



DOBOT

User Guide

Dobot Scratch User Guide

Issue: V1.3.1

Date: 2020-01-15

Copyright © ShenZhen Yuejiang Technology Co., Ltd 2020. All rights reserved.

No part of this document may be reproduced or transmitted in any form or by any means without prior written consent of Yuejiang Technology Co., Ltd

Disclaimer

To the maximum extent permitted by applicable law, the products described (including its hardware, software and firmware, etc.) in this document are provided **AS IS**, which may have flaws, errors or faults. Yuejiang makes no warranties of any kind, express or implied, including but not limited to, merchantability, satisfaction of quality, fitness for a particular purpose and non-infringement of third party rights. In no event will Yuejiang be liable for any special, incidental, consequential or indirect damages resulting from the use of our products and documents.

Before using our product, please thoroughly read and understand the contents of this document and related technical documents that are published online, to ensure that the robotic arm is used on the premise of fully understanding the robotic arm and related knowledge. Please use this document with technical guidance from professionals. Even if follow this document or any other related instructions, Damages or losses will be happen in the using process, Dobot shall not be considered as a guarantee regarding to all security information contained in this document.

The user has the responsibility to make sure following the relevant practical laws and regulations of the country, in order that there is no significant danger in the use of the robotic arm.

Shenzhen Yuejiang Technology Co., Ltd

Address: Floor 9-10, Building 2, Chongwen Garden, Nanshan iPark, Liuxian Blvd, Nanshan District, Shenzhen, Guangdong Province, China

Website: www.dobot.cc

Preface

Purpose

This manual introduces the use of Scratch, including equipment connection, building blocks, etc., for the convenience of users to understand and use Scratch.

Intended Audience

This document is intended for:





- Customer Engineer
- Sales Engineer
- Installation and Commissioning Engineer
- Technical Support Engineer

Change History

| Date | Change Description |
|------------|--------------------|
| 2020/01/11 | The first release |

Symbol Conventions


The symbols that may be founded in this document are defined as follows.

| Symbol | Description |
|---|---|
|  DANGER | Indicates a hazard with a high level of risk which, if not avoided, could result in death or serious injury |
|  WARNING | Indicates a hazard with a medium level or low level of risk which, if not avoided, could result in minor or moderate injury, robotic arm damage |
|  NOTICE | Indicates a potentially hazardous situation which, if not avoided, can result in robotic arm damage, data loss, or unanticipated result |
|  NOTE | Provides additional information to emphasize or supplement important points in the main text |

Contents

| | |
|--|----------|
| 1. Introduction..... | 1 |
| 2. Devices and Extension Center..... | 2 |
| 3. Quick Start | 3 |
| 3.1 Device Connection..... | 3 |
| 3.2 Program Upload..... | 4 |
| 4. Program Instructions..... | 6 |
| 4.1 Maigcian/Magician Lite..... | 6 |
| 4.1.1 Setting..... | 6 |
| 4.1.2 Motion | 8 |
| 4.1.3 Detection | 11 |
| 4.1.4 I/O (Only Magician supported) | 12 |
| 4.1.5 Calibration (Only Magician Lite supported) | 14 |
| 4.2 Extension Device | 17 |
| 4.2.1 Sliding rail | 17 |
| 4.2.2 AI..... | 19 |
| 4.2.3 Photoelectric and Color Sensor | 31 |
| 4.3 Magic Box..... | 32 |
| 4.4 Mobile Platform | 35 |
| 4.4.1 Mobile Platform..... | 35 |
| 4.4.2 Sensor | 37 |
| 4.5 Arduino | 42 |
| 4.5.1 Serial Port..... | 42 |
| 4.5.2 IO Operation..... | 44 |
| 4.5.3 Vision Recognition | 46 |
| 4.5.4 Speech Recognition | 50 |
| 4.5.5 JoyStick | 51 |
| 4.6 AIStarter..... | 53 |
| 4.6.1 AIStarter | 53 |
| 4.6.2 Motion | 54 |
| 4.6.3 Sensor | 56 |
| 4.6.4 Xbee..... | 61 |

2. Devices and Extension Center

We will introduce the device lib and extension center in this chapter, you can click  to view device lib. As shown below.

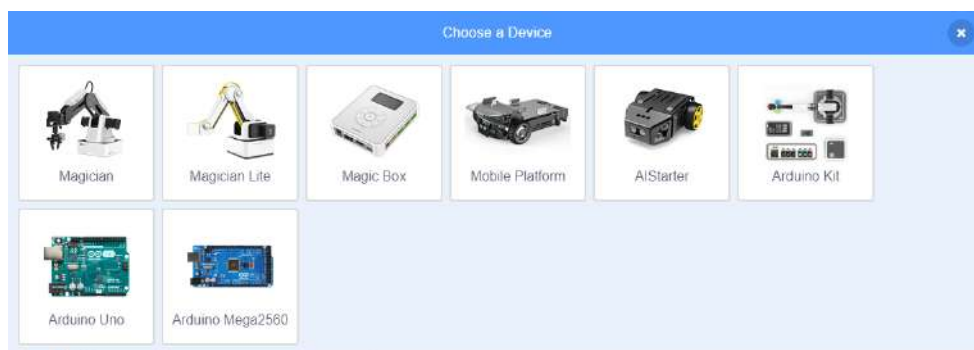



Figure 2.1 device selection

The block area will show the corresponding instruction after selecting device. You can also click  to add extension device in extension center. As shown below.

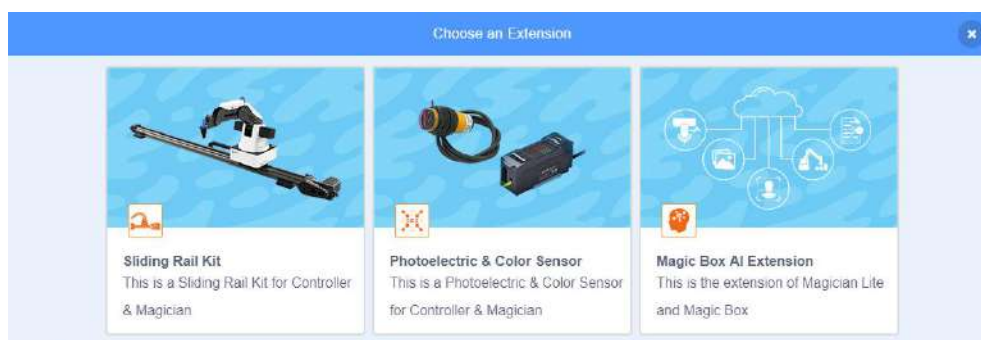


Figure 2.2 extension center

NOTE

One DobotScratch can control multiple devices at the same time.

3. Quick Start

3.1 Device Connection


DobotScratch supports multiple Dobot devices. This section uses Dobot Magician Lite as an example to describe how to connect devices.

Prerequisites

Magician Lite has been connected to PC via USB

Procedure

Step 1 Power on Magician Lite.

Step 2 Click  on DobotScratch into **Choose a Device** interface, where you should select **Magician Lite**.

Step 3 Click  to connect **Magician Lite** on device interface.

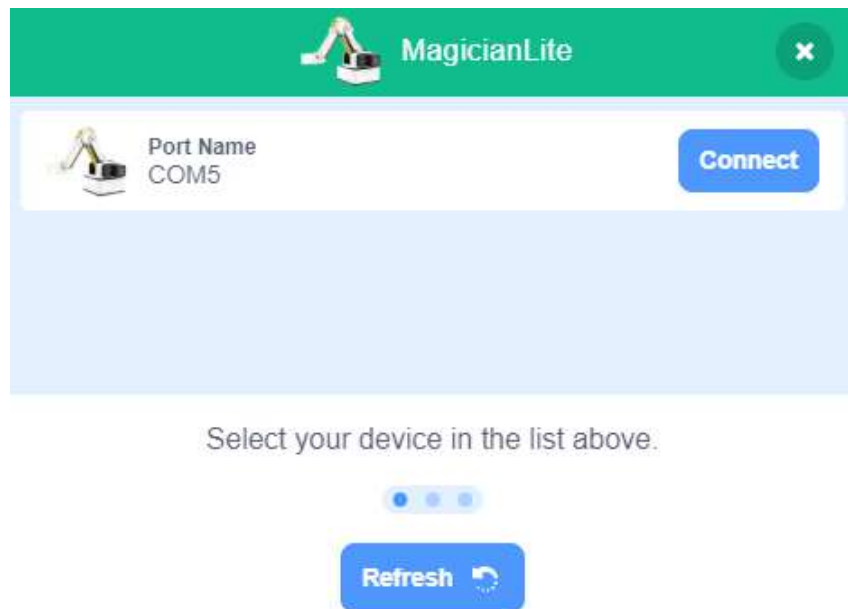

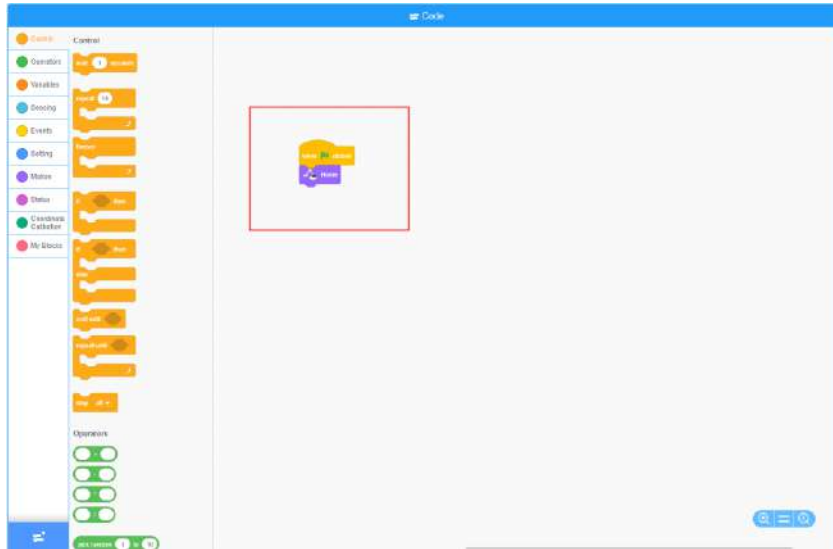


Figure 3.1 Connect Magician Lite and Scratch

Step 4 After connecting Dobot Magician Lite and DobotScratch successfully, you can drag the blocks in the block area to start programming. As shown in the figure

below, click  to home Magician Lite.




3.2 Program Upload

DobotScratch supports multiple Dobot devices. This section uses AI-Starter as an example to describe how to upload program to devices.

Prerequisites

AI-Starter has been connected to PC via USB.

Procedure

Step 1 Click  on DobotScratch into **Choose a Device** interface, where you should select **AI-Starter**.

Step 2 Drag the blocks to the block area, as shown below.

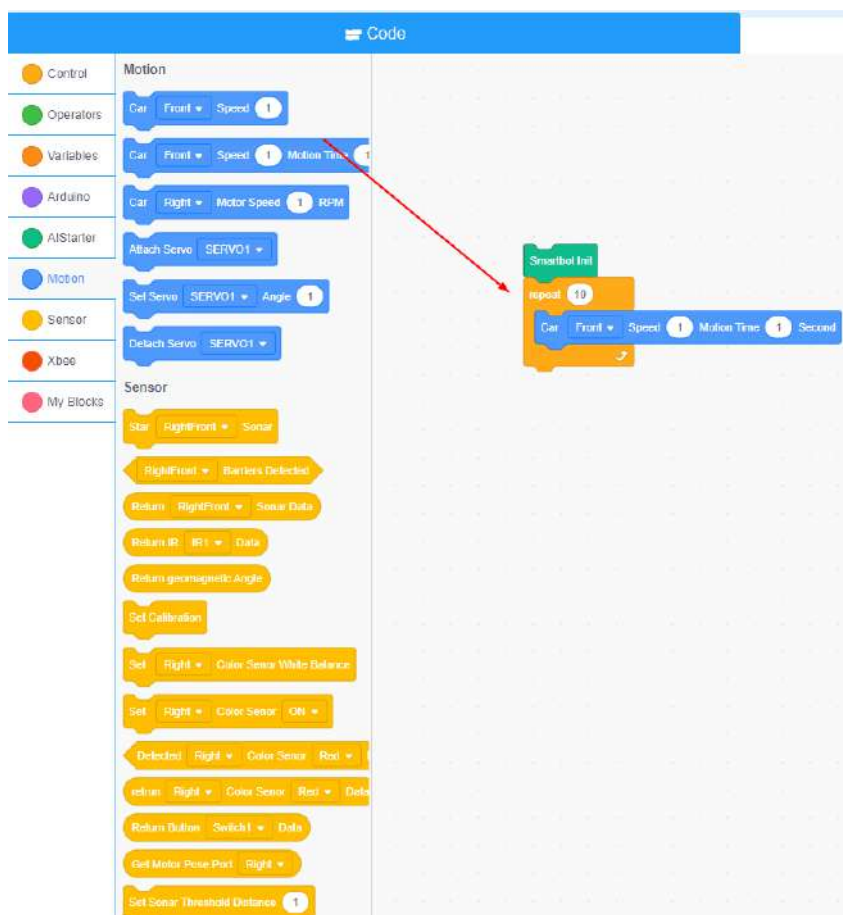



Figure 3.2 Drag blocks to the block area

Step 3 Click  to select the corresponding serial port and click **upload** to upload code. As shown below.

