

# SYNTHIAM

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## 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

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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](http://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<br>2017-04-18 5:21:31 PM<br>7,133,329 Bytes<br>4,509 downloads |
| Public EZ-Cloud Apps  |  |  |
| My EZ-Cloud Apps      | AdventureBot   | Details  |
| Preferences           |  | By DJ Sures<br>2017-03-06 2:56:10 PM<br>6,374,470 Bytes                    |
| Application Log       |  |  |

## Step 6

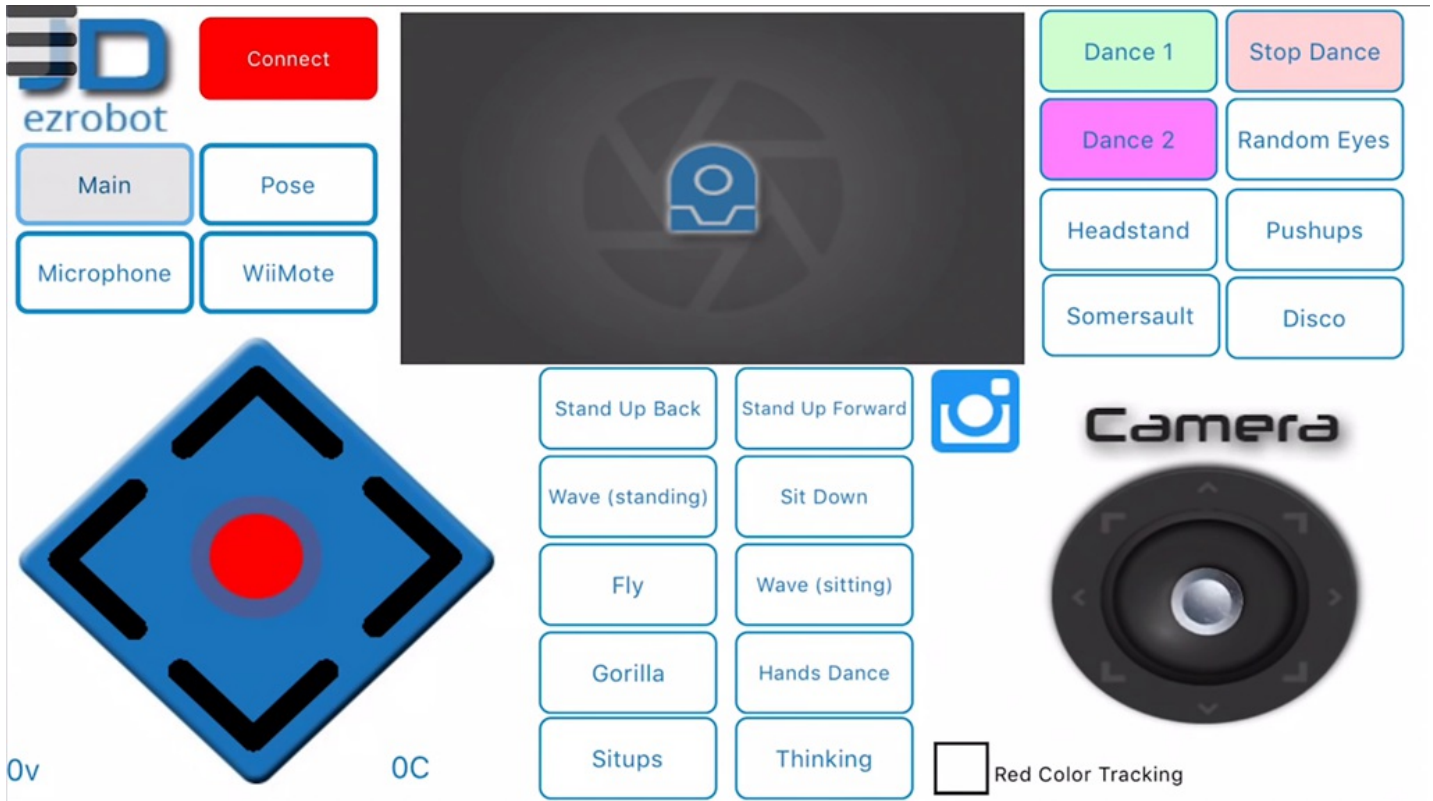
Select the default **JD** project. Choose **Download & Install** to load the project.

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



## 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 and a red 'Connect' button. Below the logo are buttons for 'Main', 'Pose', 'Microphone', and 'WiiMote'. The central area shows a camera view of a blue robot head icon. To the right is a grid of action buttons: 'Dance 1', 'Stop Dance', 'Dance 2', 'Random Eyes', 'Headstand', 'Pushups', 'Somersault', and 'Disco'. Below the camera view is a large blue diamond-shaped button with a red circle in the center. To its right is another grid of 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' icon and a circular camera control pad. At the bottom left are '0v' and '0C' labels. At the bottom right 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

