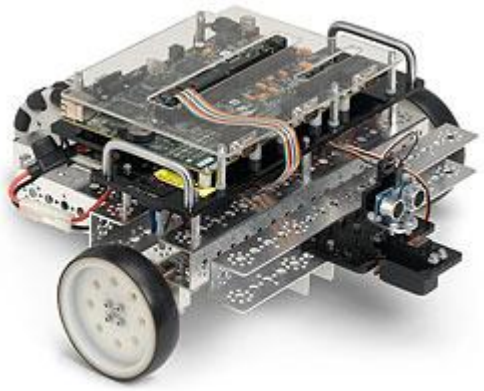

Labview 2011 Robotics Kit

DaNI 2.0

Quickstart Guide

By Sam Shue

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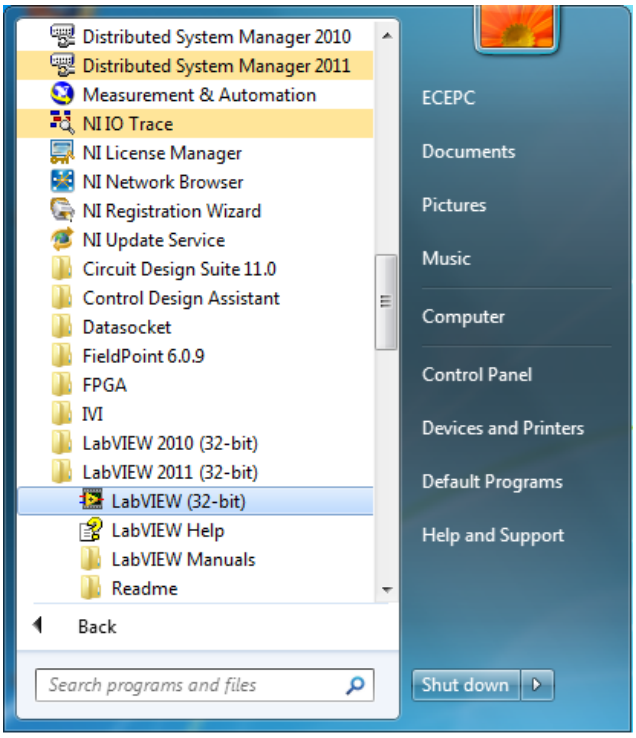
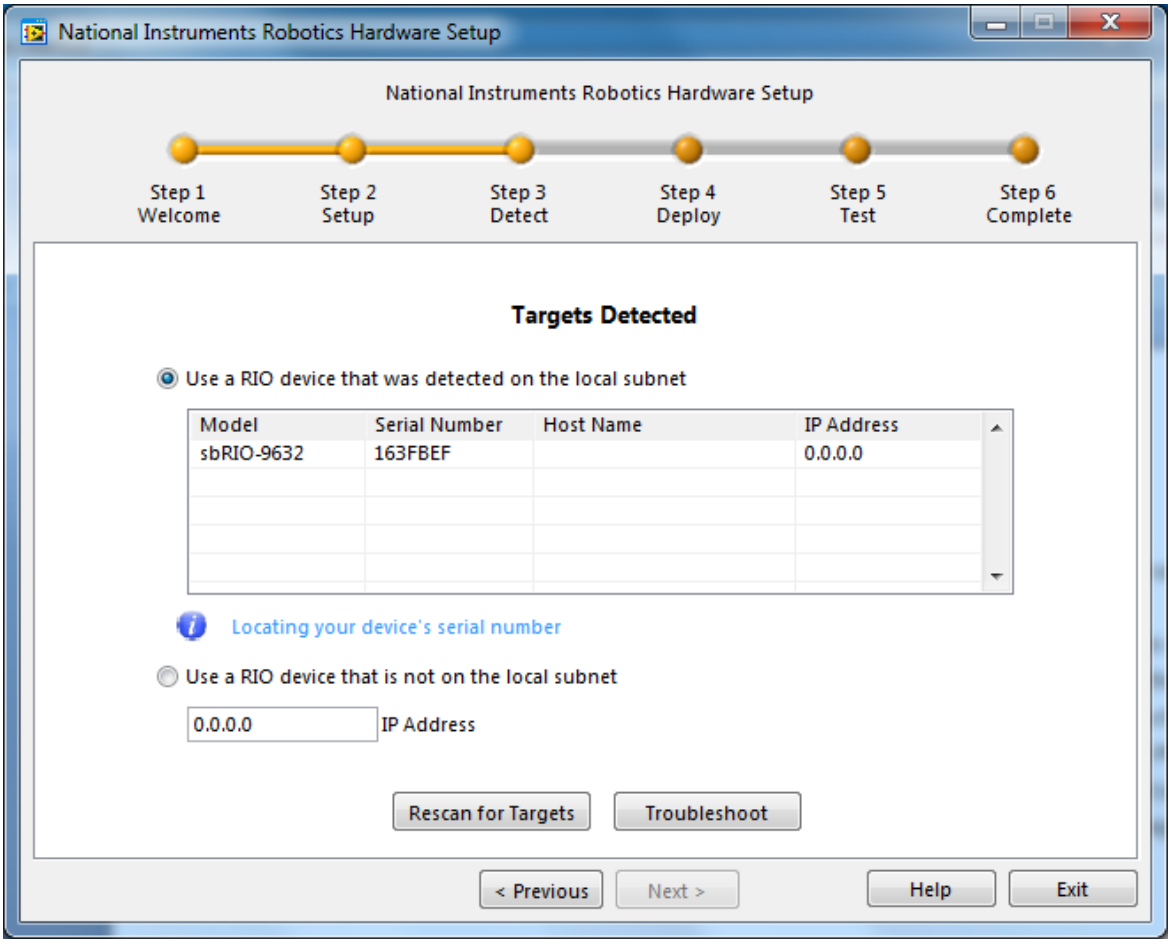
1.) Launch Labview 2011 from the programs list



