

## 3D Displacement Sensor –Cognex Designer Standard – Section 2

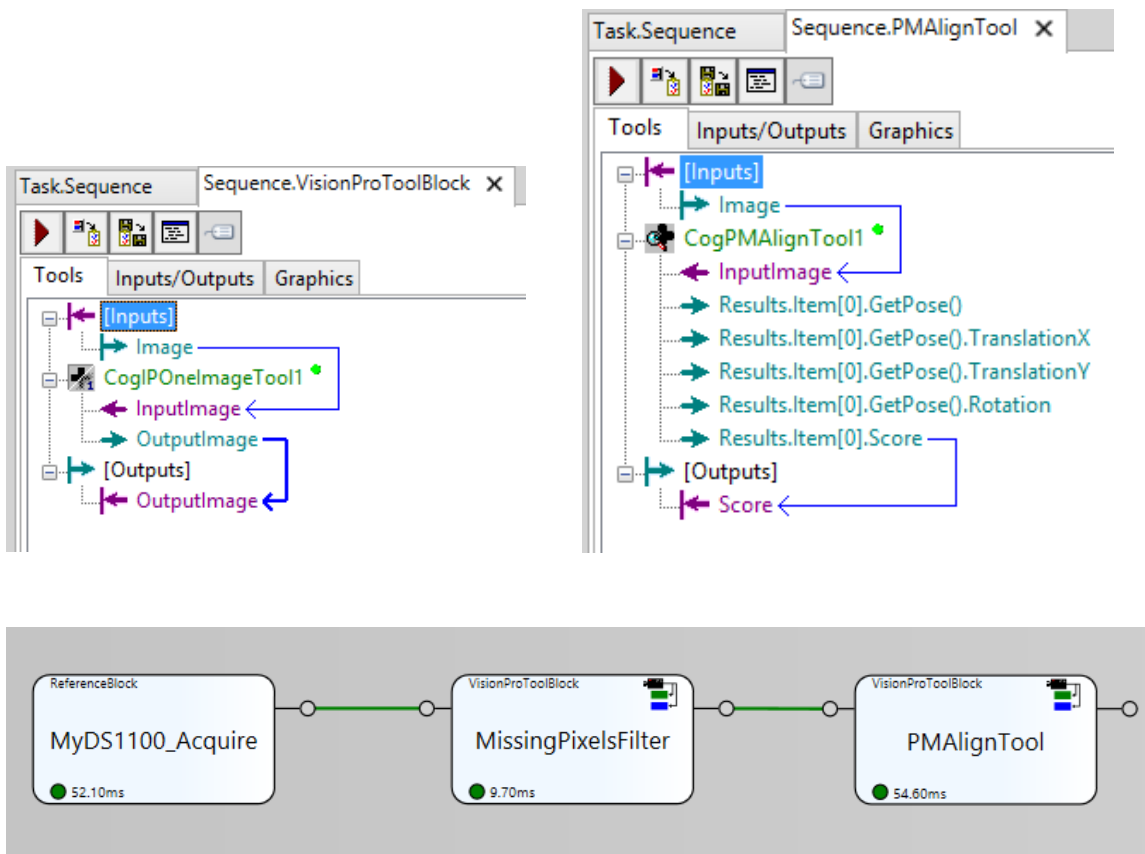
### Starting an Application Lab

Approximate Duration: 30 minutes

#### EXPECTED OUTCOMES:

- Open and use a simple Sequence
- Implement Tool Blocks
- Add a Missing Pixels filter
- Add PatMax tool to track part:
  - Translation
  - Angle
  - Scale

