

The Robot Program Episode 023: Mobile JD

This lesson will demonstrate how to control the Revolution JD Humanoid with an iOS or Android phone or tablet. At the end of this lesson, readers will be familiar with how to access and connect to the mobile JD example project, how to execute basic controls, and how to access the available programming workspaces. Follow along with The Robot Program Episode 023: Mobile JD. View the video episode here: <https://www.ez-robot.com/Tutorials/Lesson/55>

Last Updated: 7/18/2018

Professor E's Overview

This lesson demonstrates how to enable facial detection and how to control **Revolution JD** using the **EZ-Builder Mobile** software.

Always start with a fully charged, disconnected robot. Download **EZ-Builder Mobile** from the Google Play or Android App Store. Use **EZ-Cloud** to access robot project apps.

Download and install the **JD** example project. Power on the robot and connect to the **EZ-B v4** Wi-Fi connection.

The mobile interface enables the execution of various actions, movement control, sounds, and even color tracking. Access the **RoboScratch** or **Blockly** mobile workspaces to create a custom program.



Step 1

Control **Revolution JD** using **EZ-Builder Mobile**. **EZ-Builder Mobile** is available for Android or iOS mobile devices such as phones or tablets.



Step 2

Download **EZ-Builder Mobile** from Google Play or the Apple App Store.



Step 3

Install and open the app. Read and accept the **Terms of Use**.

battery replacement.

* Provide a 30 minute cool-down period before charging batteries after using the robot.

* EZ-Robot products are powerful electrical equipment. Even with the included fuse protection, take care to prevent electrical shorting which may cause fire or severe burns.

* Online tutorials and community support is provided for safety, care and product longevity usage; and ignoring these resources may void warranty.

* Use the Getting Started guide on www.ez-robot.com which is also specified in the product packaging.

I Agree

I Disagree

Step 4

Login or create an **EZ-Cloud** account.

[Installed Robot Apps](#)

[Update Installed Apps](#)

[Public EZ-Cloud Apps](#)

[My EZ-Cloud Apps](#)

[Preferences](#)

[Application Log](#)

Email

Password

[Save](#)



[Create Account](#)

[Cancel](#)

[Recover Password](#)



Step 5

Use **EZ-Cloud** to access example and public robot project apps. Click on **Search** to access the **EZ-Robot** certified project apps.

Installed Robot Apps	JD		Details
Update Installed Apps		By DJ Sures	
Public EZ-Cloud Apps		2017-04-18 5:21:31 PM	
		7,133,329 Bytes	
		4,509 downloads	
My EZ-Cloud Apps	AdventureBot		Details
Preferences		By DJ Sures	
		2017-03-06 2:56:10 PM	
Application Log		6,374,470 Bytes	

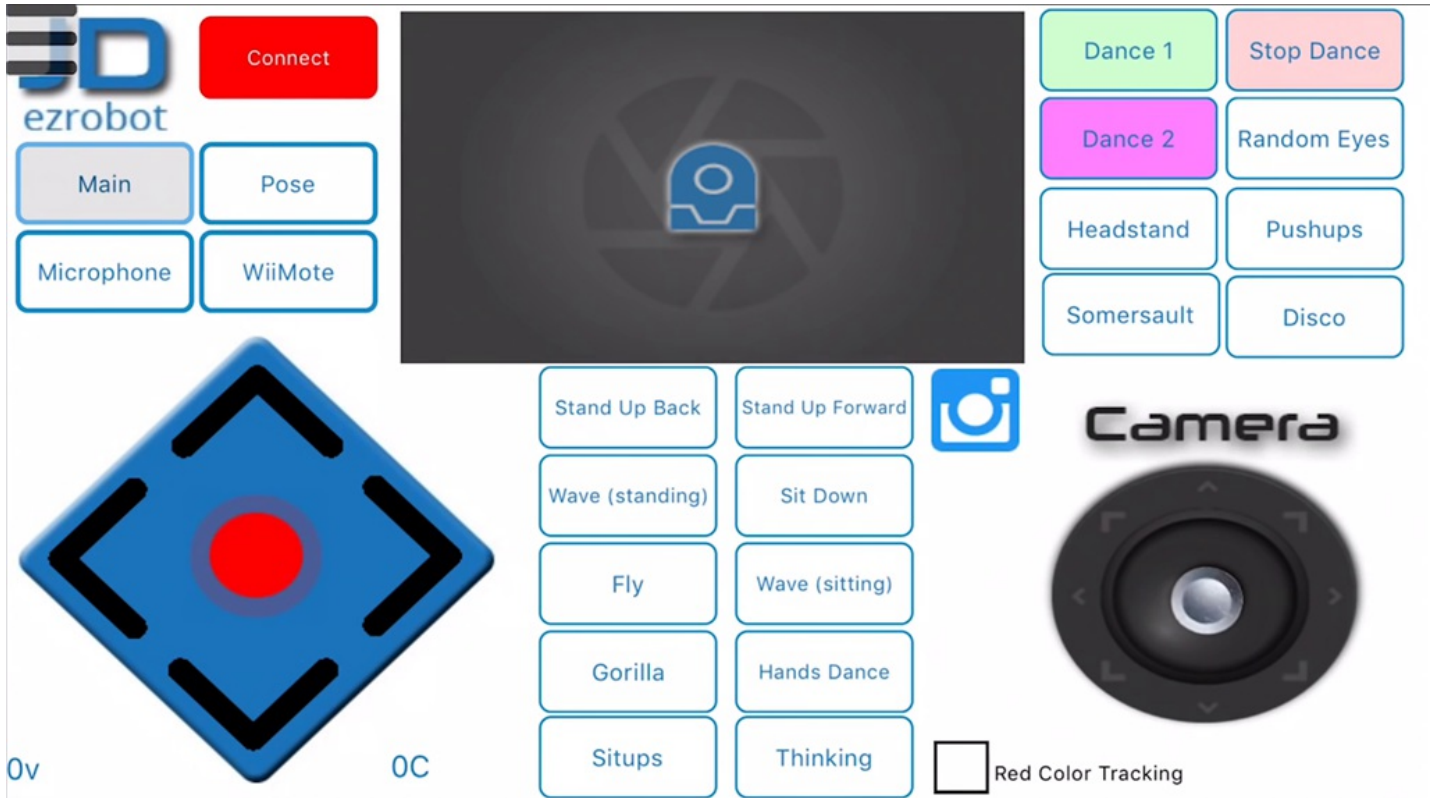
Step 6

Select the default **JD** project. Choose **Download & Install** to load the project.

Installed Robot Apps	JD	Details
Update Installed Apps		By DJ Sures 2017-04-18 5:21:31 PM 7,133,329 Bytes 4,509 downloads
Public EZ-Cloud Apps		
My EZ-Cloud Apps	AdventureBot	Details
Preferences		By DJ Sures 2017-03-06 2:56:10 PM 6,374,470 Bytes
Application Log		

Step 7

Click on the **Connect** button. Power on the robot and lay it down on a flat surface.



The screenshot displays the ezrobot software interface. At the top left is the ezrobot logo. A prominent red 'Connect' button is located at the top center. Below the logo are buttons for 'Main', 'Pose', 'Microphone', and 'WiiMote'. The central area features a large camera view showing a blue robot head icon. To the right of the camera view is a grid of action buttons: 'Dance 1' (green), 'Stop Dance' (pink), 'Dance 2' (purple), 'Random Eyes' (white), 'Headstand' (white), 'Pushups' (white), 'Somersault' (white), and 'Disco' (white). Below the camera view is a blue diamond-shaped target with a red center, labeled '0v' on the left and '0C' on the right. To the right of the target is a grid of movement and action buttons: 'Stand Up Back', 'Stand Up Forward', 'Wave (standing)', 'Sit Down', 'Fly', 'Wave (sitting)', 'Gorilla', 'Hands Dance', 'Situps', and 'Thinking'. Further right is a 'Camera' section with a camera icon and a circular camera control pad. At the bottom right, there is a checkbox labeled 'Red Color Tracking'.



Step 8

Select the **EZ-B v4** Wi-Fi connection and click **Connect**.

Connection

Connected Wifi SSID **EZ-B v4 2B07**

IP Address **192.168.1.1**

[Configure](#) [Scan](#)

[Back](#)

[Servo Profile](#)

[Connect](#)

Step 9

Servos may need calibration to compensate for any slight hardware discrepancies. Click on **Servo Profile** and choose **New** to create a profile.

Select Servo Profile

Back

Sync

New

Set to defaults

Step 10

The servos of each arm and leg should be set in a straight line.

