

Using IMAQ Vision and IMAQ Vision Builder

Objectives

To learn how to select an IMAQ Vision image processing function to suit your application.

To learn to use IMAQ Vision Builder, to prototype your IMAQ Vision application.

To practice reading and writing image files in IMAQ Vision and IMAQ Vision Builder.

To examine a complete vision application prototyped in IMAQ Vision Builder and create that application in LabVIEW.

Procedure: Measuring a Bracket [4-1]¹

1. Launch IMAQ Vision Builder 6.
2. Click **Solution Wizard**.
3. Select **Tutorial>>Bracket Inspection**, and then click **Load Solution**. Tip: If IMAQ Vision Builder asks if you want to remove previously acquired images, choose **Yes**. If it asks you if you want to save changes to the current script, choose **No**. On the lower left side there are five steps recorded in a script. This is an image-processing algorithm that has been created with IMAQ Vision builder.
4. Double-click the first step in the script, **Pattern Matching**. This step looks for the pre-defined template pattern, which you can view in the **Learn Template** tab. Notice that the results of the search are shown in the table in the middle of the window, and the location of the pattern is highlighted by a green square.
5. Click **Done** when you are finished.
6. Double-click the second **Pattern Matching** step. Notice that you matched the same pattern on the right side of the bracket. Click **Done**.
7. Double-click **Edge Detector: First and Last**. Notice the vertical green line drawn through the centre of the bracket. You have located the edges of the sides of the bracket. In a moment, you will use these edges to find the centre of the bracket.

¹ Numbers in square brackets such as [4-1] refer to exercises in the LabVIEW™ Machine Vision and Image Processing Course Manual by National Instruments.

8. Click **Done** when you are finished.
9. Double-click the fourth step, **Caliper**. In this step, you will find the midpoint of the two edges you found in the **Edge Detection**. Note that a point has been added at the centre of the bracket, and it is labeled **5**. The table displays the coordinates of point 5.
10. Click Done.
11. Click on the last step in the script, **Caliper**. The caliper determines the angle by which the bracket is bent between points 1, 5, and 2.
12. Click **Done** when you are finished. Now use IMAQ Vision Builder to automatically create a LabVIEW VI based on this script.
13. Select **Script>>Create LabVIEW VI**. The LabVIEW VI Creation Wizard opens.
14. Select **Current Script** as the script you will use to create your VI.
15. Select **Image File** as your image source, and click **Next**. The next screen allows you to choose which parameter inputs and outputs will be editable in your block diagram and on your front panel. If an item in the left column is selected, it appears as a control in LabVIEW. Similarly, if an item is selected from the right column, it appears as an indicator.
16. Verify that your settings match your instructor's.
17. Click **Finish** to complete the LabVIEW VI Creation Wizard. When you click **Finish**, LabVIEW launches and displays the front panel and block diagram of the VI you created in IMAQ Vision Builder.
18. Save this file as `Measuring a Bracket.vi`.
19. Close all windows when finished.

