

Lesson 2 APP Control

User can use app “WonderPi” to control ArmPi mini. This lesson will introduce the specific operation methods of each game.

1. Preparation

1) Firstly, calibrate the picking position of ArmPi mini.

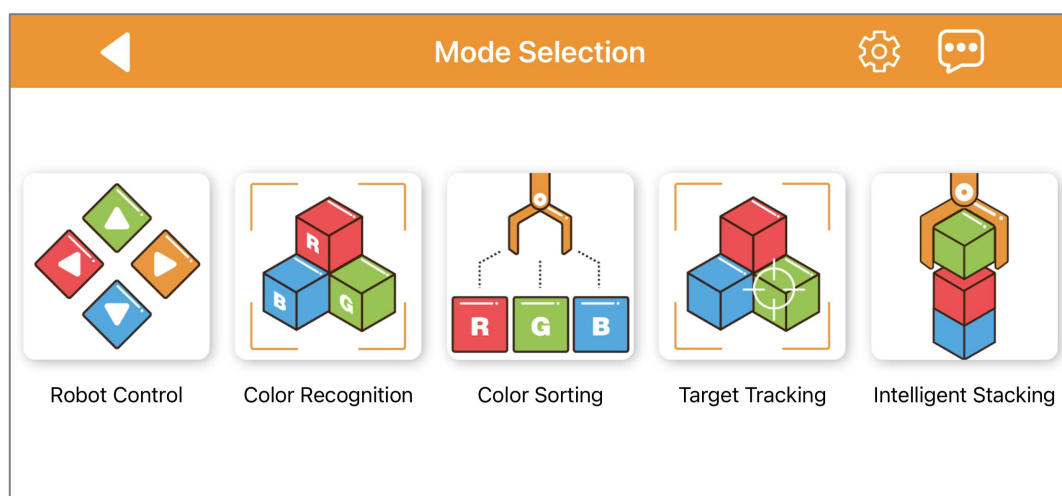
Please refer to the content in “4. Start ArmPi mini/ Lesson 5 Position Calibration” to learn about the specific operation steps.

2) Install app “WonderPi” and connect the robot.

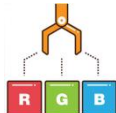
Please refer to the content in “4. Start ArmPi mini/Lesson 6 Quick User Experience/ 1.Install and Connect APP” to learn about the specific operation steps.

2. Robot Control

There are five games in app including remote control, color recognition, color tracking, target tracking and intelligent stacking.



The following list briefly introduces each game mode.

Icon	Game mode	Instruction
	Robot Control	Control the movement of robot arm
	Color Recognition	It can recognize red, green and blue. When the target color is recognized, ArmPi mini will execute the corresponding action.
	Color Sorting	It can recognize red, green and blue. When the target color is recognized and place the block in the middle of the gripper, ArmPi mini will pick the object and place it to the corresponding position.
	Target Tracking	It can recognize red, green and blue. When the target color is recognized, ArmPi mini will pick the object and place it to the corresponding position.
	Intelligent Stacking	When the target block is recognized, robot arm will pick and stack the blocks in the stacking area.

The following list introduces the functions of the navigation bar in game selection interface.

Icon	Instruction
	Back to the connection interface.

	Adjust color threshold. If want to learn about the specific adjustment method, please refer to the content in “4. Start ArmPi mini/ Lesson 7 Color Threshold Adjustment”.
	Display the window of Hiwonder information

