

# SYNTHIAM

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## The Robot Program Episode 009: Getting Six to Move

This lesson will demonstrate how to connect to and move the Revolution Six robot. Follow along with The Robot Program Episode 009: Getting Six to Move. At the end of this lesson, the reader will have learned how to connect to the robot using Wi-Fi, how to move the robot, how to track the default color, and how to use the Auto Position and Soundboard controls to execute movements and routines.

View the video episode here: <https://www.ez-robot.com/Tutorials/Lesson/35>

Last Updated: 5/29/2018

## ⑤ Professor E's Overview

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This lesson demonstrated how to connect to **Six** for the first time.

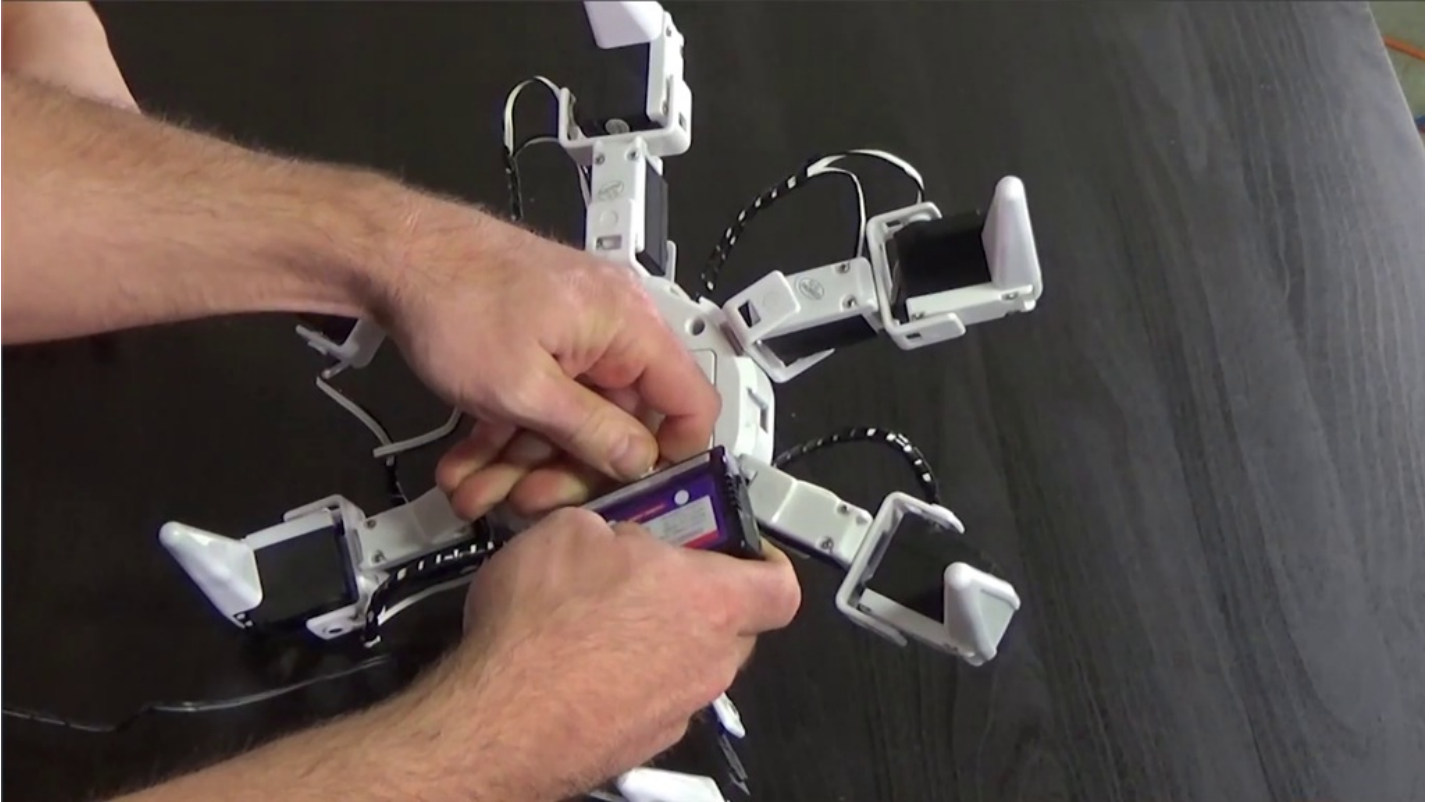
Remember to start with a fully charged robot. Load the **Example Project** for **Six** and connect to the robot using Wi-Fi.

Use the **Auto Position** and **Soundboard** controls to execute pre-built actions and routines. Use the **RobotScratch** workspace to create a linear program. In the **Camera** tab, enable color tracking and the robot will track the color red. Remember to disconnect, power off, and charge the robot when finished.



## Step 1

Disconnect from the battery charger.



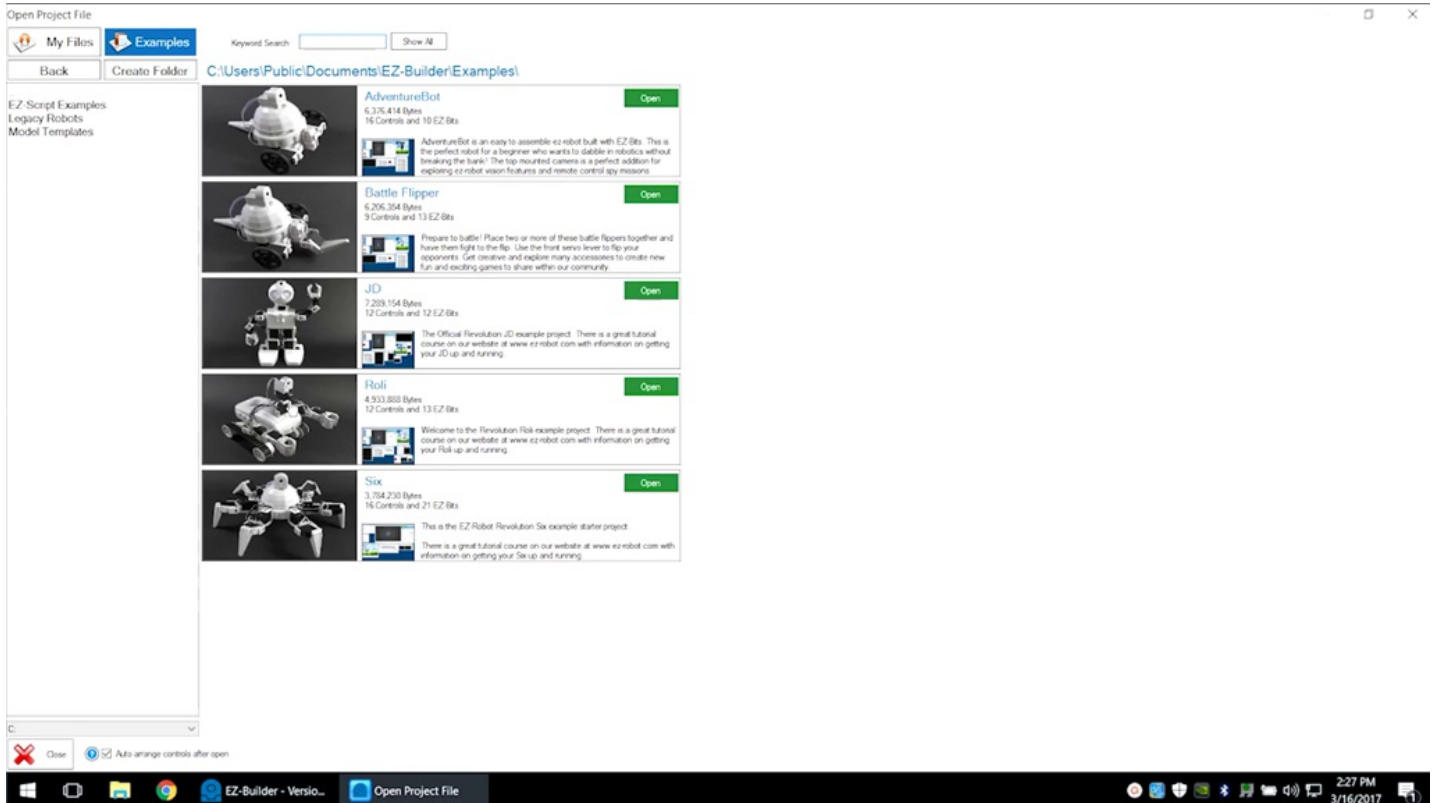
## Step 2

Power on the robot. Select the **EZ-B v4** Wi-Fi connection.