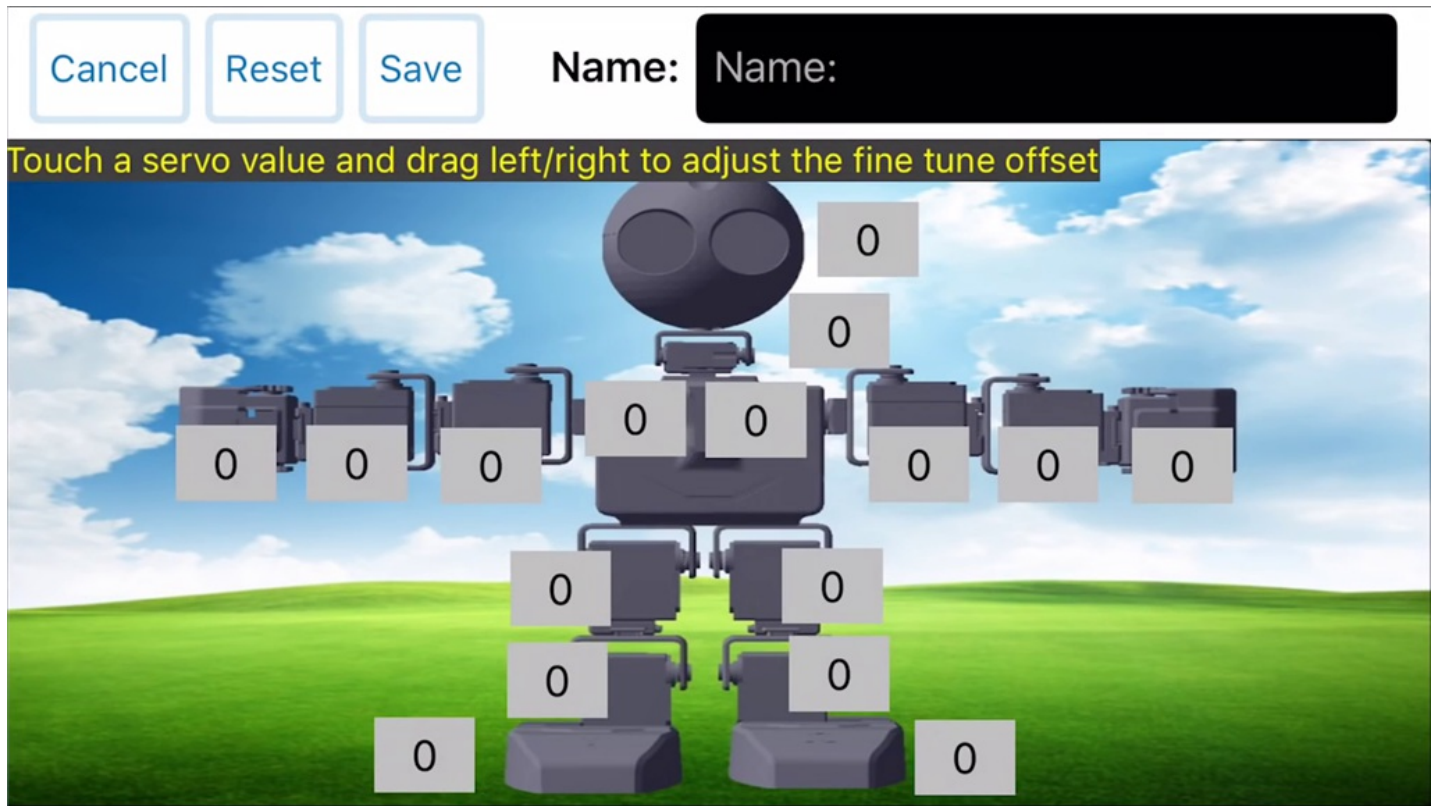
## Step 10

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



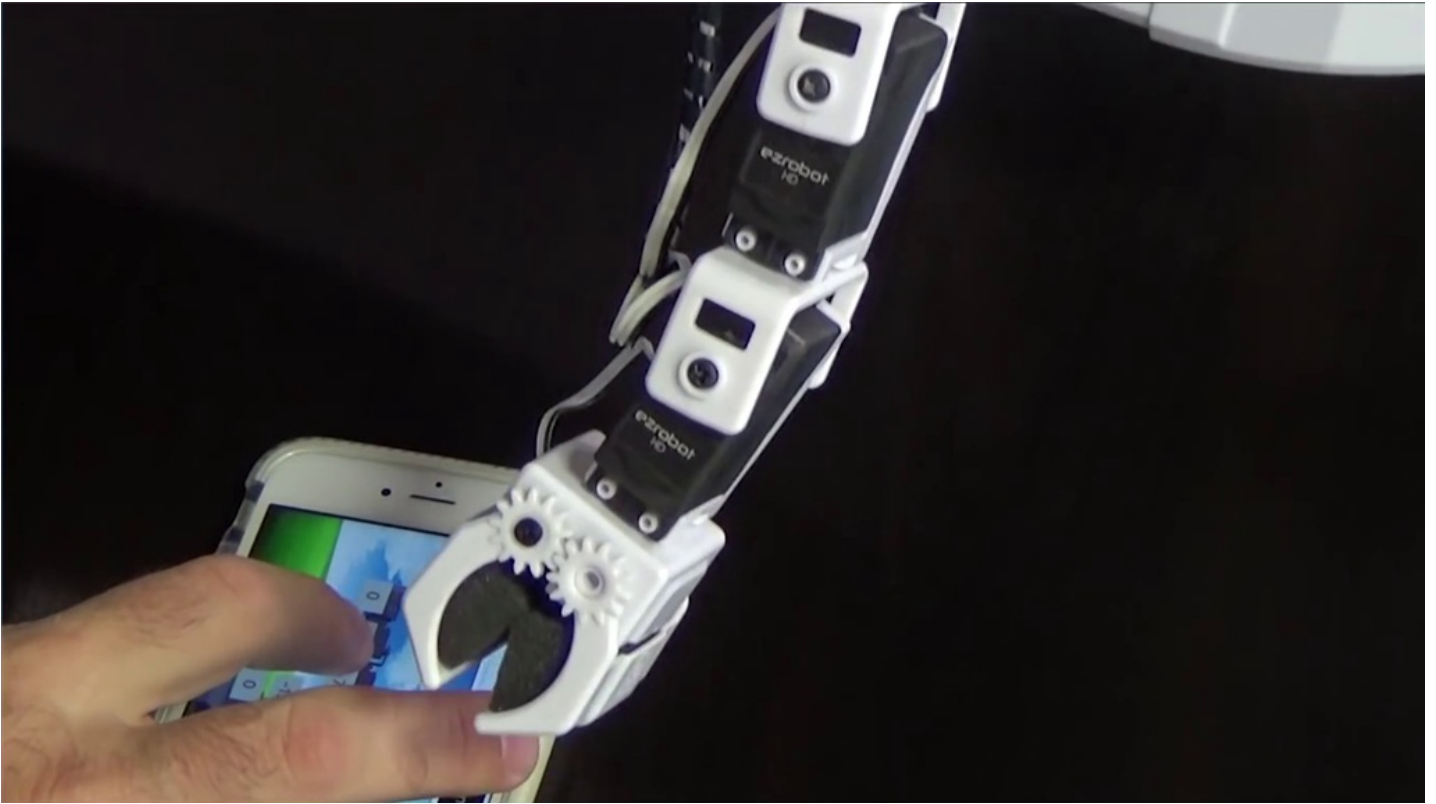
## Step 11

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



## Step 12

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



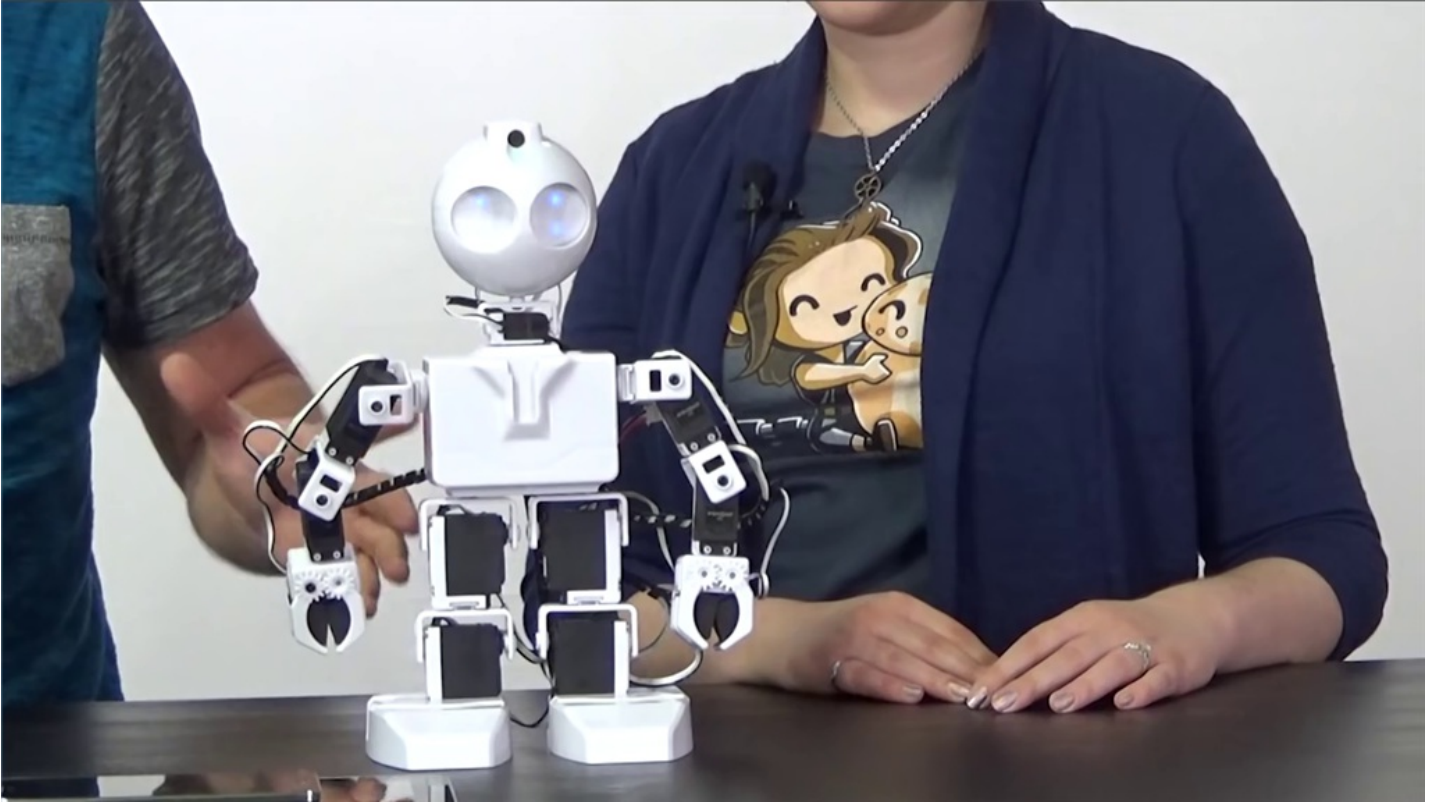
## Step 13

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'. Below the video is a large blue diamond-shaped joystick with a red center. To its right is a grid of 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' icon and a camera viewfinder. At the bottom left, the battery voltage is shown as '7.57v' and the temperature as '24.73C'. At the bottom right, there is a checkbox labeled 'Red Color Tracking' which is currently unchecked.

