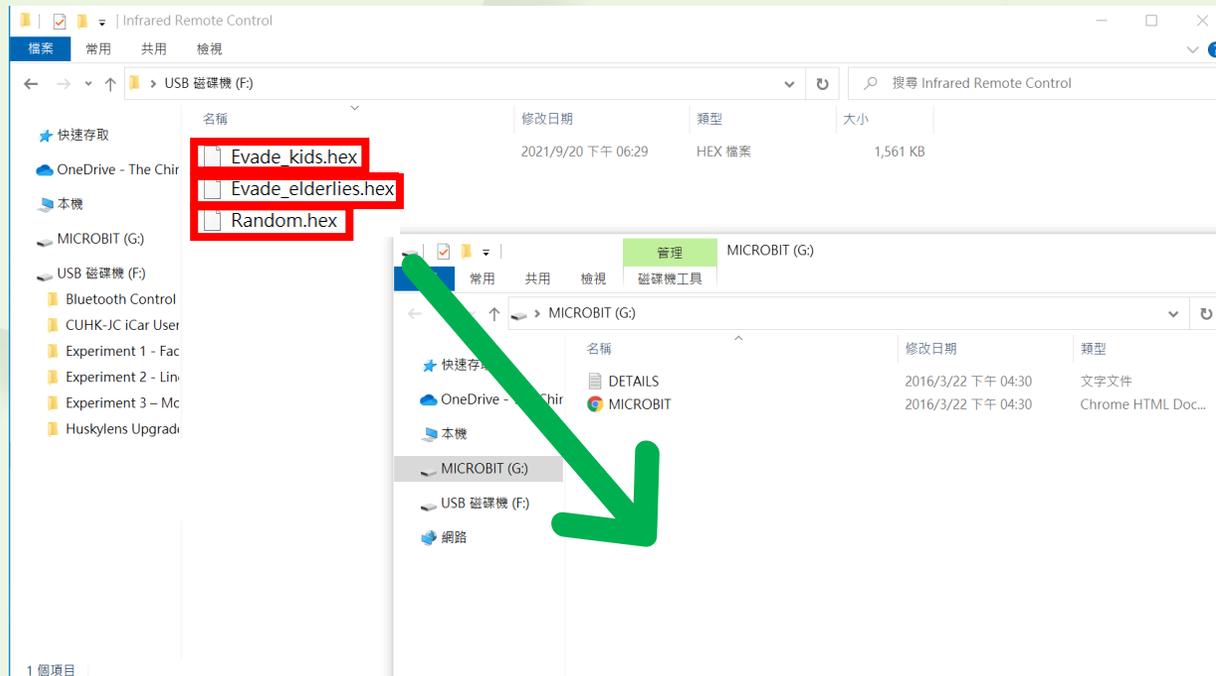
Clone the .hex to  
micro:bit directly

## Method 2

Write your own code  
on MakeCode



Step 1:  
Connect the micro:bit to  
computer by a micro USB cable



Step 2:  
Drag the  
“Evade\_kids.hex”  
OR  
“Evade\_elderlies.hex”  
OR  
“Random.hex”  
file into the micro:bit window



Step 3:  
Wait for the completion of cloning process

### Caution:

- The micro:bit window will potentially disappear after the completion
- After the completion of cloning process, the hex file will not be displayed in the micro:bit window

Step 4:  
Disconnect the micro:bit from your computer

# If the connection between CUHK iCar and the computer is failed:

- Restart the computer
- Try another USB port
- Change the micro USB cable



# You have cloned the code successfully!

Let's start collecting data!