#### EXPECTED VISUAL RESULT:



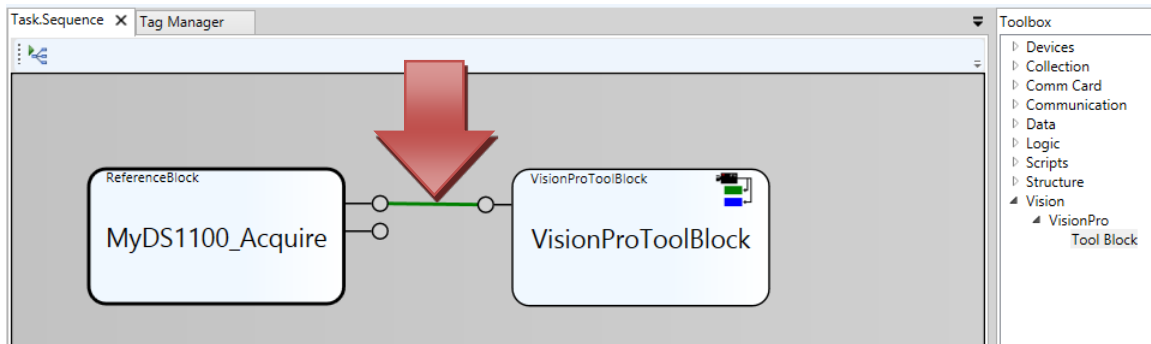
#### OUTLINE OF LAB:

1. Create Tool Block for 2D Image Conversion
  - a. Add a CogPixelMap tool
2. Create Tool Block to find part
  - a. Add a CogPMAlignTool

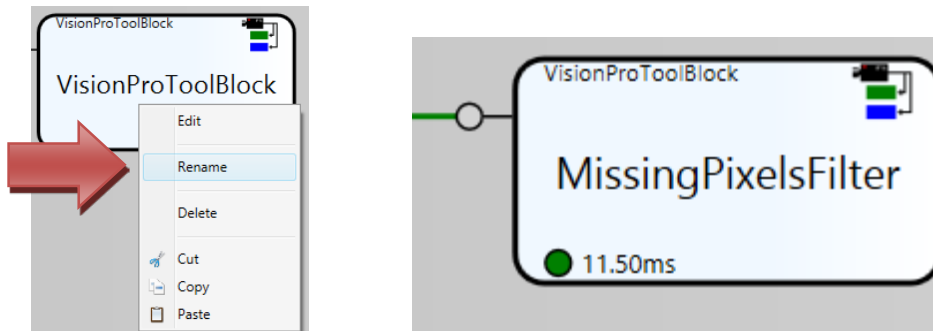
## Steps for the Lab:

### 1. Create Tool Block for 2D Image Conversion

- Add a Tool Block to the Sequence and connect the output image of the Sensor3D reference block to it as an input image.

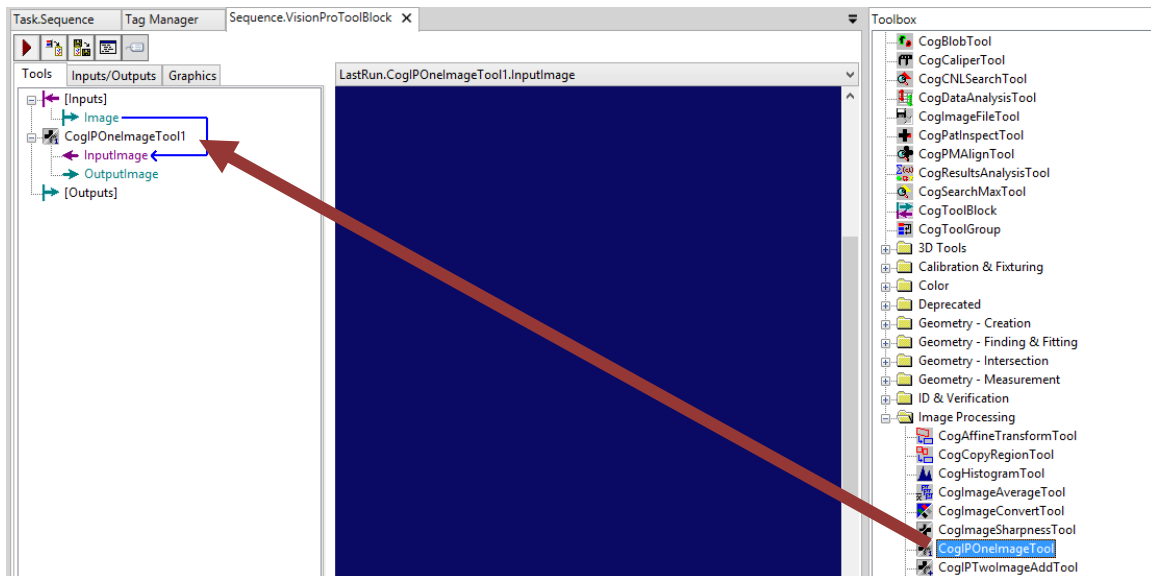


- Rename the Tool Block to MissingPixelsIFilter by right-clicking on the box and choosing "Rename"