## Step 14

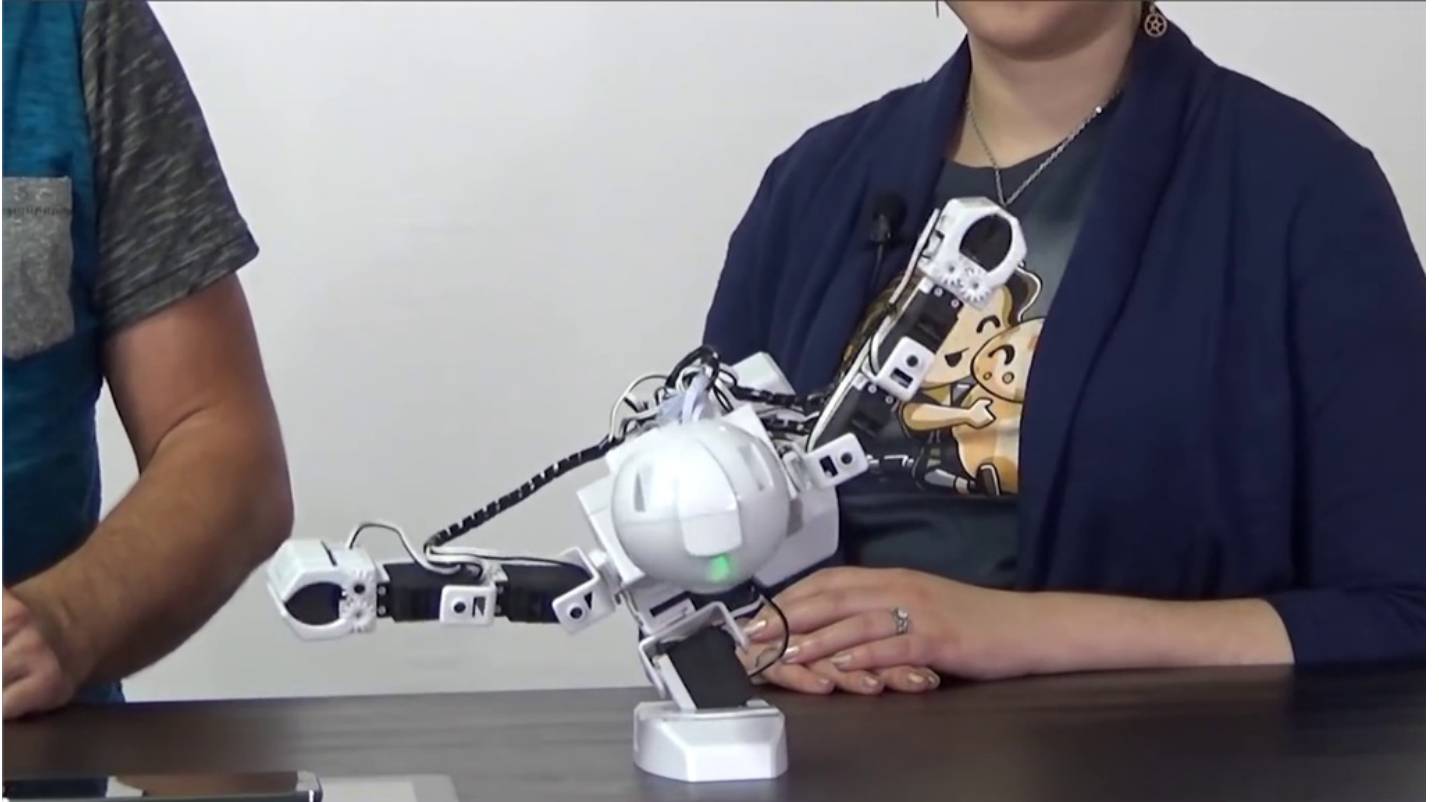
The red stop button will return **JD** to a standing pose.





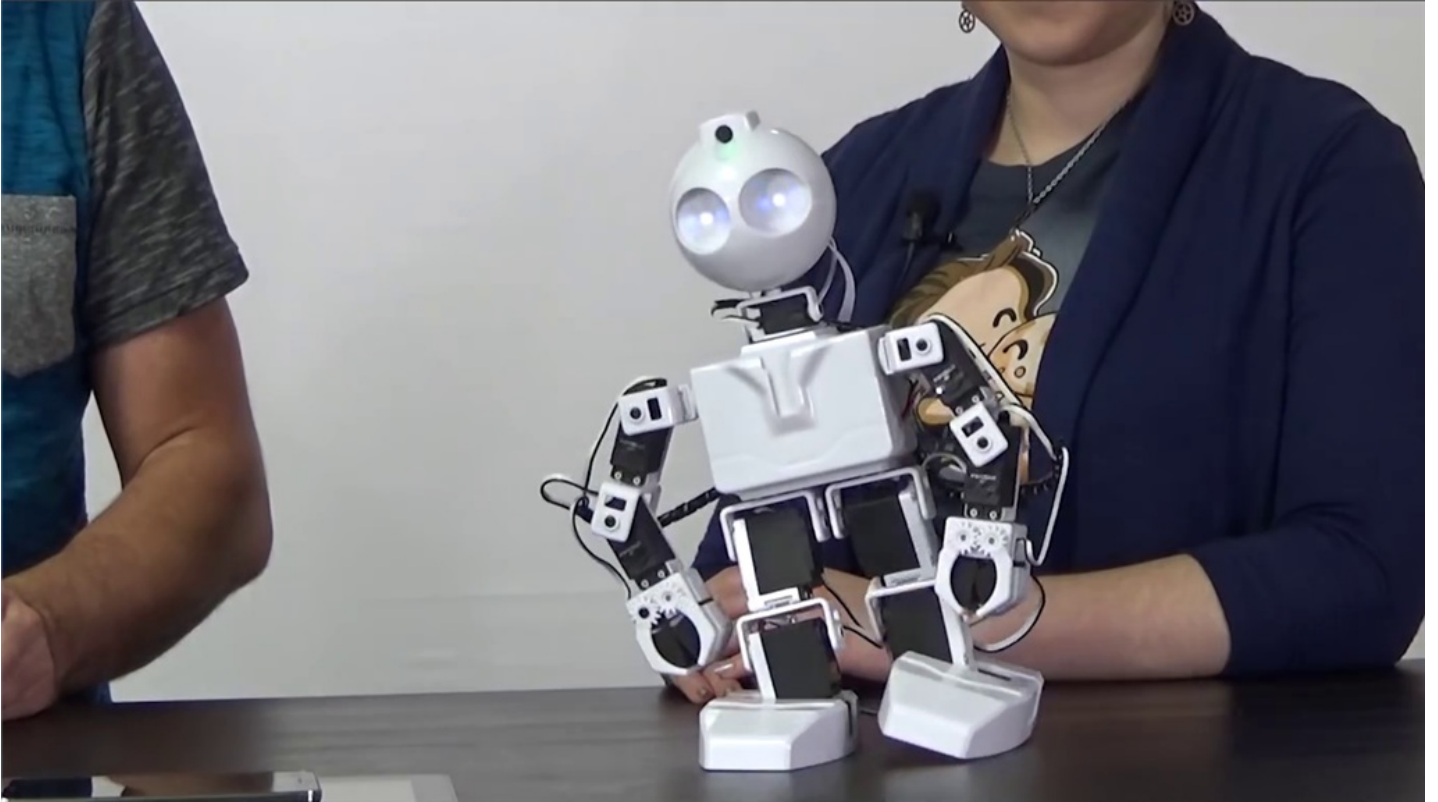
## Step 15

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



## Step 16

The arrow buttons can be used for movement control.



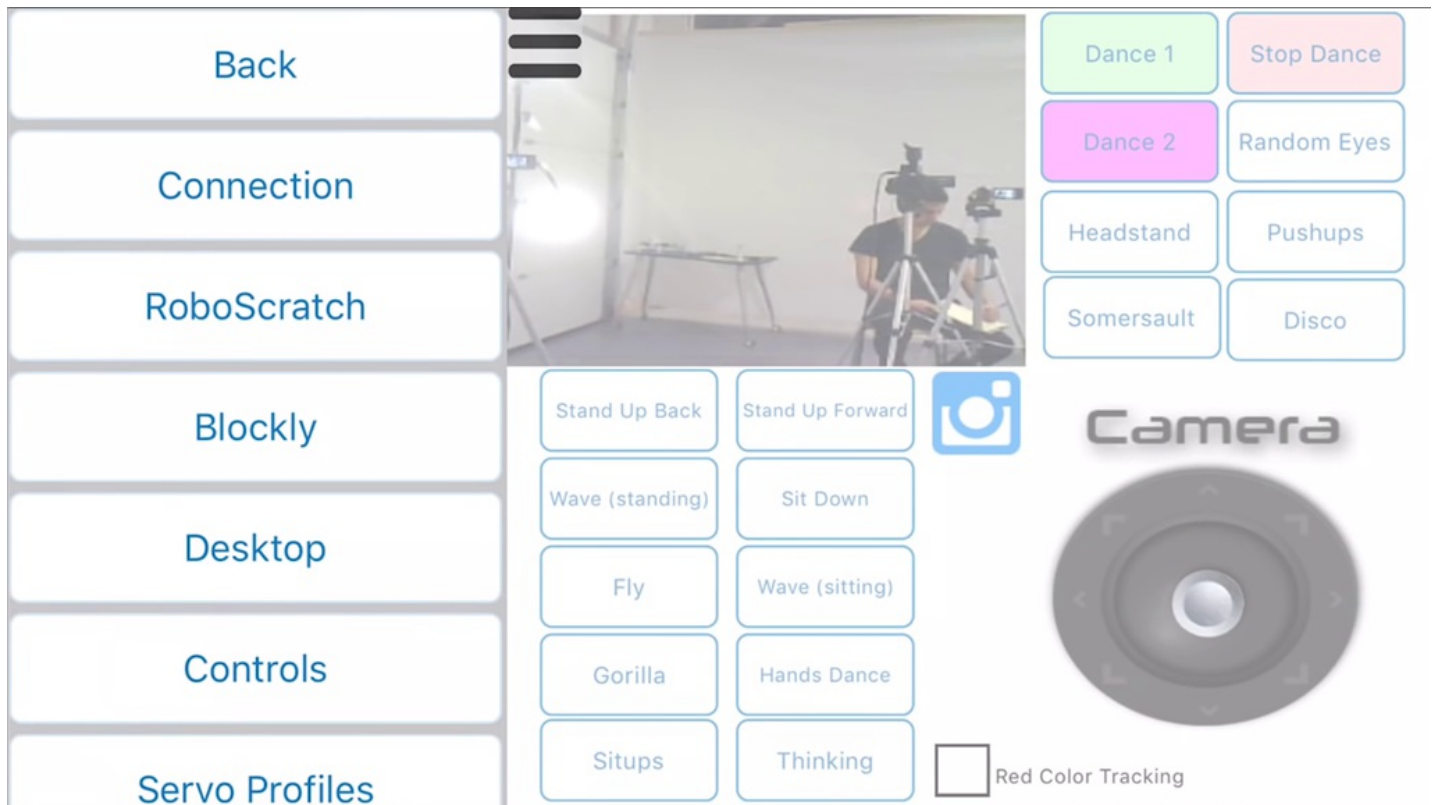
## Step 17

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.