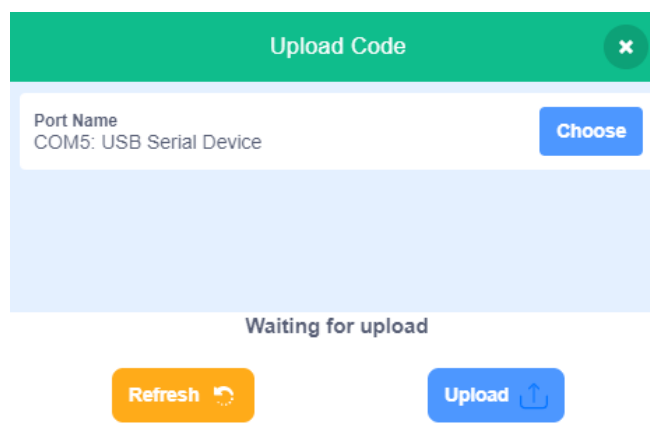


Figure 3.3 select the corresponding serial port to upload code

Power on AI-Starter to perform it after uploading code.

4. Program Instructions

4.1 Maigcian/Magician Lite

4.1.1 Setting

Table 4.1 Select end-tool

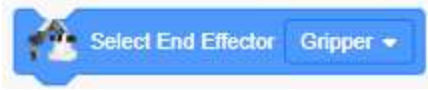
| | |
|-------------|---|
| Instruction |  |
| Description | Select end-tool |
| Parameters | end-tool: <ul style="list-style-type: none"> Gripper Suction cup Pen |
| Return | None |

Table 4.2 Set PTP motion ratio


| | |
|-------------|--|
| Instruction |  |
| Description | Set motion ratio |
| Parameter | Speed ratio: Set the speed ratio. Set the speed multiplied by the ratio to the actual speed Acceleration ratio: Set the acceleration ratio. Set the acceleration multiplied by the ratio as the actual acceleration |
| Return | None |

Table 4.3 Set the speed and acceleration of the joint axis


| | |
|-------------|--|
| Instruction |  |
| Description | Set the speed and acceleration of the joint axis |
| Parameter | Speed: Set the speed of each joint coordinate axis Acceleration: Set the acceleration of each joint coordinate axis |
| Return | None |

Table 4.4 Set the speed and acceleration of the Cartesian axis


| | |
|-------------|---|
| Instruction |  |
| Description | Set the speed and acceleration of the Cartesian axis |
| Parameter | Speed: Set the Cartesian axis speed Acceleration: Set acceleration of Cartesian axis |
| Return | None |

Table 4.5 Set the stepper motor speed


| | |
|-------------|--|
| Instruction |  |
| Description | Set the stepper motor speed. (This block is only supported by Magician) |
| Parameter | Motor: Select the motor first Speed: motor speed (puls/s) |
| Return | None |

Table 4.6 Set the height of the lift in Jump mode and the height limit of the Z axis


| | |
|-------------|---|
| Instruction |  |
| Description | Set the height of the lift in Jump mode and the height limit of the Z axis |
| Parameter | Height: set the door height Z-axis height limit: Set the Z-axis height limit |
| Return | None |

Table 4.7 Set lost step threshold

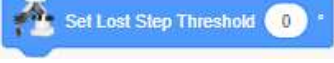
| | |
|-------------|--|
| Instruction |  |
| Description | Set a lost step detection threshold to detect whether the positioning error exceeds the threshold. If the threshold is exceeded, the motor lost steps |
| Parameter | Parameter setting: set cutting value |
| Return | None |

Table 4.8 Set the number of stepper motor speed pulses

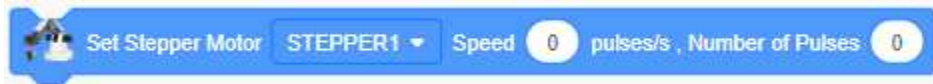
| | |
|-------------|--|
| Instruction |  |
| Description | Set the number of stepper motor speed pulses. (This block is only supported by Magician) |
| Parameter | Motor: Select motor Speed: Set the motor speed (puls/s) Pulse number: set the number of motor pulses |
| Return | None |

Table 4.9 Perform motor loss detection


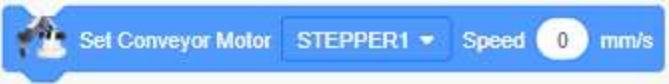
| | |
|-------------|---|
| Instruction |  |
| Description | Perform motor loss detection |
| Parameter | None |
| Return | None |

Table 4.10 Set the convert motor speed

| | |
|-------------|--|
| Instruction |  |
| Description | Set the conveyor motor speed (this block is only supported by Magician) |
| Parameter | Motor: Select motor Speed: Set the motor speed |
| Return | None |

4.1.2 Motion

Table 4.11 Home robot

| | |
|-------------|---|
| Instruction |  |
|-------------|---|

| | |
|-------------|------------|
| Description | Home robot |
| Parameter | None |
| Return | None |

Table 4.12 Robot moves to a set target point in jump mode


| | |
|-------------|--|
| Instruction |  |
| Description | Robot moves to a set target point in jump mode |
| Parameter | X: Set the X coordinate value Y: set the Y coordinate value Z: Set the Z coordinate value R: Set the R coordinate value |
| Return | None |

Table 4.13 The robot moves to the set target position with a certain type of motion


| | |
|-------------|---|
| Instruction |  |
| Description | The robot moves to the set target position with a certain type of motion |
| Parameter | X: Click the edit box to set the X coordinate value Y: Set Y coordinate value Z: Set the Z coordinate value R: Set the R coordinate value Movement type: <ul style="list-style-type: none"> Joint Straight Line |
| Return | None |

Table 4.14 Robot moves a relative Cartesian coordinate increment

| | |
|-------------|--|
| Instruction |  |
|-------------|--|

| | |
|-------------|--|
| Description | Robot moves a relative Cartesian coordinate increment |
| Parameter | Δ X: set x increment value Δ Y: set y increment value Δ Z: set z increment value Δ R: set r increment value |
| Return | None |

Table 4.15 Robot moves to the set joint target position

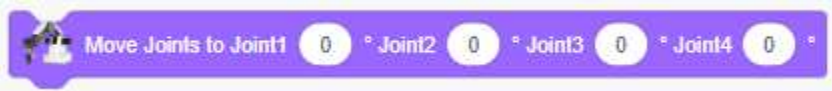
| | |
|-------------|--|
| Instruction |  |
| Description | Robot moves to the set joint target position |
| Parameter | Joint 1: Set the angle of Joint 1 Joint 2: Set the angle of Joint 2 Joint 3: Set the angle of joint 3 Joint 4: Set the angle of joint 4 |
| Return | None |

Table 4.16 Set R axis rotation angle

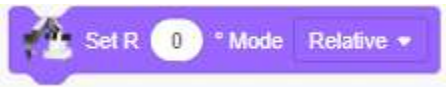
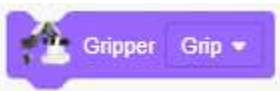
| | |
|-------------|--|
| Instruction |  |
| Description | Set R axis rotation angle |
| Parameter | R-axis angle: set rotation angle Mode: <ul style="list-style-type: none"> Relative: Relative coordinate Absolute: Absolute coordinate |
| Return | None |

Table 4.17 Set suction cup switch

| | |
|-------------|---|
| Instruction |  |
| Description | Set suction cup switch |

| | |
|-----------|---|
| Parameter | Suction cup status: <ul style="list-style-type: none"> ON OFF |
| Return | None |

Table 4.18 Set gripper status

| | |
|-------------|--|
| Instruction |  |
| Description | Set gripper status |
| Parameter | Gripper status: <ul style="list-style-type: none"> Grip Release Off |
| Return | None |

4.1.3 Detection

Table 4.19 Get real-time robot coordinates



| | |
|-------------|--|
| Instruction |  |
| Description | Get real-time robot coordinates |
| Parameter | Axis: <ul style="list-style-type: none"> X Y Z R |
| Return | Coordinate value |

Table 4.20 Get real-time joint angle of robotic arm

| | |
|-------------|---|
| Instruction |  |
| Description | Get real-time joint angle of robotic arm |

| | |
|-----------|---|
| Parameter | Joint: <ul style="list-style-type: none"> Joint 1: Set the angle of Joint 1 Joint 2: Set the angle of Joint 2 Joint 3: Set the angle of joint 3 Joint 4: Set the angle of joint 4 |
| Return | Return joint angle |

Table 4.21 Detect Robot lost step results

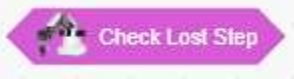
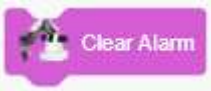
| | |
|-------------|---|
| Instruction |  |
| Description | Detect Robot lost step results |
| Parameter | None |
| Return | True: step lost False: no step lost |

Table 4.22 clearthe robot alarm

| | |
|-------------|---|
| Instruction |  |
| Description | Clear robot alarm |
| Parameter | None |
| Return | None |

4.1.4 I/O (Only Magician supported)

Table 4.23 Set EIO state

| | |
|-------------|--|
| Instruction |  |
| Description | Set EIO state |

| | |
|-----------|---|
| Parameter | EIO: Select IO address according to function type Function type: <ul style="list-style-type: none"> IOFunctionDummy IOFunctionDO IOFunctionDI IOFunctionPWM IOFunctionADC IOFunctionDIPU IOFunctionDIPD |
| Return | None |

Table 4.24 Set PWM output


| | |
|-------------|--|
| Instruction |  |
| Description | Set PWM output |
| Parameter | EIO: Select IO address Frequency: Set the frequency. Value range: 10HZ ~ 1MHZ Duty Cycle: Set the duty cycle. Value range: 0 ~ 100 |
| Return | None |

Table 4.25 Set digital output to high or low



| | |
|-------------|--|
| Instruction |  |
| Description | Set digital output to high or low |
| Parameter | EIO: Select EIO address Value: high or low |
| Return | None |

Table 4.26 Read the value of a digital signal

| | |
|-------------|---|
| Instruction |  |
|-------------|---|

| | |
|-------------|------------------------------------|
| Description | Read the value of a digital signal |
| Parameter | EIO: Select EIO |
| Return | 0: low level; 1: high level |

Table 4.27 Read the value of an analog signal

| | |
|-------------|---|
| Instruction |  |
| Description | Read the value of an analog signal |
| Parameter | EIO: Select EIO |
| Return | 0: low level; 1: high level |

4.1.5 Calibration (Only Magician Lite supported)

If Magician Lite is required for precise positioning and grasping, coordinate calibration is required in advance. The calibration steps are as follows.

Step 1 Click “Coordinate Calibration” to pop up the calibration interface, follow the prompts to install the suction cup, and click **Next**.