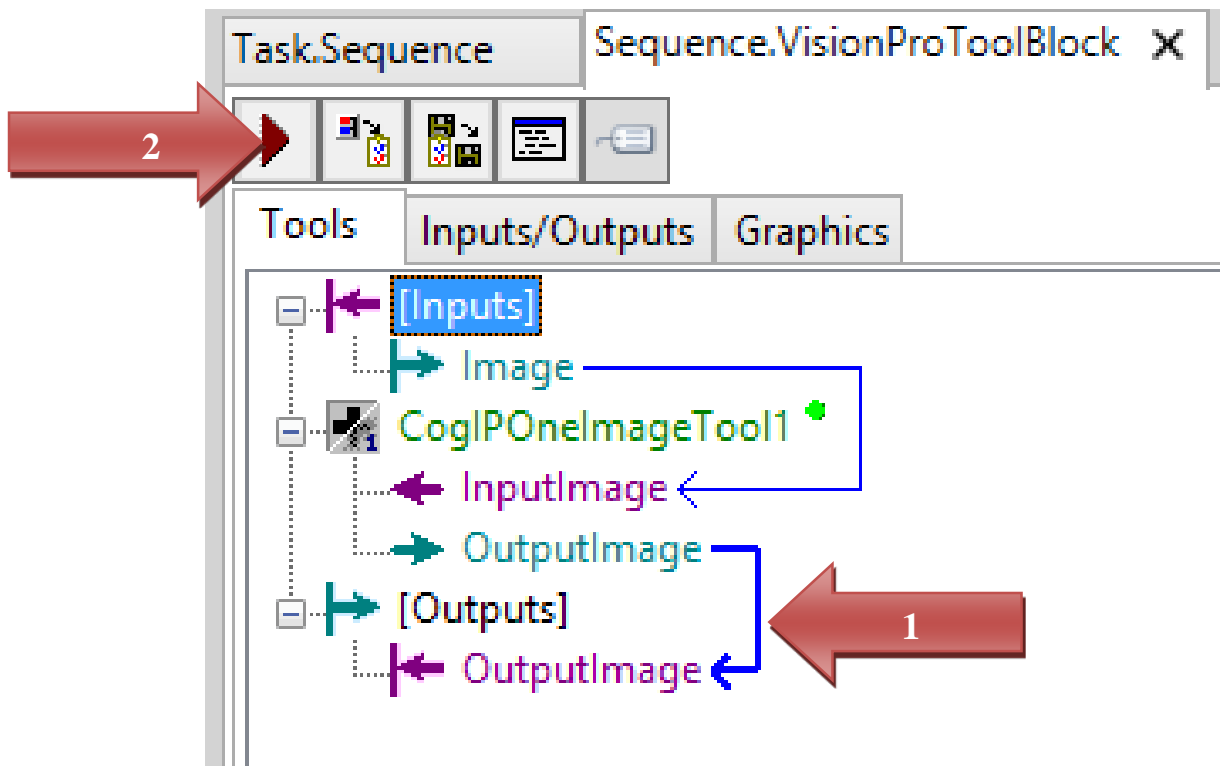


**a. Add a CogIPOneImageTool**

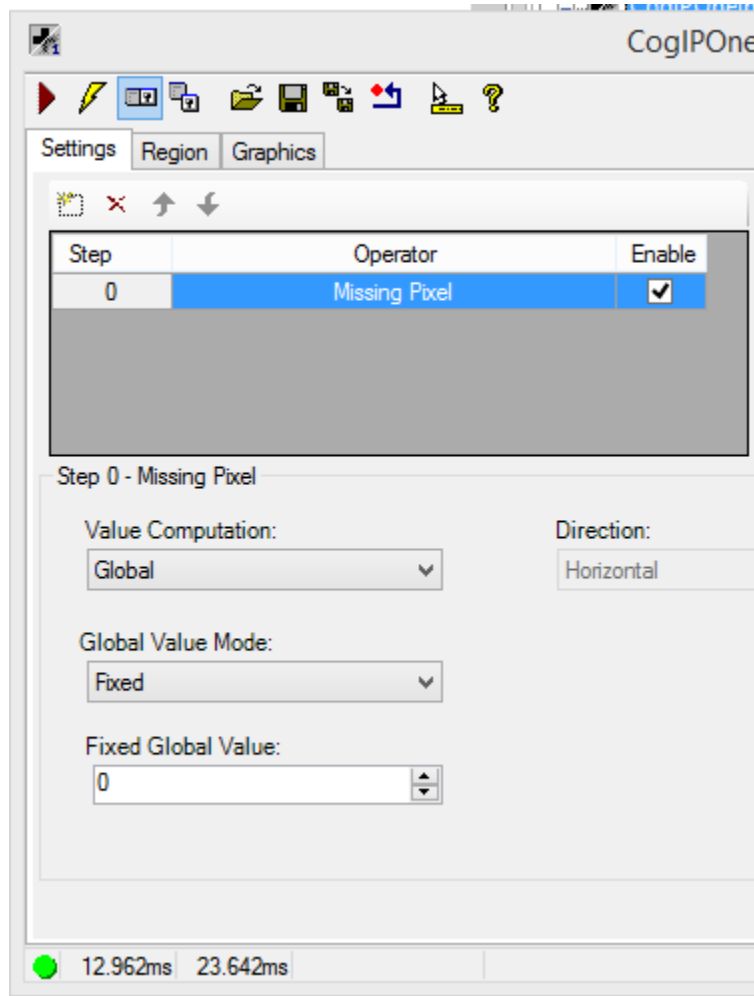
- i. Open the Tool Block by double-clicking on it and add a CogIPOneImageTool, and pass the image into it. The