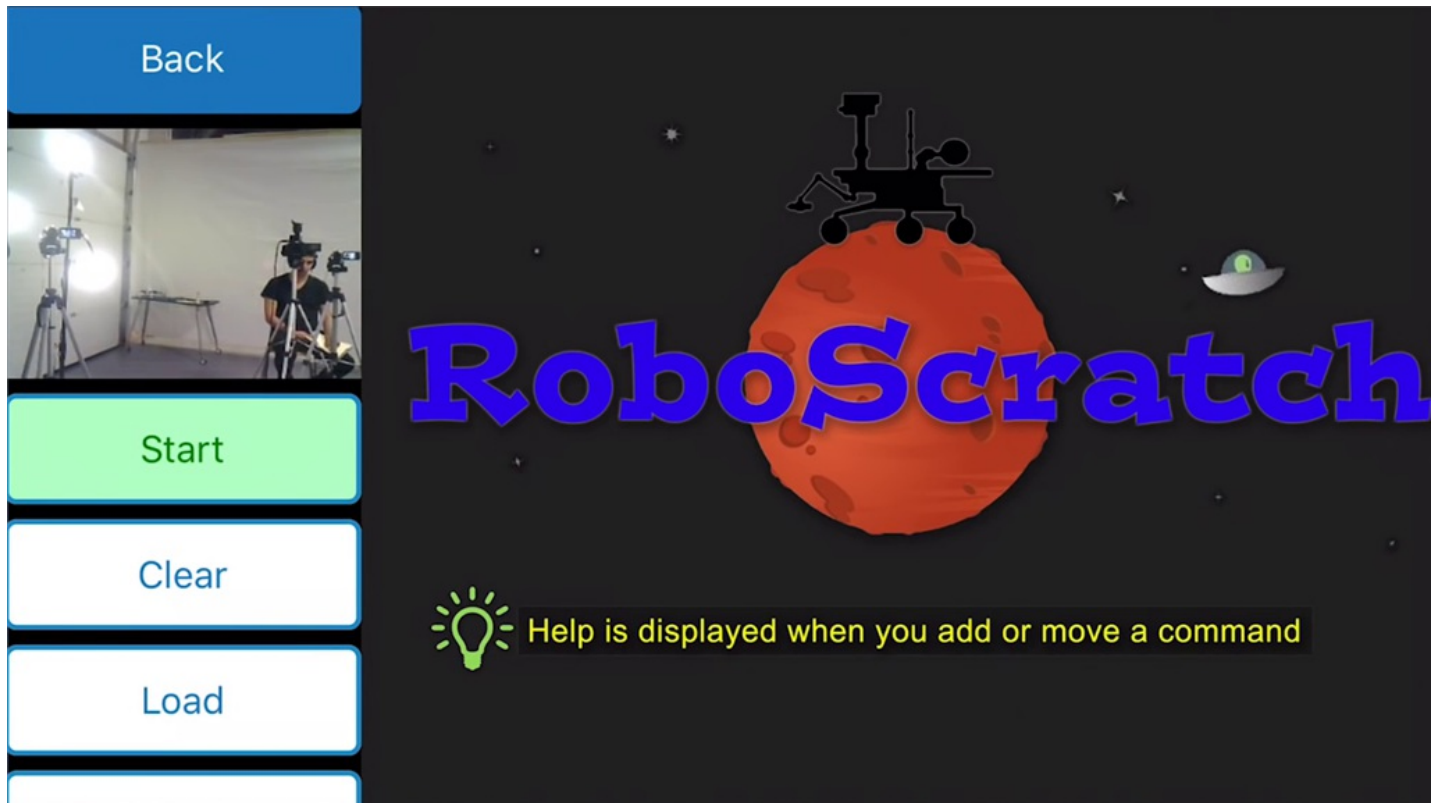
## Step 18

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



## Step 19

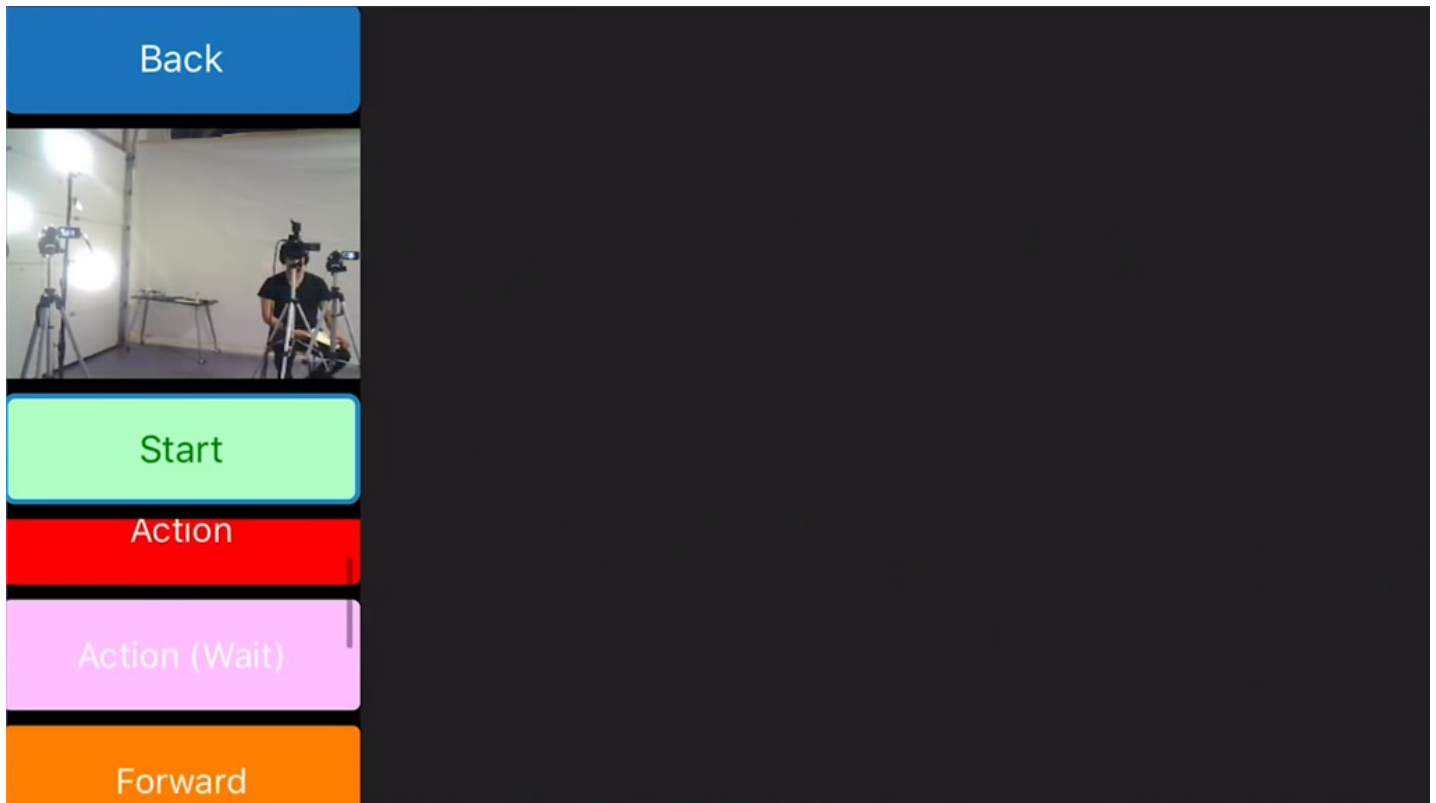
**RoboScratch** or **Blockly** can be used to create custom programs. Click on **RoboScratch** to get started.



The screenshot displays the RoboScratch interface. On the left side, there is a vertical navigation menu with the following buttons: "Back" (blue), "Start" (green), "Clear" (white), "Load" (white), and a partially visible white button at the bottom. The main workspace has a dark background with a large orange planet in the center. A black silhouette of a Mars rover is positioned on top of the planet. To the right of the planet, there is a small white satellite or probe. The text "RoboScratch" is written in large, blue, stylized letters across the middle of the planet. Below the planet, there is a yellow lightbulb icon followed by the text "Help is displayed when you add or move a command" in yellow.