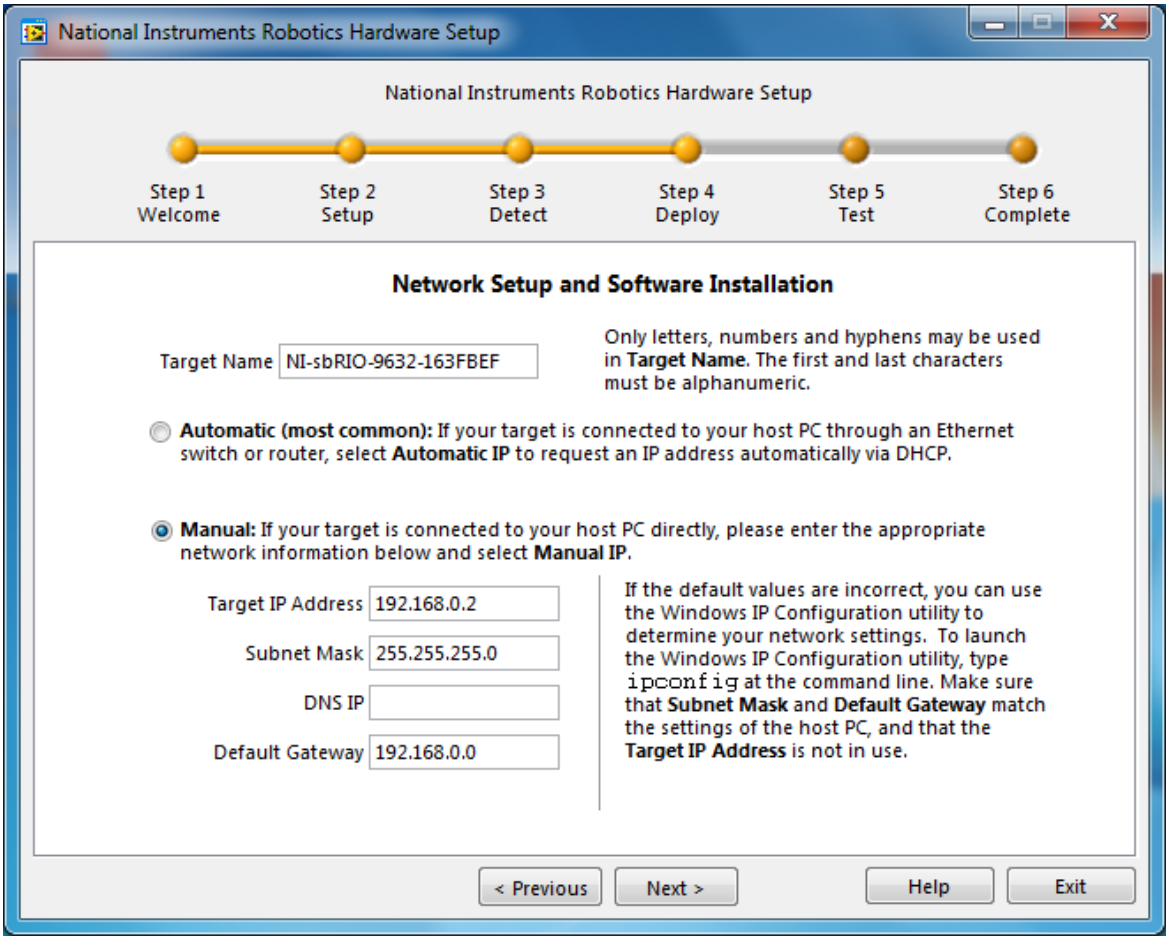
2.) Within the “Getting Started” window, select “Getting Started … “ and then select “Hardware Setup Wizard.”