CogIPOneImageTool tool is found under the Image Processing folder.



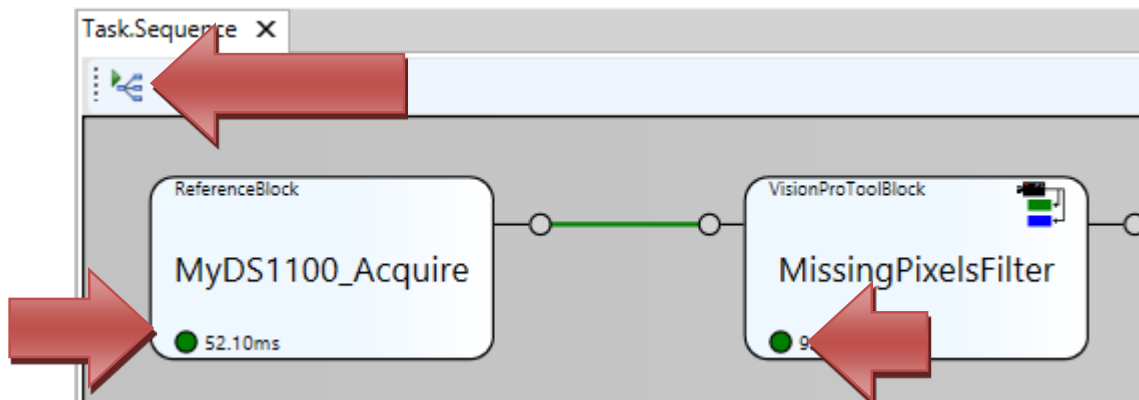
- ii. Run the Tool Block and set the output image of the CogIPOneImageTool as an output of the Tool Block.