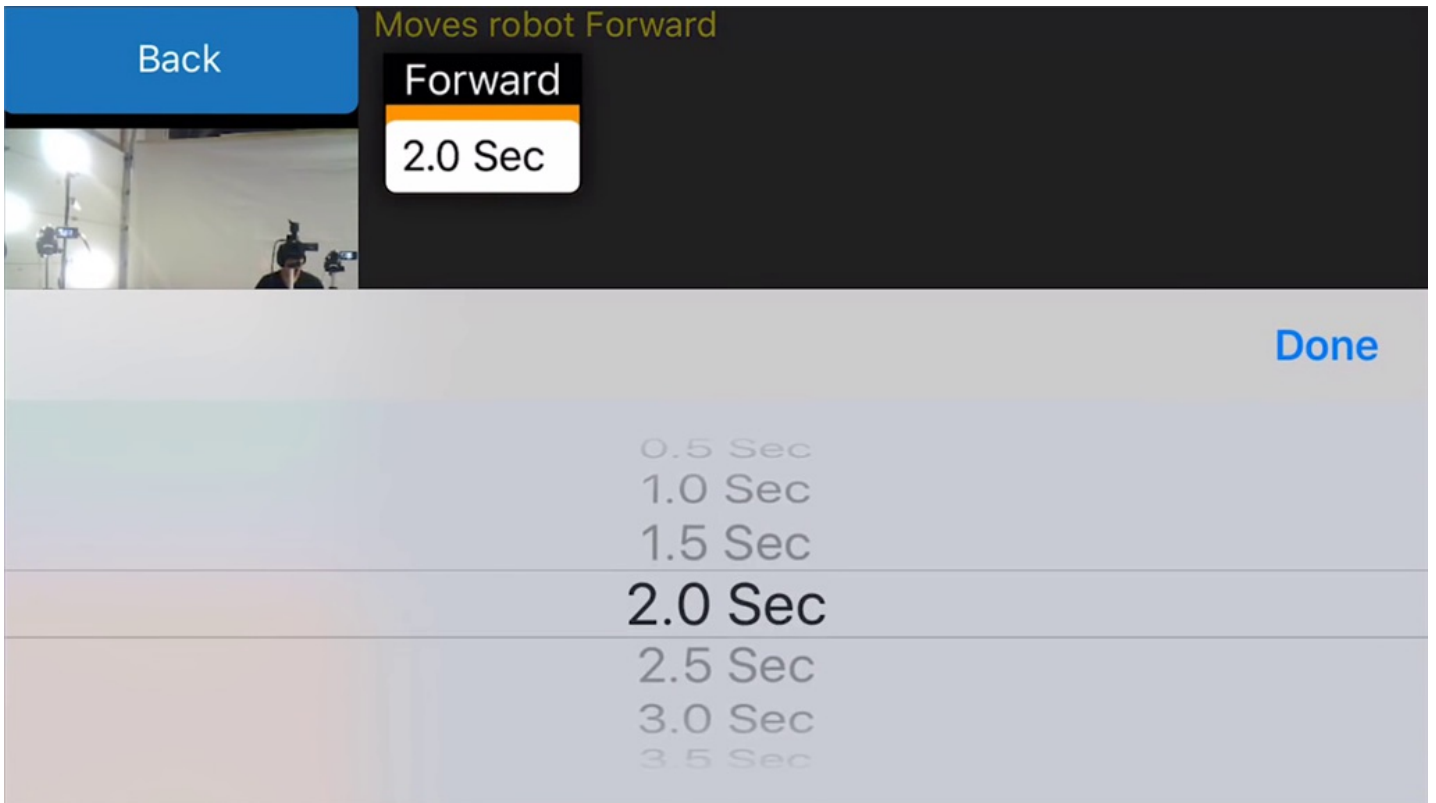
## Step 20

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

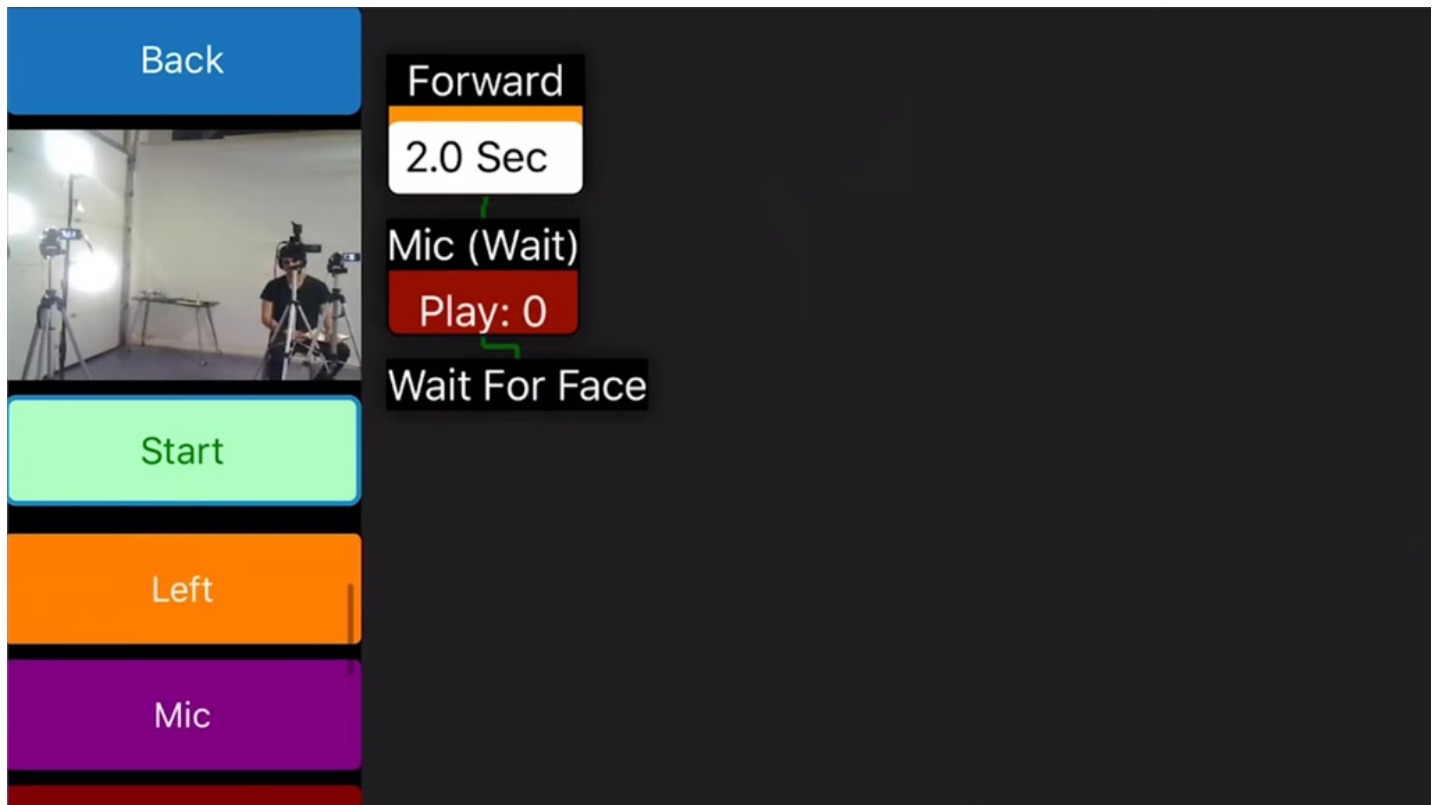
Back

|                 |   |   |   |
|-----------------|---|---|---|
| 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.



