

2023-2024 Quality Education Fund Thematic Network - Tertiary Institutes

STEAM Education with Self-directed and Progressive Learning of Engineering Design Process for Problem-solving

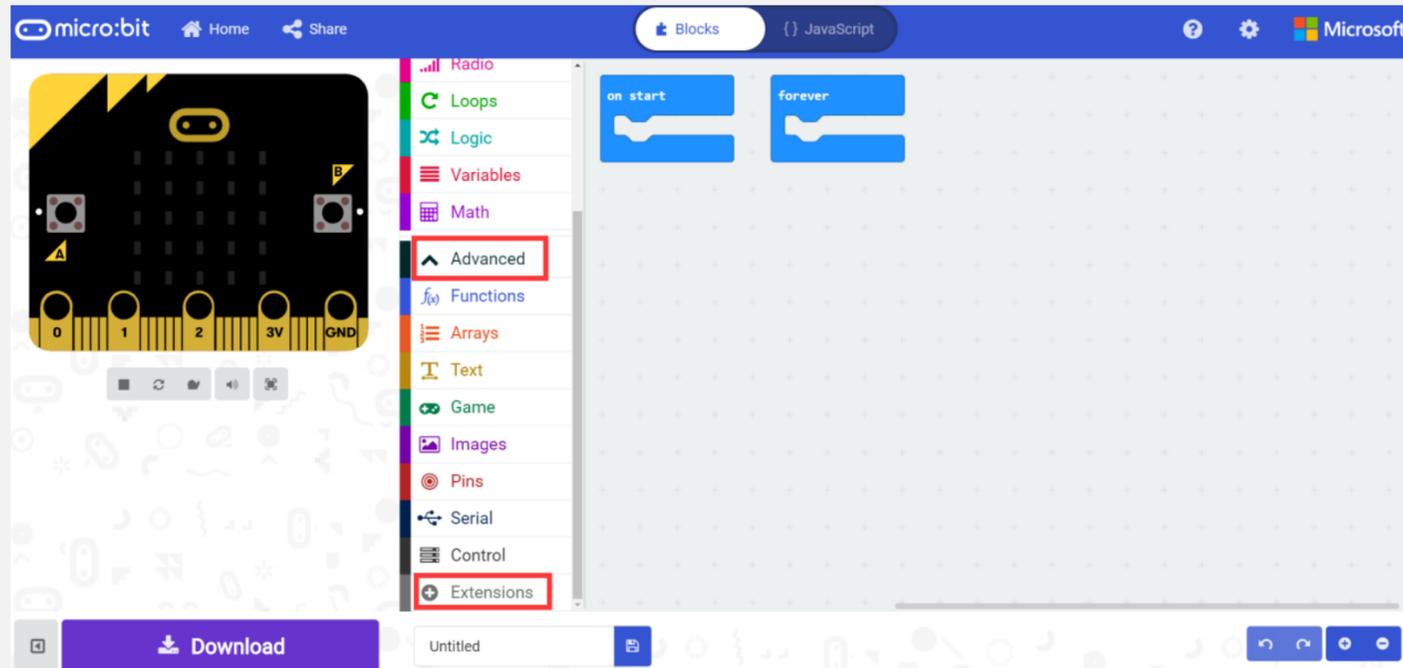
透過STEAM教育自主及循序漸進學習以工程設計流程解難

救援

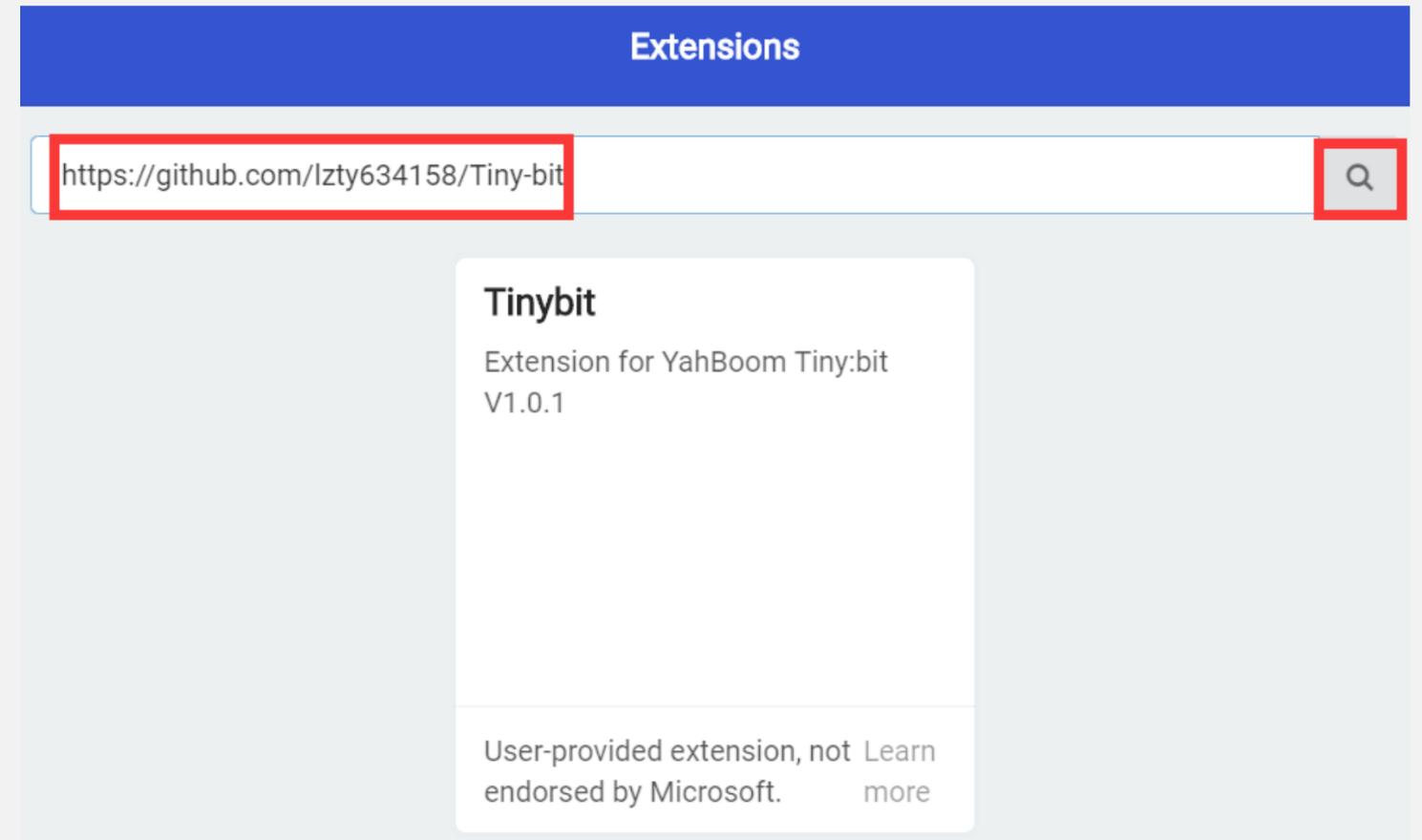
九龍婦女福利會李炳紀念學校

Kowloon Women' s Welfare Club Li Ping Memorial School

Coding



1. 我們首先需要加入Yahboom包，在如上圖所示介面中，點選【進階】，然後點選【擴充】，彈出介面。



2. 在輸入欄位中輸入 URL : <https://github.com/YahboomTechnology/Tiny-bitLib> 和 https://github.com/YahboomTechnology/Yahboom_IR。然後點選「搜尋」或按鍵盤上的「Enter」鍵。您可以搜尋Yahboom軟體包，然後點選Tinybit，即可成功新增軟體包。

Coding-搖控器

```
on start
  set conductivity to 650
  radio set group 1
  analog write pin P1 to 1023
  show icon [grid icon]

on button A pressed
  radio send string "open"

on button B pressed
  radio send string "close"
```

