

OzoBlockly Editor Challenge

Factory Part Inspection – ORA Responds to Hand Gestures

Student Guide

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Introduction

Welcome to this exciting educational challenge for the Ozobot ORA, where you'll step into the role of a factory inspector. Imagine controlling a robot with simple hand gestures, directing it to move inspected items to the "Good," "Rework," or "Discard" locations. This hands-on activity explores real-world factory control systems that allow humans to guide robots through intuitive hand gestures, making operations safer and more efficient.

In modern factories, technologies like gesture recognition—using cameras and sensors—along with computer vision, translate your hand gestures into precise robot commands. For instance, if you're signaling a part for rework, the system interprets your gesture accurately. To avoid confusion with everyday movements, workers often use a "wake-up" signal, such as a specific hand pose, pressing a button on a wearable device, or even a voice command like "Robot, listen," to alert the system that a command is coming.

Through this program, you'll discover how some of these innovations enhance workplace safety and productivity, while traditional controls like keyboards become obsolete. By programming and testing with the Ozobot ORA, you'll gain valuable skills in robotics, coding, and human-robot interaction—preparing you for future careers in automation. Let's get started and bring your gestures to life!

Challenge Details

The figure below shows the setup for this challenge. In addition to the inspection station, there are three other stations—good, rework, and discard. Two items have already been moved by ORA, one to “good” and the other to “discard”. A rework item, shown as a wrench and screwdriver, will be the next for ORA to move, after being placed at the inspection station by the inspector. Ari will serve to provide a wake-up signal to ORA. Ari's display reads “Tap when ready to make hand gesture.” There is a camera in the upper right corner of the figure that will capture the inspector's hand signal.

A “thumbs up” gesture is used to indicate the part is good. Similarly, a “thumbs down” gesture indicates that the part is a discard. A “two fingers” gesture is used to indicate that the part needs rework. With this signal, the fore finger and middle finger are separated and extended either to the

left or right. ORA's job is to move the item from the inspection station to the good, rework, or discard stations, as appropriate.

This process continues indefinitely until the "stop" gesture is signaled by the inspector. The stop gesture is the traditional palm open, often used in traffic control by police. ORA should move to the ZERO location upon recognizing a stop gesture. Also, the program should then stop executing.



To get a better feeling for how the process proceeds, view the 2½ minute video that accompanies this challenge. The process is narrated by the inspector.

Ready to become a factory inspector of the future? In this exciting challenge, you'll program an Ozobot ORA robot to respond to your hand gestures—thumbs up for good parts, thumbs down for discards, and two fingers for rework items. You'll experience cutting-edge technology used in real factories today, where workers safely control robots through simple gestures instead of complex keyboards. Master robotics, coding, and human-robot interaction while bringing your hand signals to life!