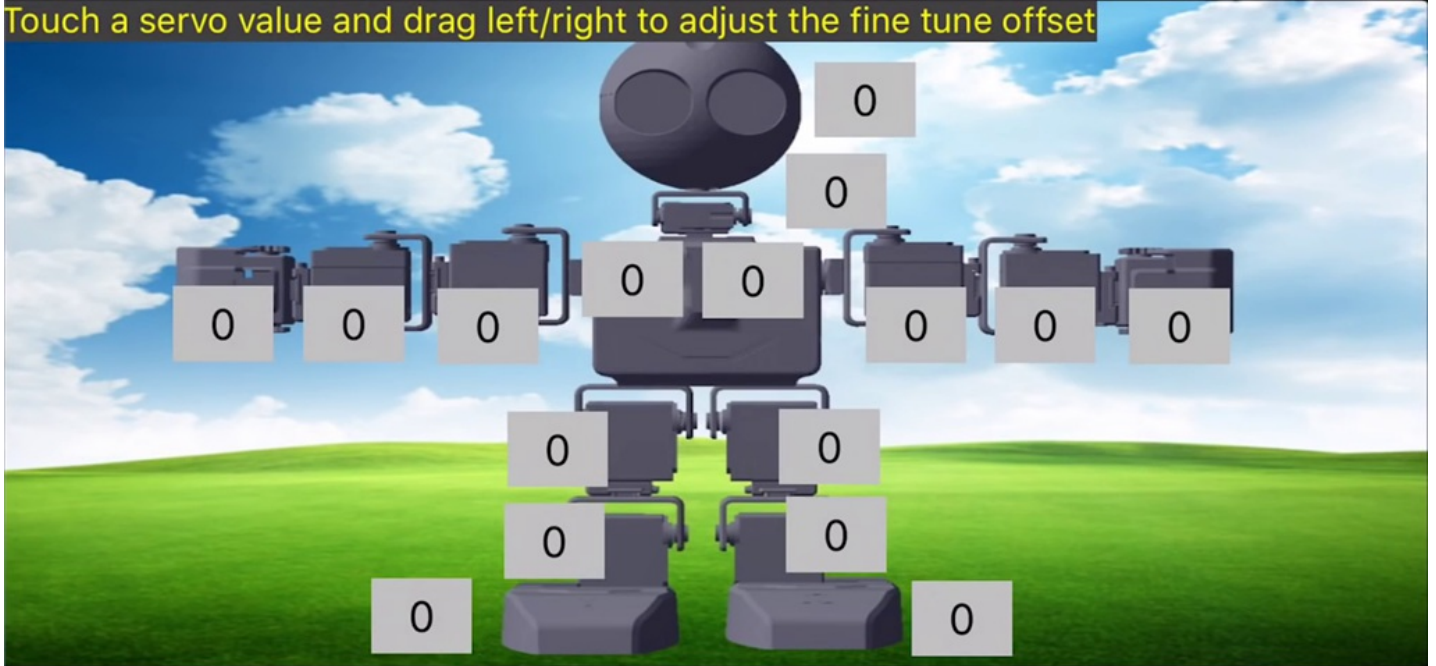


Step 11

Adjust the software servo values to line up each servo. Start with the servos closest to the body and move outwards.

Cancel Reset Save Name: Name:

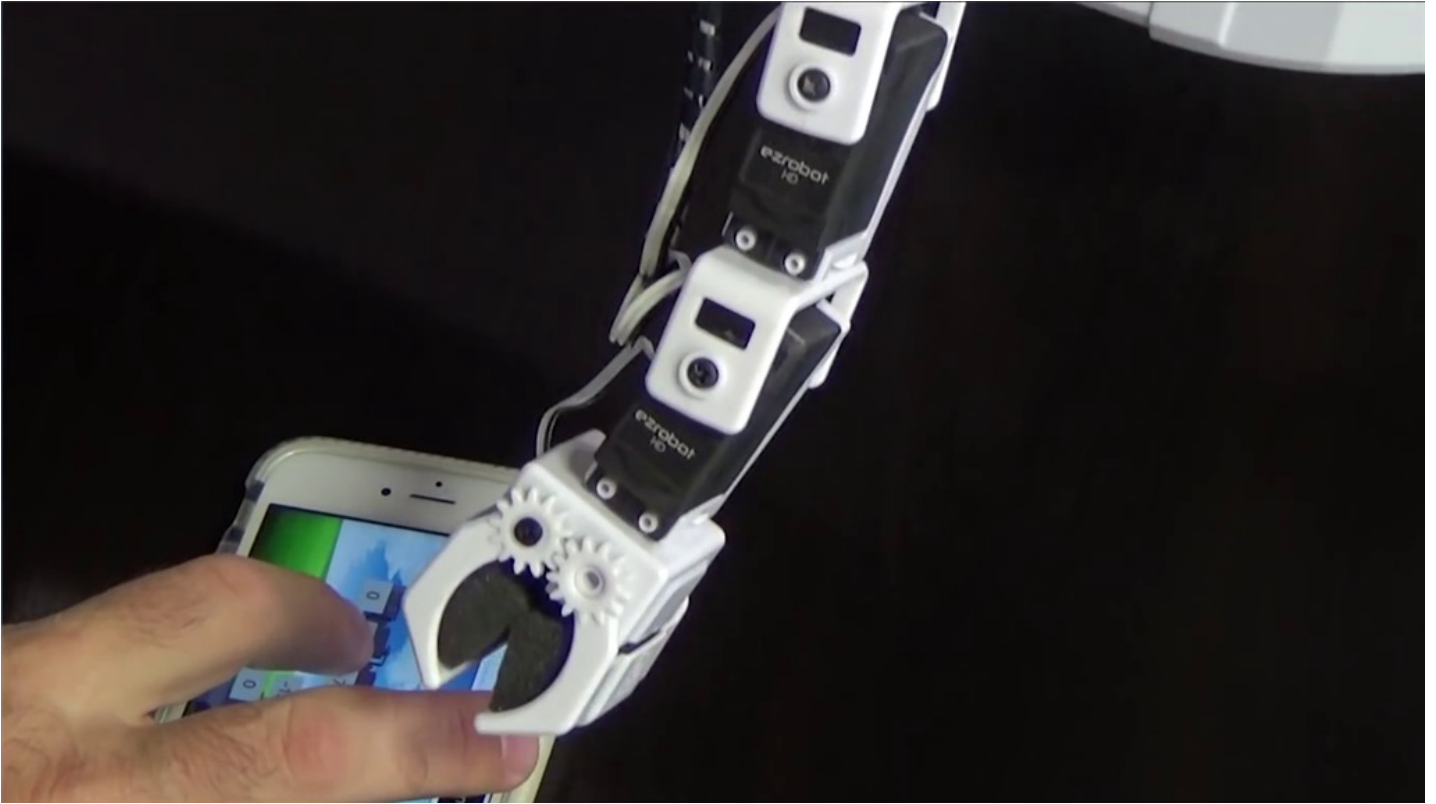
Touch a servo value and drag left/right to adjust the fine tune offset



The image shows a 3D rendered robot with a spherical head and a rectangular body. It has 14 servos attached to its arms and legs. Each servo is represented by a grey rectangular box with the number '0' on it. The robot is standing on a green field under a blue sky with white clouds. The servos are arranged as follows: two on the head, two on the neck, three on each arm (total six), two on each leg (total four), and two on the feet (total two).

Step 12

The robot grippers should not make a vibrating or grinding noise. Adjust the gripper servos as necessary to prevent damage.



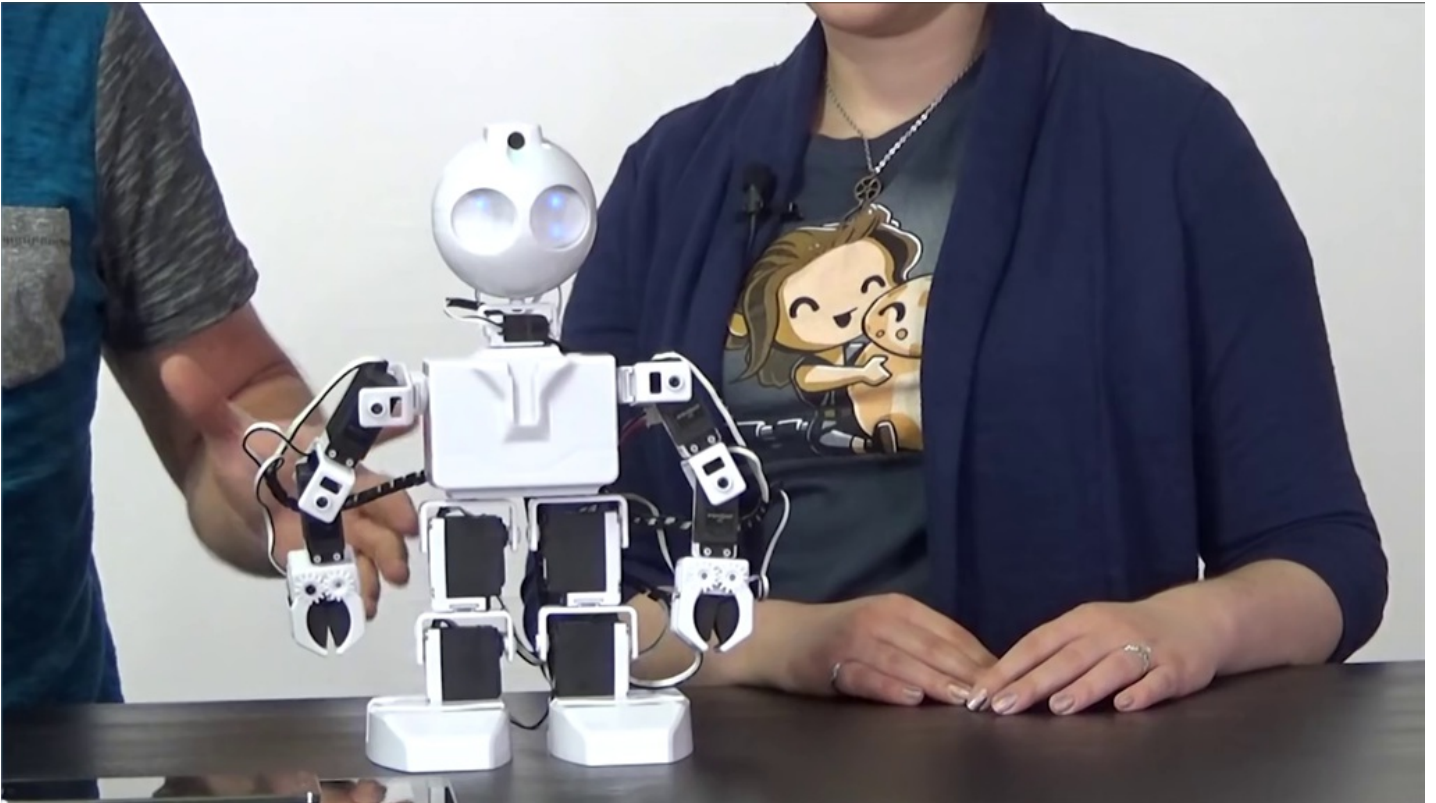
Step 13

Name the servo profile and save for future use. Return to the main screen to access pre-built actions and movement control.