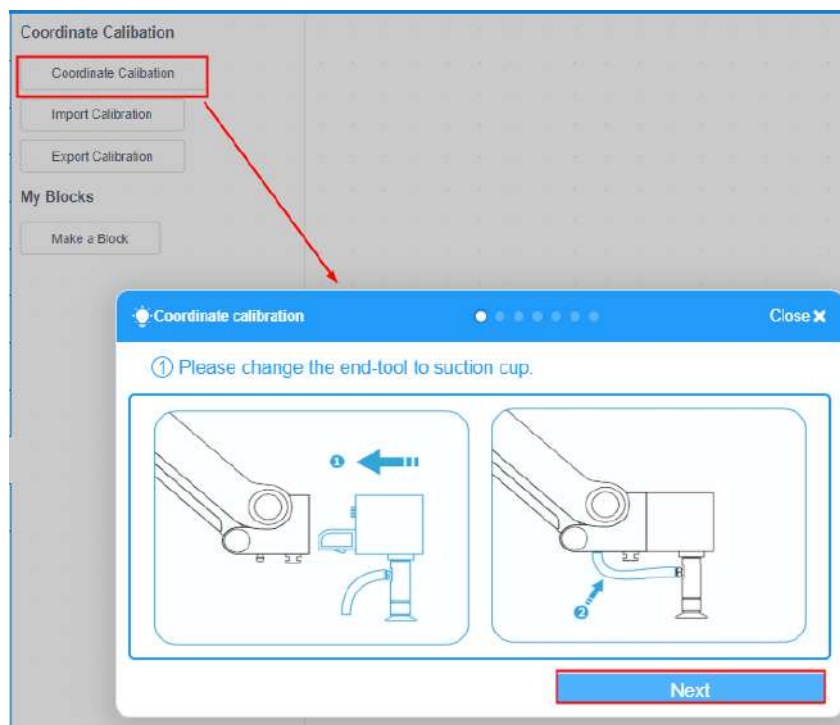


Figure 4.1 Install suction cup

Step 2 Follow the prompts to place the device. Click **Next**.

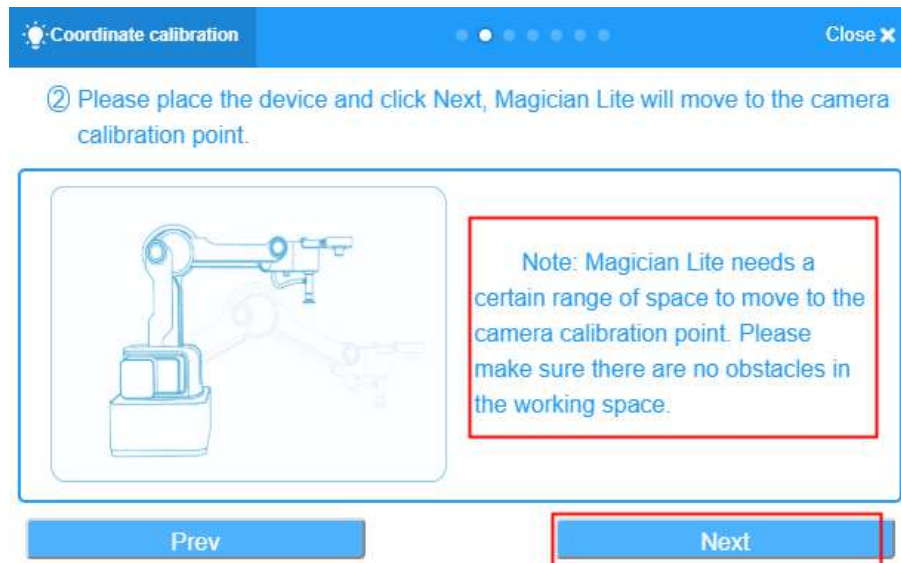


Figure 4.2 Place Magician Lite

Step 3 After placing the calibration plate in the box under the camera according to the prompts, the four calibration points A, B, C, and D will be displayed in the figure. Click **Next**.

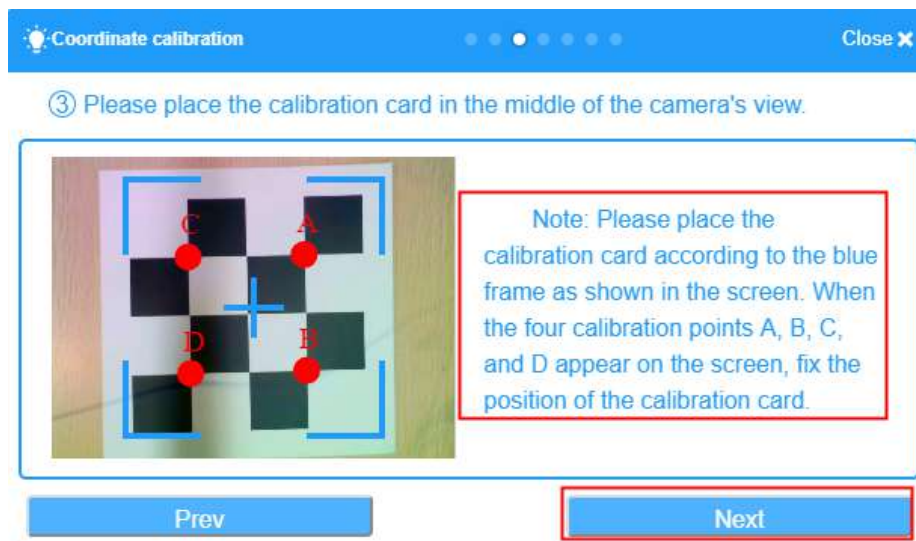


Figure 4.3 Place calibration plate

Step 4 Follow the prompts to jog the robot arm to move the end suction cup to the calibration point A, and click **Next**.



Figure 4.4 Move the end suction cup to the calibration point A

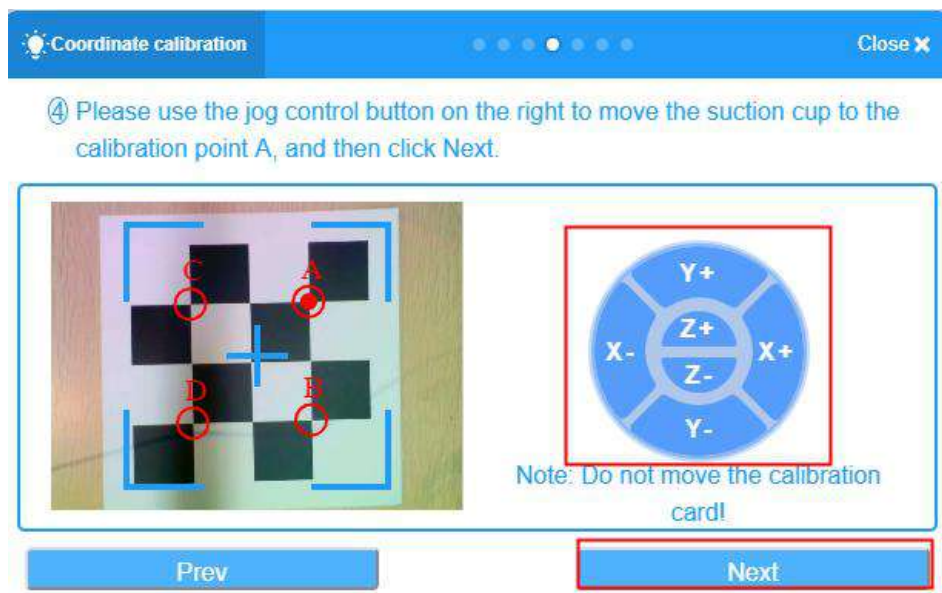


Figure 4.5 Calibration point A

NOTE

Do not move the calibration plate during the calibration process, otherwise the calibration will be invalid.

Step 5 Follow step 4 to calibrate point B, point C and point D.

4.2 Extension Device

4.2.1 Sliding rail

Table 4.28 Set sliding rail state


| | |
|-------------|---|
| Instruction |  |
| Description | Set Sliding rail status |
| Parameter | Status: Click the drop-down box to set the status Version: Click the drop-down box to select the corresponding version of the sliding rail |
| Return | None |

Table 4.29 Get sliding rail state


| | |
|-------------|---|
| Instruction |  |
| Description | Get Sliding rail state |
| Parameter | None |
| Return | None |

Table 4.30 Move the sliding rail for a certain distance

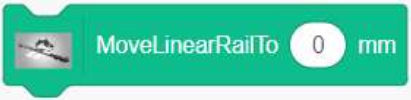
| | |
|-------------|---|
| Instruction |  |
| Description | Move the sliding rail for a certain distance |
| Parameter | Distance: Set the moving distance of the sliding rail |
| Return | None |

Table 4.31 Set the speed and acceleration in PTP mode

| | |
|-------------|--|
| Instruction |  |
|-------------|--|

| | |
|-------------|--|
| Description | Set the speed and acceleration in PTP mode |
| Parameter | Speed: Set the speed of the sliding rail Acceleration: Set the acceleration of the sliding rail |
| Return | None |

Table 4.32 Set the speed and acceleration in jogging mode

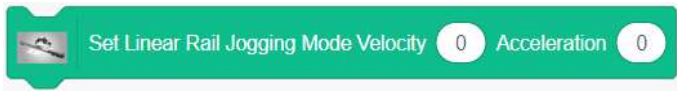
| | |
|-------------|--|
| Instruction |  |
| Description | Set the speed and acceleration in jogging mode |
| Parameter | Speed: Set the speed of the sliding rail Acceleration: Set the acceleration of the sliding rail |
| Return | None |

Table 4.33 Get the speed and acceleration in PTP mode

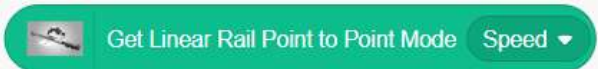
| | |
|-------------|--|
| Instruction |  |
| Description | Get the speed and acceleration in PTP mode |
| Parameter | Select the parameter speed (mm / s) or acceleration (mm / s ²) |
| Return | Speed or acceleration |

Table 4.34 Get the speed and acceleration in jogging mode


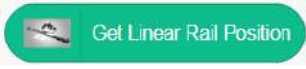
| | |
|-------------|--|
| Instruction |  |
| Description | Get the speed and acceleration in jogging mode |
| Parameter | Select the parameter speed (mm/s) or acceleration (mm/s ²) |
| Return | Speed or acceleration |

Table 4.35 Get sliding rail position

| | |
|-------------|---|
| Instruction |  |
|-------------|---|

| | |
|-------------|----------------------------|
| Description | Get sliding rail position |
| Parameter | None |
| Return | Sliding rail position (mm) |

4.2.2 AI

Speech Recognition

Speech Recognition

Step 1 Click **Open speech recognition** popup the voice recognition interface.

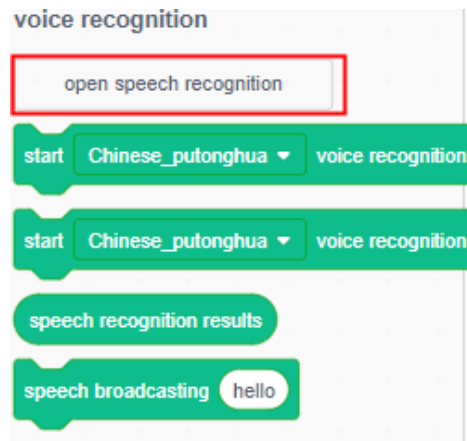


Figure 4.6 Open speech recognition

Step 2 Please select a language, Click **Start** to recognize your voice.

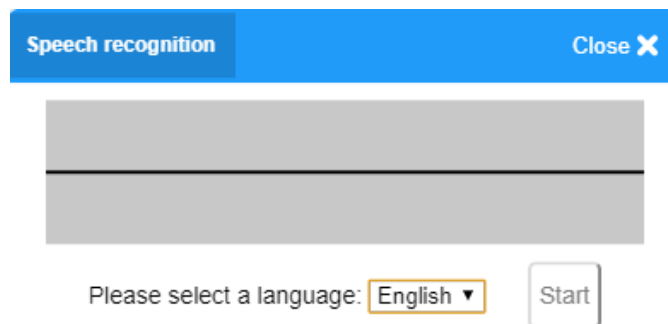


Figure 4.7 Start recognition

Step 3 Click **Stop** to finish speech recognition.

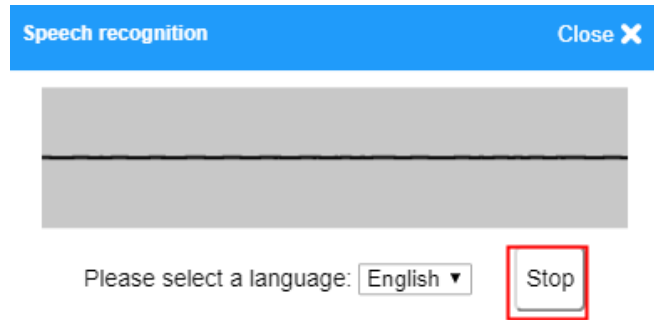



Figure 4.8 Stop recognition

Step 4 Close this interface, and the recognition result will be saved to Speech recognition results module .