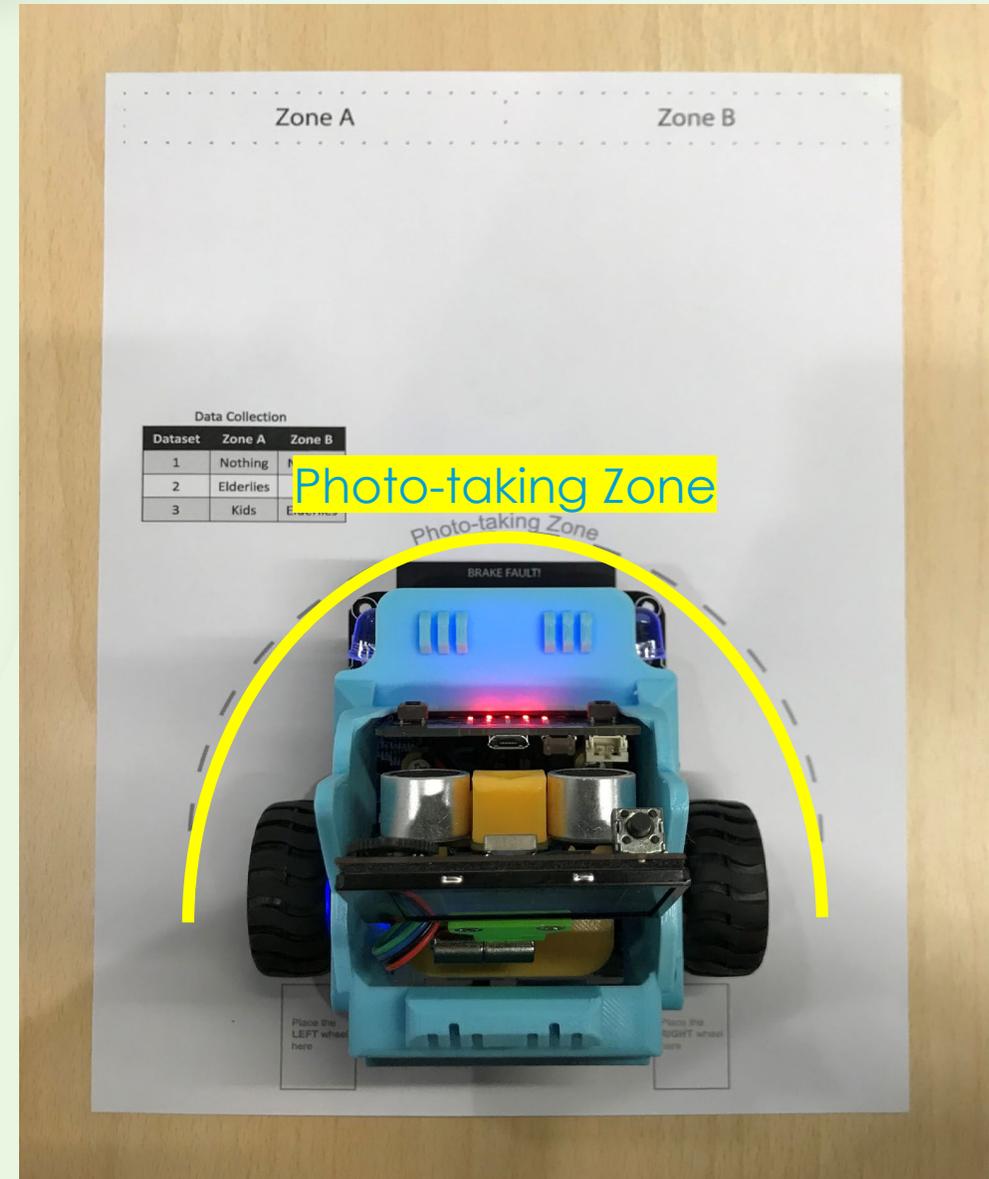


# Data Collection



Step 1:

Place the track onto the table, and the CUHK iCar on the Photo-taking Zone



Dataset	Zone A	Zone B
<b>1</b>	<b>Nothing</b>	<b>Nothing</b>
2	Elderlies	Kids
3	Kids	Elderlies

## Step 2 - Collect Dataset 1:

- CUHK iCar should face forward
- **Press** the learning button to collect data



Tips:

Rotate the CUHK iCar to obtain a better result

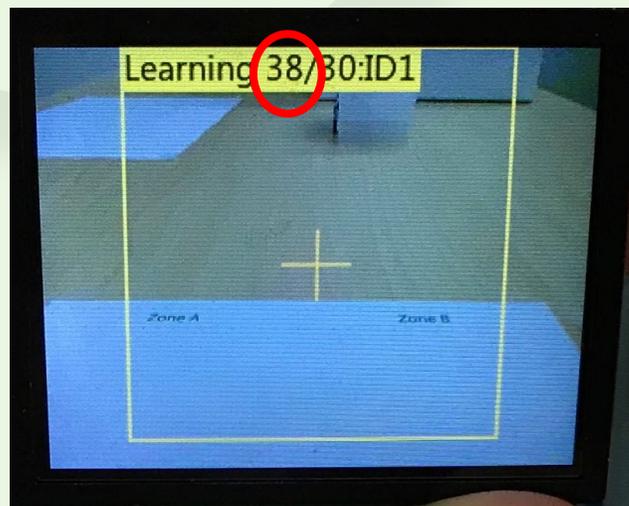
Make sure you keep pressing the button while you're rotating!

Press



Step 3:

Release the learning button after the number reaches 30



Step 4:

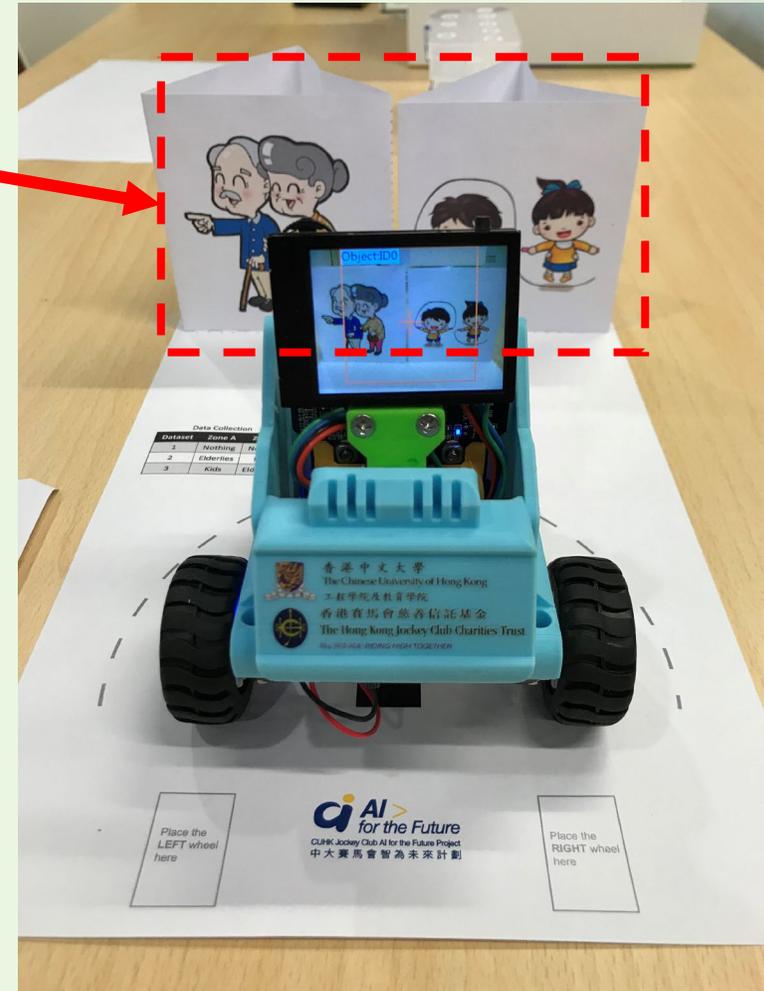
Press the learning button again  
before the countdown ends



Dataset	Zone A	Zone B
1	Nothing	Nothing
<b>2</b>	<b>Elderlies</b>	<b>Kids</b>
3	Kids	Elderlies

### Step 5 - Collect Dataset 2:

- CUHK iCar should face forward
- Place the paper model accordingly
- **Press** the learning button to collect data



Tips:

Rotate the CUHK iCar to obtain a better result

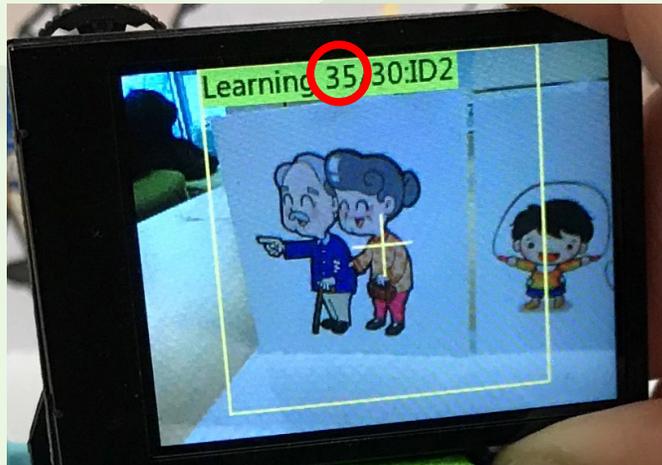
Make sure you keep pressing the button while you're rotating!

Press



Step 6:

Release the learning button after the number reaches 30



Step 7:

Press the learning button again  
before the countdown ends



Dataset	Zone A	Zone B
1	Nothing	Nothing
2	Elderlies	Kids
<b>3</b>	<b>Kids</b>	<b>Elderlies</b>



### Step 8 - Collect Dataset 3:

- CUHK iCar should face forward
- Place the paper model accordingly
- **Press** the learning button to collect data



Tips:

Rotate the CUHK iCar to obtain a better result

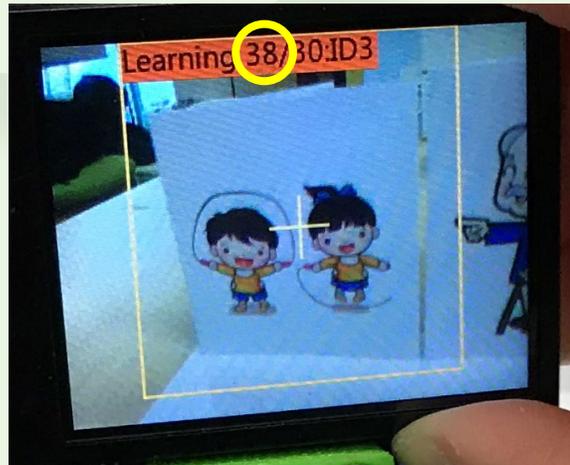
Make sure you keep pressing the button while you're rotating!

Press



Step 9:

Release the learning button after the number reaches 30



Dataset	Zone
1	North
2	Elderly
3	Kids

Step 10:

Wait for the

countdown ends





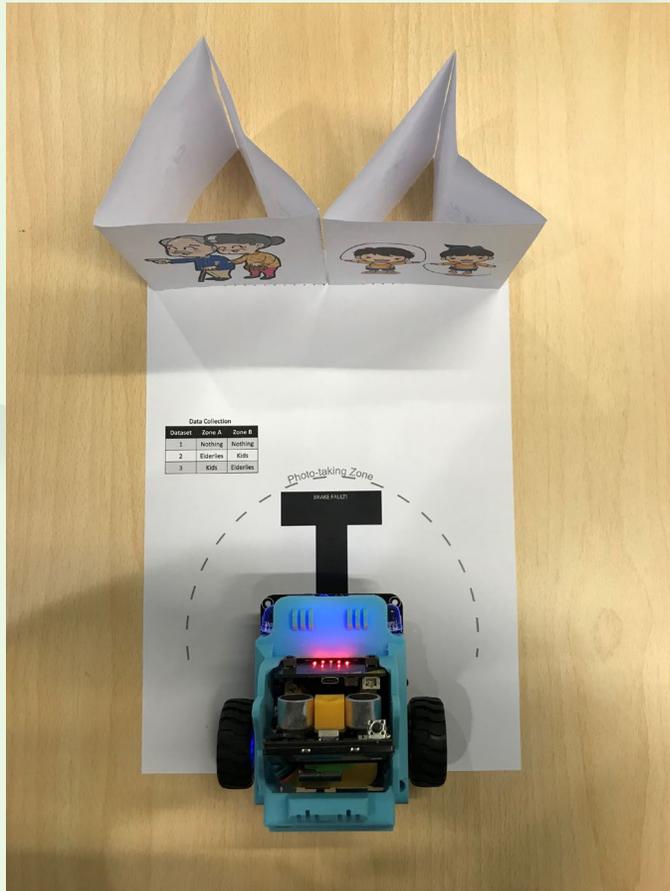
# You've collected all the data needed!