The screenshot displays the ezrobot control interface. At the top left is the ezrobot logo and a green 'Disconnect' button. Below the logo are buttons for 'Main', 'Pose', 'Microphone', and 'WiiMote'. A central video window shows a person operating a robot. To the right of the video are buttons for 'Dance 1', 'Stop Dance', 'Dance 2', 'Random Eyes', 'Headstand', 'Pushups', 'Somersault', and 'Disco'. In the bottom left, a blue diamond-shaped area contains a red circle, with '7.57v' and '24.73C' displayed below it. In the bottom center, there is a grid of buttons: 'Stand Up Back', 'Stand Up Forward', 'Wave (standing)', 'Sit Down', 'Fly', 'Wave (sitting)', 'Gorilla', 'Hands Dance', 'Situps', and 'Thinking'. To the right of this grid is a 'Camera' icon and a circular camera view. At the bottom right, there is a checkbox labeled 'Red Color Tracking'.

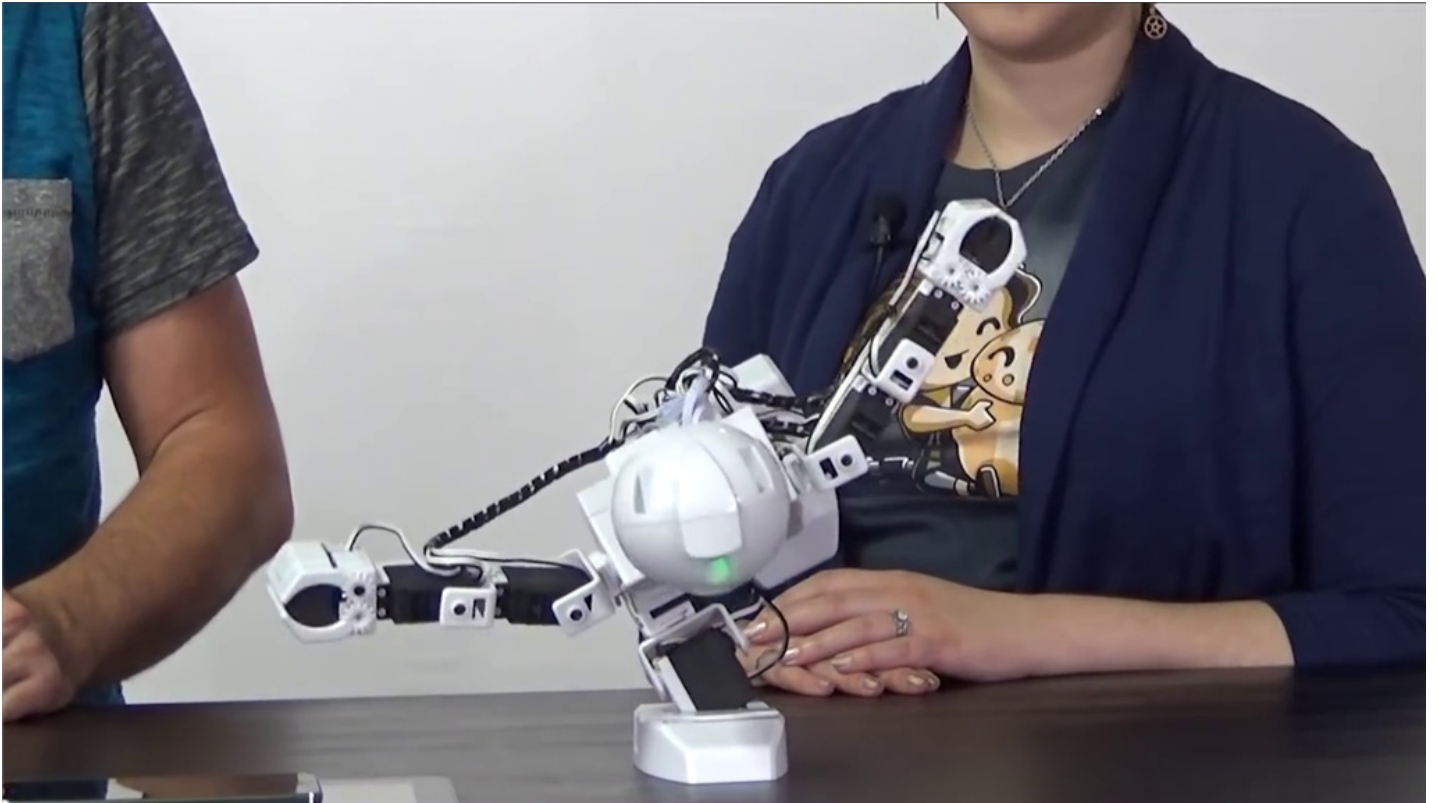
Step 14

The red stop button will return **JD** to a standing pose.



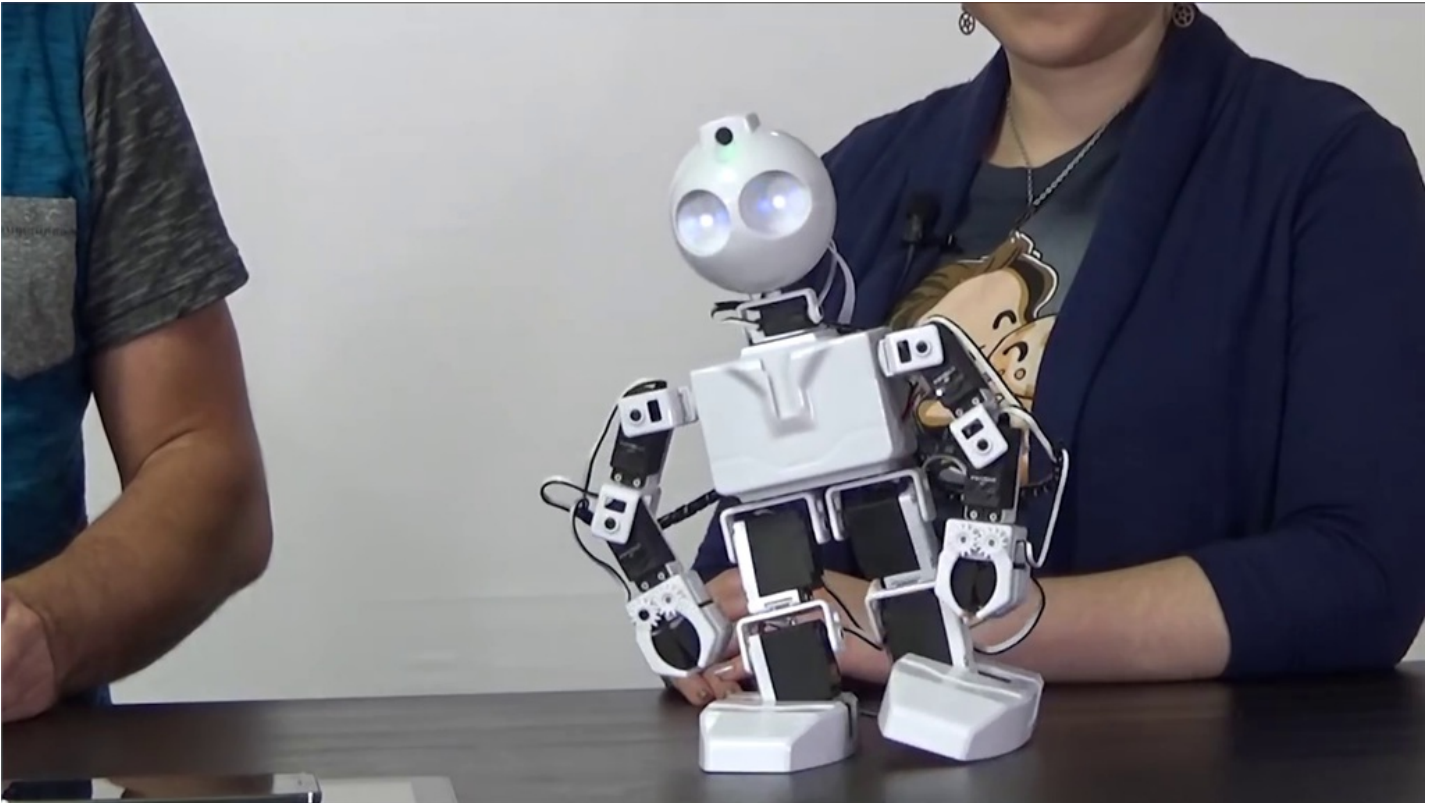
Step 15

Clicking on buttons such as **Fly** will execute pre-designed actions.



Step 16

The arrow buttons can be used for movement control.