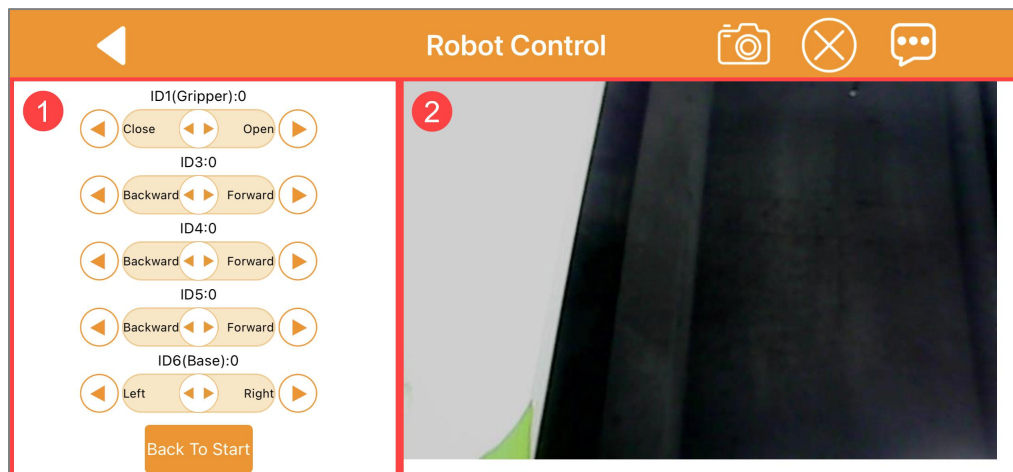
2.1 Robot Control

Note: After entering the game “Remote control”, ArmPi mini will stand straight up.

Therefore, please make sure there is no obstacle in front of the robot before entering game.

Select “Robot Control” to enter this game. The interface is divided into two parts:

- 1) The left side is servo control area.
- 2) The right side displays the image returned by camera.



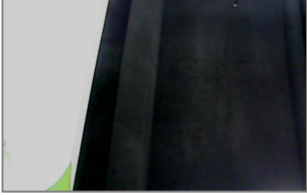
◆ Navigation Bar Icon Function

The button function of navigation bar is explained in following list which is also applicable to other games.

Icon	Function Instruction
	Back to the previous interface.
	Capture and save the returned image to photo. Click on  to check the image.
	Hide the navigation bar.
	Display the window of Hiwonder information.

◆ Game Interface Icon Function

Icon	Function instruction
	Drag  icon to “close” or “Release” side to control the gripper to open or close. Click  and  to slightly adjust the servo rotation.
	Drag  icon to “Forward” or “Backward” side to control the corresponding servo to rotate forward or backward. Click  and  to slightly adjust the servo rotation.

 ID6(Base):0	Drag  and  icon to "Left" or "Right" side to control ID6 servo to rotate to left or right. Click  and  to slightly adjust the servo rotation.
	Display the real-time returned image.

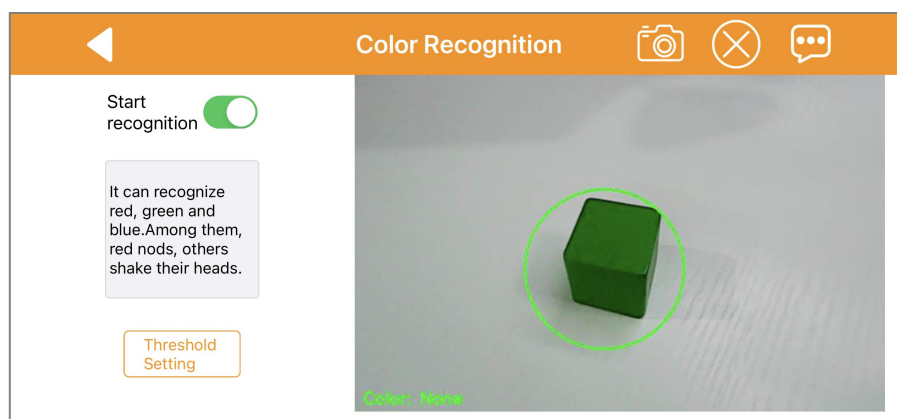
2.2 Color Recognition

1) Please start this game under a moderate environment light, too bright or too dark light will influence the normal recognition affect.

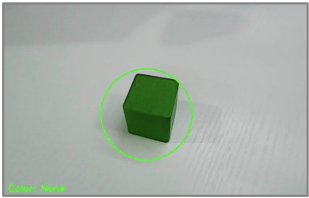
2) After starting game, please ensure there is no other object containing the recognition color except the target object within the camera frame, otherwise the recognition result will be affected.

Firstly, click "Color Recognition" to enter game interface. The interface consists of two parts.

- 1) At the left side, you can start or stop game, and set color threshold.
- 2) The right side of interface displays the real-time returned image.



◆ **Icon Function**

Icon	Function
	Start or stop game
	Adjust color threshold. You can refer to “4.Start ArmPi mini/ Lesson 7 Color Threshold Adjustment” to learn about the specific adjustment method.
	Display the real-time image returned by camera. The current recognized color is displayed in the lower left corner.

◆ **Operation Instruction and Realization Outcome**

3) Click “Start Recognition” and position red, blue or green object in camera frame.