Instruction Description

Table 4.36 Recognize speech automatically

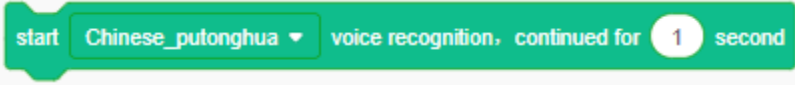


| | |
|-------------|---|
| Instruction |  |
| Description | Recognize speech automatically |
| Parameter | Select language: select language to Chinese_putonghua or English Time: set speech recognition time |
| return | None |
| Example | <p>Click  to execute program. Say something for 5s, wait for 3s to broadcast speed result.</p>  |

Table 4.37 Recognize speech manually

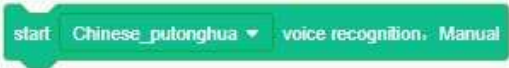

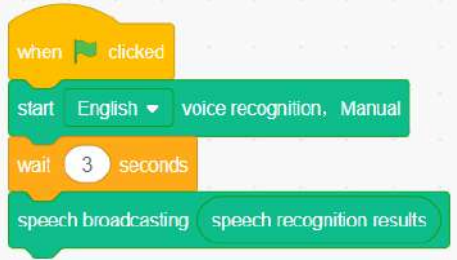
| | |
|-------------|--|
| Instruction |  |
| Description | Recognize speech manually |
| Parameter | Select language: select language to Chinese_putonghua or English |
| return | None |
| Example | <p>Click  to xecute program. Click Start to say something, when you finish speaking, click Stop, wait for 3s to broadcast speed result.</p>  |

Table 4.38 Speech recognition result


| | |
|-------------|---|
| Instruction |  |
| Description | speech recognition will be saved in this module |
| Parameter | None |
| return | Speech recognition |
| Example | Please refer to Table 4.36 |

Table 4.39 broadcast speech

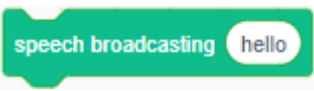
| | |
|-------------|---|
| Instruction |  |
| Description | Broadcast speech |
| Parameter | Set speech that need to broadcast |
| return | None |
| Example | Please refer to Table 4.36 |

Image Getting

Table 4.40 Get image automatically

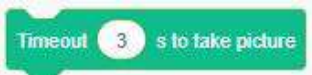

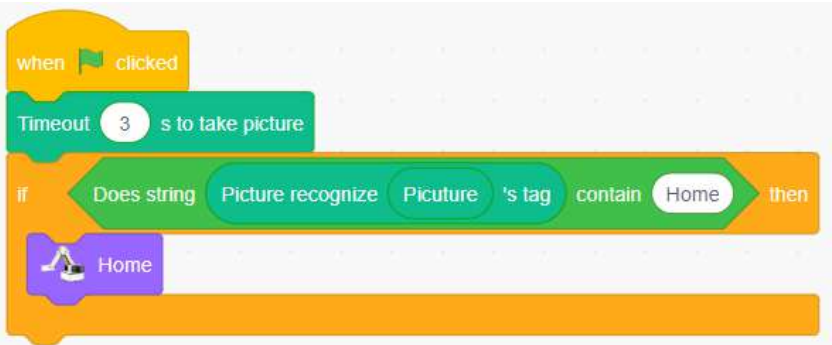
| | |
|-------------|---|
| Instruction |  |
| Description | Get image automatically |
| Parameter | Set time to get image |
| return | None |
| Example | <p>Click  and the camera will take a picture after 3s, if the picture's tag contains Home, the Robot will execute home function.</p>  |

Table 4.41 Get image manually

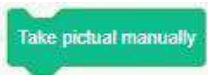

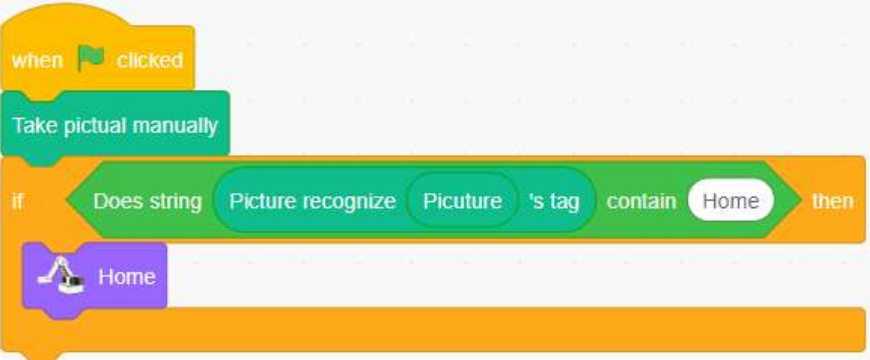
| | |
|-------------|--|
| Instruction |  |
| Description | Get image manually |
| Parameter | None |
| return | None |
| Example | <p>Click  and click take a picture, if the picture's tag contains Home, the Robot will execute home function</p>  |

Table 4.42 Save image


| | |
|-------------|---|
| Instruction |  |
| Description | An image will be saved in this module |
| Parameter | None |
| return | Image |
| Example | Please refer to Table 4.41 |

Image Recognition

Create Image Date

Step 5 Click **Edit classification data** to popup create image date interface.

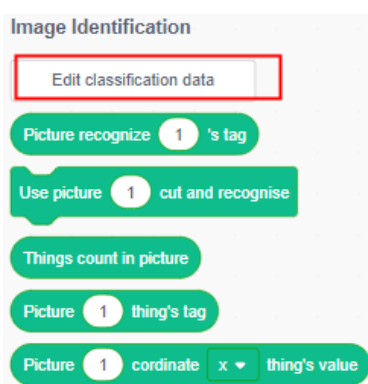



Figure 4.9 Edit classification data

Step 6 Click  to get image and name it. (please colse your computer camera before using camera)

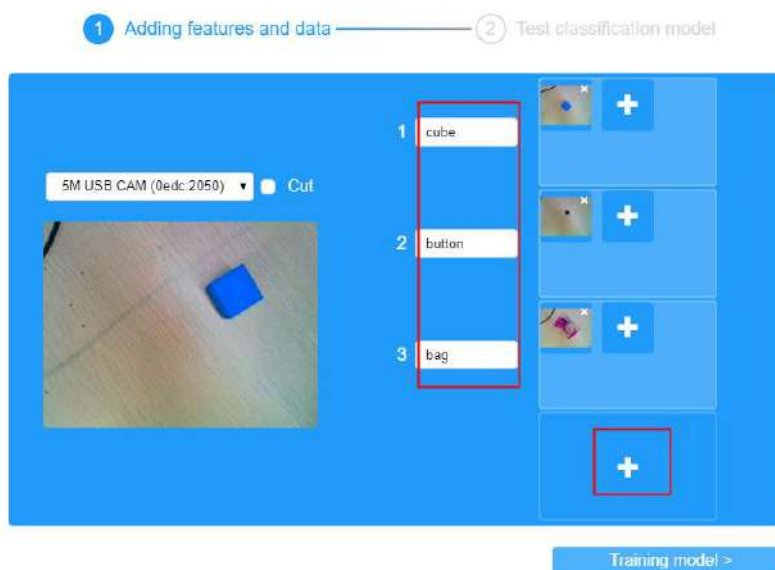


Figure 4.10 Get image and name it

Step 7 If you need to cut the object in the picture, you can check **Cut** and click the object in the box to get the picture.

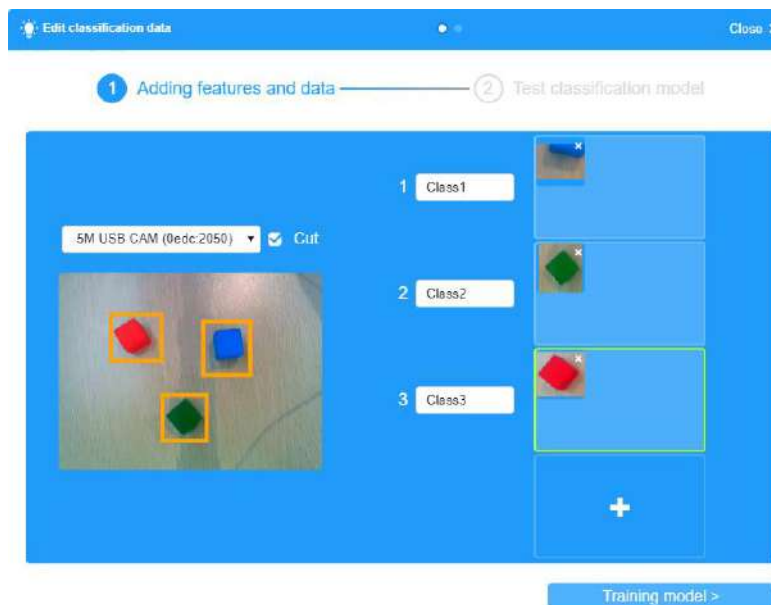


Figure 4.11 Cut picture

Step 8 Click **Training model** to test image, put object below the camera, and the system will match it via feature.

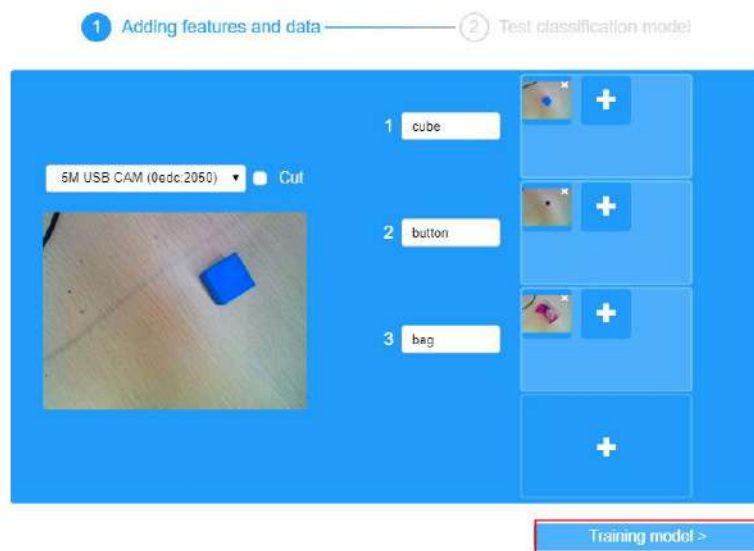


Figure 4.12 Training model

Step 9 Click **Finish** to finish creating image after finish image testing.