Coding-搖控器

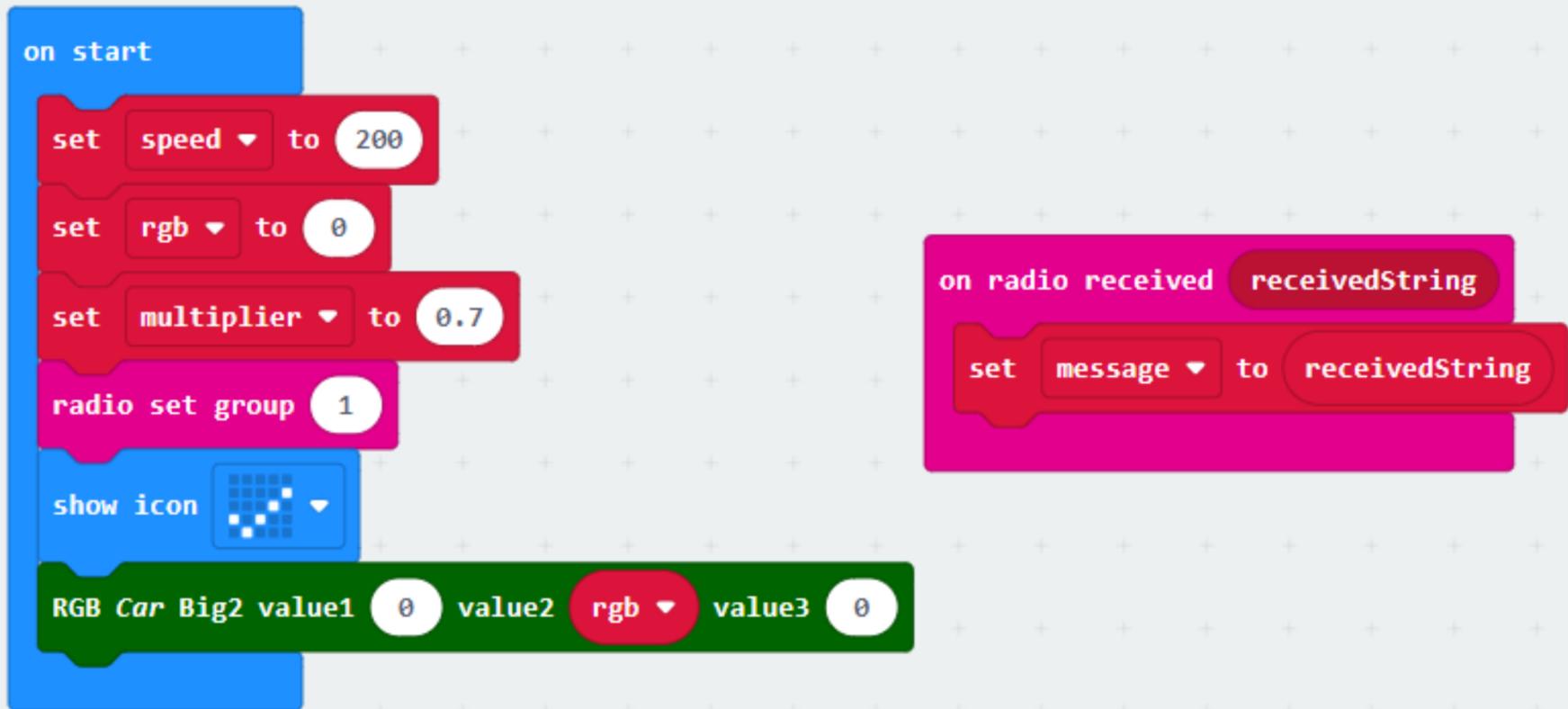
```
forever
  if < analog read pin P0 > > < conductivity > then
    radio send string "RotateLeft"
    show leds
  else if < analog read pin P2 > > < conductivity > then
    radio send string "RotateRight"
    show leds
  else
    set roll to rotation(*) roll
    set pitch to rotation(*) pitch
    if < pitch < -30 and roll < -30 > then
      radio send string "forward_left"
      show leds
    else if < pitch < -30 and roll > 30 > then
```

```
      radio send string "forward_right"
      show leds
    else if < pitch > 30 and roll < -30 > then
      radio send string "backward_left"
      show leds
    else if < pitch > 30 and roll > 30 > then
      radio send string "backward_right"
      show leds
    else if < pitch < -30 > then
```

```
      radio send string "Forward"
      show leds
    else if < pitch > 30 > then
      radio send string "Backward"
      show leds
    else if < roll < -30 > then
      radio send string "Left"
      show leds
    else if < roll > 30 > then
```

```
      radio send string "Right"
      show leds
    else if not < button A is pressed or button A is pressed > then
      radio send string "Stop"
      show leds
    else
```