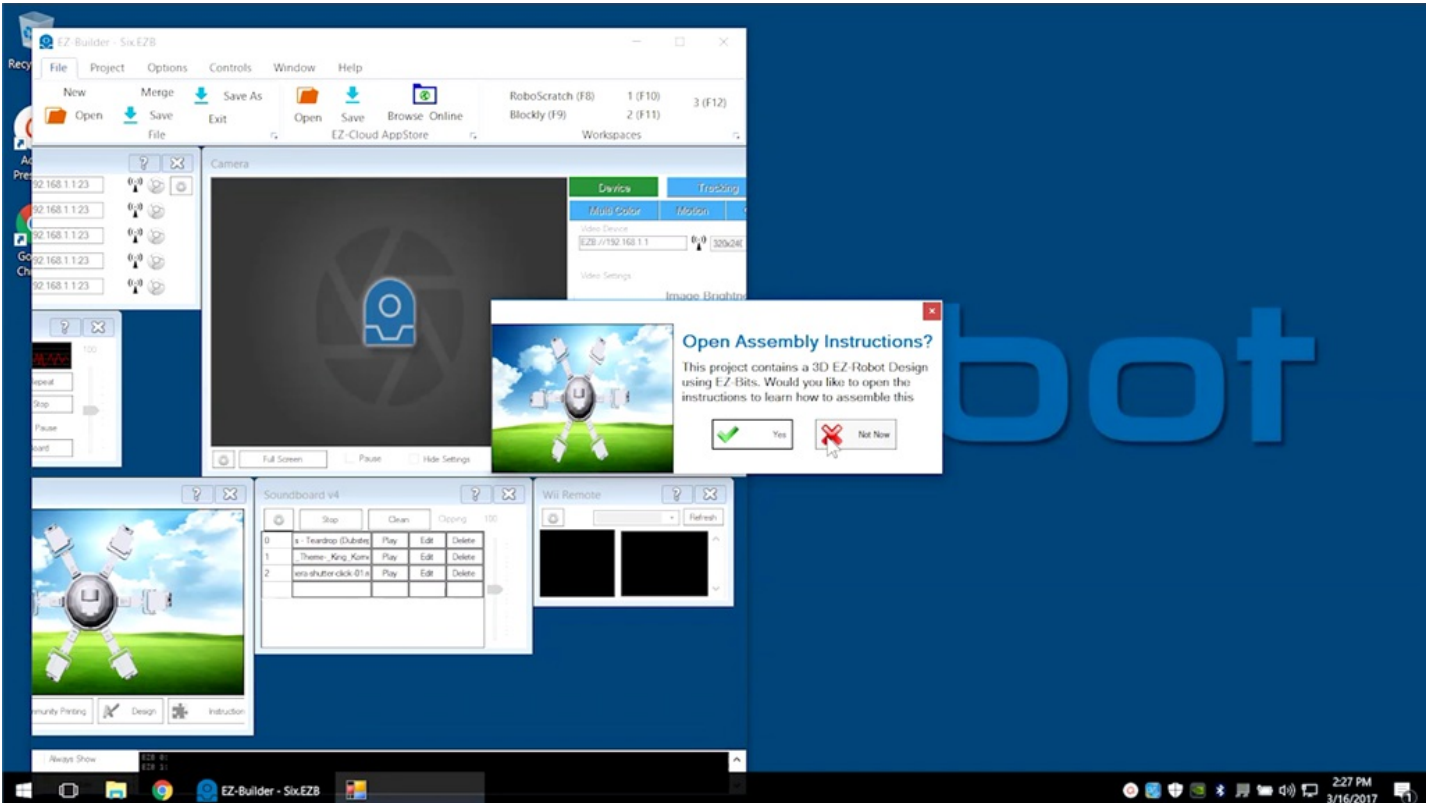
# Step 3

Open **EZ-Builder**. Select **Example Projects** and load the **Six** project.



## Step 4

See how to build **Six** in **Episode 008**.



## Step 5

Select **Connect to EZ-B**. The robot should move into the calibration position.

The screenshot displays the EZ-Builder software interface for a SixX robot. The main window is titled "EZ-Builder - SixX.EZB" and features a menu bar (File, Project, Options, Controls, Window, Help) and a toolbar with icons for New, Open, Merge, Save, Save As, Exit, Open, Save, Browse Online, and Workspaces. The interface is divided into several panels:

- Connection:** A list of connection attempts, all showing "Connect" buttons and the IP address "192.168.1.123".
- Microphone:** A panel with a "RECORD" button, "Repeat" and "Stop" buttons, a volume slider, and an "Export To SoundBoard" button.
- Camera:** A central panel showing a camera feed of the robot. Below the feed are "Full Screen", "Pause", "Hide Settings", and "Tracking" checkboxes. To the right of the camera are tabs for "Device", "Tracking", and "Color". Under "Device", the "Video Device" is set to "EZB://192.168.1.1" with a "Refresh" and "Start" button. Under "Tracking", there are sliders for "Image Brightness", "Image Contrast", and "Image Saturation", each with a "Reset" button and a "Bright" indicator. There are also "Video Recording" buttons for "Start" and "Pause", and an "Enhancements" checkbox for "Sharpen Image".
- Notepad:** A text area containing a welcome message: "Welcome to the Revolution Six example project. There is a great tutorial course on our website at www.ez-robot.com with information on getting your Six up and running. Be sure to charge the battery, calibrate the servos, and assemble your robot. The tutorial course explains how to get Six moving, as well. This project has a Mobile Interface, which can be viewed on the second of the three virtual desktops. You may access the second virtual desktop by pressing the shortcut keys or clicking WINDOW from the top menu. The shortcut keys are shown on the WINDOW tab of the top menu. Warning: the fast walk actions in the Auto Position control have been known to damage servos. The actions remain for your custom use, but executing them from mobile interface has been disabled. enjoy your Six!"
- Auto Position:** A panel with "Actions" and "Frames" lists. The "Actions" list includes "3 Legs Dance", "3 Legs Up Down", "Attack", "Bounce Dance", "Circle Dance", "Cut Dance", "Fast Forward", "Fast Left", "Fast Reverse", "Fast Right", and "Happy Dance". The "Frames" list includes "3 Leg Step 1", "3 Leg Step 2", "3 Leg Step 3", and "3 Legs Rotate 1". There are also "Jump To...", "Speed" (set to 50), and "Steps" (set to 2) fields, along with "Execute" and "Transition To" buttons.
- EZ-Robot:** A panel showing a 3D model of the robot on a green field under a blue sky. Below the model are "Buy", "Community Posting", "Design", and "Instruction" buttons.
- Soundboard v4:** A panel with a table of sound effects and their durations.
- Wii Remote:** A panel with a "Refresh" button and a video feed.