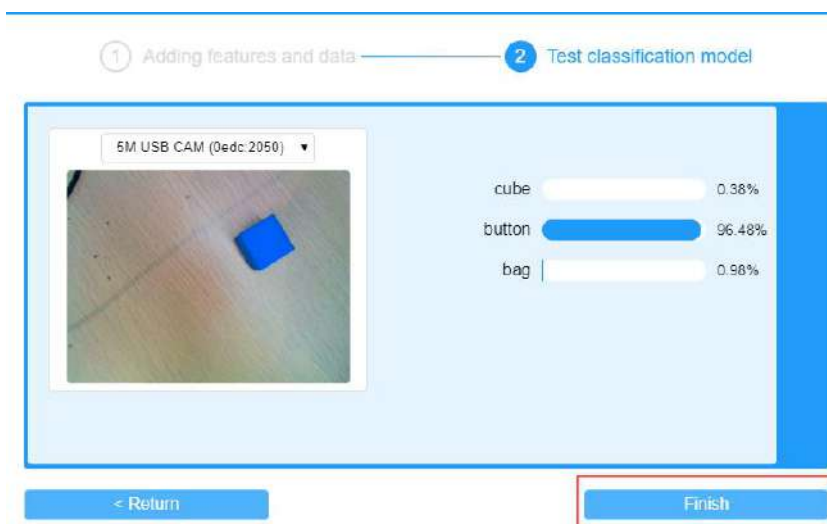


Figure 4.13 Finish model

Instruction Description

Table 4.43 Image name recognition

| | |
|-------------|------------------------------|
| Instruction | |
| Description | Recognize image name |
| Parameter | Put an image into the module |
| return | Image name |
| Example | Please refer to Table 4.40 |

Table 4.44 Cut and recognize image

| | |
|-------------|---|
| Instruction | |
| Description | Cut and recognize image |
| Parameter | Put an image into the module |
| return | None |
| Example | Click space key to execute program. If picture's tag is home , get coordinate value and to make robot execute home function |

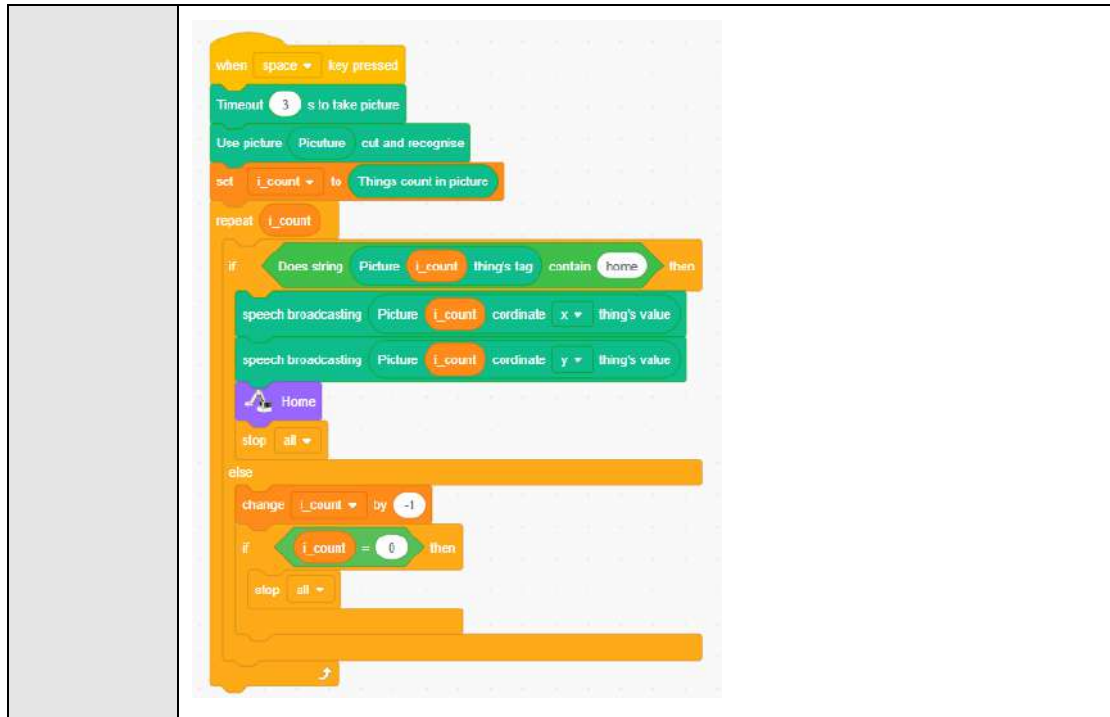


Table 4.45 Get the number of image which is cut


| | |
|-------------|---|
| Instruction |  |
| Description | Get the number of image which is cut |
| Parameter | None |
| return | Image number |
| Example | Please refer to Table 4.44 |

Table 4.46 Get number of picture which is cut


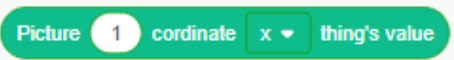
| | |
|-------------|---|
| Instruction |  |
| Description | Get number of picture which is cut |
| Parameter | Picture number: set cut picture number |
| return | name |
| Example | Please refer to Table 4.44 |

Table 4.47 Get coordinate of picture

| | |
|-------------|---|
| Instruction |  |
| Description | Get coordinate of picture which is cut |
| Parameter | Picture number: set cut picture number coordinate: select axis |
| return | Coordinate value |
| Example | Please refer to Table 4.44 |

Face Recognition

Create Face Data

Step 1 Click **New face data** to popup the create face data interface.

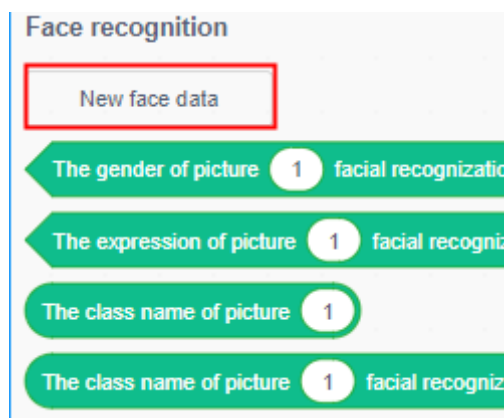



Figure 4.14 Create face data

Step 2 Click  to get face data and name it.

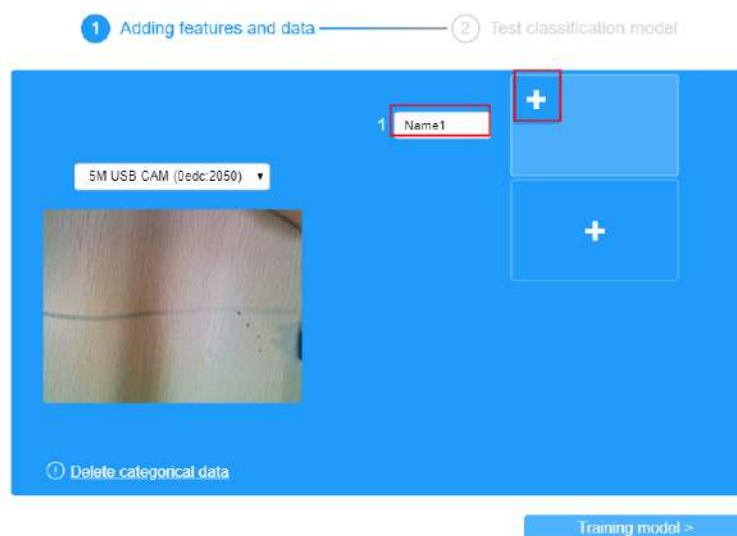


Figure 4.15 Get face data and name it

Step 3 Click **Training model** to test face data



Figure 4.16 Training model

Step 4 Put your face below the camera, and click **Test** to match it via feature.

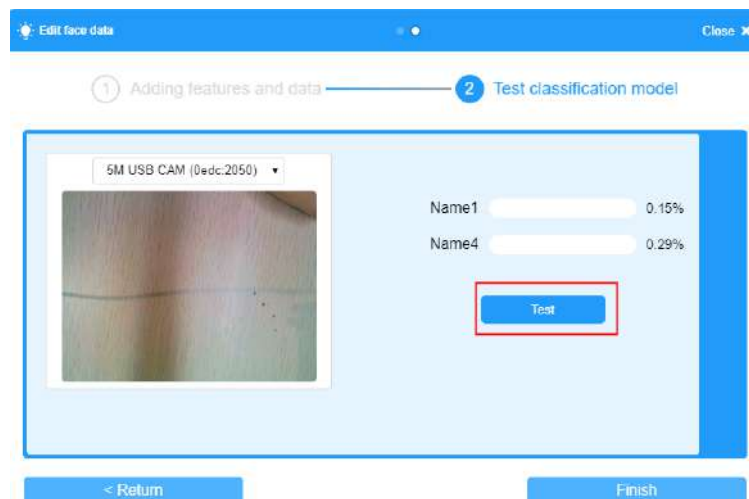


Figure 4.17 Train model

Step 5 Click **Finish** to finish creating face data.

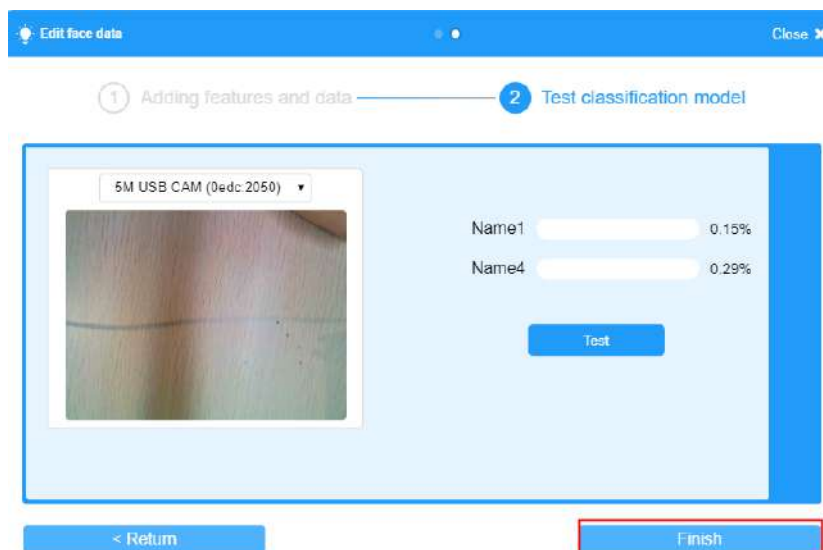


Figure 4.18 finish training model

Instruction Description

Table 4.48 sexual recognition

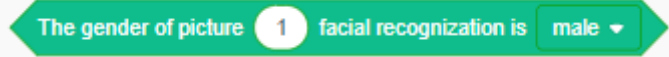


| | |
|-------------|---|
| Instruction |  |
| Description | Recognize sexual via face data |
| Parameter | Face data: put face data into the module Sexual: male, female |
| return | True: Recognize successfully False: Recognize failed |
| Example | Click key space to execute and recognize a man's sexual and expression.  |

Table 4.49 Expression recognition

| | |
|-------------|--|
| Instruction |  |
| Description | Recognize expression via face data |

| | |
|-----------|---|
| Parameter | Expression: <ul style="list-style-type: none"> Normal Smile Laugh |
| return | True: Recognize successfully False: Recognize failed |
| Example | Please refer to Table 4.48 |

Table 4.50 Get name

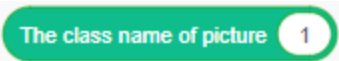

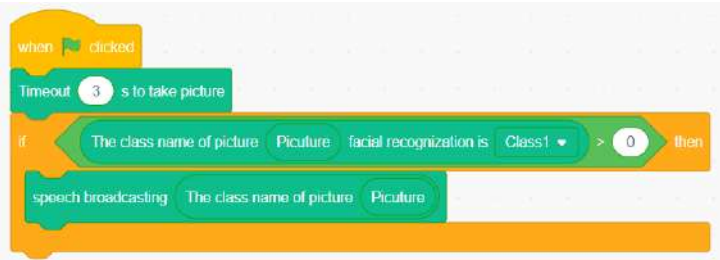

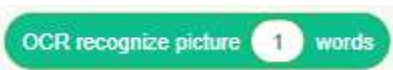

| | |
|-------------|---|
| Instruction |  |
| Description | Get name via face data |
| Parameter | Put face data into the module |
| return | Name |
| Example | <p>Click  to execute program. If the picture match is greater than 0, broadcast picture's name</p>  |

Table 4.51 Face match

| | |
|-------------|--|
| Instruction |  |
| Description | Get face match results |
| Parameter | face: put a face data into the module name: select match name |
| return | Match range: 0%~100% |
| Example | Please refer to Table 4.50 |

OCR Recognition

Table 4.52 OCR recognition

| | |
|-------------|---|
| Instruction |  |
| Description | Recognize the text of image |
| Parameter | Put an image into this module |
| Return | Text |
| Example | <p>Press space key to execute program, the camera will take a picture after 3s, if the picture contains text Laugh, program will broadcast hahahahahaha</p>  |

4.2.3 Photoelectric and Color Sensor

Table 4.53 Set infrared sensor state

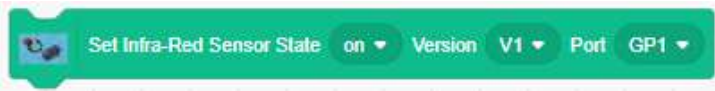
| | |
|-------------|---|
| Instruction |  |
| Description | Set infrared sensor state |
| Parameter | <p>Status: set status on, off</p> <p>Version: Select the appropriate sensor version</p> <p>Port: Select the port where the sensor is connected to the robot</p> |
| Return | None |

Table 4.54 Get infrared sensor value


| | |
|-------------|---|
| Instruction |  |
| Description | Get Infrared Sensor value |
| Parameter | port: Select the port where the sensor is connected to the robot |
| Return | Value |

Table 4.55 Get color sensor state



| | |
|-------------|---|
| Instruction |  |
| Description | Set color sensor status |
| Parameter | <p>Status: set status</p> <ul style="list-style-type: none"> On Off <p>Version: Select the corresponding color sensor version</p> <p>Port: Select the port where the sensor is connected to the robot arm</p> |
| Return | None |