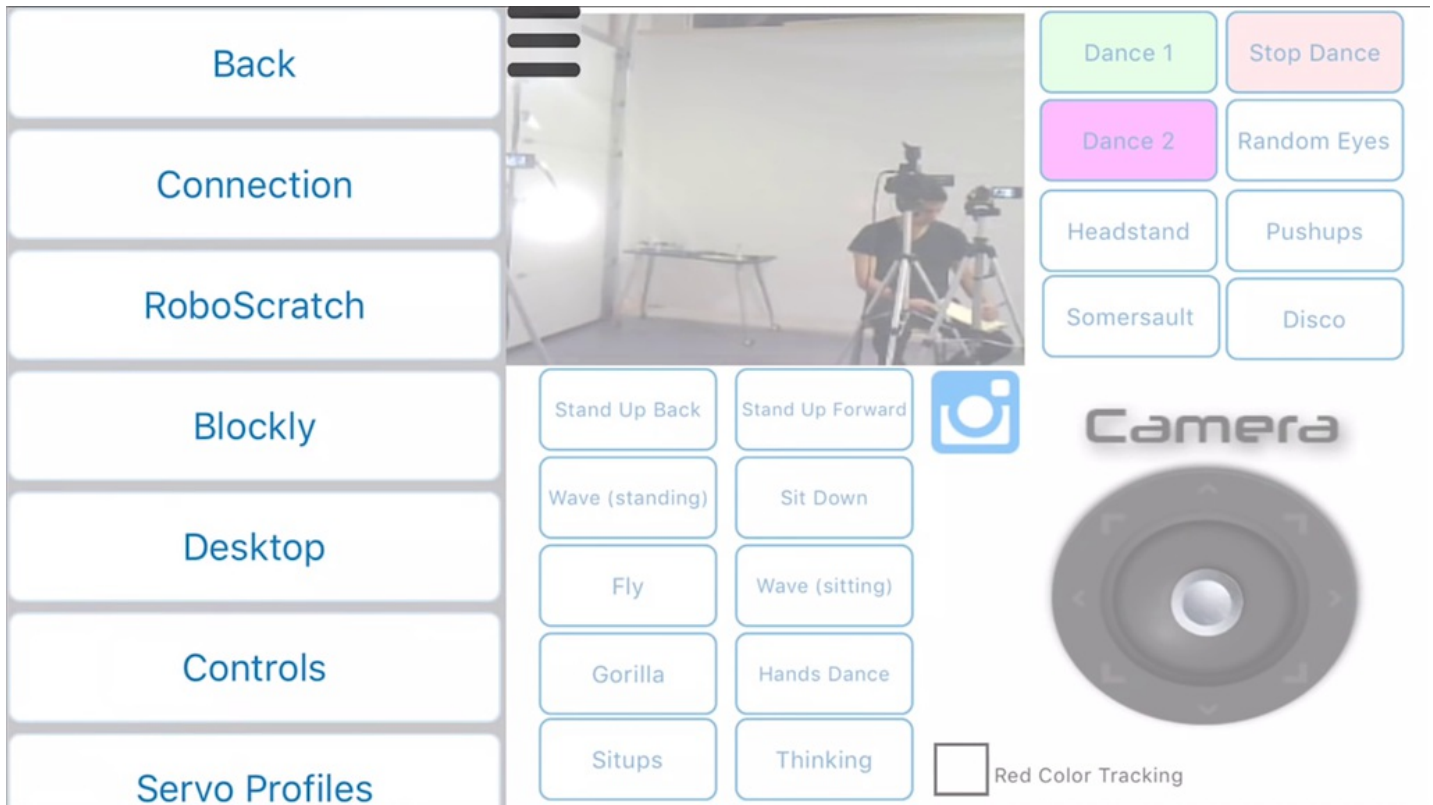
Step 17

Explore other actions such as **Headstand** or **Sit Down**. The right hand joystick can be used to move the camera by controlling the head servos. **Revolution JD** can return to standing from a forward or backwards position. The default project also includes audio control, which can be used in features such as dance actions.



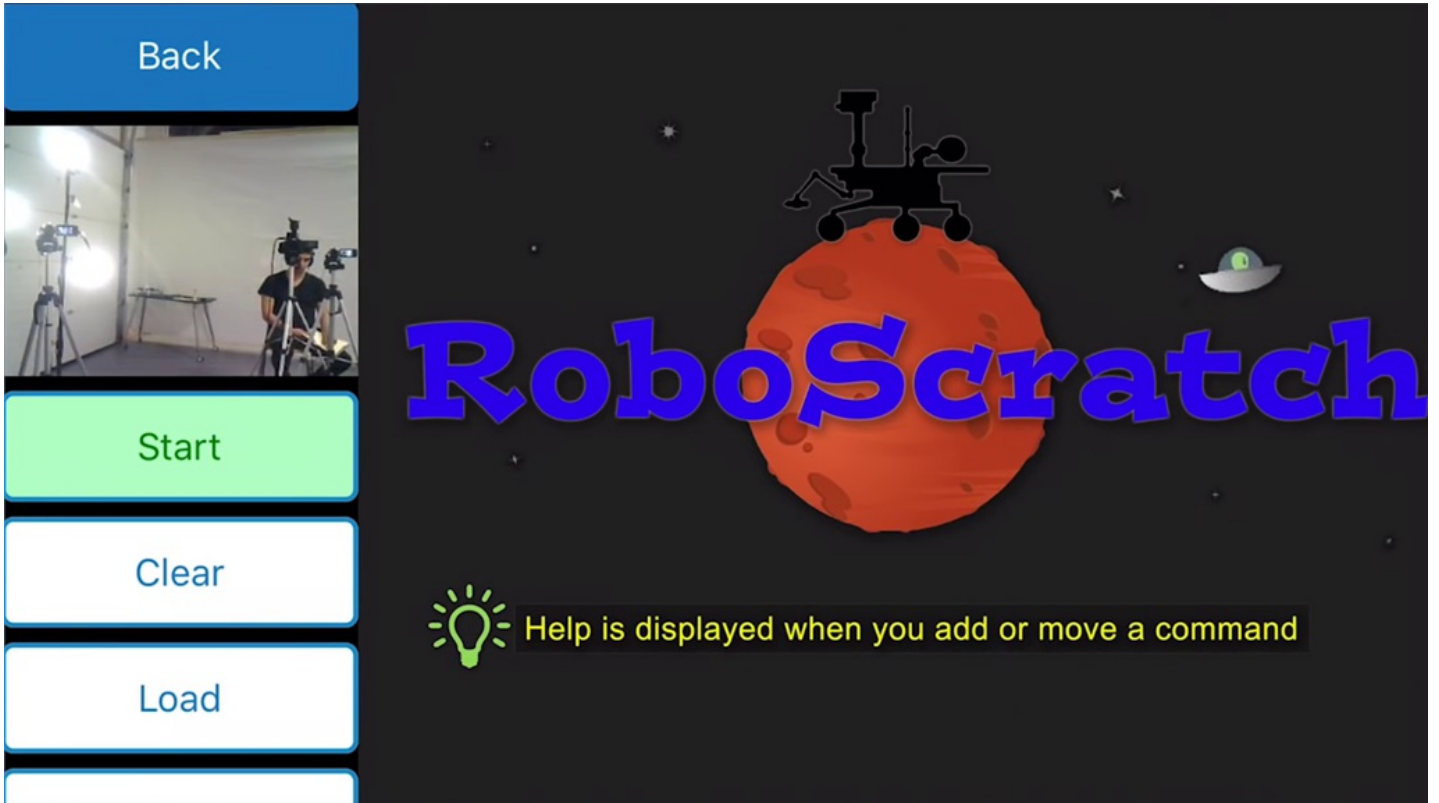
Step 18

The top-left “hamburger” menu icon will access other features of the app.



Step 19

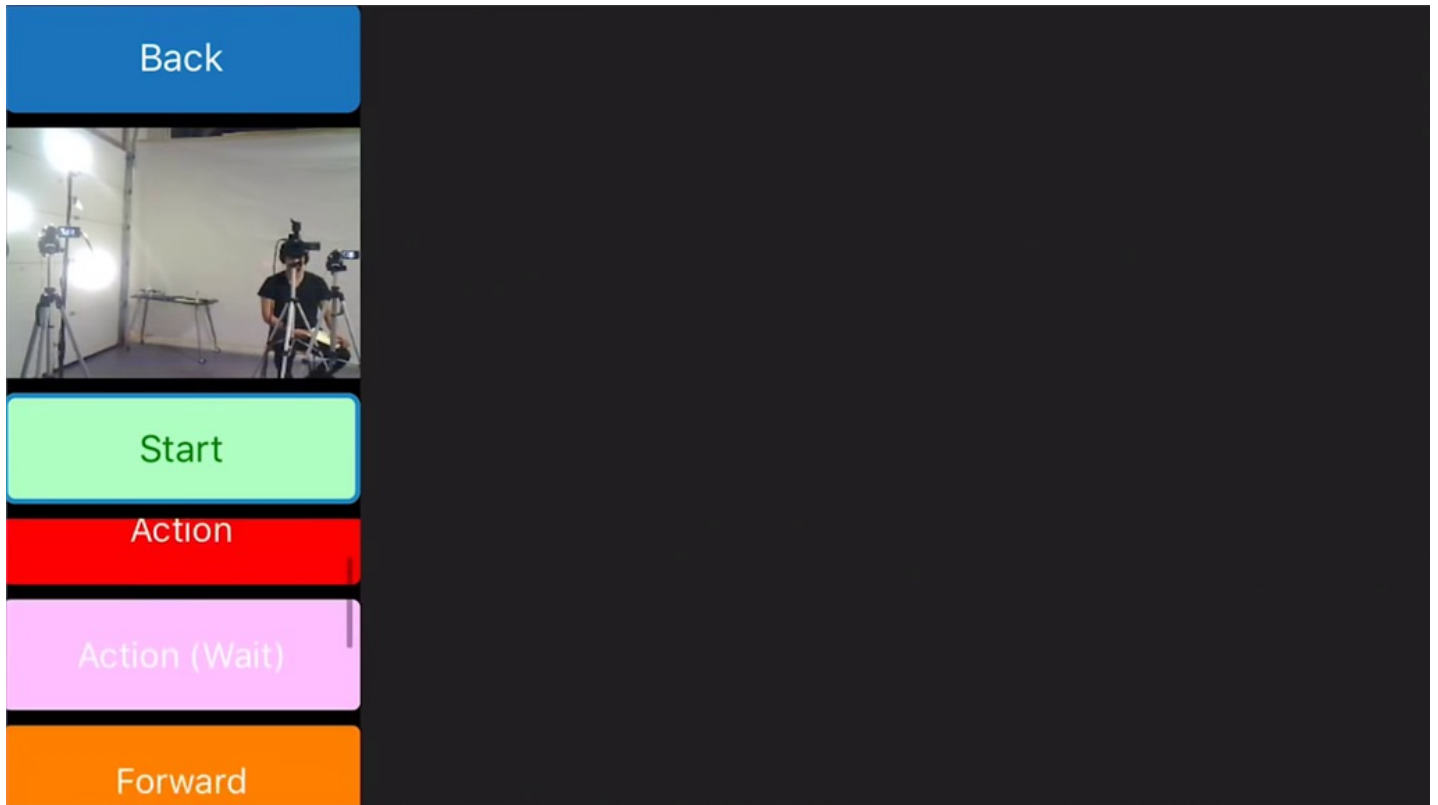
RoboScratch or **Blockly** can be used to create custom programs. Click on **RoboScratch** to get started.



