Jet Arm Guide

PC web interface created by Robert Langenderfer

Hiwonder built-in applications - PC and Android operation

http://192.168.2.128:8765/

Robot IP: **192.168.2.128** | Web port: **8765**

What this system does

The robot runs Hiwonder's built-in vision applications. The added PC webpage provides controls, a live camera view, detection labels and automatic RGB sorting. The software runs on the robot. A browser is needed only to see or change controls.

Automatic RGB sorting starts when the robot powers on. The arm moves to its viewing pose, waits for a red, green or blue cube in the large rectangle, and returns that cube to the matching printed B/G/R box. Keep the base and mat in their calibrated positions. Leave room around the arm during startup.

Connect a Windows laptop

On the existing robot network, open this address in Edge or Chrome: http://192.168.2.128:8765/

No Android app or NoMachine session is required for the PC webpage.

For a direct, isolated Ethernet connection:

- Connect the laptop's Ethernet port directly to the robot's Ethernet port. A switch is optional. A switch alone does not assign IP addresses.
- The robot currently has the fixed Ethernet address 192.168.2.128 with subnet mask 255.255.254.0.
- On the laptop's dedicated robot Ethernet adapter, set IPv4 manually to 192.168.2.129, subnet mask 255.255.254.0, with gateway and DNS left blank. This example is for an isolated cable between these two devices only.
- Keep the laptop's Wi-Fi connected to the university/internet if needed. One Wi-Fi adapter plus Ethernet is enough. DHCP is unnecessary on this isolated link because both devices have fixed addresses.
- Open the webpage address above. Restore the laptop Ethernet adapter's normal settings when reconnecting it to another wired network.

Do not apply the robot's fixed address settings to a university network adapter or plug the isolated robot network into campus infrastructure without approval. If the laptop's other network already uses 192.168.2.x or 192.168.3.x, overlapping routes may need IT assistance. Do not randomly change the robot's address.

Automatic color sorting

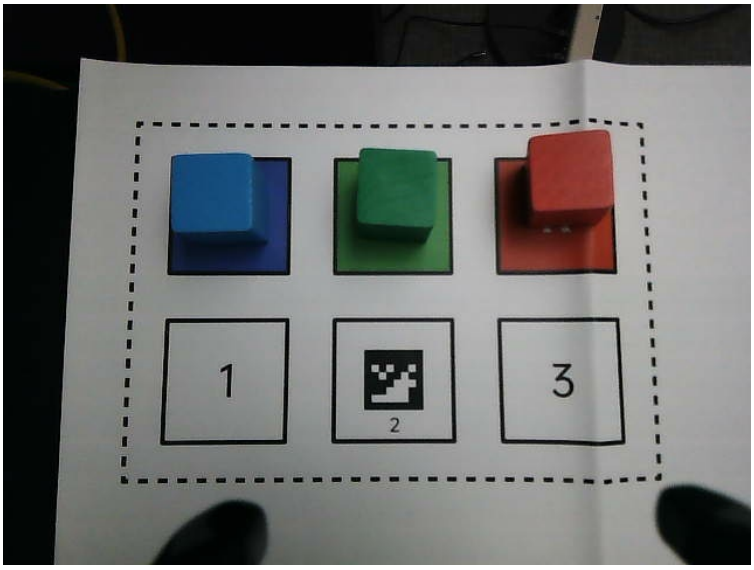
Use the three existing red, green and blue cubes, approximately 29.5 mm wide.

1. Confirm the page says Automatic color sorting / Running.
2. Move one cube from its colored box into the large center rectangle.
3. Remove your hand and let the cube sit still.
4. The robot identifies its color, picks it up and places it in the matching box.
5. It returns to its viewing pose and waits for the next cube.

No per-cube color selection or button press is needed. Keep the destination box clear: use the same three distinct-color cubes rather than adding extra cubes of a color whose box is already occupied. Boxes and color labels appear while detecting in the pickup area; arm travel uses live video without those overlays.

Stop current feature pauses automatic operation. An active movement may finish. Wait for the arm to stop before reaching into its path. Use the physical power switch if immediate shutdown is necessary. A software stop is not an emergency stop. A power cycle enables automatic sorting again.

Expected result: each cube returns to its matching printed box.



Run another built-in feature

Choose a built-in feature, set any options, then click **Start selected feature**. The webpage stops the old feature before starting the new one. If a transfer is already underway, wait for it to finish before changing features.

- Color tracking: choose red, green or blue; the arm follows that color.
- Face tracking: the camera/arm follows a face.
- Hand gestures: Hiwonder's recognized gestures can trigger saved arm actions.
- AprilTag stacking: requires the appropriate marked blocks and stacking layout.
- Shape recognition and sorting: uses depth data for cuboids, spheres and cylinders. Select shapes and RGB or depth display. Use its factory layout.
- Waste classification: uses Hiwonder's trained object model and four-category sorting layout. The RGB cube boxes are not its waste-sorting destinations.
- Camera / arm calibration: **Start preview** first. **Run calibration** only with the printed calibration mat correctly positioned; it replaces the camera mapping.
- Color threshold calibration: load a color, adjust LAB minimum/maximum values, then preview the mask. **Save selected color** explicitly to persist changes.

Calibration and color saves first back up existing settings on the robot under /home/ubuntu/robert_blocks/configuration-backups/. Previewing does not save. Changing a working calibration is normally unnecessary when the base, camera and table setup have not changed.

Click **Return to automatic sorting** to restore the RGB viewing pose and restart the automatic loop. Power-on always defaults to RGB sorting, not the last demo.

Use the original Android app

The factory app services remain installed and running. They have not been replaced by the webpage. The app connection and video services were checked; the Android phone has not been retested after the latest PC-interface changes.

Use one controller at a time:

1. In the webpage, click **Stop current feature** and wait until the arm settles.
2. Connect the phone as before, using the robot's Wi-Fi/network and WonderAi app.
3. Start the desired feature in the Android app.
4. Before returning to PC control, stop the Android feature and exit its screen.
5. In the webpage, click **Return to automatic sorting** or start another feature.

Closing the browser alone does NOT stop autonomous sorting. Stop it explicitly before using Android. Rebooting also restarts automatic sorting, so pause it again after a reboot if the Android app will control the arm.

The Arm desktop application shown in NoMachine is the separate factory manual joint/action editor. Close it before using the webpage or Android vision modes: its direct motor-controller access previously interrupted ROS feedback.

Troubleshooting

- Page unavailable: check power, Ethernet/Wi-Fi and laptop addressing. Use http:// (not https://), address 192.168.2.128 and port 8765. Allow time for the robot's boot and camera startup.
- Running but no pickup: put the entire cube inside the center rectangle, keep its destination clear, improve lighting and let the cube sit still.
- Calibration preview is black: the LAB mask may simply contain no matching colored pixels. Load the intended color and present that object to the camera.
- Feature unavailable: its native ROS service is missing or still starting. Read the displayed error; do not repeatedly press Start.
- Servo feedback error: close the Arm desktop program and stop using other controllers simultaneously. Do not bypass the position checks.
- Wrong pickup/placement: stop the feature, check the base/mat/camera position and gripper clearance, and review calibration before continuing.

What has been checked

RGB transfers for all three colors have been observed. The automatic red return cycle was confirmed by the operator. The web feature list and factory service connections, LAB preview and switching back to RGB sorting were checked. Other demonstrations still need trials with their intended objects and layouts.

The automatic-start service is enabled and its startup was exercised. A complete power-off/power-on test has not yet been performed. The robot's original sorting and launch files are preserved. Earlier motor-driver fixes retain their backups.