Test: Part Identification Test

Engineer: [Name removed for privacy]

Prerequisites:

System power on

Equipment:

Laptop with Insight Explorer, Sorting Things Out's High Speed Sorter, miscellaneous hardware for identification

Personnel:

Any trained personnel

Objective:

The goal of this test is to ensure that the system can correctly identify or at least distinguish between the hardware that needs to be identified.

Safety:

For this test, the e-stop should be pressed and the door open to ensure the robot is disabled and out of the view of the camera. Only trained personnel should perform this test.

Procedure:

1. Plug in the system to a 110VAC outlet and ensure that power is on by the presence of the camera lights.
2. Ensure that the air supply is either disconnected or in the closed position
3. Press the E-stop and Open the operator door.
4. The robot is now deenergized, ensure this by manually moving the arm. If it moves freely with no resistance, it is safe to procede. If not, STOP THIS PROCEDURE and notify a member of the Sorting Things Out team immediately.
5. Move the robot arm to where it will not be visible to the camera by placing it 90 degrees counterclockwise from the home position.
6. Place the hardware to be identified in the field of vision (toward the center for optimal results).
7. Open Insight Explorer on the laptop and connect to the IS8405 camera system.
8. Ensure that the camera vision tools are visible on the right hand side of the screen. (See below)
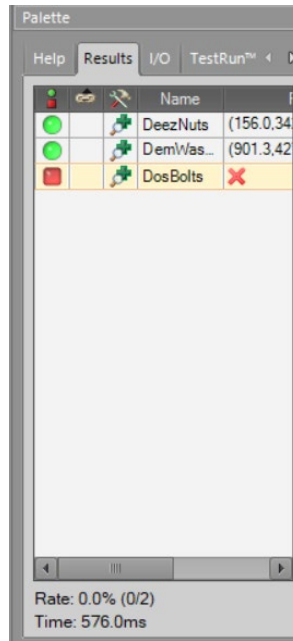
9. Place the camera in offline mode
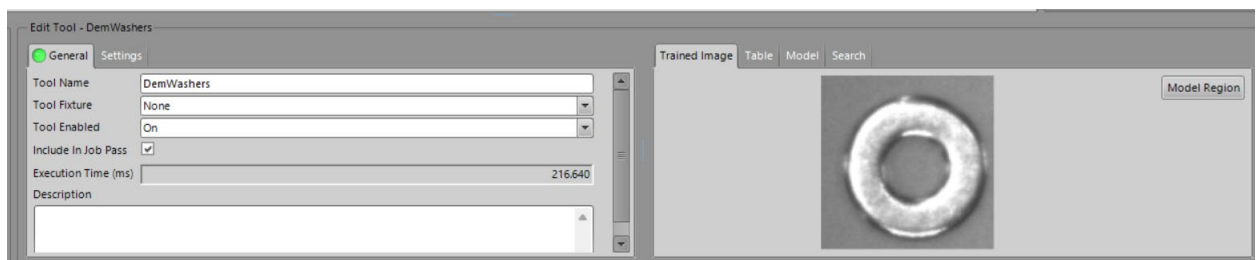

10. Press F5 to trigger the camera.

11. The parts in question should have green crosshairs on the center

12. Double click one of the tools in the right hand side of the screen (e.g. DemWashers)

13. The system will now display the details of that vision tool on the bottom pane of the screen.

14. In the right hand corner of the bottom pane of the screen, select "Table"

Index	X	Y	Angle	Score	Scale
0	901.293	427.915	-201.734	77.6	62.681
1	123.272	430.546	46.480	74.6	60.026
2	272.281	393.398	-169.437	74.4	80.558
3	813.221	189.321	-266.597	74.0	81.143
4	990.958	114.347	-206.510	72.4	62.184
5	-	-	-	-	-
6	-	-	-	-	-

a. This is a list of the identified parts for the selected vision tool (i.e. if DemWashers was selected, this is the list of washers that the vision system has identified).

b. NOTE: The system is programmed to find a maximum of 5 pieces of hardware per vision tool. Therefore do not be alarmed if the system only finds a few of the pieces in question.

15. For each listing in the table, ensure that the X and Y columns of the list of identified parts matches up with the location of the parts in the field of view of the camera by dragging the mouse over the part in question and observing the X,Y pixel value that is located in the bottom left corner of the center window.

Pixel Value @ (812,191) = 33
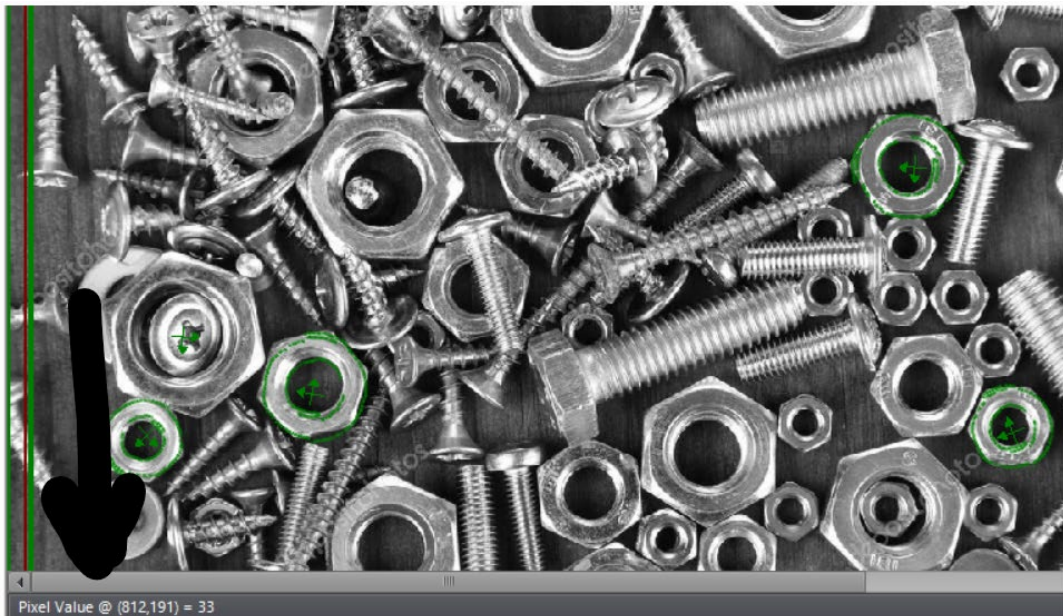
16. Record the results as Correct or Incorrect for each part in the table.

17. Repeat steps 12-15 for each of the remaining vision tools.

18. Manually remove identified parts and leave any remaining parts.

19. Randomly rearrange the remaining parts (this simulates the vibration of the plate when running in auto)

20. Repeat steps 10-19 until there are no remaining parts in the field of view OR a picture has been taken with none of the remaining parts identified (i.e no crosshairs).

21. Record the results of the test in the table below.

	# Correct	# Incorrect	# Unidentified
Nuts			
Bolts			
Washers			
Total			