The image shows the RoboScratch interface. On the left is a vertical sidebar with a blue 'Back' button at the top, a video thumbnail showing a person in a studio, and three buttons: a green 'Start' button, a white 'Clear' button, and a white 'Load' button. The main area has a dark background with a red planet, a rover, and a satellite. The text 'RoboScratch' is written in large blue letters. A yellow lightbulb icon is next to the text 'Help is displayed when you add or move a command'.

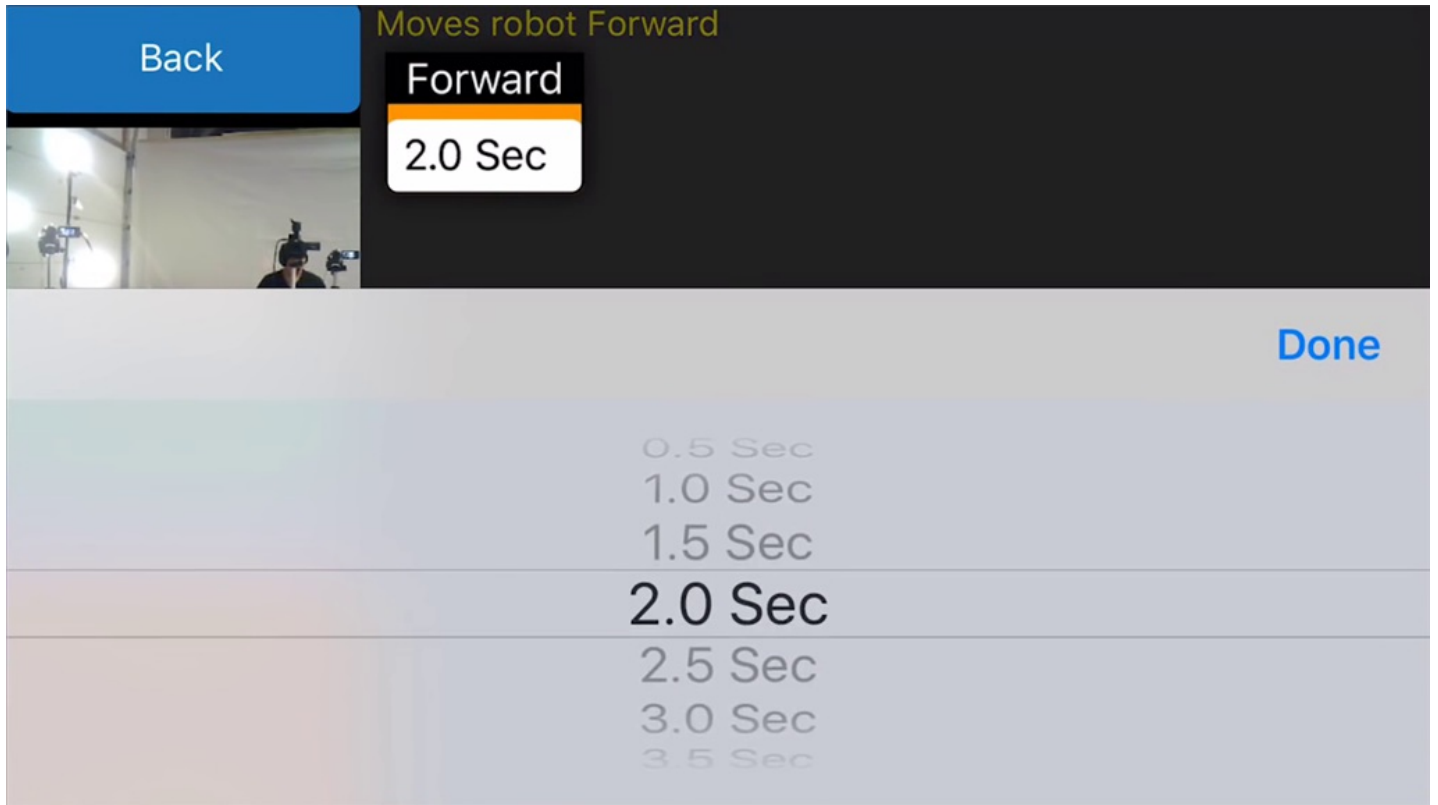
Step 20

Scroll through left-hand menu to view the available command options. Click on an action to add it to the workspace.



Step 21

For example, click on **Forward** to add the forward movement command. Click on the timing value and scroll to **2.0 Sec**.



Step 22

Click on **Mic** and then click on **Play**. Nine channels are available for recording. Select a channel number and click **Start Recording** to record an audio clip.