Coding-車子



```
on start
  set speed to 200
  set rgb to 0
  set multiplier to 0.7
  radio set group 1
  show icon [Car icon]
  RGB Car Big2 value1 0 value2 rgb value3 0

on radio received receivedString
  set message to receivedString
```

The image shows a Scratch code editor with a grid background. The code is organized into two event-driven blocks. The first block, 'on start', contains several initialization blocks: 'set speed to 200', 'set rgb to 0', 'set multiplier to 0.7', 'radio set group 1', 'show icon' (with a car icon selected), and 'RGB Car Big2 value1 0 value2 rgb value3 0'. The second block, 'on radio received receivedString', contains a 'set message to receivedString' block.

Coding-車子

```
forever
  change rgb by 1
  if rgb > 255 then
    set rgb to 0
  +
  RGB Car Big2 value1 0 value2 rgb value3 0
  if message = "forward_left" then
    CarCtrlSpeed2 Back speed1 speed x multiplier speed2 0
  else if message = "backward_left" then
    CarCtrlSpeed2 Run speed1 speed x multiplier speed2 0
  else if message = "forward_right" then
    CarCtrlSpeed2 Back speed1 0 speed2 speed x multiplier
  else if message = "backward_right" then
    CarCtrlSpeed2 Run speed1 0 speed2 speed x multiplier
  else if message = "Forward" then
```

```
else if message = "Forward" then
  CarCtrlSpeed Back speed speed
else if message = "Backward" then
  CarCtrlSpeed Run speed speed
else if message = "Left" then
  CarCtrlSpeed2 Back speed1 speed x multiplier speed2 0
else if message = "Right" then
  CarCtrlSpeed2 Back speed1 0 speed2 speed x multiplier
else if message = "RotateLeft" then
  CarCtrlSpeed SpinLeft speed speed
else if message = "RotateRight" then
  CarCtrlSpeed SpinRight speed speed
else if message = "Stop" then
  CarCtrlSpeed Stop speed 0
else
```