The Windows taskbar at the bottom shows the time as 2:28 PM on 3/16/2017.

# Step 6

Use the arrow keys of **Auto Position** to move **Six**.

The screenshot displays the EZ-Builder software interface for controlling a robot named Six. The interface is divided into several panels:

- Connection:** A list of connection points with IP addresses (192.168.1.123) and status indicators (Disconnect, Connect).
- Microphone:** A control panel with a volume slider and buttons for Record, Repeat, Stop, and Pause.
- EZ-Robot:** A product image of the robot Six on a green field.
- Soundboard v4:** A table with columns for Stop, Clean, and a volume slider.
- WiI Remote:** A control panel with a Refresh button.
- Auto Position:** A control panel with a list of actions and frames. The 'Auto Position' button is highlighted.

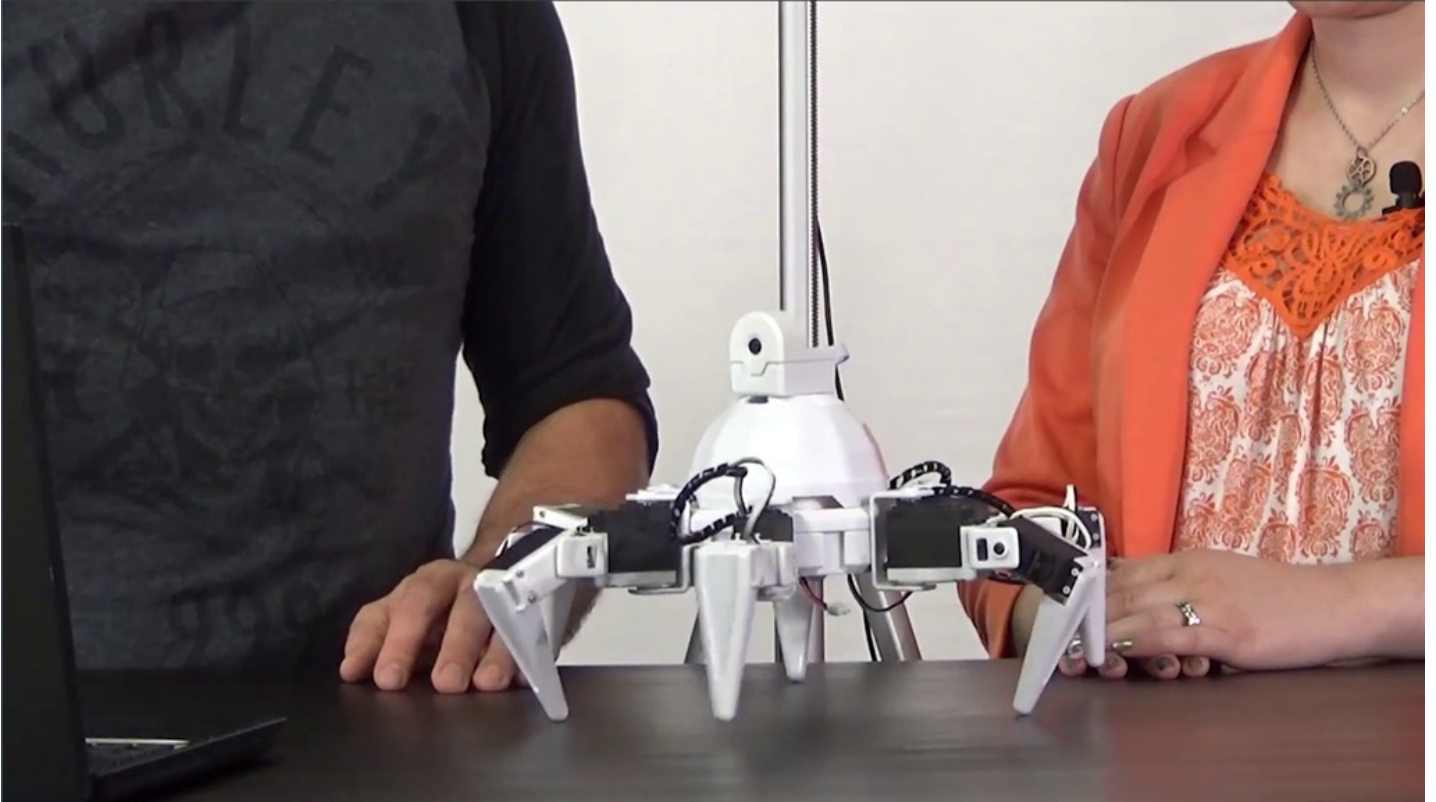
The **Auto Position** panel contains the following data:

| Actions       | Frames         |
|---------------|----------------|
| 3 Leg Dance   | 3 Leg Step 1   |
| 3 Leg Up Down | 3 Leg Step 2   |
| Retask        | 3 Leg Step 3   |
| Bounce Dance  | 3 Leg Rotate 1 |
| Circle Dance  | 3 Leg Rotate 2 |
| Full Dance    |                |
| Fast Forward  | Jump To...     |
| Fast Left     | Speed (50)     |
| Fast Reverse  | Steps (2)      |
| Fast Right    | Transition To  |
| Happy Dance   |                |