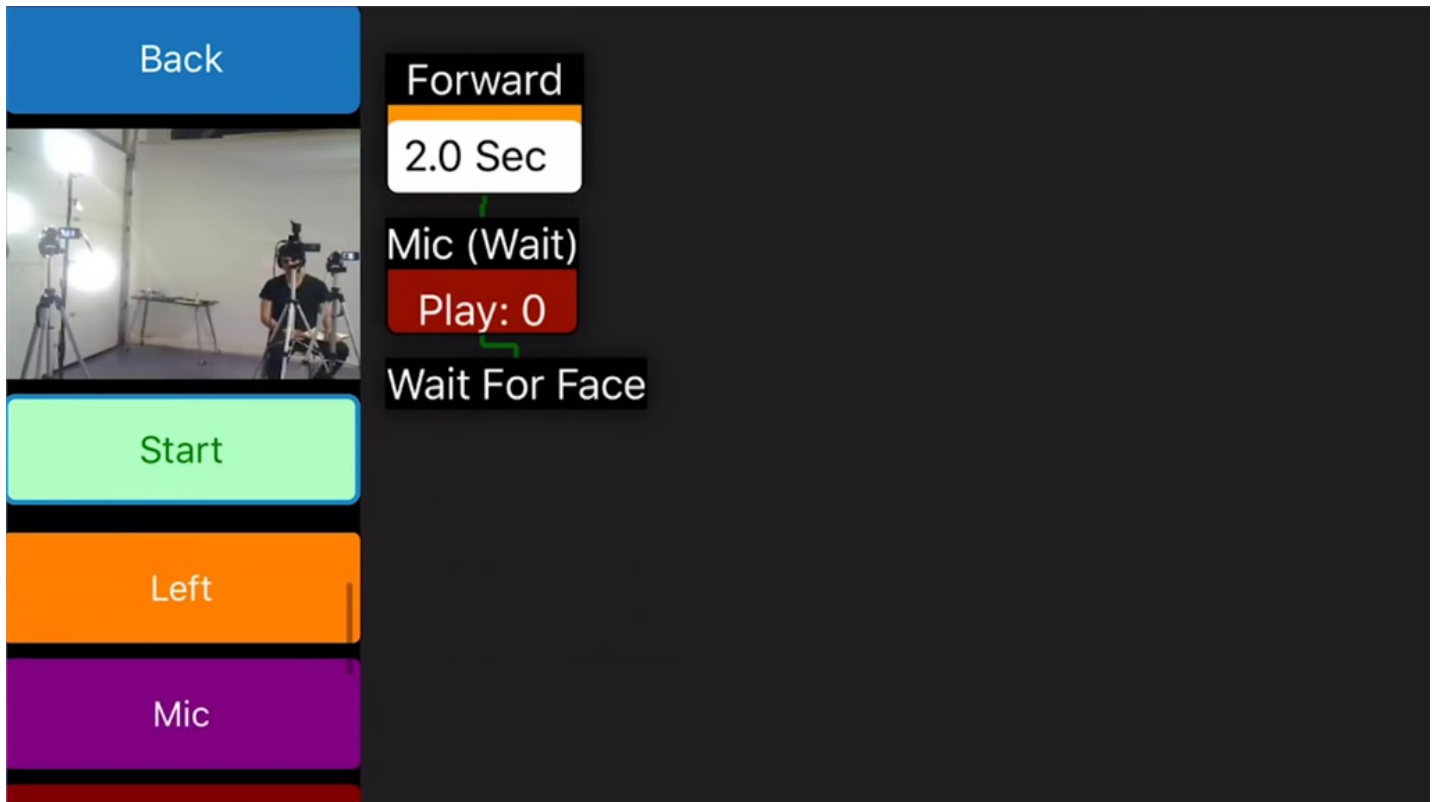
Microphone

Back

Start Recording	0	1	2
Play	3	4	5
Selected: 0	6	7	8

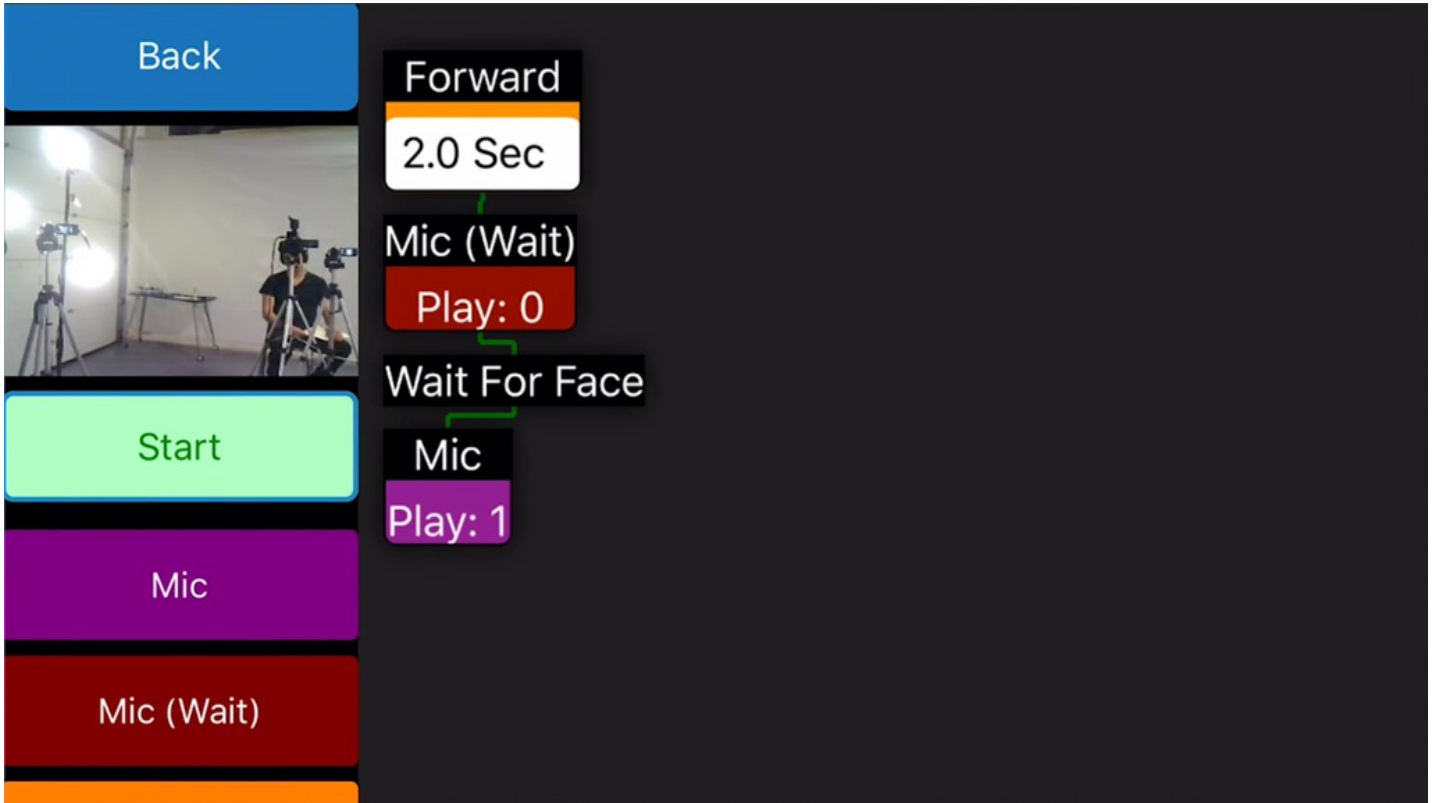
Step 23

Click on **Wait For Face**. This action will wait for a face to be detected in the camera view.



Step 24

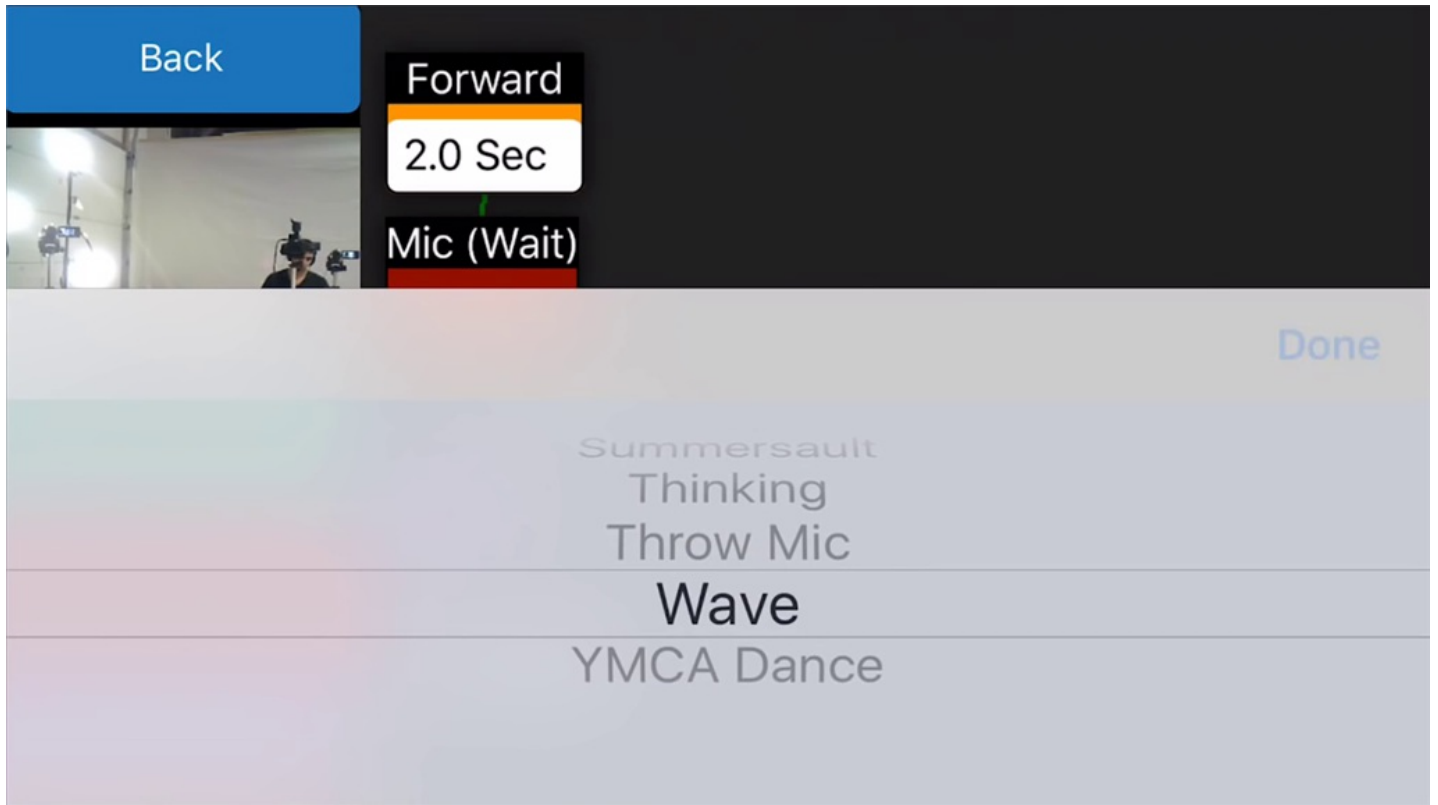
Add another **Mic** command and click on **Play**. Select a different channel number to record an audio clip that will be played once a face is detected.



The screenshot displays a programming environment with a sequence of blocks on the left and a corresponding flowchart on the right. The blocks on the left are: a blue 'Back' block, a light green 'Start' block, a purple 'Mic' block, a dark red 'Mic (Wait)' block, and an orange block. The flowchart on the right shows the following sequence: 'Forward' (orange), '2.0 Sec' (white), 'Mic (Wait)' (black) with a red 'Play: 0' block below it, 'Wait For Face' (black), and 'Mic' (black) with a purple 'Play: 1' block below it. Green arrows indicate the flow from '2.0 Sec' to 'Mic (Wait)', from 'Play: 0' to 'Wait For Face', and from 'Wait For Face' to 'Mic'.

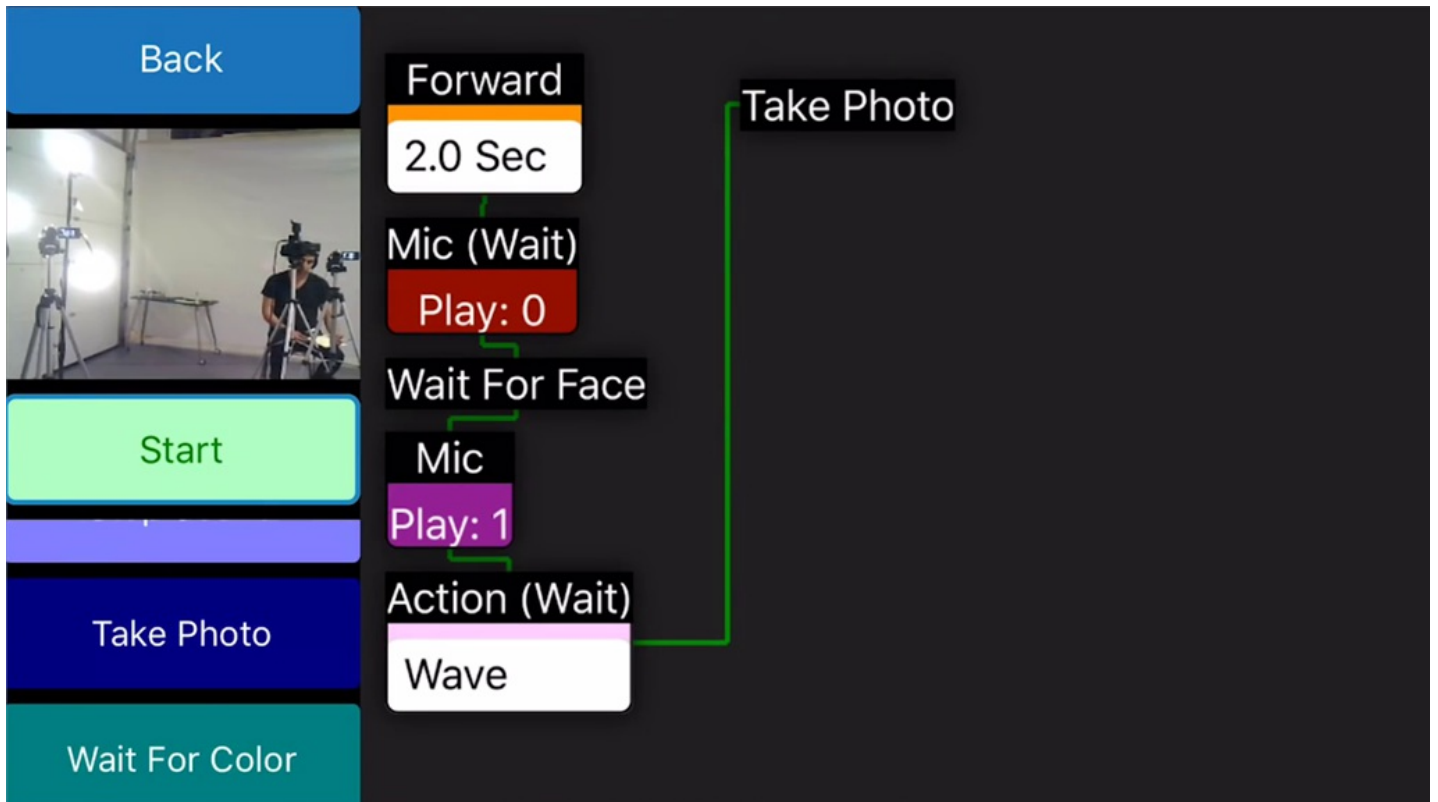
Step 25

Click on **Action (Wait)** and scroll to the **Wave** action. A **(Wait)** action will execute entirely before moving to the next command.