Table 4.56 Get color sensor value

| | |
|-------------|---|
| Instruction |  |
| Description | Get color sensor value |
| Parameter | <p>Select color:</p> <ul style="list-style-type: none"> Red Green Blue |
| Return | Color value |

4.3 Magic Box

Table 4.57 Output analog signal pin value

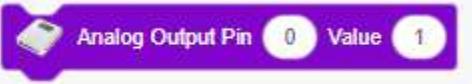
| | |
|-------------|---|
| Instruction |  |
| Description | Output analog signal pin value |
| Parameter | <p>Pin: Set pin number</p> <p>Value: Set value, value range: 0~255</p> |
| Return | None |

Table 4.58 Output digital signal pin value

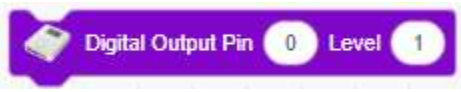
| | |
|-------------|---|
| Instruction |  |
| Description | Output digital signal pin value |
| Parameter | Pin: Set pin number Level: 1: high level, 0: low level |
| Return | None |

Table 4.59 Set pin state

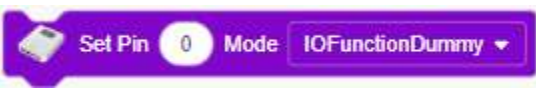
| | |
|-------------|---|
| Instruction |  |
| Description | Set pin state |
| Parameter | Pin: Select the pin according to the function type Function type: <ul style="list-style-type: none"> IOFunctionDummy IOFunctionDO IOFunctionDI IOFunctionPWM IOFunctionADC IOFunctionDIPU IOFunctionDIPD |
| Return | None |

Table 4.60 Set PWM output

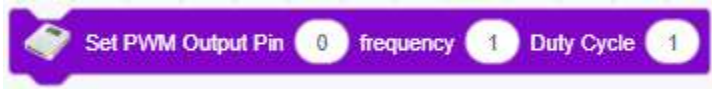
| | |
|-------------|--|
| Instruction |  |
| Description | Set PWM output |
| Parameter | Pin: input pin Frequency: Set the frequency. Value range: 10HZ ~ 1MHZ Duty Cycle: Set the duty cycle. Value range: 0 ~ 100 |
| Return | None |

Table 4.61 Read the value of a digital signal


| | |
|-------------|---|
| Instruction |  |
| Description | Read the value of a digital signal |
| Parameter | Pin: Enter the pin number |
| Return | 1: high level, 0: low level |

Table 4.62 Read the value of a digital signal


| | |
|-------------|---|
| Instruction |  |
| Description | Read the value of a digital signal |
| Parameter | Pin: Enter the pin number |
| Return | True: read successfully false: read failed |

Table 4.63 Read the value of an analog signal

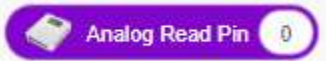
| | |
|-------------|---|
| Instruction |  |
| Description | Read the value of an analog signal |
| Parameter | Pin: Enter the pin number |
| Return | 1: high level 0: low level |

Table 4.64 Set stepper motor speed

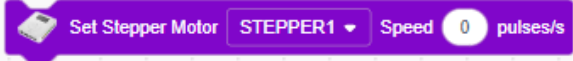
| | |
|-------------|--|
| Instruction |  |
| Description | Set stepper motor speed |
| Parameter | Motor: Select motor Speed: Motor speed (puls / s) |
| Return | None |

Table 4.65 Set the number of stepping motor speed pulses

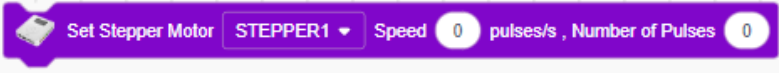

| | |
|-------------|--|
| Instruction |  |
| Description | Set the number of stepping motor speed pulses |
| Parameter | Motor: Select motor Speed: Set motor speed (puls/s) Pulse number: set the number of motor pulses |
| Return | None |

Table 4.66 Set the conveyor motor speed

| | |
|-------------|---|
| Instruction |  |
| Description | Set the conveyor motor speed |
| Parameter | Motor: Select motor Speed: Set the motor speed |
| Return | None |

4.4 Mobile Platform

4.4.1 Mobile Platform

Table 4.67 Initialize the mobile platform

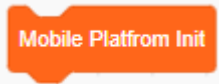
| | |
|-------------|---|
| Instruction |  |
| Description | Initialize the mobile platform |
| Parameter | None |
| Return | None |

Table 4.68 Initialize the mobile platform key


| | |
|-------------|---|
| Instruction |  |
| Description | Initialize the mobile platform key |
| Parameter | None |
| Return | None |

Table 4.69 Set LED state


| | |
|-------------|---|
| Instruction |  |
| Description | Set LED state |
| Parameter | <p>Sselect LED:</p> <ul style="list-style-type: none"> • LED1 • LED2 • LED3 • LED4 <p>Set state:</p> <ul style="list-style-type: none"> • ON • OFF • BLINK |
| Return | None |

Table 4.70 Set the movement direction and speed of the car


| | |
|-------------|--|
| Instruction |  |
| Description | Set the movement direction and speed of the car |
| Parameter | <p>Direction:</p> <ul style="list-style-type: none"> • Ahead • Back • Turn Left • Turn Right <p>Speed: set the duty cycle, range (0 ~ 255)</p> |
| Return | None |

Table 4.71 Set the movement direction, speed and time of the car

| | |
|-------------|--|
| Instruction |  |
|-------------|--|

| | |
|-------------|--|
| Description | Set the movement direction, speed and time of the car |
| Parameter | Direction: <ul style="list-style-type: none"> Ahead Back Turn Left Turn Right Speed: set the duty cycle, range (0 ~ 255) Time: Set time (seconds) |
| Return | 无 |

Table 4.72 Set the motor speed

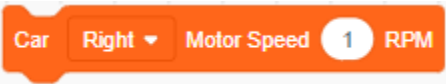

| | |
|-------------|--|
| Instruction |  |
| Description | Set the motor speed |
| Parameter | Select motor: <ul style="list-style-type: none"> Right Left speed: Set the motor speed, the setting range (0 ~ 160rpm) |
| Return | None |

Table 4.73 Set the motor parameters

| | |
|-------------|---|
| Instruction |  |
| Description | Set the motor parameters |
| Parameter | KP: scale factor. Value range: 0.5 ~ 2.5 KI: integration factor. Value range: 0.05 ~ 0.5 |
| Return | None |

4.4.2 Sensor

Table 4.74 Start sonar


| | |
|-------------|--|
| Instruction |  |
| Description | Start sonar |
| Parameter | Select sonar: <ul style="list-style-type: none"> • Right Front • Front • Left Front |
| Return | None |

Table 4.75 Detect barrier


| | |
|-------------|--|
| Instruction |  |
| Description | Detect barrier |
| Parameter | Select sonar: <ul style="list-style-type: none"> • Right Front • Front • Left Front |
| Return | true: Obstacle detected false: No obstacle detected |

Table 4.76 Get detection distance


| | |
|-------------|--|
| Instruction |  |
| Description | Obtain ultrasound data of a certain position, that is, the distance between the car and the obstacle |
| Parameter | Select sonar: <ul style="list-style-type: none"> • Right Front • Front • Left Front |
| Return | Distance |

Table 4.77 Get the infrared sensor data


| | |
|-------------|---|
| Instruction |  |
| Description | Get the infrared sensor data |
| Parameter | Select IR: <ul style="list-style-type: none"> • IR1 • IR2 • IR3 • IR4 • IR5 • IR6 |
| Return | IR data |

Table 4.78 Set the color sensor white balance



| | |
|-------------|--|
| Instruction |  |
| Description | Set the color sensor white balance |
| Parameter | Select color sensor: <ul style="list-style-type: none"> • Right • Left |
| Return | None |

Table 4.79 Set color sensor state

| | |
|-------------|---|
| Instruction |  |
| Description | Set color sensor state |
| Parameter | Select color sensor: <ul style="list-style-type: none"> • Right • Left state: <ul style="list-style-type: none"> • ON • OFF |

| | |
|--------|------|
| Return | None |
|--------|------|

Table 4.80 Get RGB value


| | |
|-------------|--|
| Instruction |  |
| Description | This block is used to obtain the color value by the color sensor |
| Parameter | <p>Select color sensor:</p> <ul style="list-style-type: none"> • Right • Left <p>Color:</p> <ul style="list-style-type: none"> • Red • Green • Blue |
| Return | Infrared sensor color value. Value range: 0 ~ 255 |

Table 4.81 Detect color

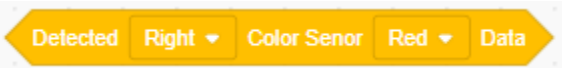
| | |
|-------------|--|
| Instruction |  |
| Description | This block is used to detect whether the color sensor detects a color |
| Parameter | <p>Select color sensor:</p> <ul style="list-style-type: none"> • Right • Left <p>Color:</p> <ul style="list-style-type: none"> • Red • Green • Blue |
| Return | <p>True: Color detected</p> <p>False: No color detected</p> |

Table 4.82 Get the switch state

| | |
|-------------|---|
| Instruction |  |
|-------------|---|

| | |
|-------------|---|
| Description | Get the switch state |
| Parameter | Select button: <ul style="list-style-type: none"> 1 2 |
| Return | 1: press 0: release |

Table 4.83 Get the motor angle


| | |
|-------------|---|
| Instruction |  |
| Description | Get the motor angle |
| Parameter | Select motor: <ul style="list-style-type: none"> Right Left |
| Return | Angle |

Table 4.84 Set the ultrasonic sensor detection threshold



| | |
|-------------|---|
| Instruction |  |
| Description | Set the ultrasonic sensor detection threshold |
| Parameter | Set threshold: set the detection threshold, value range: 0 ~ 51.2cm |
| Return | None |

Table 4.85 Set position offset

| | |
|-------------|--|
| Instruction |  |
| Description | Set the position offset corresponding to the sensor |
| Parameter | IR: <ul style="list-style-type: none"> IR1 IR2 |

| | |
|--------|---|
| | <ul style="list-style-type: none"> • IR3 • IR4 • IR5 • IR6 <p>Set offset: Set the offset of each infrared pair. When setting the offset, you need to set the 6 infrared pair offsets to symmetric data centered on 0, for example: -3, -2, -1, 1, 2, 3 This will not cause the car to deviate from the black line during the line inspection process.</p> |
| Return | None |

Table 4.86 Get the infrared sensor offset



| | |
|-------------|---|
| Instruction |  |
| Description | Get the infrared sensor offset |
| Parameter | None |
| Return | Return deviation |

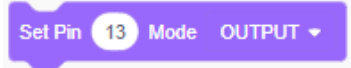
Table 4.87 Get the infrared sensor offset after PID processing

| | |
|-------------|---|
| Instruction |  |
| Description | Get the infrared sensor offset after PID processing |
| Parameter | None |
| Return | Return deviation |

4.5 Arduino

4.5.1 Serial Port

Table 4.88 Set pin mode

| | |
|-------------|---|
| Instruction |  |
| Description | Set pin mode |
| Parameter | <p>Pin: input pin index</p> <p>Select mode:</p> <ul style="list-style-type: none"> • OUTPUT • INPUT |

| | |
|--------|--|
| | <ul style="list-style-type: none"> INPUT_PULLUP |
| Return | None |

Table 4.89 Set baud rate for serial data transmission

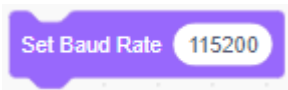
| | |
|-------------|---|
| Instruction |  |
| Description | Set baud rate for serial data transmission |
| Parameter | Baud rate: Set the baud rate for data transmission |
| Return | None |

Table 4.90 Set Xbee data transmission baud rate


| | |
|-------------|---|
| Instruction |  |
| Description | Set Xbee data transmission baud rate |
| Parameter | Baud rate: Set the baud rate for data transmission |
| Return | None |

Table 4.91 Serial print



| | |
|-------------|---|
| Instruction |  |
| Description | Serial print |
| Parameter | Set data |
| Return | None |