4) When the red object is recognized, robot arm will nod. When the blue or green object is recognized, robot arm will shake its head.

2.3 Color Sorting

Note:

1) Before starting game, you need to firstly calibrate the gripping position of the robot to avoid influencing the game effect.

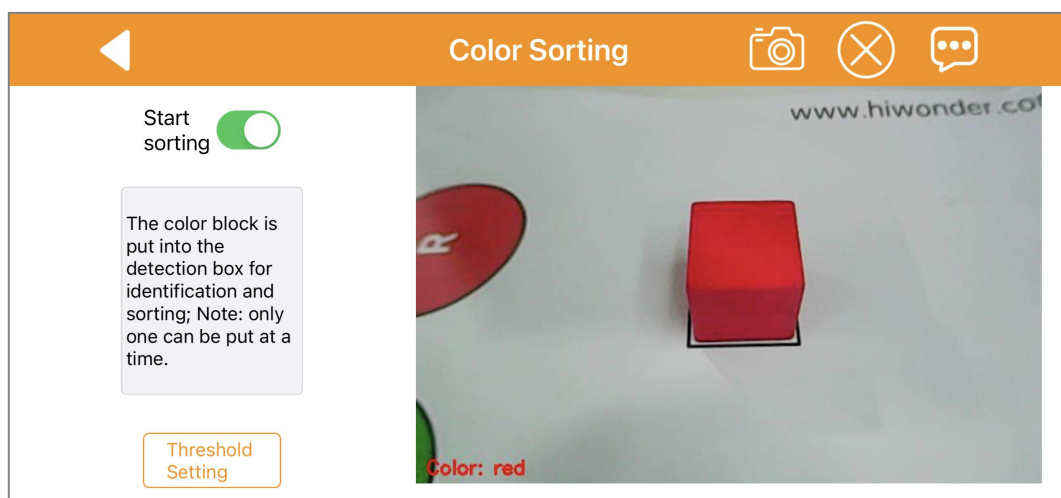
2) Please start this game under a moderate environment light, too bright or too dark light will influence the normal recognition affect.

3) After starting game, please ensure there is no other object containing the recognition color except the target object within the camera frame, otherwise the recognition result will be affected.

Firstly, click “Color Sorting” to enter game interface. The interface consists of two parts.

7) At the left side, you can start or stop game.

8) The right side of interface displays the real-time returned image.



◆ Icon Function

Icon	Function
Start sorting 	Start or stop game
Threshold Setting	Adjust color threshold. You can refer to “4.Start ArmPi mini/ Lesson 7 Color Threshold Adjustment” to learn about the specific adjustment method.

	Display the real-time image returned by camera. The current recognized color is displayed in the lower left corner.
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◆ Operation Instruction and Realization Outcome

- 1) Click “Start sorting”, and put the colored block in camera frame.
- 2) When the block is recognized, the gripper will open automatically.
- 3) Position the block in the middle of the gripper, and then the gripper will pick the block and place it in the corresponding position.

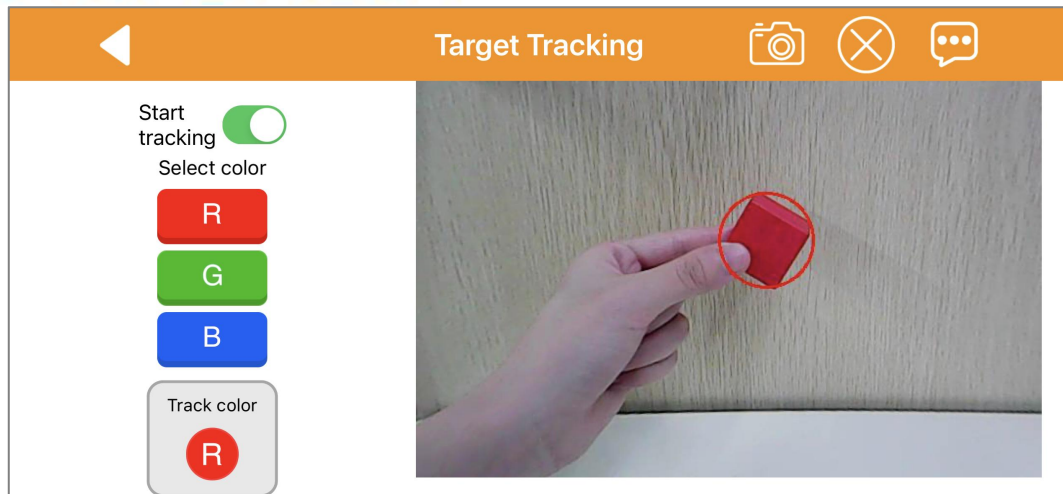
2.4 Target Tracking

Note:

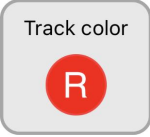
- 1) Please start this game under a moderate environment light, too bright or too dark light will influence the normal recognition affect.
 - 2) After starting game, please ensure there is no other object containing the recognition color except the target object within the camera frame, otherwise the recognition result will be affected.
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Firstly, click “Target Tracking” to enter game interface. The interface consists of two parts.

- 1) At the left side, you can start or stop game.
- 2) The right side of interface displays the real-time returned image.



◆ Icon Function

Icon	Function
	Start or stop game
	Select target color. “R” is red, “G” is green and “B” is blue.
	Display the current tracked color
	Display the real-time image returned by camera.

◆ Operation Instruction and Realization Outcome

3) Firstly, select the color to track in color selection area. Here take red for example, click “R”.

4) Then click “Start tracking”, and position the red block in camera frame.

5) When the block is recognized, robot arm will move with the block.

2.5 Intelligent Stacking

Note:

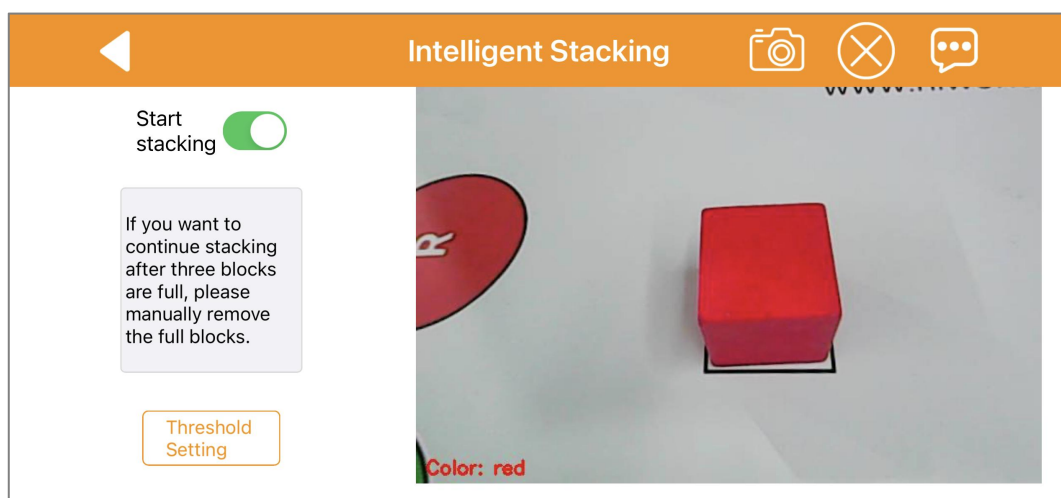
1) Please start this game under a moderate environment light, too bright or too dark light will influence the normal recognition affect.

2) After starting game, please ensure there is no other object containing the recognition color except the target object within the camera frame, otherwise the recognition result will be affected.

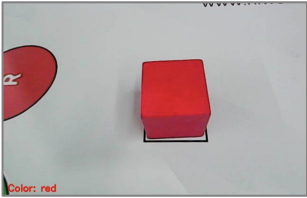
Firstly, click “Intelligent Stacking” to enter game interface. The interface consists of two parts.

6) At the left side, you can start or stop game, and adjust color threshold.

7) The right side of interface displays the real-time returned image.



◆ Icon Function

Icon	Function
	Start or stop game
	Adjust color threshold. You can refer to “4.Start ArmPi mini/ Lesson 7 Color Threshold Adjustment” to learn about the specific adjustment method.
	Display the real-time image returned by camera. The current recognized color is displayed in the lower left corner.

◆ **Operation Instruction and Realization Outcome**

- 1) Click “Start stacking”, and place the colored block within detection area.
- 2) When the block is recognized, robot arm will pick the block and place it in stacking area.
- 3) The stacking area can stack up to three blocks. When the upper limit is reached, please remove the blocks in the stacking area before the next block is stacked.