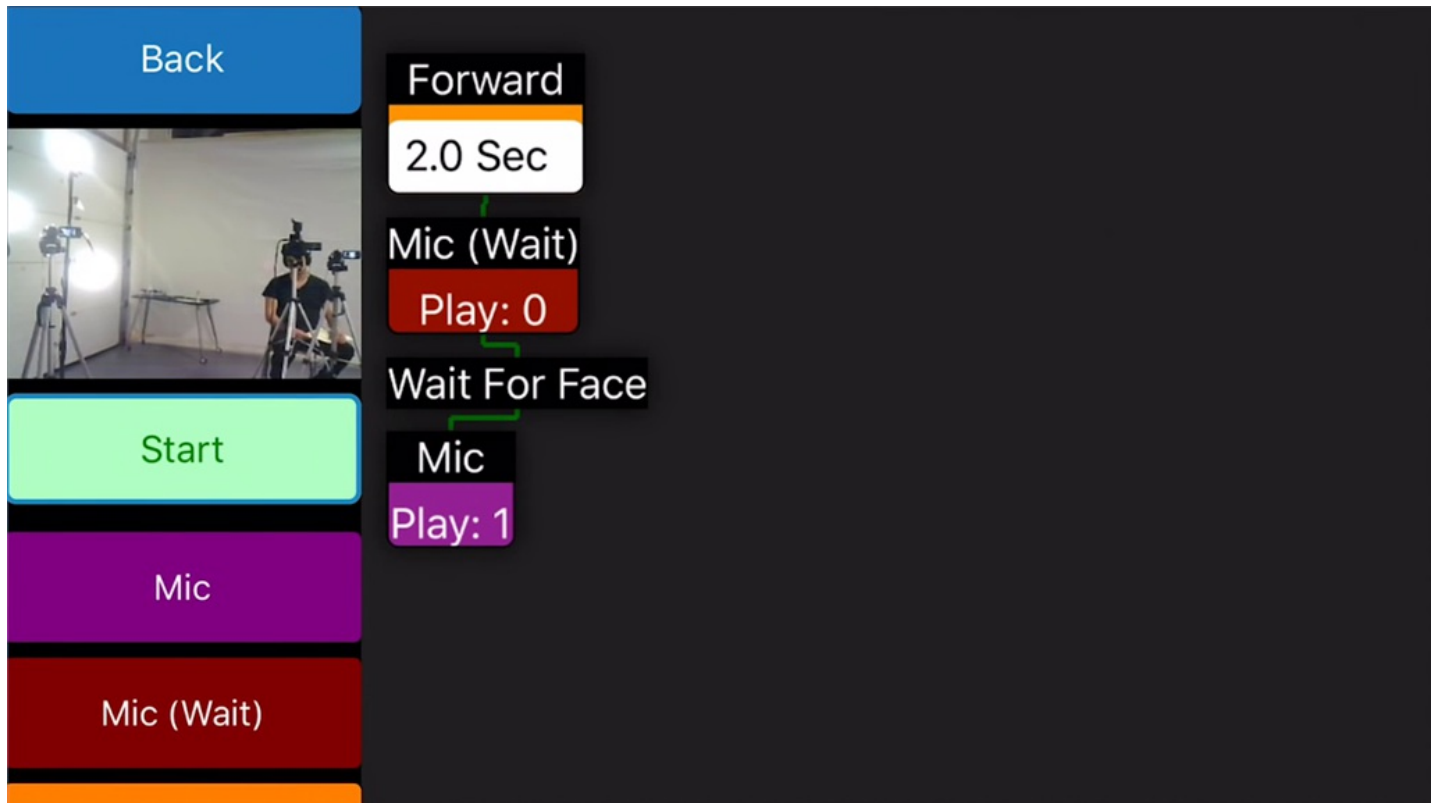
The screenshot displays a software interface with a central camera view and a vertical stack of control buttons on the left. The camera view shows a person in a dark shirt sitting in a room with a white wall and a tripod-mounted camera. To the right of the camera view is a vertical list of actions:

- Back (blue button)
- Forward (white button with orange border)
- 2.0 Sec (white button)
- Mic (Wait) (white button)
- Play: 0 (red button)
- Wait For Face (white button)

Below the camera view is a vertical stack of buttons: Start (green), Left (orange), Mic (purple), and a partially visible red button at the bottom. Green arrows indicate a sequence from '2.0 Sec' to 'Mic (Wait)', and from 'Mic (Wait)' to 'Wait For Face'.

## Step 24

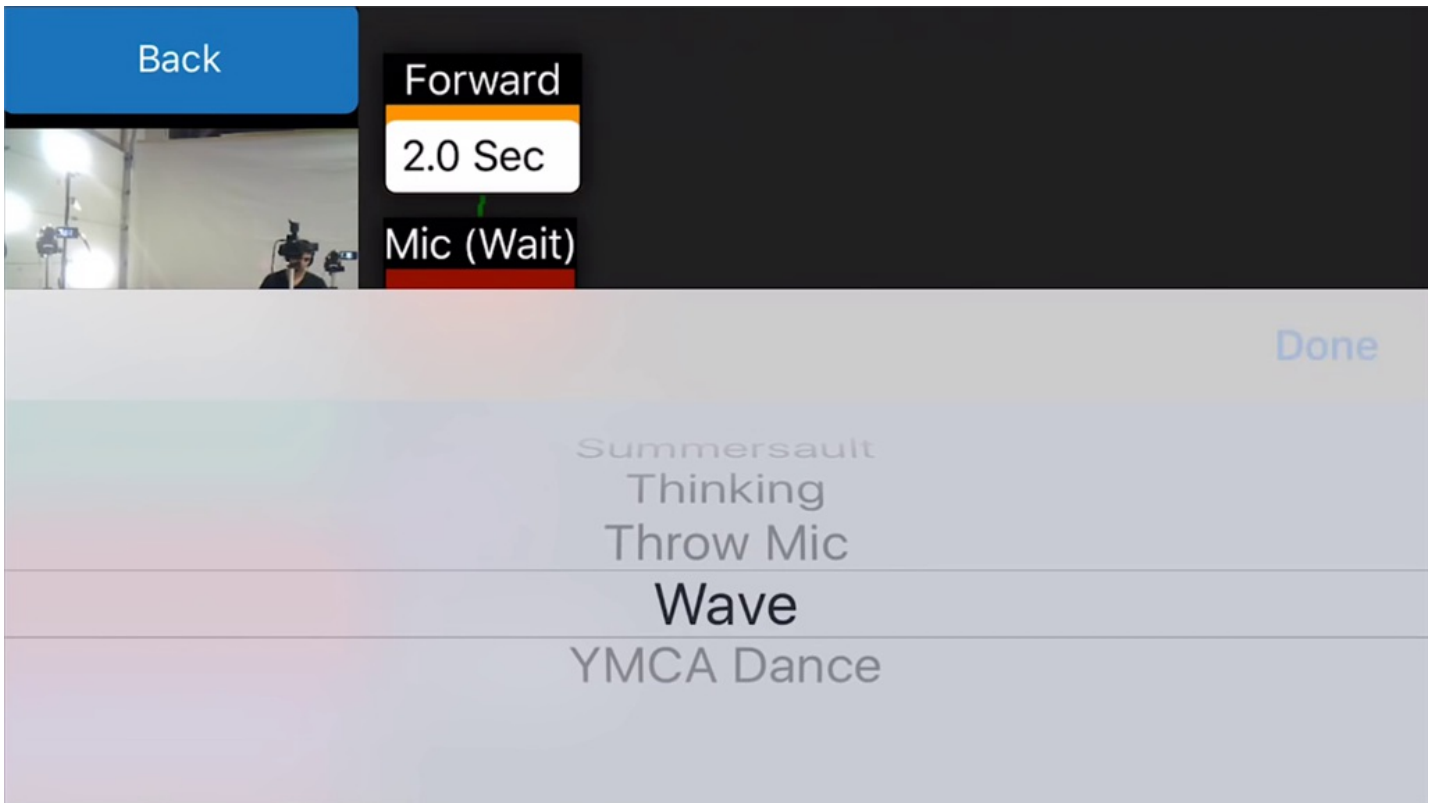
Add another **Mic** command and click on **Play**. Select a different channel number to record an audio clip that will be played once a face is detected.



The screenshot displays a video editing software interface. On the left, a vertical stack of clips is visible, including a blue 'Back' clip, a video clip showing a person in a studio, a green 'Start' clip, a purple 'Mic' clip, a red 'Mic (Wait)' clip, and an orange clip. On the right, a timeline shows a sequence of clips: a white 'Forward' clip with a duration of '2.0 Sec', a red 'Mic (Wait)' clip with 'Play: 0', a black 'Wait For Face' clip, a purple 'Mic' clip with 'Play: 1', and a red 'Mic (Wait)' clip. Green arrows indicate the flow of the sequence from the 'Start' clip to the 'Forward' clip, then to the 'Mic (Wait)' clip, then to the 'Wait For Face' clip, and finally to the 'Mic' clip.