Table 4.92 Serial line feed

| | |
|-------------|---|
| Instruction |  |
| Description | Serial line feed |
| Parameter | Set data |

| | |
|--------|------|
| Return | None |
|--------|------|

Table 4.93 Get serial value length

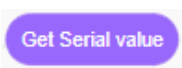
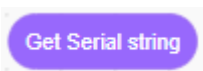
| | |
|-------------|---|
| |  |
| Description | Get serial value |
| Parameter | None |
| Return | Serial data byte |

Table 4.94 Get serial string

| | |
|-------------|---|
| Instruction |  |
| Description | Get serial string |
| Parameter | None |
| Return | String |

4.5.2 IO Operation

Table 4.95 Set Arduino digital level


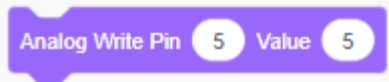
| | |
|-------------|---|
| Instruction |  |
| Description | Set Arduino digital level |
| Parameter | <ul style="list-style-type: none"> pin level: high or low |
| Return | None |

Table 4.96 Set analog pin value

| | |
|-------------|---|
| Instruction |  |
| Description | Write analog value to the specified analog pin, used to control the brightness of the LED indicator or control the speed of the motor |

| | |
|-----------|---|
| Parameter | <ul style="list-style-type: none"> pin: pin number value: value range 0~255 |
| Return | None |

Table 4.97 Read digital signal pin


| | |
|-------------|---|
| Instruction |  |
| Description | Read digital signal pin value |
| Parameter | Pin: Pin number |
| Return | True: read successfully False: read failed |

Table 4.98 Read digital signal pin value

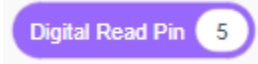
| | |
|-------------|---|
| Instruction |  |
| Description | Read digital signal pin value |
| Parameter | Pin: Pin number |
| Return | Pin value |

Table 4.99 Read analog signal pins

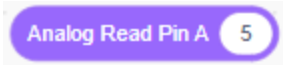
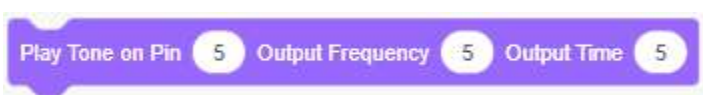
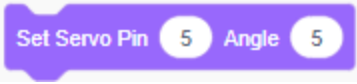
| | |
|-------------|---|
| Instruction |  |
| Description | Read analog signal pins |
| Parameter | Pin: Pin number |
| Return | Pin value |

Table 4.100 Set the output frequency and output duration of the ultrasonic pin

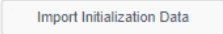
| | |
|-------------|---|
| Instruction |  |
| Description | Set the output frequency and output duration of the ultrasonic pin |
| Parameter | <ul style="list-style-type: none"> Pin number Output frequency, value range: 31~65535HZ |

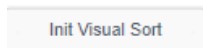
| | |
|--------|---|
| | <ul style="list-style-type: none"> Output duration, value range: 0~4294967295 us |
| Return | None |

Table 4.101 Set angle of the servo motor

| | |
|-------------|--|
| Instruction |  |
| Description | Set angle of the servo motor |
| Parameter | <ul style="list-style-type: none"> Pin: Pin number Angle: Motor angle, value range: 0° ~180° |
| Return | None |

4.5.3 Vision Recognition

You need to initialize it before using the vision kit. If you have previously saved the initialization data, you can click  to import to initialize it. Otherwise, click



to complete the initialization according to the wizard. The initialization steps are as follows

1. Follow the prompts to complete the initialization preparations.

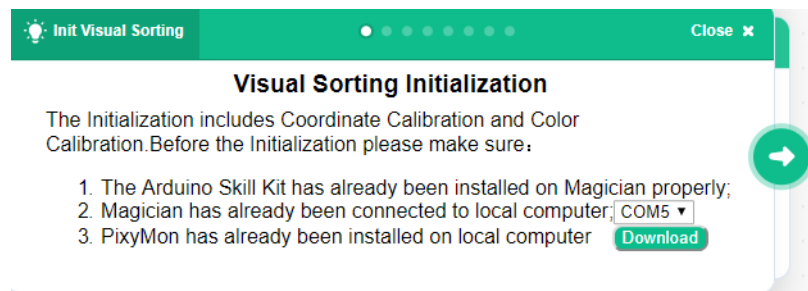


Figure 4.19 Vision sorting initialization

NOTICE

Need to download and install PixyMon according to different PC systems



Figure 4.20 Download PixyMon

2. Move the robot arm to the suction cup close to the plane and click the "Record" button to record the plane height.

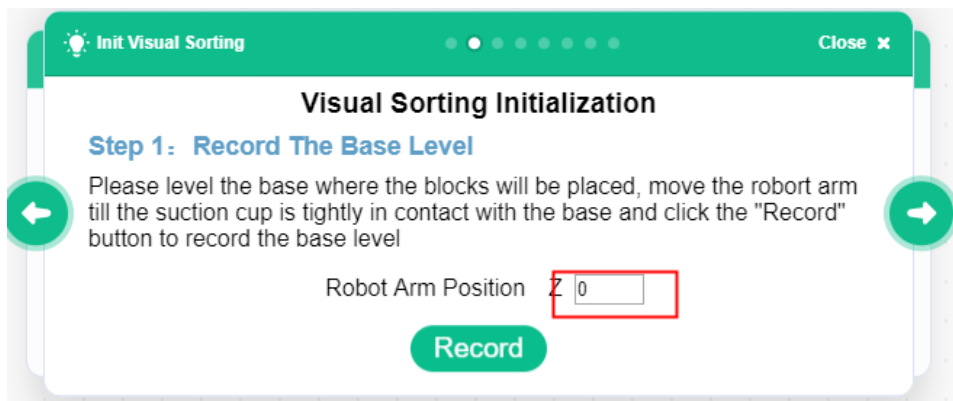


Figure 4.21 Record base level

3. According to the actual situation, write in the height of the different colored squares, and then click "Record".

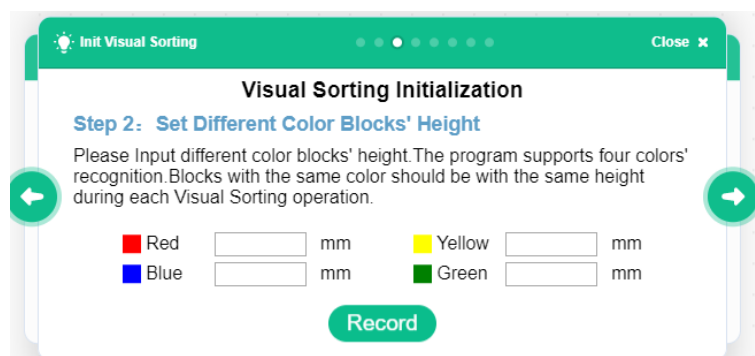


Figure 4.22 Record block height

4. Move the camera to the wooden block recognition position, click "Record" to obtain

the position of the robot arm or manually enter the position of the robot arm and click "Record".

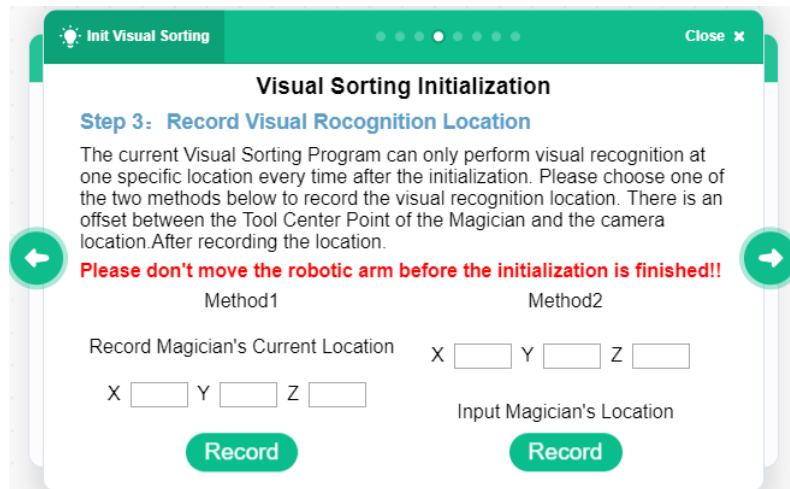


Figure 4.23 Record recognition position

- Record the PixyMon calibration point reading. Follow the prompts to place the three calibration blocks into the camera's field of view. Click "Action" in the PixyMon window and repeatedly use the Signature1 box to select three wooden blocks, and write in the coordinates and height and width of the wooden blocks according to the box selection results, and click "Record".

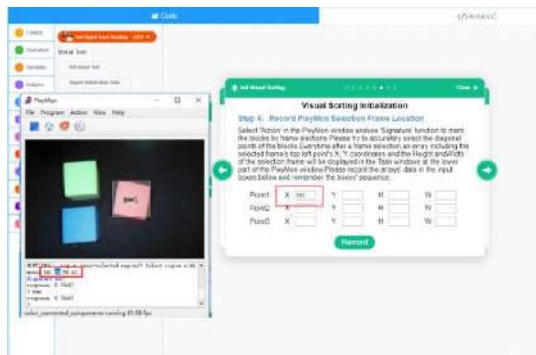


Figure 4.24 Record calibration position

NOTICE

Before using Signature1 to select wooden blocks, you need to open the Console. Click on "View-> Console"

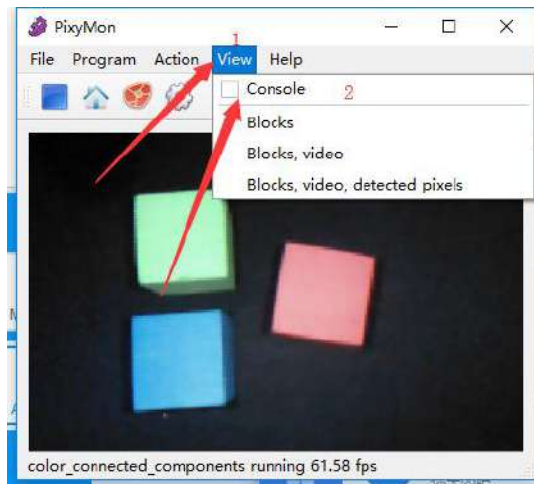


Figure 4.25 open console

6. Record the robot coordinates of the calibration block. Hold the robot arm close to the center of the three wooden blocks and click "Record" to record separately.



Figure 4.26 Hold the robot arm close to the center of the three wooden blocks

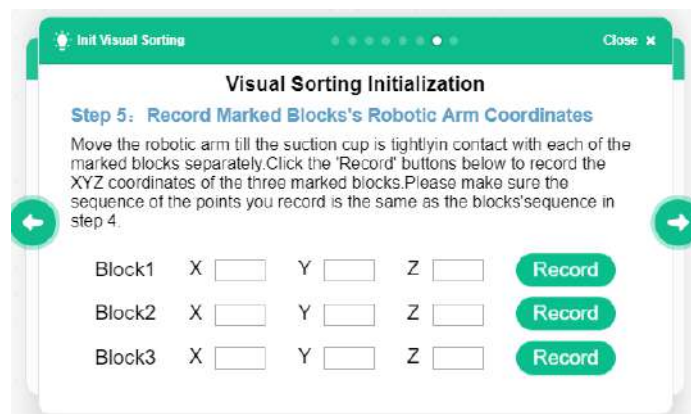


Figure 4.27 Record position

7. Color calibration. Put the wooden block that needs to identify the color in the field of vision, click "Action" according to the prompt and use Signature1, 2, 3, 4 to select the wooden block of the corresponding color, and match the color with the mark in the option box.