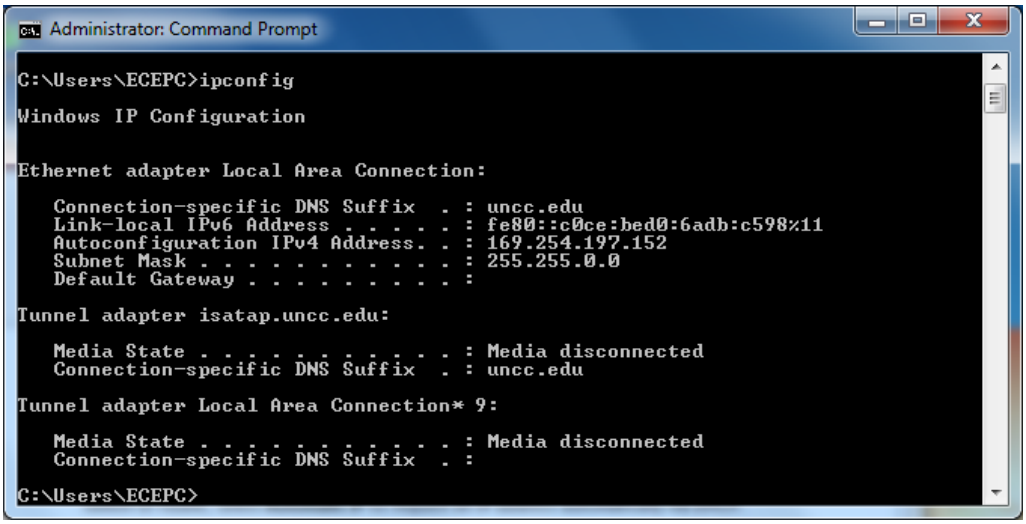
3.) When the wizard launches, select next, then be sure that the Target Type is set as “Starter Kit 2.0” and select next. All hardware is already connected, so select next on the “Connect Your Motors and Sensors” page. At the “Connect Your Hardware” page, be sure that you have the robot connected with an ethernet cable which is directly connected to the PC and be sure to connect the battery to the robot and set the “MASTER” switch on.
Note: it is not wise to leave the “MOTORS” switch on during the setup process, as your robot may unexpectedly drive off your desk.