Let's conduct the experiment!



## Step 1:

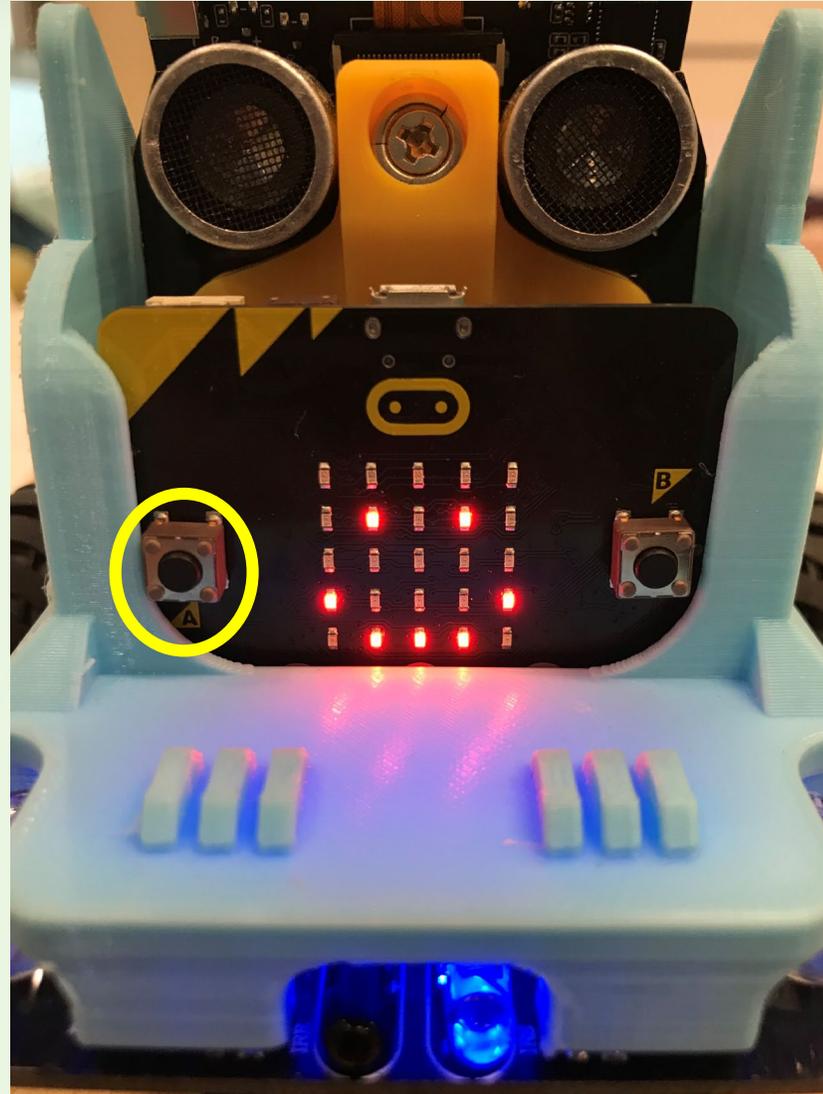
Place the paper models in the designated zones and place CUHK iCar on the starting point



Attention:  
Place the two  
wheels according  
to the instructions  
on the paper

Step 2:

Press **button A** on micro:bit



# Simulation

Program: Evade Kids/Evade Elderlies/Random

Paper Model: Dataset 2



Place the CUHK iCar at the starting position and press button A.

CUHK iCar has trouble braking!

It will evade the corresponding group according to the program you choose.

# Simulation

Program: Evade Kids/Evade Elderlies/Random

Paper Model: Dataset 3



Place the CUHK iCar at the starting position and press button A.



CUHK iCar has trouble braking!



It will evade the corresponding group according to the program you choose.

# If CUHK iCar does not work as expected:

- Try to fully charge the CUHK iCar
- If the CUHK iCar still does not work as expected, then you can try to recollect data by pressing the learning button twice to forget the recorded data, then to recollect data. For details, please refer to the slide 10