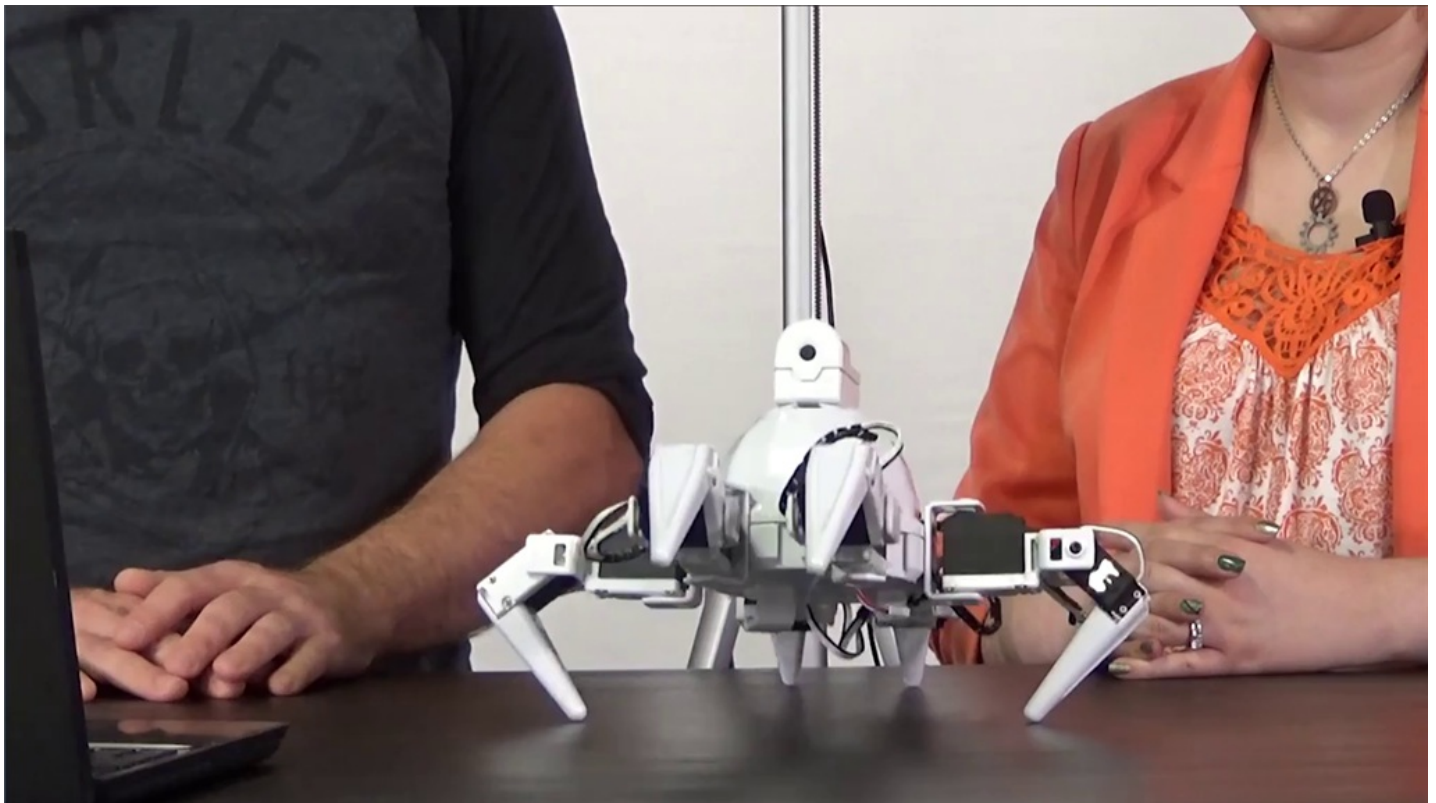
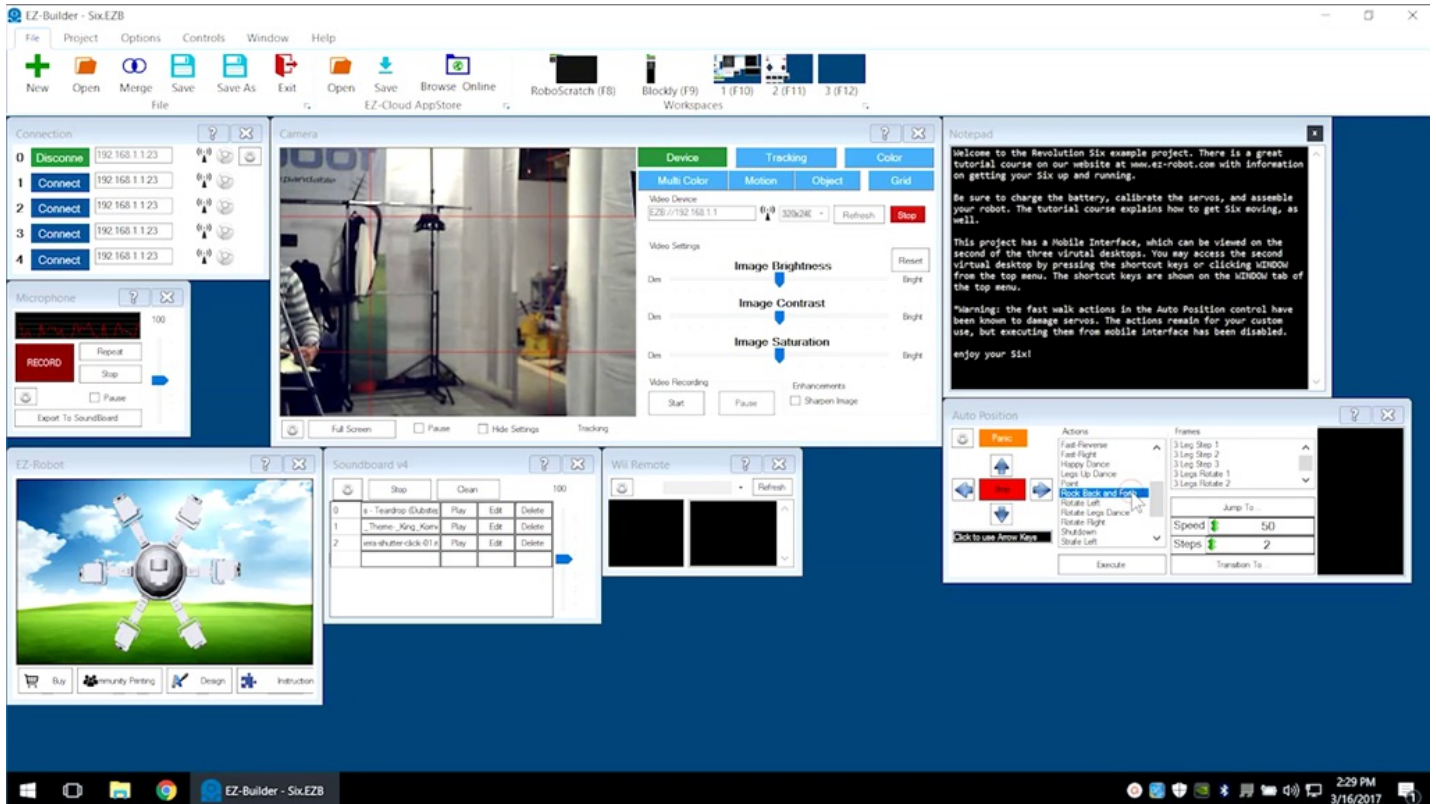
## Step 7

**Six** can balance on a minimum of three legs.



## Step 8

Scroll through **Auto Position** actions to select the **Rock Back and Forth** command. Click the **Execute** button.