Coding-夾子

```
on start
  show icon
  servo write pin P1 to 0
  radio set group 1

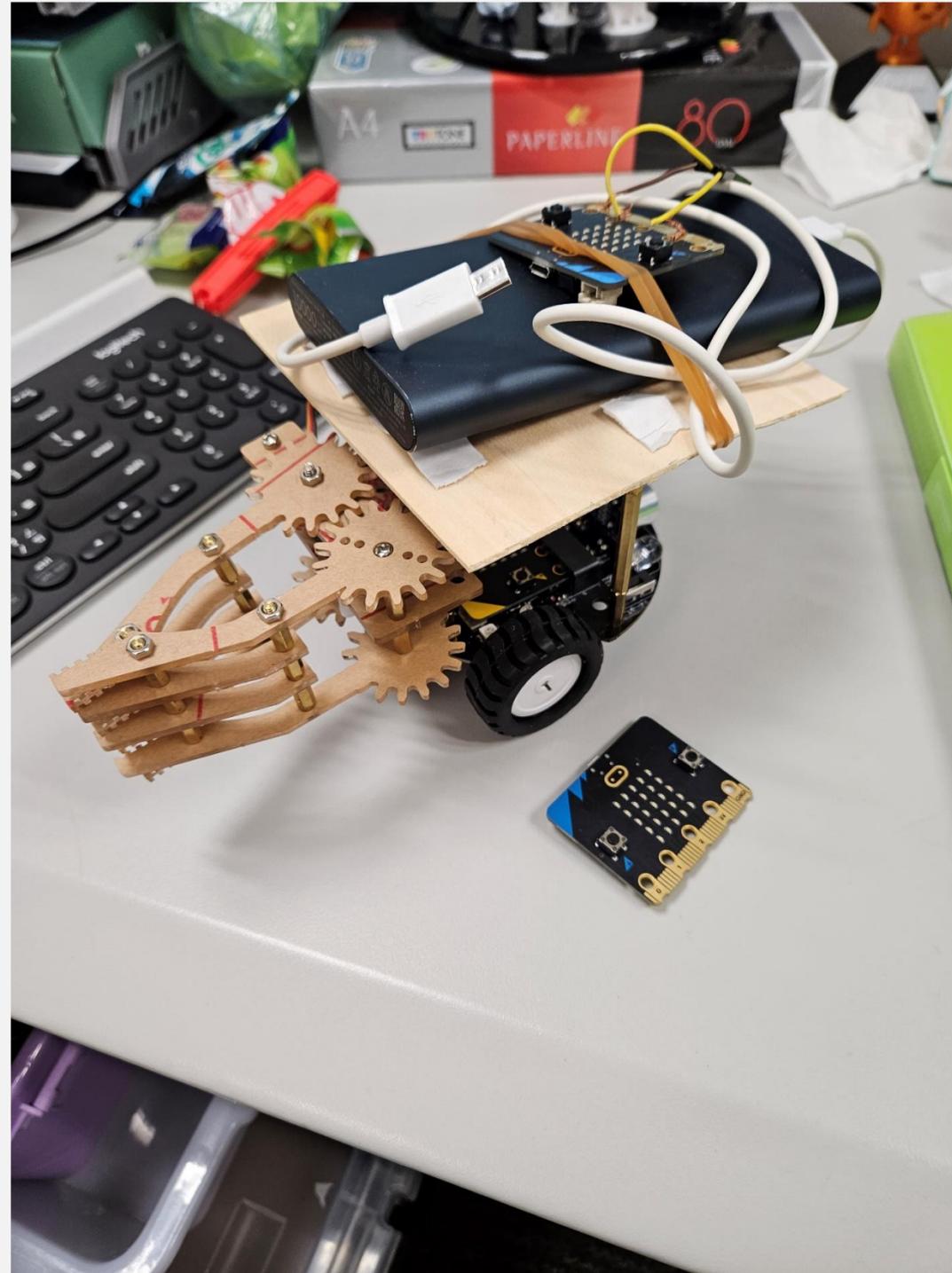
on button A pressed
  show icon
  servo write pin P1 to 55

on button B pressed
  show icon
  servo write pin P1 to 0

on radio received receivedString
  if receivedString = "close" then
    servo write pin P1 to 0
    show icon
  else if receivedString = "open" then
    servo write pin P1 to 55
    show icon
  else
    
```

The image displays a Scratch script for a gripper project. The script is organized into four main sections: 'on start', 'on button A pressed', 'on button B pressed', and 'on radio received receivedString'. The 'on start' section initializes the servo motor to 0 degrees and sets the radio group to 1. The 'on button A pressed' section sets the servo motor to 55 degrees and shows a grid icon. The 'on button B pressed' section sets the servo motor to 0 degrees and shows a grid icon. The 'on radio received receivedString' section uses an if-else structure to respond to radio commands: if the received string is 'close', the servo motor is set to 0 degrees and the grid icon is shown; if the received string is 'open', the servo motor is set to 55 degrees and the grid icon is shown; otherwise, no action is taken.

Model 1



Model 2