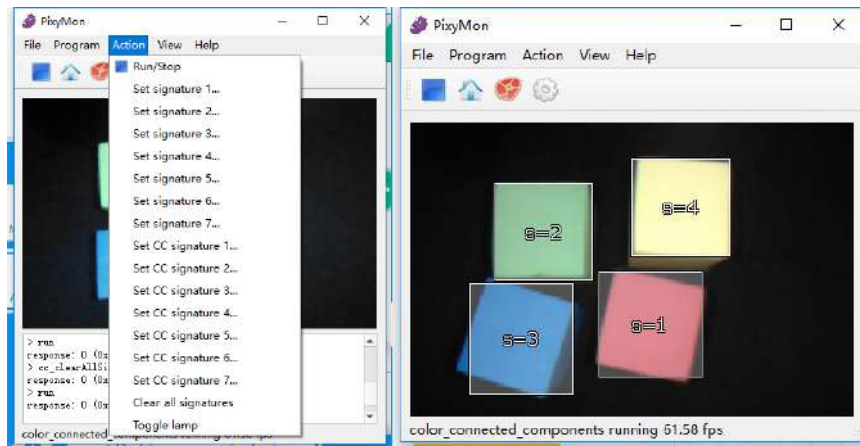


Figure 4.28 Select block

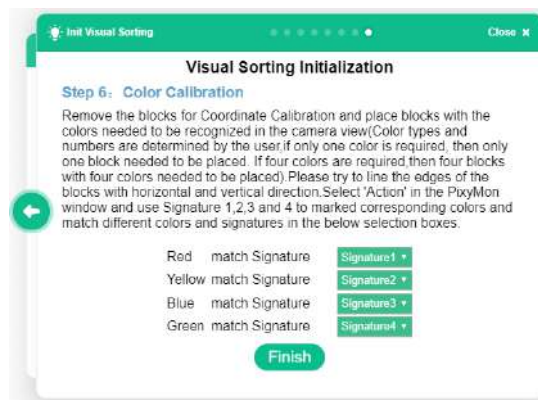


Figure 4.29 Color matching

4.5.4 Speech Recognition

Table 4.102 Initialize speech recognition module

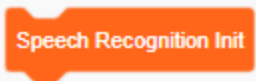
| | |
|-------------|---|
| Instruction |  |
| Description | Initialize speech recognition module |
| Parameter | None |
| Return | None |

Table 4.103 Add speech

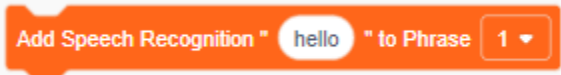
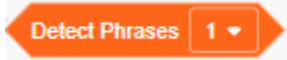
| | |
|-------------|--|
| Instruction |  |
| Description | Add speech to speech recognition module |
| Parameter | Voice content: Edit voice content Speech recognition phrase: Select the speech recognition phrase serial number to be added |
| Return | None |

Table 4.104 Detect voice module

| | |
|-------------|---|
| Instruction |  |
| Description | Detect voice module |
| Parameter | Select speech recognition column number |
| Return | True: Voice detected False: No speech detected |

4.5.5 JoyStick

Table 4.105 Get button status


| | |
|-------------|---|
| Instruction |  |
| Description | Get button status |
| Parameter | Select button: <ul style="list-style-type: none"> • Red • Green • Blue |
| Return | State: <ul style="list-style-type: none"> • true: Up • false: Down |

Table 4.106 Set LED state


| | |
|-------------|---|
| Instruction |  |
| Description | Set LED state |
| Parameter | Select LED: <ul style="list-style-type: none"> Red Green Blue State: <ul style="list-style-type: none"> ON OFF |
| Return | None |

Table 4.107 Get LED state


| | |
|-------------|---|
| Instruction |  |
| Description | Get LED state |
| Parameter | Select LED <ul style="list-style-type: none"> Red Green Blue |
| Return | LED state <ul style="list-style-type: none"> True: ON False: OFF |

Table 4.108 Read Joystick value



| | |
|-------------|---|
| Instruction |  |
| Description | Read Joystick value |
| Parameter | Joystick coordinate <ul style="list-style-type: none"> x y |
| Return | Joystick value |

Table 4.109 Check Joystick state

| | |
|-------------|--|
| Instruction |  |
| Description | Check Joystick state |
| Parameter | None |
| Return | Press state: <ul style="list-style-type: none"> true: Up false: Down |

4.6 AIStarter

4.6.1 AIStarter

Table 4.110 Initialize AI-Starter


| | |
|-------------|---|
| Instruction |  |
| Description | Initialize AI-Starter |
| Parameter | None |
| Return | None |

Table 4.111 Initialize switch




| | |
|-------------|---|
| Instruction |  |
| Description | Initialize switch |
| Parameter | None |
| Return | None |

Table 4.112 Set LED status

| | |
|-------------|---|
| Instruction |  |
| Description | Set LED state |
| Parameter | Select LED: <ul style="list-style-type: none"> LED1 |

| | |
|--------|--|
| | <ul style="list-style-type: none"> LED2 Set state: <ul style="list-style-type: none"> ON OFF BLINK |
| Return | 无 |

Table 4.113 Set PID

| | |
|-------------|---|
| Instruction |  |
| Description | This program block is used to set the motor parameters |
| Parameter | KP: scale factor. Value range: 0.5 ~ 2.5 KI: integration factor. Value range: 0.05 ~ 0.5 |
| Return | None |

4.6.2 Motion

Table 4.114 Set direction and speed of AI-Starter

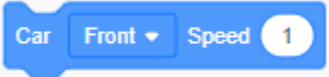
| | |
|-------------|---|
| Instruction |  |
| Description | Set direction and speed of AI-Starter |
| Parameter | Direction: <ul style="list-style-type: none"> Ahead Back Turn left Turn right Speed: Set Duty ratio. Value range: 0-255 |
| Return | None |

Table 4.115 Set the movement direction, speed and time of AI-Starter

| | |
|-------------|--|
| Instruction |  |
|-------------|--|

| | |
|-------------|---|
| Description | Set the movement direction, speed and time of AI-Starter |
| Parameter | Direction: <ul style="list-style-type: none"> Ahead Back Turn left Turn right Speed: Set Duty ratio. Value range: 0-255 |
| Return | None |

Table 4.116 Set motor speed

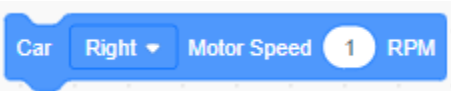
| | |
|-------------|---|
| Instruction |  |
| Description | Set motor speed |
| Parameter | Select the motor <ul style="list-style-type: none"> LEFT RIGHT Speed: Set the motor speed. Value range: 0r/m – 100r/m |
| Return | None |

Table 4.117 Attach sever



| | |
|-------------|---|
| Instruction |  |
| Description | Make servo attach to make AIStarter unload |
| Parameter | Select servo |
| Return | None |

Table 4.118 Detach servo

| | |
|-------------|---|
| Instruction |  |
| Description | Make servo detach to make AIStarter restore |

| | |
|-----------|--------------|
| Parameter | Select servo |
| Return | None |

Table 4.119 Set servo angle

| | |
|-------------|---|
| Instruction |  |
| Description | Set servo angle |
| Parameter | Servo: select motor Angle: set angle |
| Return | None |

4.6.3 Sensor

Table 4.120 Start sonar


| | |
|-------------|--|
| Instruction |  |
| Description | Start sonar |
| Parameter | Sonar position: <ul style="list-style-type: none"> Right Front Front Left Front |
| Return | None |

Table 4.121 Detect barrier


| | |
|-------------|--|
| Instruction |  |
| Description | Detect whether a barrier is exist in front of AI-Starter, before calling this module, please start the corresponding sonar |
| Parameter | Obstacle position: <ul style="list-style-type: none"> Right Front Front Left Front |
| Return | true: There is a barrier false: There is no barrier |

Table 4.122 Get sonar data


| | |
|-------------|--|
| Instruction |  |
| Description | Get the detection distance of sonar, which is the distance between AI-Starter and barrier. |
| Parameter | Sonar position: <ul style="list-style-type: none"> • Right Front • Front • Left Front |
| Return | Detection distance |

Table 4.123 Get infrared sensor data

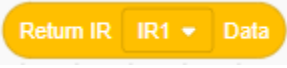
| | |
|-------------|--|
| Instruction |  |
| Description | Get infrared sensor data |
| Parameter | IR: <ul style="list-style-type: none"> • IR1 • IR2 • IR3 • IR4 • IR5 • IR6 |
| Return | false: Black line true: White line |

Table 4.124 Get geomagnetic angle


| | |
|-------------|---|
| Instruction |  |
| Description | Get geomagnetic angle |
| Parameter | None |
| Return | Geomagnetic angle |

Table 4.125 Set calibration


| | |
|-------------|---|
| Instruction |  |
| Description | Calibration method: Press down the left-most key after starting up, make AI-Starter rotate 360° around space axes X, Y, Z respectively, press down the left-most key once again to finish calibration |
| Parameter | None |
| Return | None |

Table 4.126 Set color sensor white balance


| | |
|-------------|---|
| Instruction |  |
| Description | Set color sensor white balance |
| Parameter | Color sensor: <ul style="list-style-type: none"> • Right • Left |
| Return | None |

Table 4.127 Set color sensor state

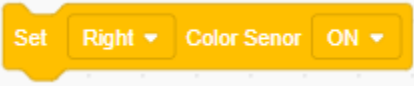
| | |
|-------------|--|
| Instruction |  |
| Description | Set color sensor state |
| Parameter | Color sensor: <ul style="list-style-type: none"> • Right • Left state: <ul style="list-style-type: none"> • ON • OFF |
| Return | None |

Table 4.128 Detect RGB


| | |
|-------------|---|
| Instruction |  |
| Description | Get color sensor value |
| Parameter | <p>Color sensor:</p> <ul style="list-style-type: none"> • Right • Left <p>Color:</p> <ul style="list-style-type: none"> • Red • Green • Blue |
| Return | <p>True: Detect successfully</p> <p>False: Detect failed</p> |

Table 4.129 Get RGB



| | |
|-------------|---|
| Instruction |  |
| Description | Get color sensor value |
| Parameter | <p>Color sensor:</p> <ul style="list-style-type: none"> • Right • Left <p>Color:</p> <ul style="list-style-type: none"> • Red • Green • Blue |
| Return | Color sensor value. Value range: 0~255 |

Table 4.130 Get Switch state

| | |
|-------------|---|
| Instruction |  |
| Description | Get switch state |
| Parameter | <p>Switch:</p> <ul style="list-style-type: none"> • Switch 1 • Switch 2 • Switch 3 |

| | |
|--------|-------------------------------|
| Return | true: Press false: Release |
|--------|-------------------------------|

Table 4.131 get photosensitive value


| | |
|-------------|---|
| Instruction |  |
| Description | get photosensitive value |
| Parameter | None |
| Return | Photosensitive value. Value range: 0 – 4096 |

Table 4.132 Set sonar threshold



| | |
|-------------|---|
| Instruction |  |
| Description | Set sonar threshold |
| Parameter | Set threshold. Value range: 0~51.2cm |
| Return | None |

Table 4.133 Set the position offset

| | |
|-------------|--|
| Instruction |  |
| Description | Set the position offset corresponding to the sensor |
| Parameter | <p>IR:</p> <ul style="list-style-type: none"> • IR1 • IR2 • IR3: • IR4: • IR5: • IR6: <p>Set offset: Set the offset of each infrared pair. When setting the offset, you need to set the 6 infrared pair offsets to symmetric data centered on 0, for example: -3, -2, -1, 1, 2, 3 This will not cause the car to deviate from the black line during the line inspection process.</p> |

| | |
|--------|------|
| Return | None |
|--------|------|

Table 4.134 Get the infrared sensor offset


| | |
|-------------|---|
| Instruction |  |
| Description | Get the infrared sensor offset |
| Parameter | None |
| Return | Return deviation |

Table 4.135 Get the infrared sensor offset after PID processing



| | |
|-------------|---|
| Instruction |  |
| Description | Get the infrared sensor offset after PID processing |
| Parameter | None |
| Return | Return deviation |

Table 4.136 Get motor pose

| | |
|-------------|---|
| Instruction |  |
| Description | Get motor pose |
| Parameter | Select motor: <ul style="list-style-type: none"> • Right • Left |
| Return | Motor pose (Number of pulses obtained by the encoder) |

4.6.4 Xbee

Table 4.137 Get Xbee value

| | |
|-------------|---|
| Instruction |  |
| Description | 该Instruction用于读取Xbee数值 |
| Parameter | 无 |

| | |
|--------|--------|
| Return | Xbee数值 |
|--------|--------|

Table 4.138 Send Xbee value

| | |
|-------------|---|
| Instruction |  |
| Description | Send Xbee values |
| Parameter | Value: Set the value to be sent |
| Return | None |

Table 4.139 Compare two Xbee value



| | |
|-------------|---|
| Instruction |  |
| Description | Compare two Xbee values |
| Parameter | Value: Set the value to be compared |
| Return | Ture: same False: different |

Table 4.140 Clear Xbee cache

| | |
|-------------|---|
| Instruction |  |
| Description | Clear the Xbee cache |
| Parameter | None |
| Return | None |



DOBOT

Shenzhen Yuejiang Technology Co., Ltd

www.dobot.cc