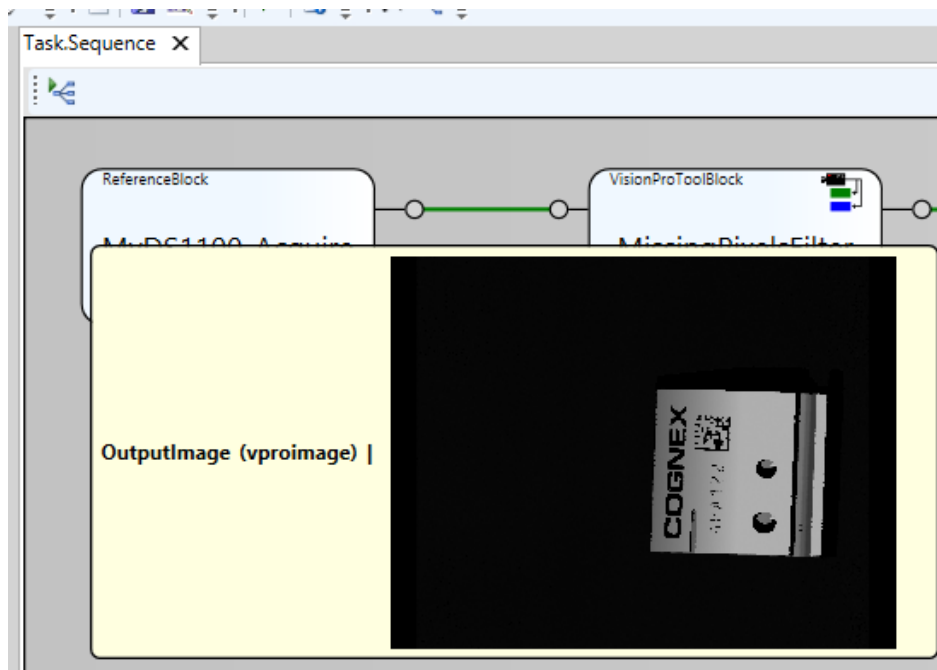
iii. Configure the CogIPOneImageTool as follows:



iv. Move your gantry system to so that the LASER is projected just before the beginning of your part. Click the Execute Sequence button, and move your gantry over the part. The green dot and time update indicates you have acquired an image and run the Tool Block.

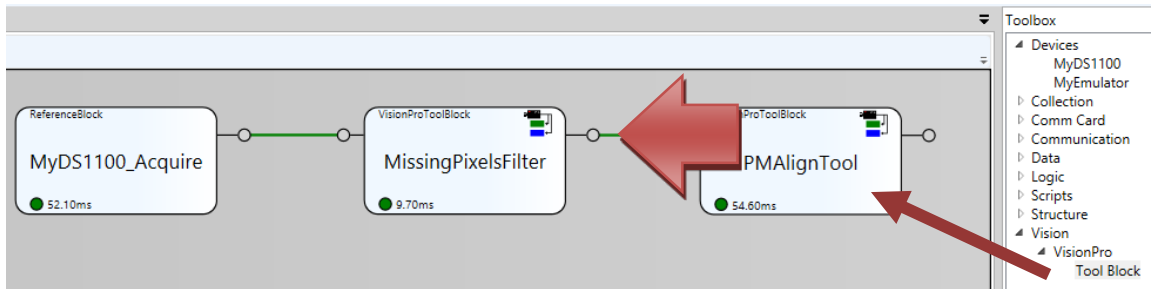


- v. Place your mouse over the top terminal on the right side of the Vision Tool Block to view the image.