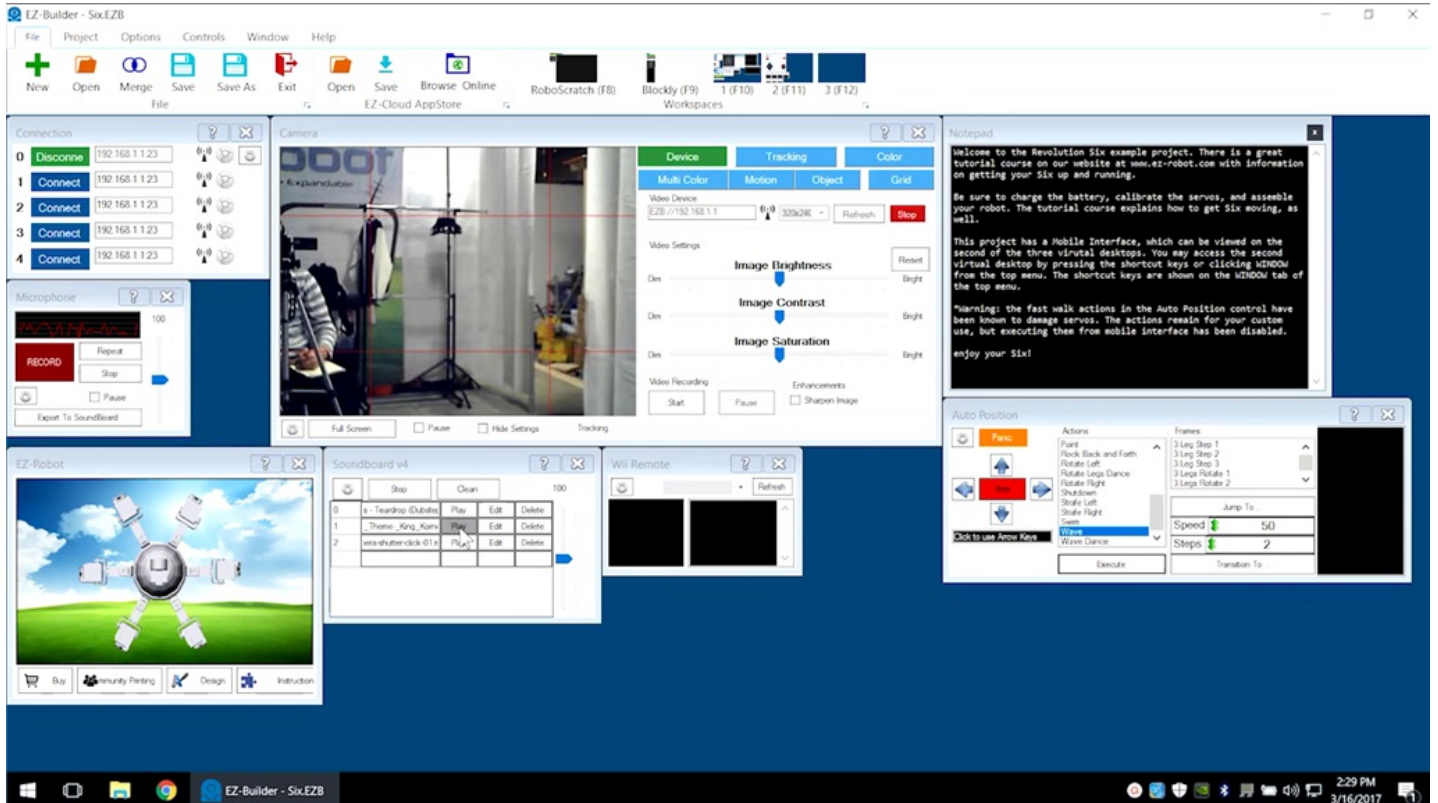
## Step 9

Try executing another pre-built command. Select and execute **Wave**.



# Step 10

In the **Soundboard** control, scroll to the dance theme and select the **Play** button.



# Step 11

Use the **Microphone** control to record and playback sounds.

The screenshot displays the EZ-Builder software interface for a Six-EZ robot project. The main window is titled "EZ-Builder - Six.EZB" and features a menu bar (File, Project, Options, Controls, Window, Help) and a toolbar with icons for New, Open, Merge, Save, Save As, Exit, Open, Save, Browse Online, EZ-Cloud AppStore, RoboScratch (F8), Blockly (F9), and Workspaces (F10, F11, F12).

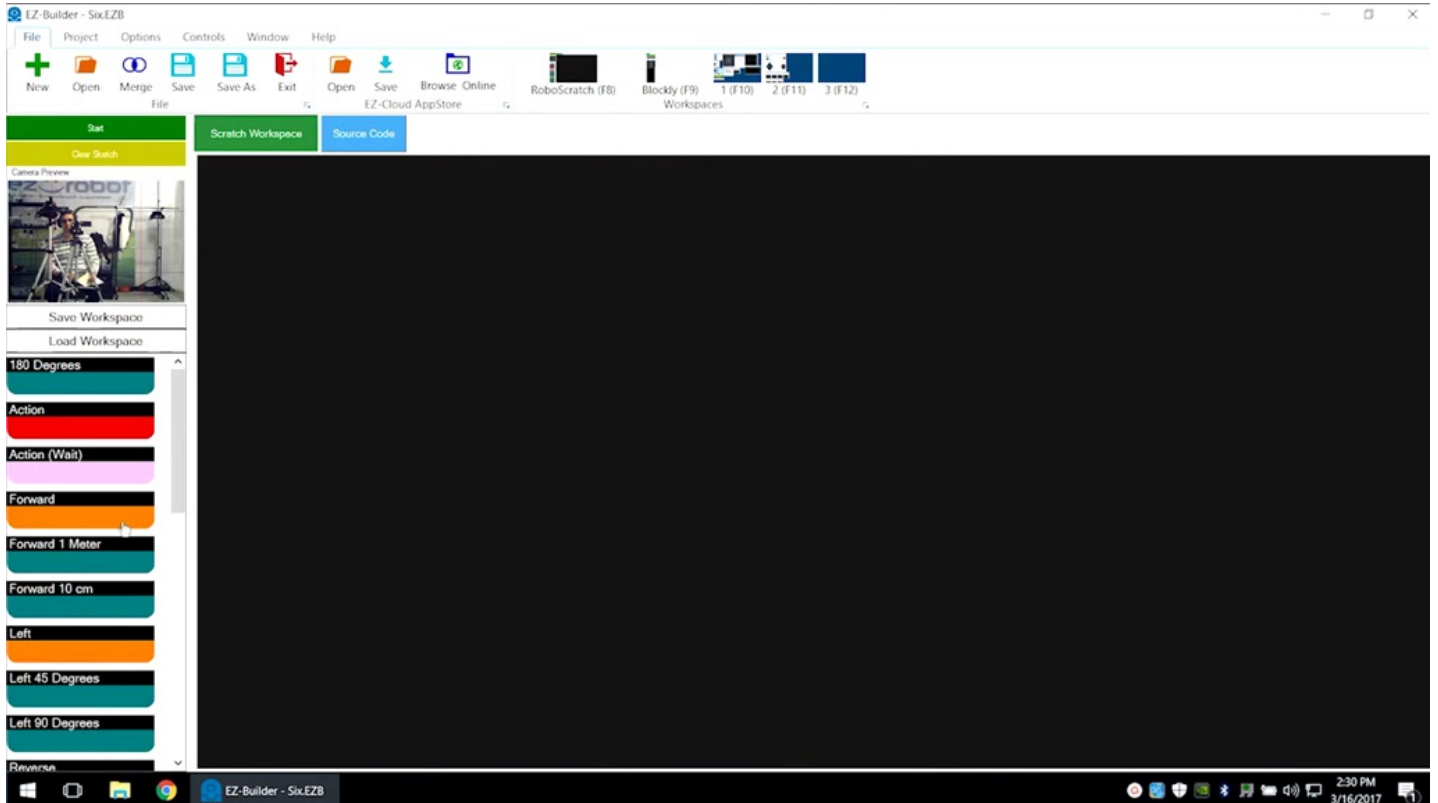
Key components of the interface include:

- Connection Panel:** A list of connection attempts with columns for status (Disconnect, Connect), IP address (192.168.1.123), and signal strength.
- Microphone Control:** A panel with a volume slider set to 100, a red "RECORD" button, a "Start" button, a "Pause" button, and an "Export To SoundBoard" button.
- Camera View:** A live video feed of a person operating the robot, with a "Camera" title bar and "Full Screen", "Pause", "Hide Settings", and "Tracking" options.
- Device Settings:** A panel with tabs for "Device", "Tracking", and "Color". It shows "Video Device" as "EZ67/192.168.1.1" with a "Refresh" button and a "Stop" button. Below are sliders for "Image Brightness", "Image Contrast", and "Image Saturation", each with a "Reset" button and a "Bright" label. There are also "Video Recording" (Start, Pause) and "Enhancements" (Sharpen Image) options.
- Notepad:** A text area containing a welcome message: "Welcome to the Revolution Six example project. There is a great tutorial course on our website at www.ez-robot.com with information on getting your Six up and running. Be sure to charge the battery, calibrate the servos, and assemble your robot. The tutorial course explains how to get Six moving, as well. This project has a Mobile Interface, which can be viewed on the second of the three virtual desktops. You may access the second virtual desktop by pressing the shortcut keys or clicking WINDOW from the top menu. The shortcut keys are shown on the WINDOW tab of the top menu. Warning: the fast walk actions in the Auto Position control have been known to damage servos. The actions remain for your custom use, but executing them from mobile interface has been disabled. enjoy your Six!"
- EZ-Robot:** A panel showing a 3D model of the robot with buttons for "Buy", "Community Posting", "Design", and "Instruction".
- Soundboard v4:** A table with columns for "Stop", "Clean", and "Clean" (value 100). It lists sound effects like "Teardrop (Lubric)", "Theme (King, King)", and "into shutter click (1)", each with "Play", "Edit", and "Delete" buttons.
- Wii Remote:** A panel with a "Refresh" button and a video feed.
- Auto Position:** A panel with "Actions" (Park, Park Back and Forth, Rotate Left, Rotate Lens Dance, Rotate Right, Shutdown, Shake Left, Shake Right, Wave Dance) and "Frames" (3 Leg Step 1, 3 Leg Step 2, 3 Leg Step 3, 3 Legs Rotate 1, 3 Legs Rotate 2). It includes a "Jump To:" field, a "Speed" slider set to 50, and a "Steps" slider set to 2. There are "Execute" and "Transition To" buttons.

The Windows taskbar at the bottom shows the time as 2:30 PM on 3/16/2017.