4.) The next page will prompt you to “Scan for Targets.” Sometimes it may take several scans for the PC to recognize your robot. Once the robot is detected, it will display the robot’s board model and IP address. Not all of the robots have been configured to connect with a direct ethernet connection to the computer, and Labview is expecting the robot to be connected through a router or switch with default addresses. If your robot’s detected IP address is 0.0.0.0, then it has not yet been configured and you will need to give it an appropriate address.
Note: If you encounter an error message while attempting to connect to your robot, the saved network setting may be inappropriate, and will need to be reset. To reset the network settings, locate the set of small white switches on the back of the robot, pull down switch 3, press and hold the reset button for 10 seconds with the “MASTER” switch on, then press and hold the reset with the “MASTER” switch off. Turn the robot back on and your IP should be reset to “0.0.0.0”.

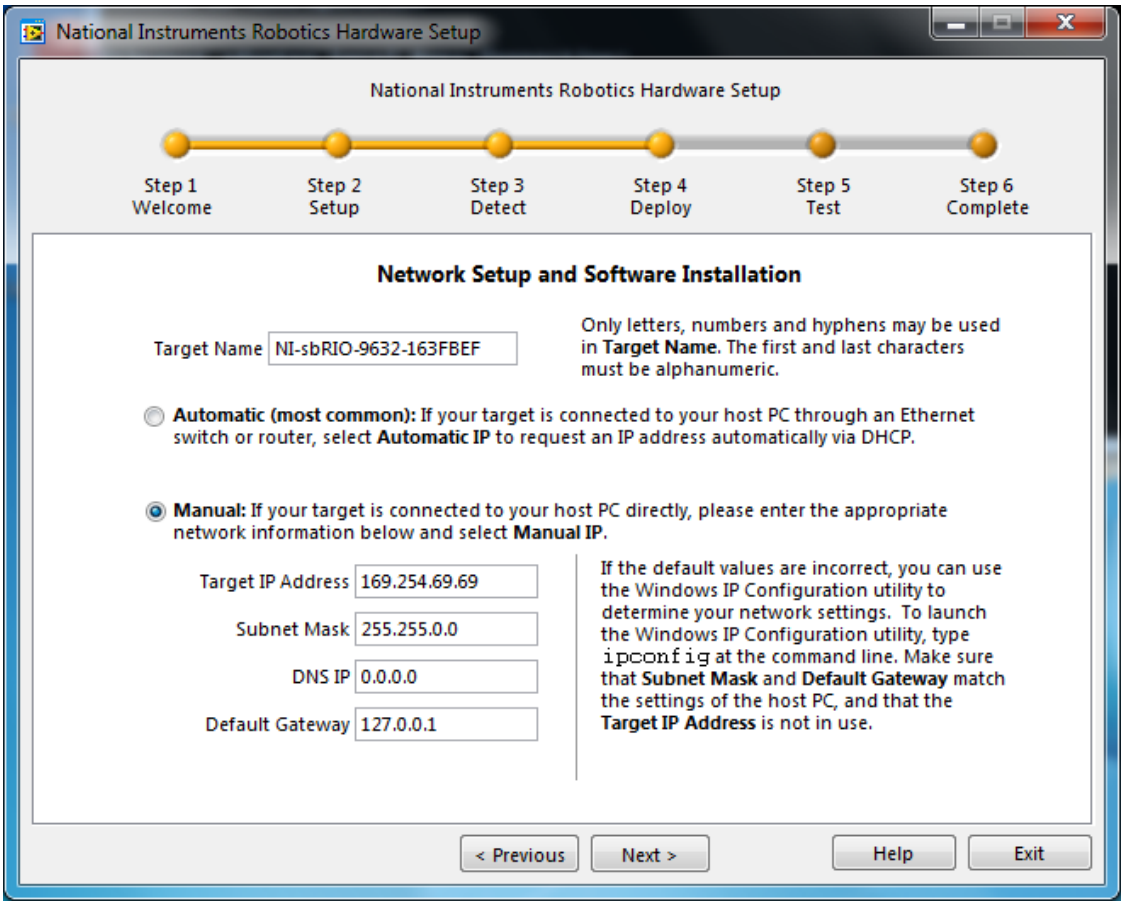