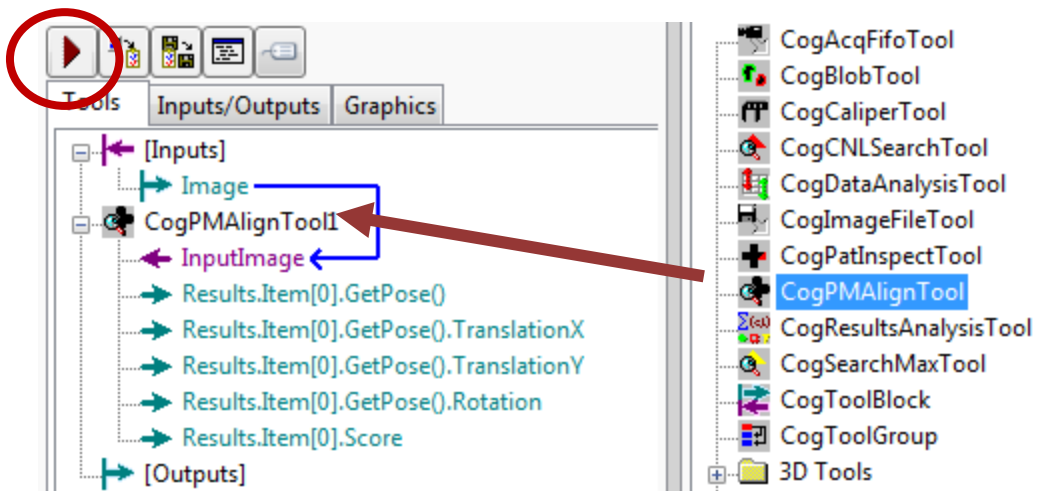
## 2. Create Tool Block to Find Part

- Add another Tool Block, rename it PMAAlignTool
- Connect the Output pin of MissingPixelsFilter to the Input pin of PMAAlignTool