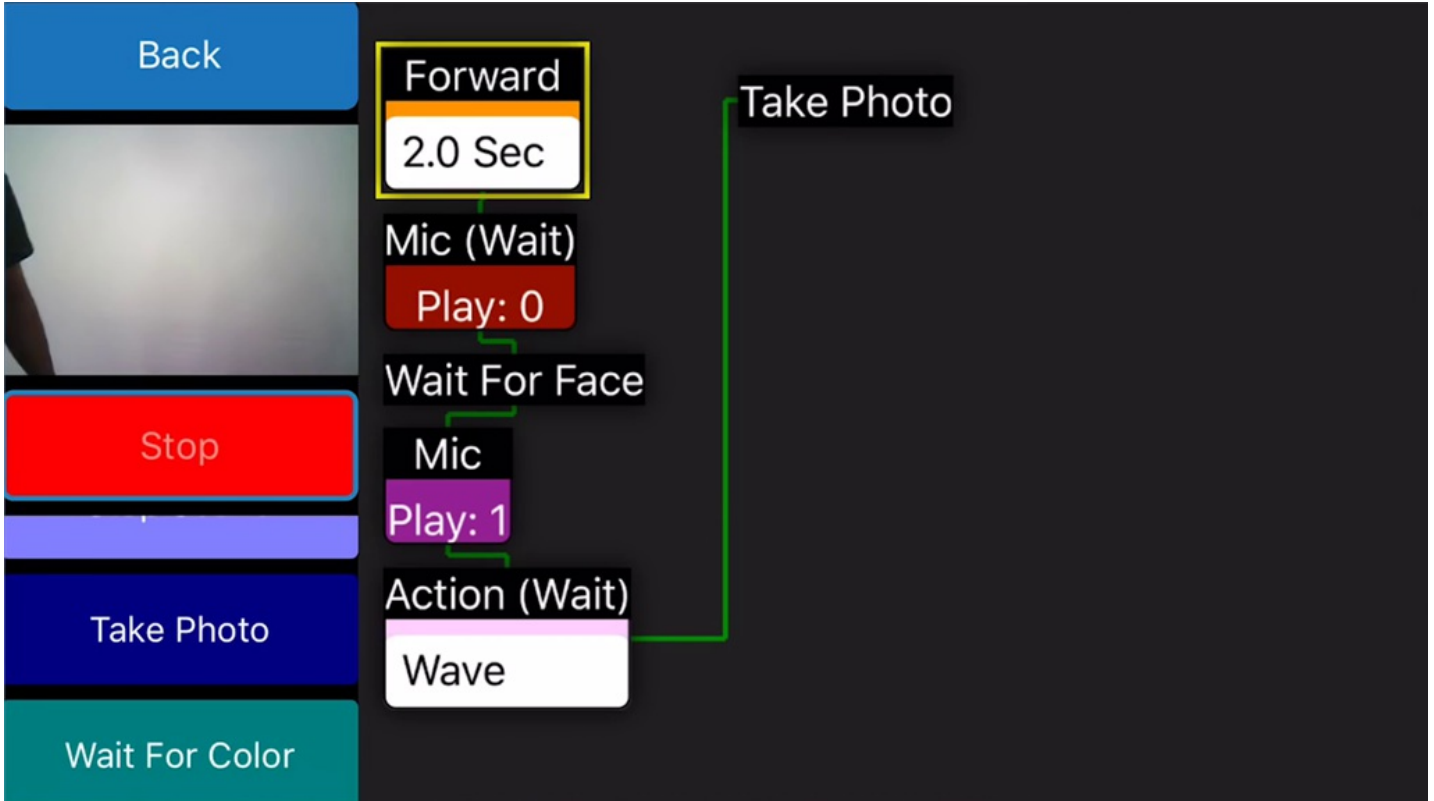
Step 26

Click on **Take Photo** to capture a photo of the camera view.



Step 27

This code will make the robot walk forward for two seconds, play an audio clip, wait for a face to be detected, and then play another audio clip while waving. When the waving is complete, the robot will take a photo. Click on the **Start** button to execute the code. Follow the highlighting and the green line to view the execution progress.



The image shows a code editor interface with a dark background. On the left, there is a vertical sidebar with several buttons: "Back" (blue), "Stop" (red), "Take Photo" (dark blue), and "Wait For Color" (teal). The main workspace contains a sequence of code blocks connected by a green line indicating execution flow. The blocks are: "Forward" (white with orange border) containing "2.0 Sec"; "Mic (Wait)" (red) containing "Play: 0"; "Wait For Face" (black); "Mic" (purple) containing "Play: 1"; "Action (Wait)" (black) containing "Wave"; and "Take Photo" (black). A green line starts at the "Forward" block, goes down to "Mic (Wait)", then down to "Wait For Face", then down to "Mic", then down to "Action (Wait)", and finally a long line goes right to the "Take Photo" block. The "Forward" block is highlighted with a yellow border.

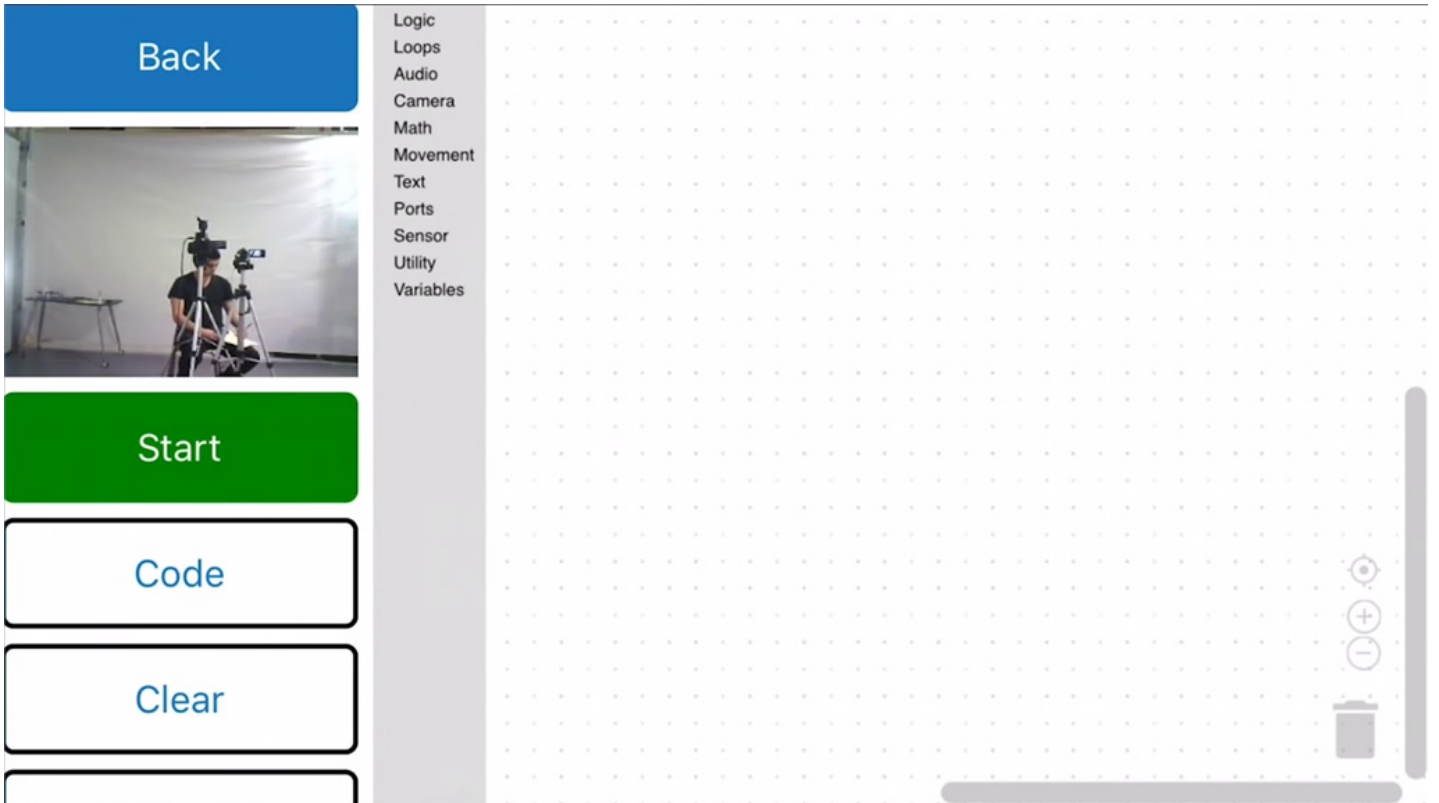
Step 28

Click on **Save** and name the project for future use. The captured photos will be stored directly to the device.