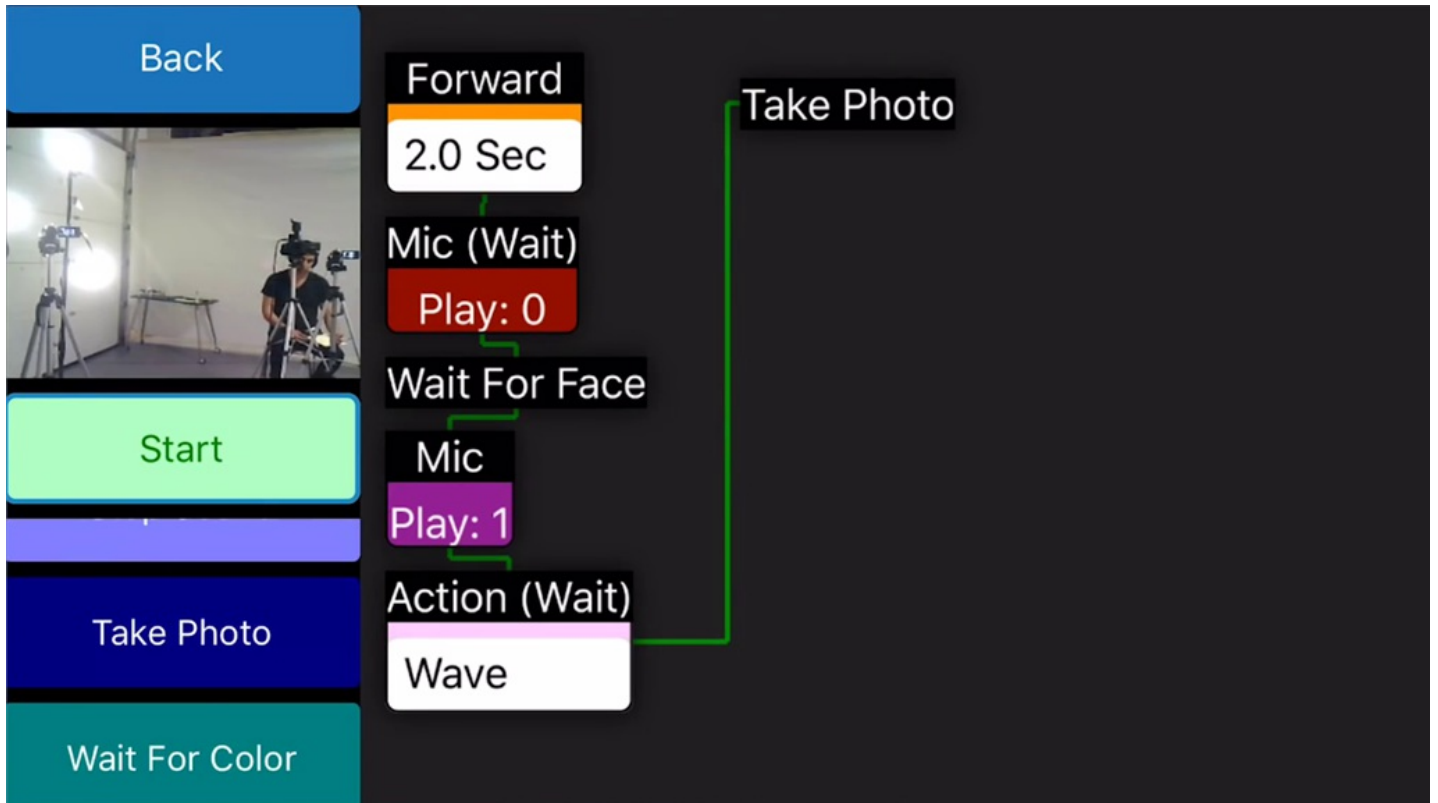
## Step 25

Click on **Action (Wait)** and scroll to the **Wave** action. A **b[/b]** 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 list of actions on the left and a sequence of code blocks on the right. The actions on the left are: Back, Stop, Take Photo, and Wait For Color. The code blocks on the right are: Forward 2.0 Sec, Mic (Wait) Play: 0, Wait For Face, Mic Play: 1, Action (Wait) Wave, and Take Photo. A green line connects the 'Wave' block to the 'Take Photo' block, indicating the execution path.