5.) Select your robot from the detected targets list and select next. The next page will have a radio button selected for Automatic configuration. It says this is the most common option, but we are not the common case this time. We need to select Manual. When Manual is selected, typical network addresses are already displayed. Again, we are not typical, so we need to match our computer's network settings. To view the network settings, open up a command prompt and type in "ipconfig" and hit enter.

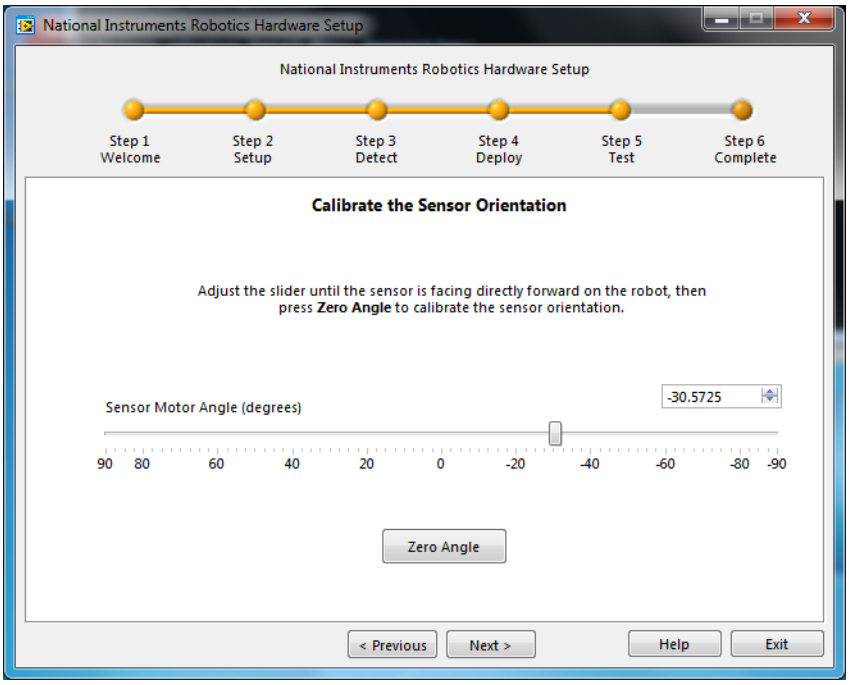




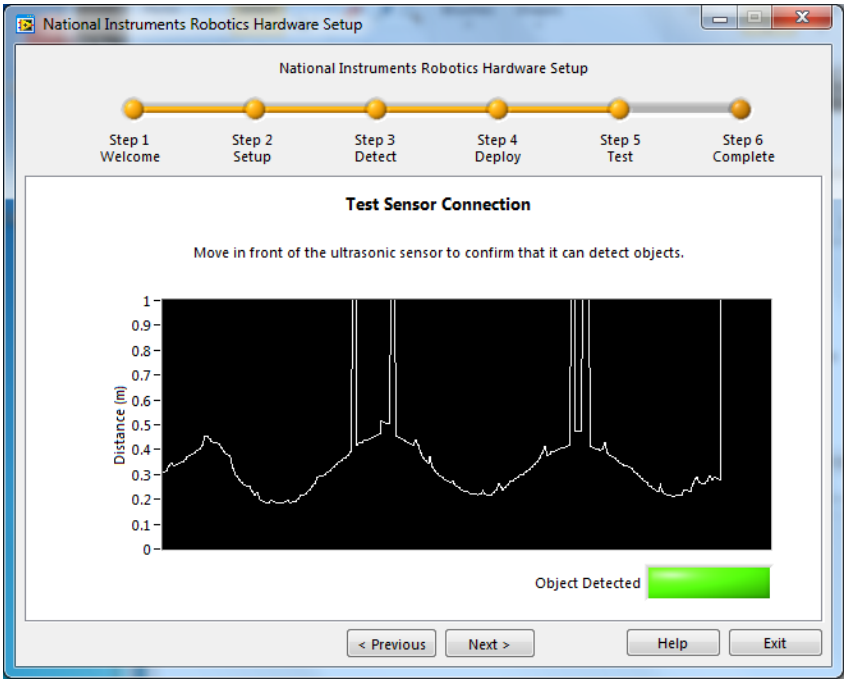
6.) As you can see, our IP address does not begin with 192.168 as listed in the default manual configuration. Our Subnet mask also does not match, and we have no default gateway as we are currently not connected to a greater network. To set an appropriate IP, type in 169.254.x.y, where x and y can be any two of your favorite 8-bit numbers (anything between 0 and 255). The subnet mask will also need to be modified from 255.255.255.0 to 255.255.0.0. You may leave the DNS IP address as "0.0.0.0". The Default Gateway will need to be changed to the home address, "127.0.0.1". After you have finished configuring the addresses, select next.