Step 29

Blockly can be used to create a more complicated custom program.



The screenshot displays the Blockly programming environment. On the left side, there is a vertical toolbar with several buttons: a blue 'Back' button at the top, a green 'Start' button, a white 'Code' button, a white 'Clear' button, and a partially visible white button at the bottom. Below the 'Back' button is a small video thumbnail showing a person at a computer. To the right of the toolbar is a vertical menu listing various block categories: Logic, Loops, Audio, Camera, Math, Movement, Text, Ports, Sensor, Utility, and Variables. The main workspace is a large grid of dots where blocks are placed. On the right side of the workspace, there are three circular icons (a target, a plus sign, and a minus sign) and a trash can icon, all within a vertical scrollbar area.

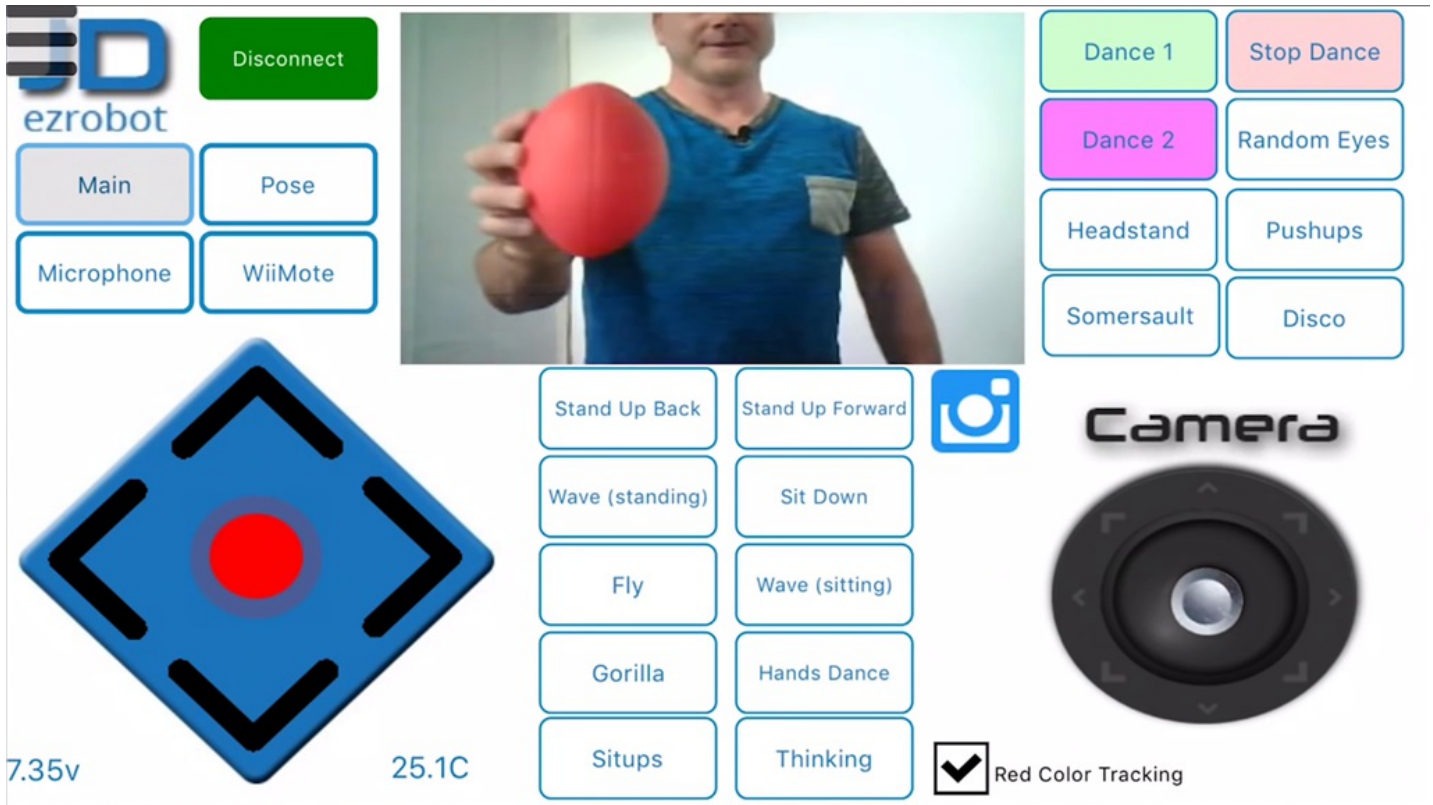
Step 30

The default **JD** project app includes color tracking. The default color for tracking is red. Choose a red object and hold it against a contrasting background. Color tracking works best when the light source is not directly behind the robot.



Step 31

Select the **Red Color Tracking** checkbox. The robot's head will follow the movements of the object.



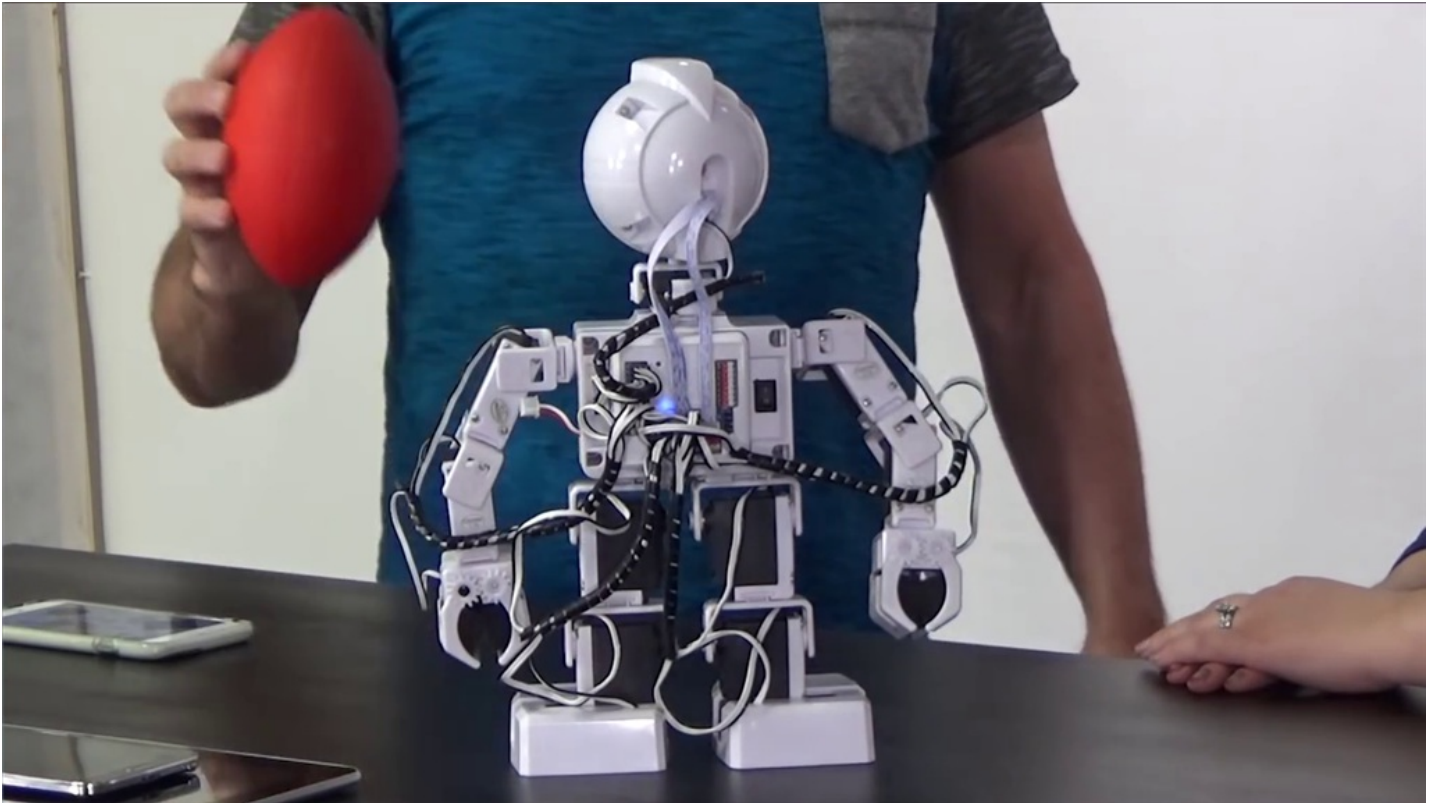
The screenshot displays the ezrobot control interface. At the top left is the ezrobot logo and a green 'Disconnect' button. Below the logo are buttons for 'Main', 'Pose', 'Microphone', and 'WiiMote'. A central video feed shows a person holding a red ball. To the right of the video are buttons for 'Dance 1', 'Stop Dance', 'Dance 2', 'Random Eyes', 'Headstand', 'Pushups', 'Somersault', and 'Disco'. At the bottom left is a blue diamond-shaped navigation pad with a red dot in the center, labeled '7.35v' and '25.1C'. In the center are buttons for 'Stand Up Back', 'Stand Up Forward', 'Wave (standing)', 'Sit Down', 'Fly', 'Wave (sitting)', 'Gorilla', 'Hands Dance', 'Situps', and 'Thinking'. On the right is a 'Camera' icon and a circular camera viewfinder. At the bottom right, a checkbox labeled 'Red Color Tracking' is checked.

7.35v 25.1C

Red Color Tracking

Step 32

Keep exploring all of the mobile app features.



Question #1

What is the purpose of a servo profile?

Question #2

How does the mobile app connect to a robot?

Question #3

What two programming workspaces can be accessed via the "hamburger" menu button?

View the answers to this quiz at www.ez-robot.com/Tutorials/Lesson/55.

Visit www.TheRobotProgram.com for more episodes.