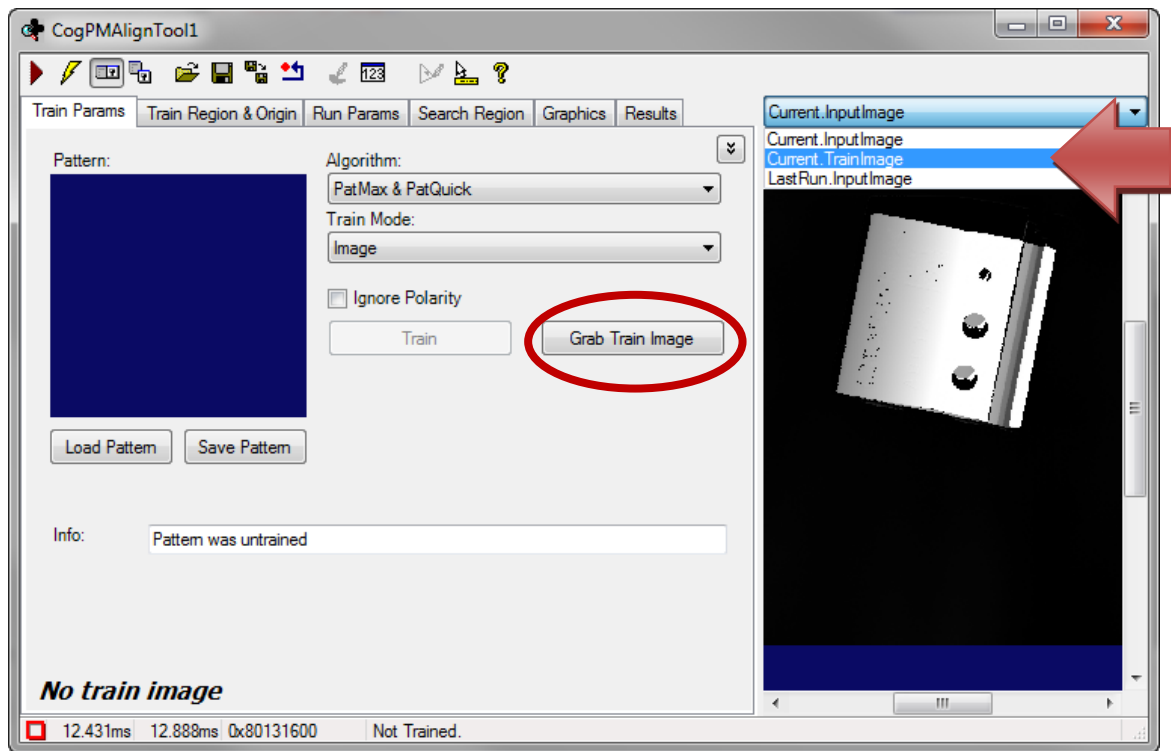


### a. Add a CogPMAAlignTool

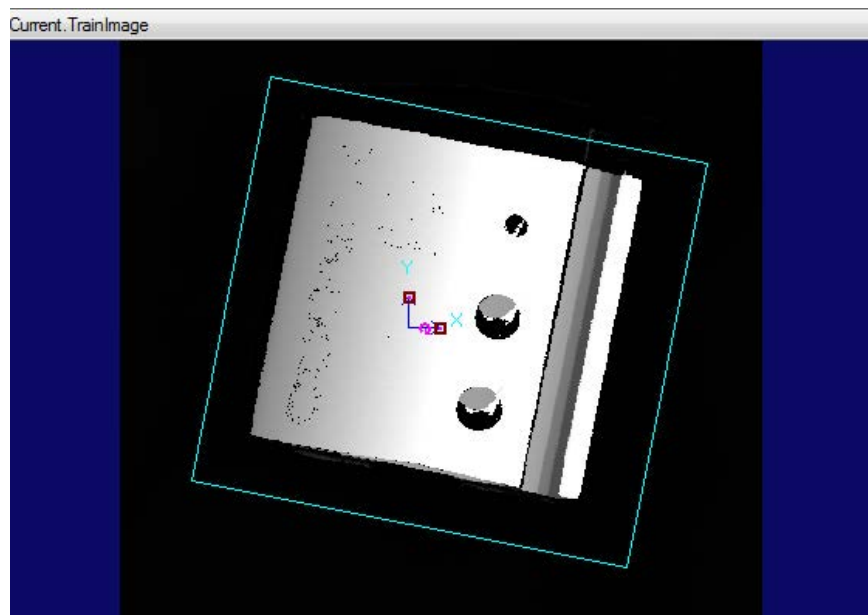
- Open up the PMAAlignTool Tool Block. Add a CogPMAAlignTool to the Tool Block and pass it the Image as an input image and run the Tool Block once by clicking on the red arrow.



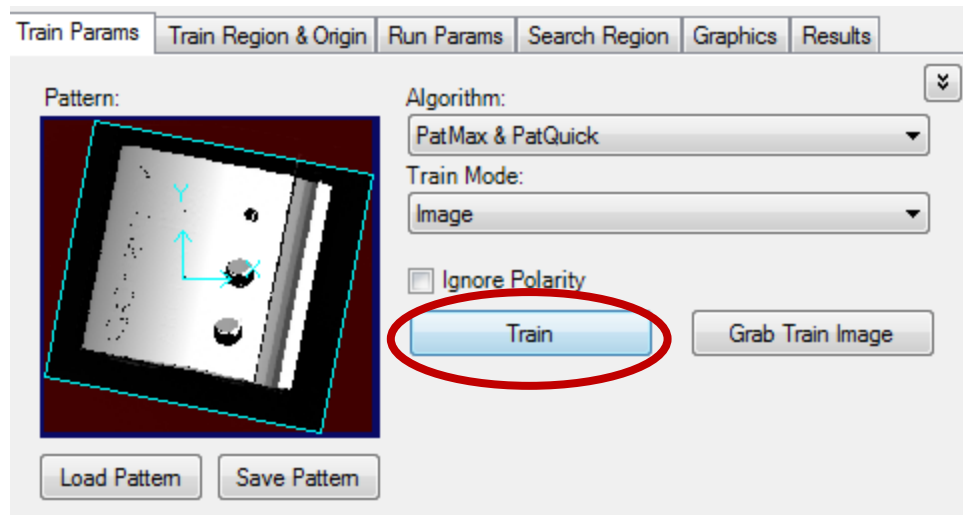
- ii. Open the newly inserted tool, and use the pull-down menu of the images and select Current.TrainImage then press the “Grab Train Image” button.