7.) The robot's network settings will be configured, the calibration software will be installed, and the board will be restarted. This will take some time. Once the software is successfully deployed, the next several pages will test the various hardware on the robot. The first step displays a slider which corresponds with the position of the ultrasonic sensor servo.

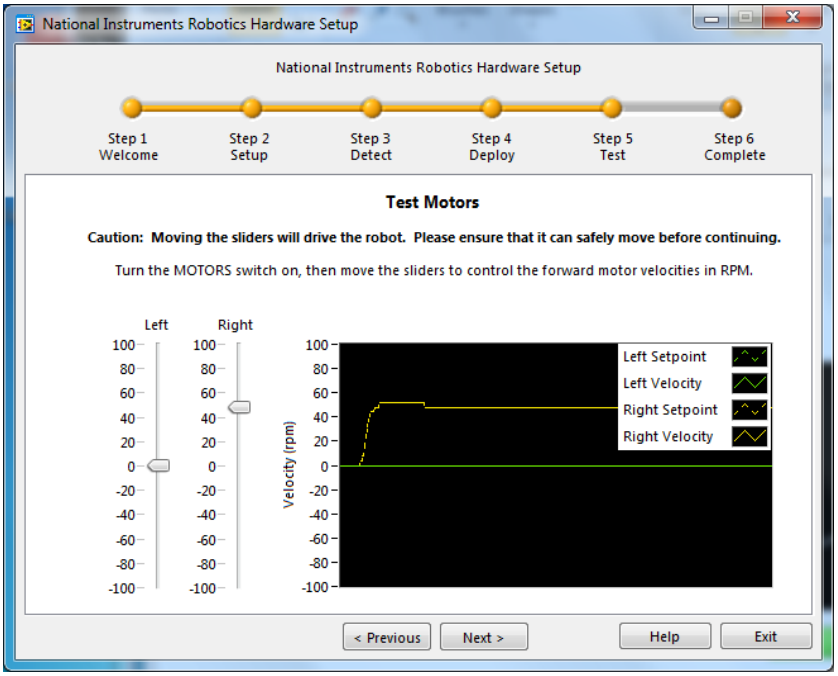


Drag the slider to assure that the servo is functional.



The next page will test the ultrasonic sensor. Wave your hand in front of the sensor to check that it is working and the distance is approximately correct. (The parallax ping))) ultrasonic sensor is notoriously fragile, and is very common for it to break and be somewhat inaccurate.

See Dr. Conrad or myself to get a replacement if you need one.)



The next window will test the motors. Be extra careful when testing the motors so you do not drive the robot off the desk. Also note the position of the "MOTORS" switch, as they will only turn when it is on (in case that wasn't obvious).

8.) After calibration and testing, the setup is complete! Select finish and keep the "Create a new robotics project in LabVIEW" checked to launch a new project!