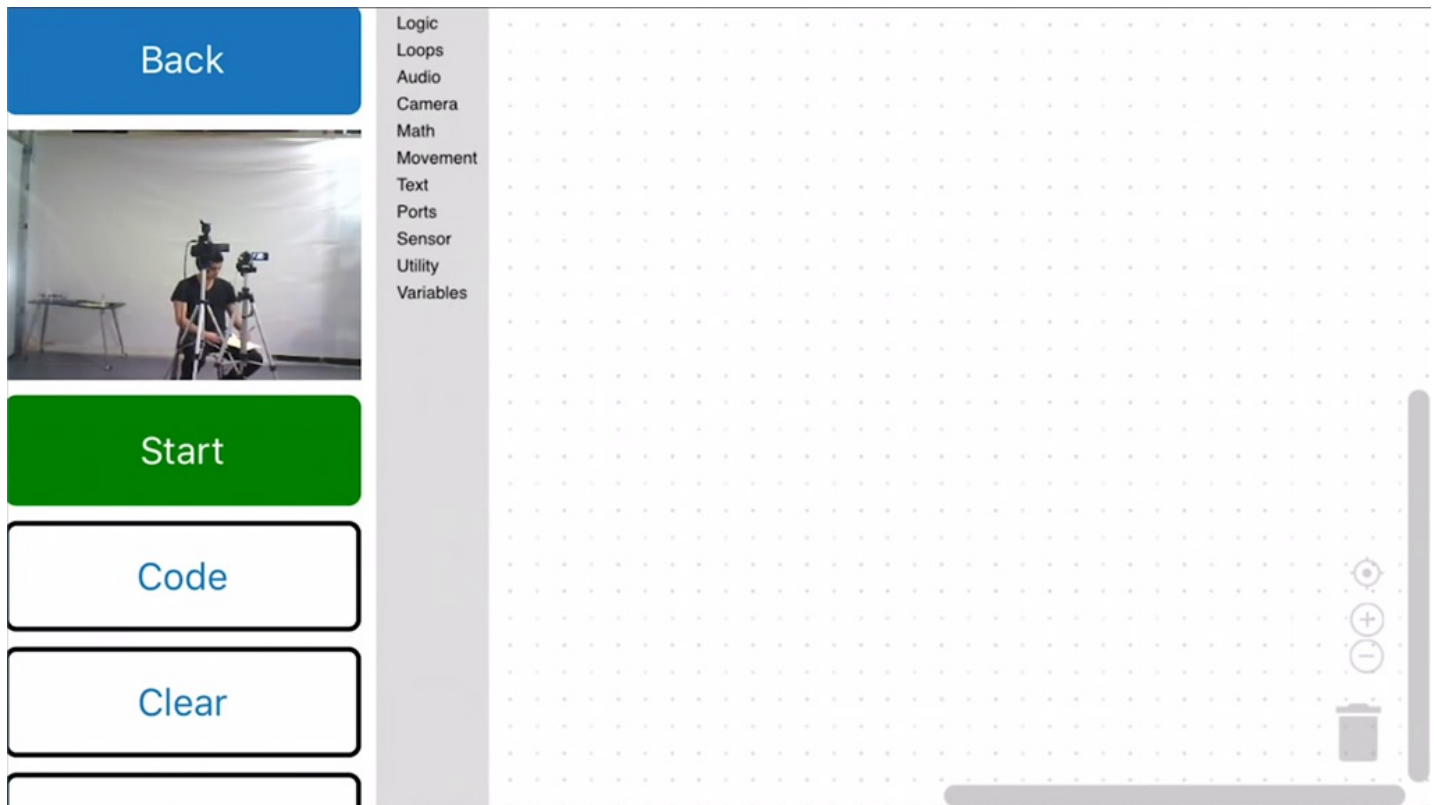
## Step 28

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



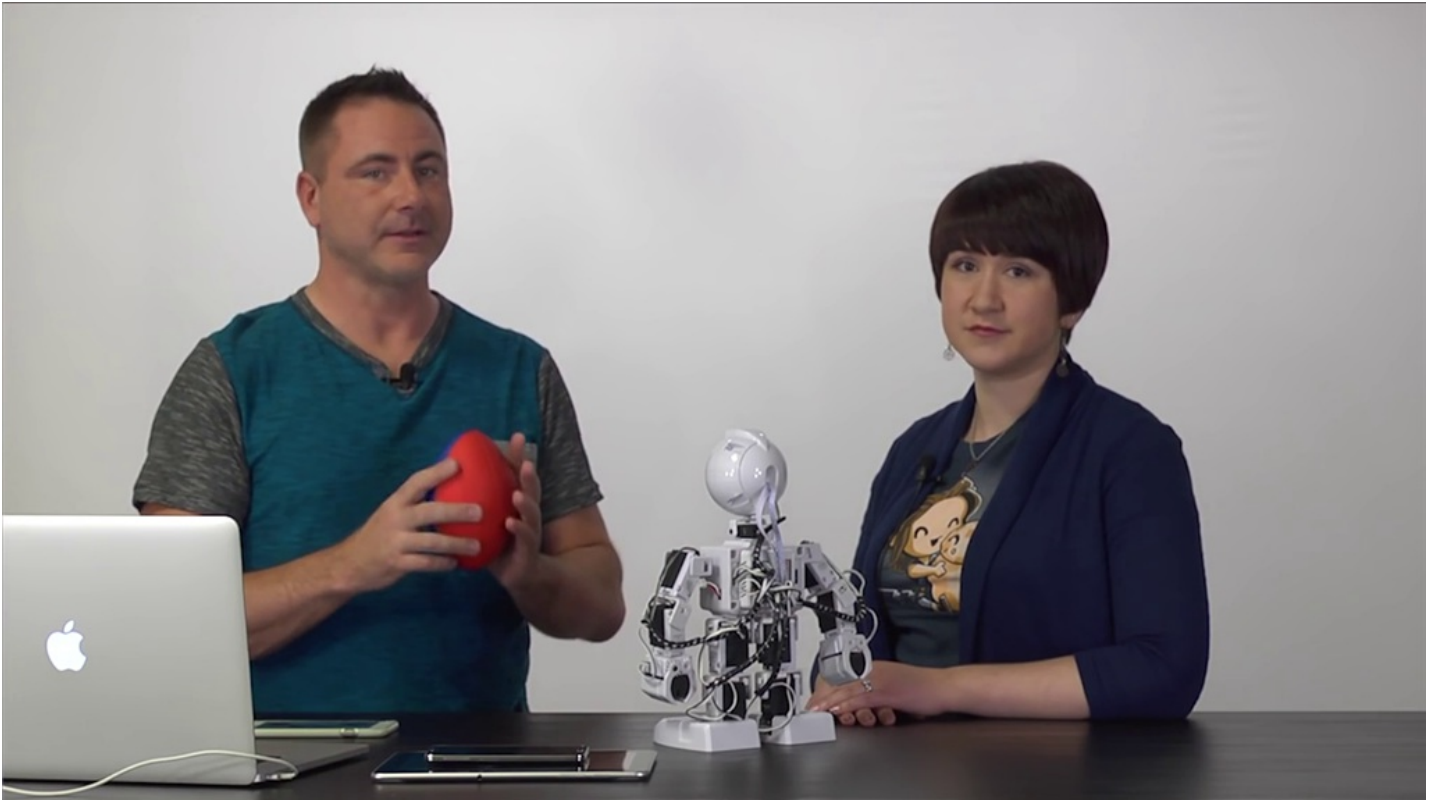
## Step 29

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



## Step 30

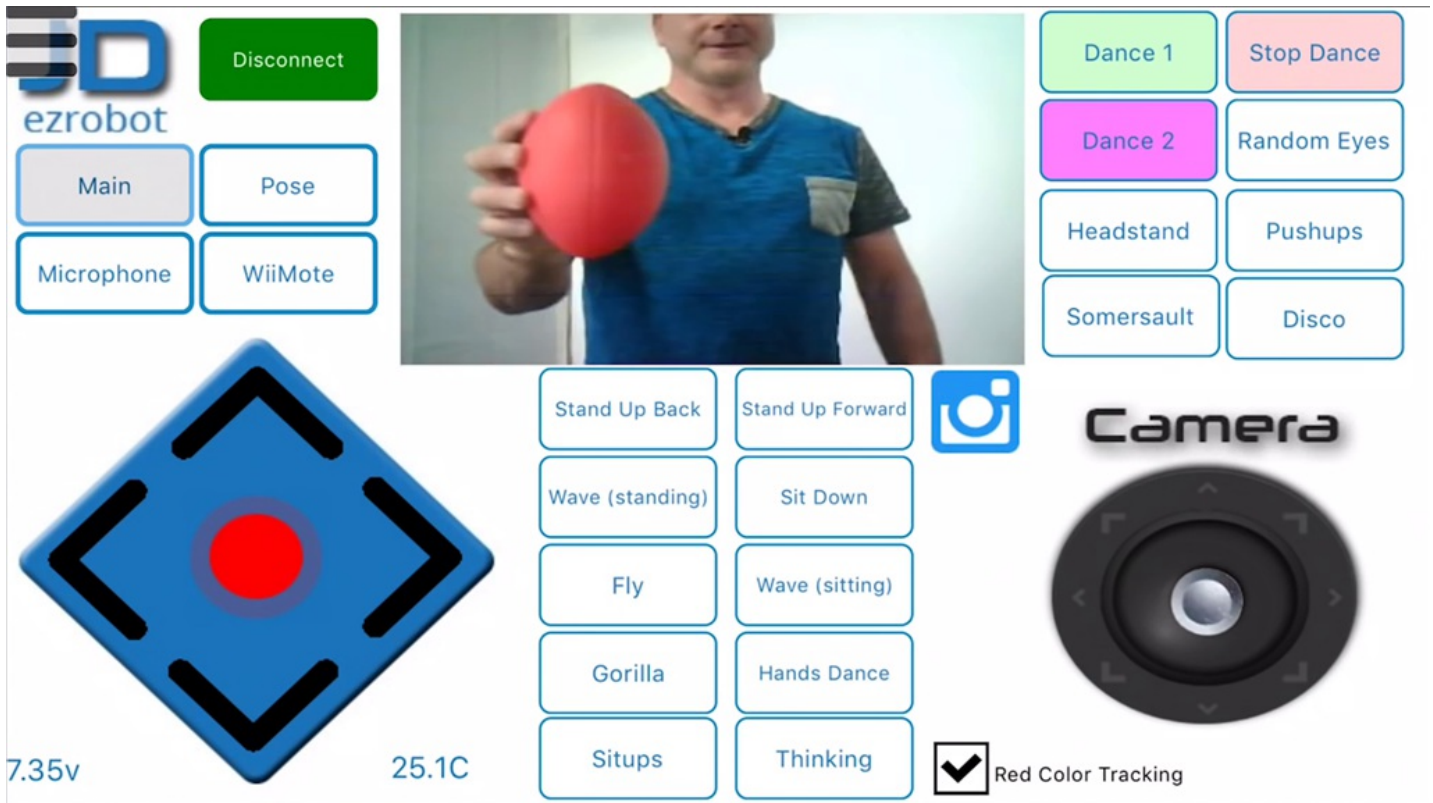
The default **JD** project app includes color tracking. The default color for tracking is red. Choose a red object and hold it against a contrasting background. Color tracking works best when the light source is not directly behind the robot.





## Step 31

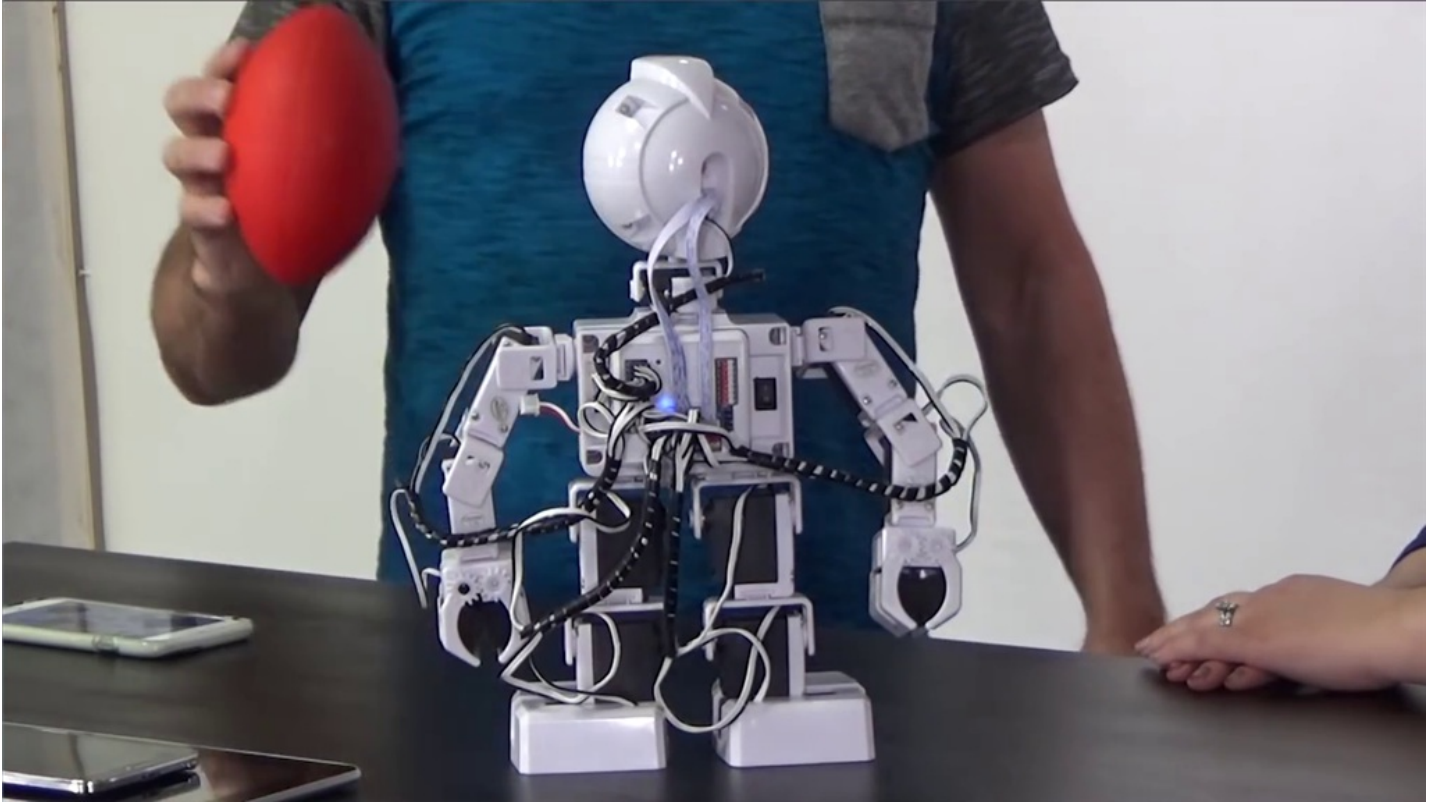
Select the **Red Color Tracking** checkbox. The robot's head will follow the movements of the object.



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'. The 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'. Below the video is a blue diamond-shaped tracking area with a red circle in the center. To the right of the tracking area 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 the grid is a 'Camera' icon and a 'Camera' label above a camera viewfinder. At the bottom right, there is a checked checkbox labeled 'Red Color Tracking'. The bottom left shows '7.35v' and the bottom center shows '25.1C'.

## Step 32

Keep exploring all of the mobile app features.



## Quiz

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**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](http://www.ez-robot.com/Tutorials/Lesson/55).

Visit [www.TheRobotProgram.com](http://www.TheRobotProgram.com) for more episodes.