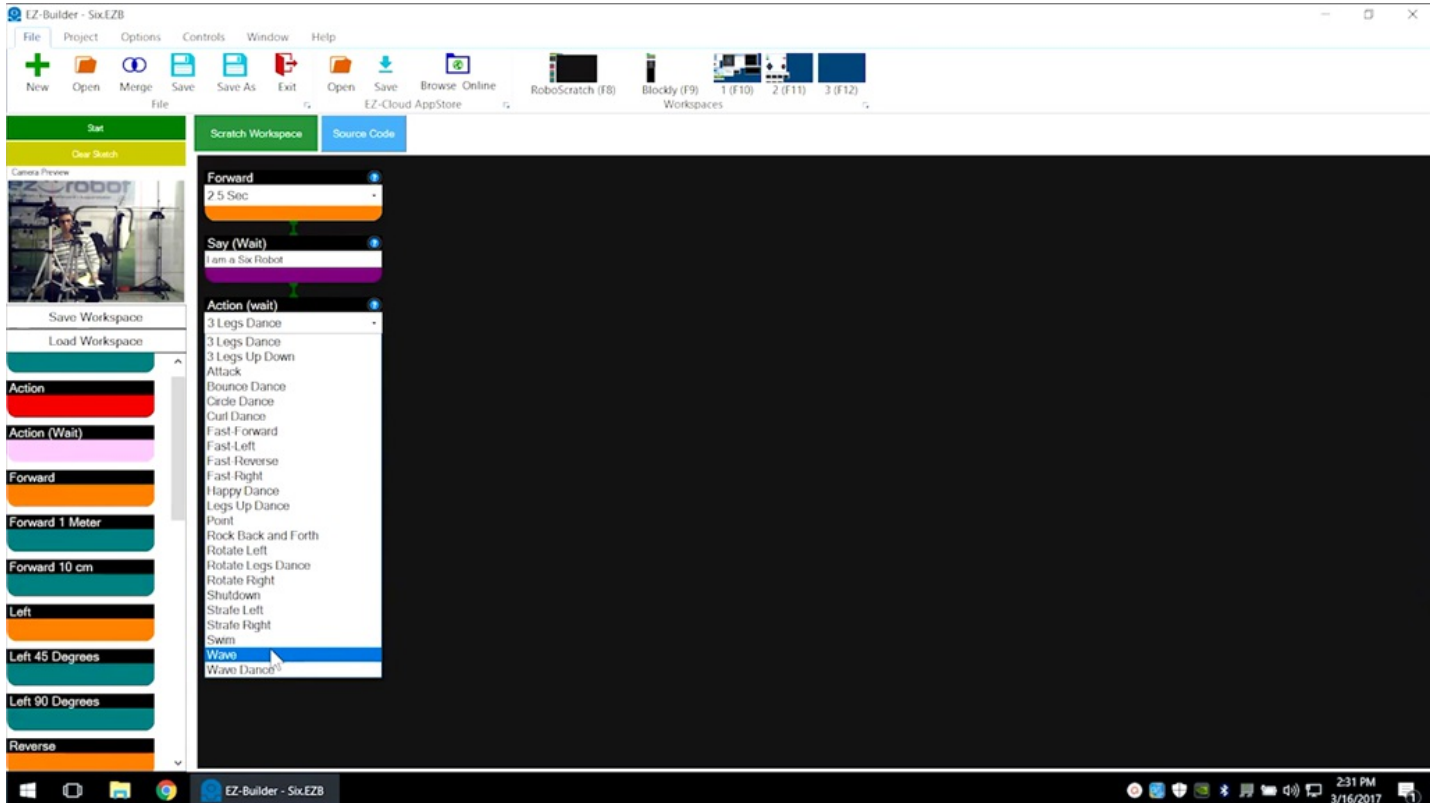
## Step 12

**RoboScratch** can be used to create custom programs.



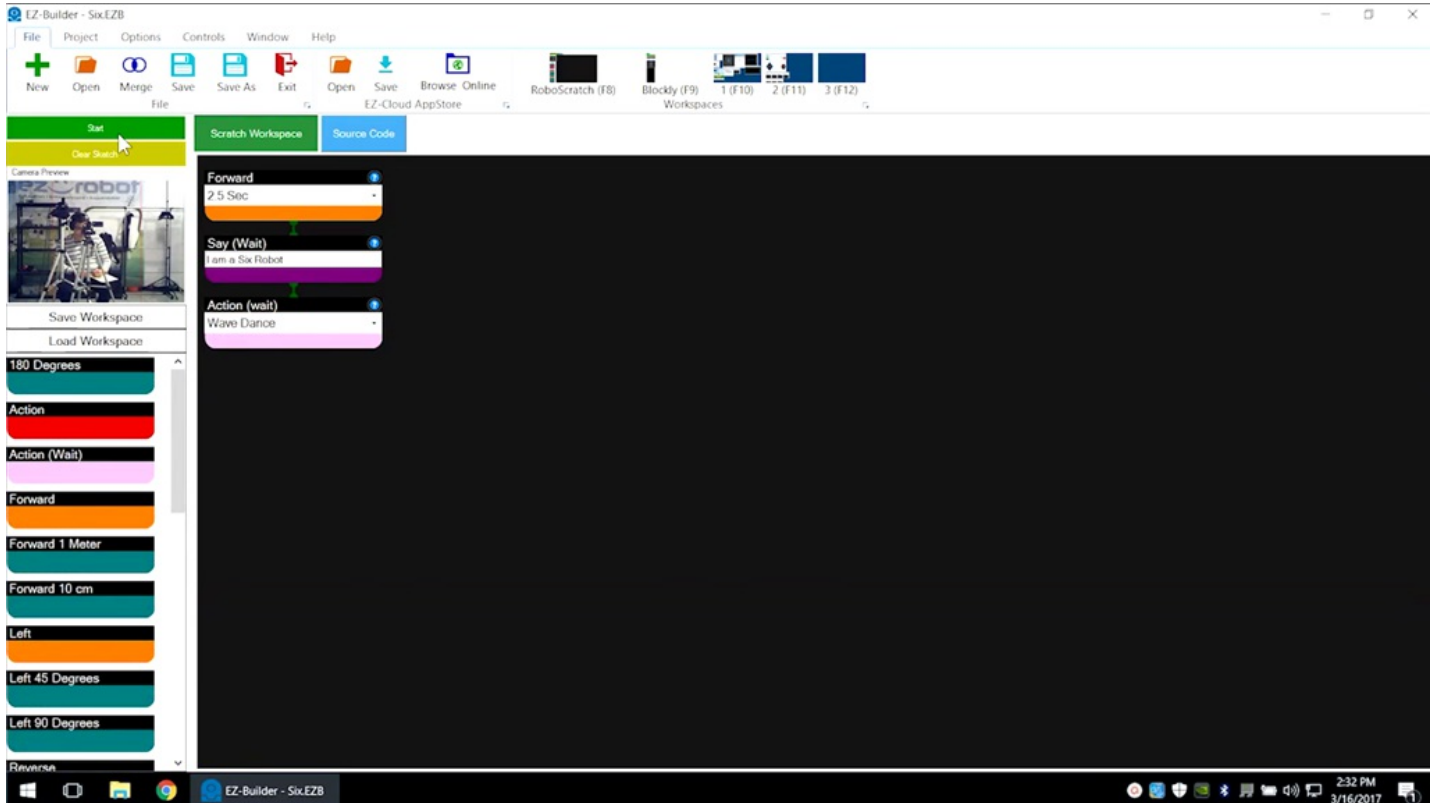
# Step 13

Build programs by selecting actions.



## Step 14

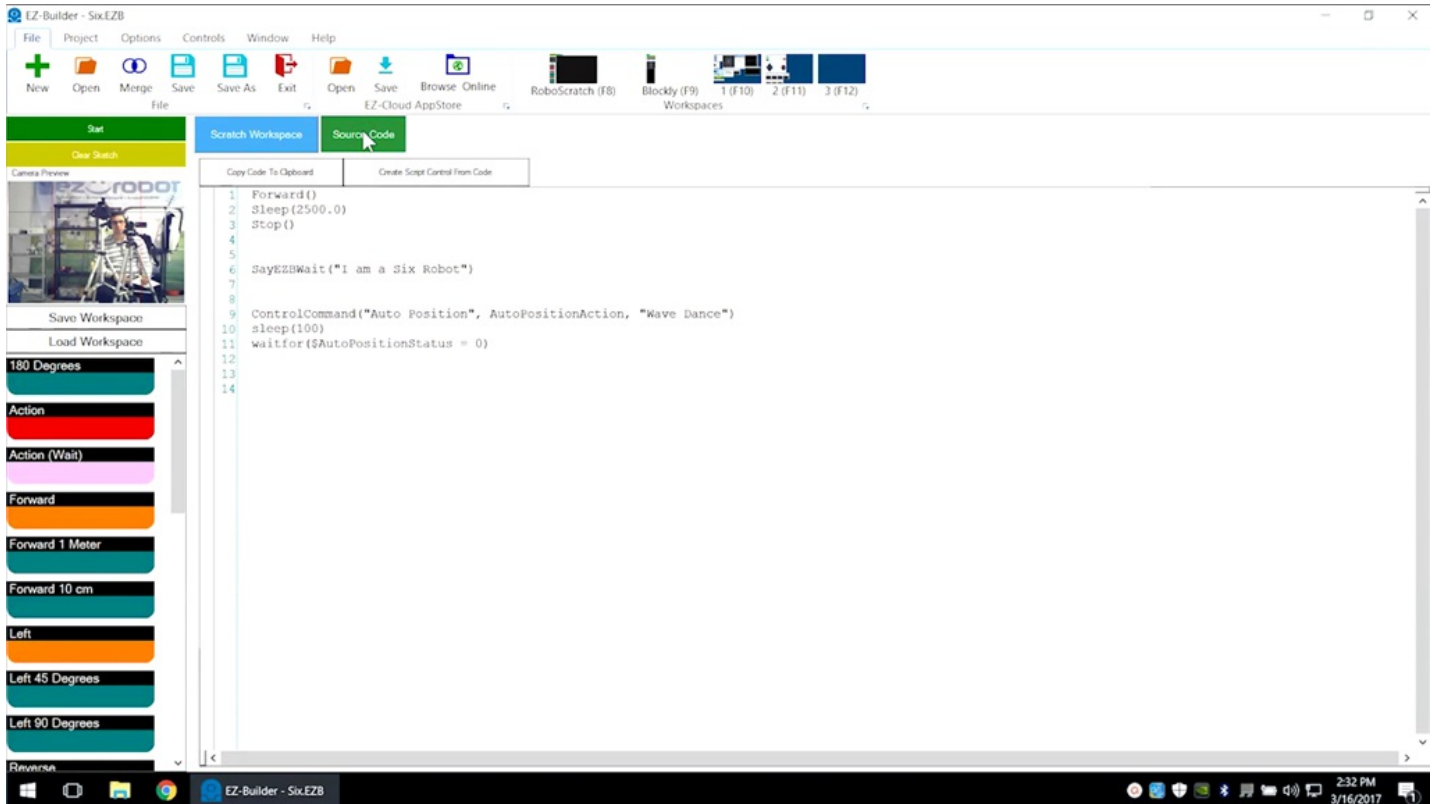
Click on **Start** to run the program.





## Step 15

Click on **Source Code** to view the generated code. Learn more about **RoboScratch** in **Episode 006**.



The screenshot displays the EZ-Builder software interface. The main window is titled "EZ-Builder - SixEZB". The menu bar includes File, Project, Options, Controls, Window, and Help. The toolbar contains icons for New, Open, Merge, Save, Save As, Exit, Open, Save, Browse Online, EZ-Cloud AppStore, RoboScratch (F8), Blockly (F9), and Workspaces (1 (F10), 2 (F11), 3 (F12)).

The interface is divided into several sections:

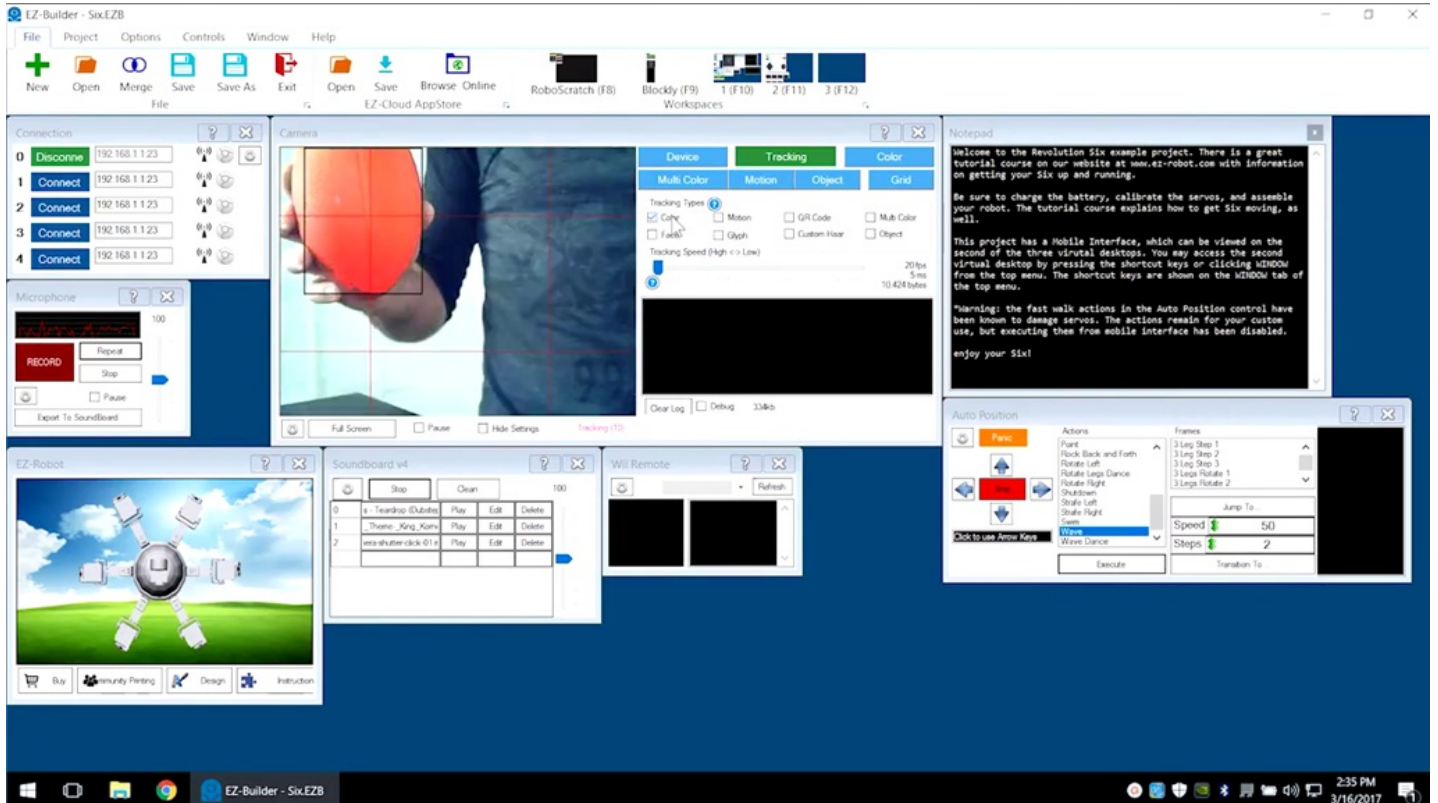
- Start:** A green button labeled "Start".
- Scratch Workspace:** A blue button labeled "Scratch Workspace".
- Source Code:** A green button labeled "Source Code", which is currently selected.
- Camera Preview:** A small window showing a robot in a lab setting.
- Save Workspace / Load Workspace:** Buttons for saving and loading workspace files.
- Block Palette:** A vertical list of colored blocks including "180 Degrees", "Action", "Action (Wait)", "Forward", "Forward 1 Meter", "Forward 10 cm", "Left", "Left 45 Degrees", "Left 90 Degrees", and "Reverse".
- Code Editor:** A text area containing the following code:

```
1 Forward ()
2 Sleep (2500.0)
3 Stop ()
4
5
6 SayEZBWait("I am a Six Robot")
7
8
9 ControlCommand("Auto Position", AutoPositionAction, "Wave Dance")
10 sleep(100)
11 waitfor ($AutoPositionStatus = 0)
12
13
14
```

The Windows taskbar at the bottom shows the system tray with the time 2:32 PM and date 3/16/2017.

# Step 16

In the **Camera** control, click on **Tracking** and select the **Color** checkbox.



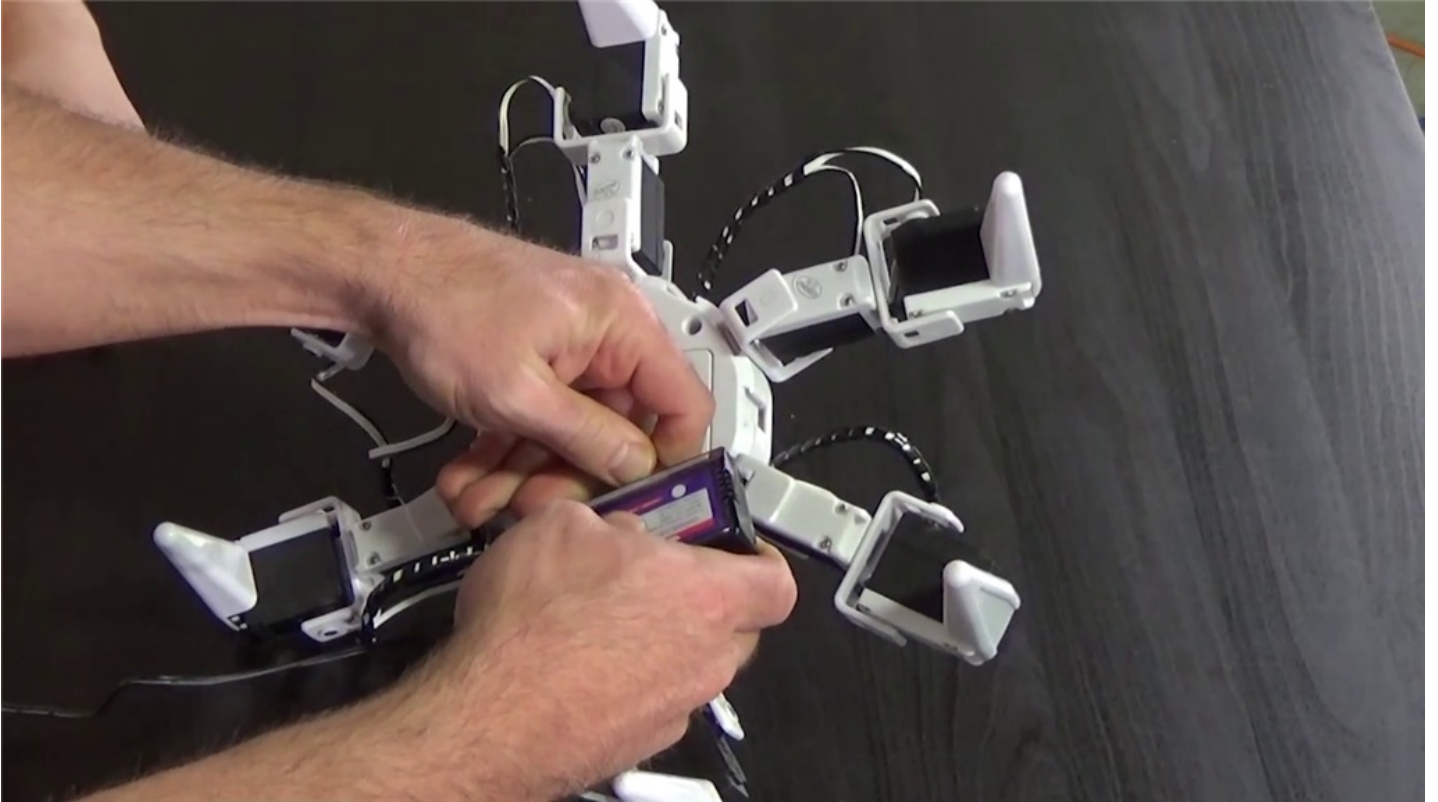
## Step 17

By default, **Six** will track the color red. Turn off tracking when finished.



## Step 18

Remember to disconnect, power off, and connect to the battery charger when finished.



## Quiz

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**Question #1** What letters are always at the start of the Wi-Fi connection name?

**Question #2** What is the minimum number of legs that Six needs for balance?

**Question #3** What is the name of the control panel used to execute pre-built commands?

View the answers to this quiz at [www.ez-robot.com/Tutorials/Lesson/35](http://www.ez-robot.com/Tutorials/Lesson/35).

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