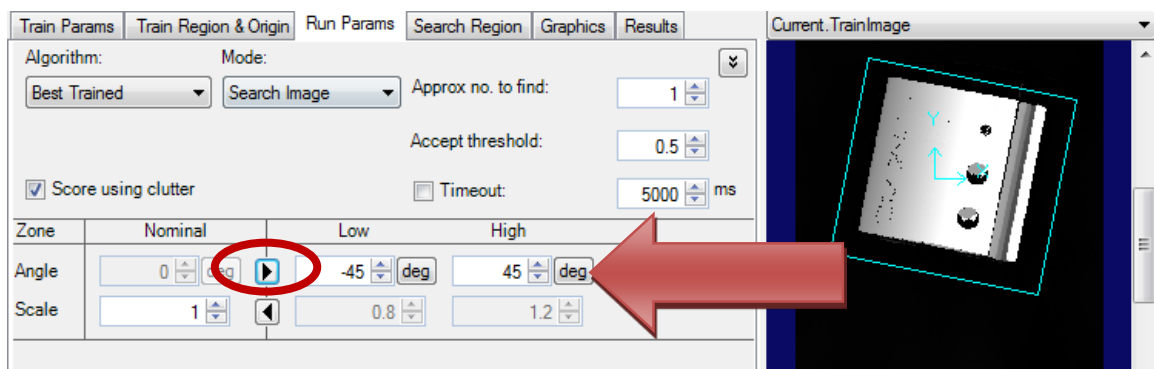
- iii. Set the region and origin point around your part.



- iv. Then press “Train”. The image of your model should appear under Pattern.



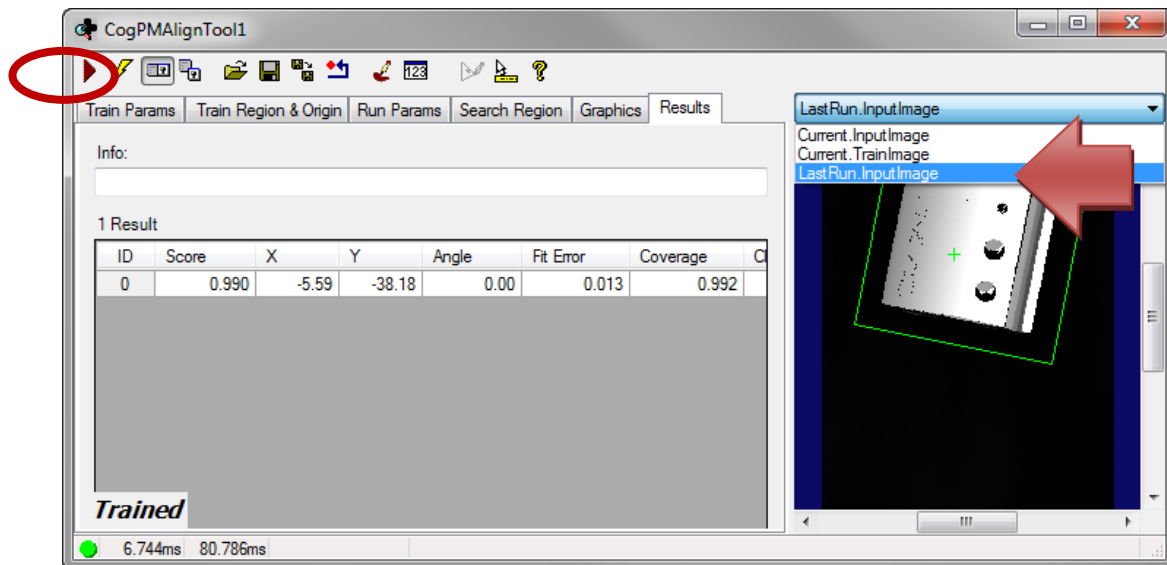
- v. Go to the **Run Params** tab and configure the CogPMAAlignTool to find the demo block. Make sure to allow for angle rotation by selecting the range mode – black arrow pointing to the right the range settings..



- vi. Run the tool once and note the results on the **Results** tab as well as the green outline and crosshair of the found part on the LastRun.InputImage.

Note: Re-running the tool or the Tool Block does not cause another acquisition. A new image can only be seen by running the Sequence again and thus providing a new image to the Tool Block.





- vii. Save your project by clicking on the Save Timer indicator on the lower right hand corner of Cognex Designer.

