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Line profile
Edge detection

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Based on:

NI Vision Assistant Tutorial

June 2011 372228M

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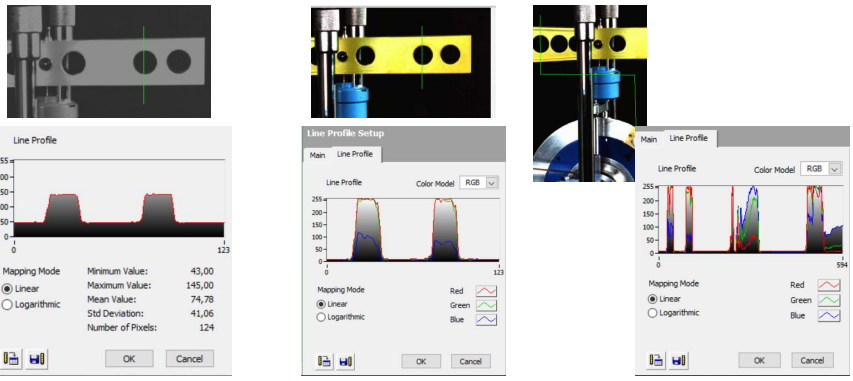
Line profile → important part of Edge detection procedure

For grayscale images, the step displays the ***grayscale distribution along a line*** of pixels in an image. For color images, the step displays the pixel distribution along a line for **each plane of the selected color model**. Using the **Line Tool**, **Broken Line Tool**, or **Freehand Line Tool** from the toolbar, click and drag to draw a line segment.



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Edge Detection: identifies boundaries that define an object.

Edge - discontinuity in the intensity of the image color.

To measure the distance between edges

To control a geometrical constraint → e.g. to control the shape of component

An edge detection operation is available for images represented in the "grayscale".

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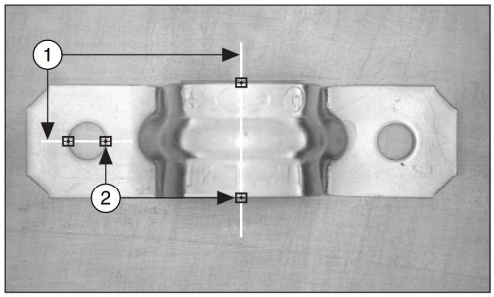
Edge Detection: identifies boundaries that define an object.



1	Search Lines	2	Edges

Figure 6-5. Edge Detection with a Line Profile

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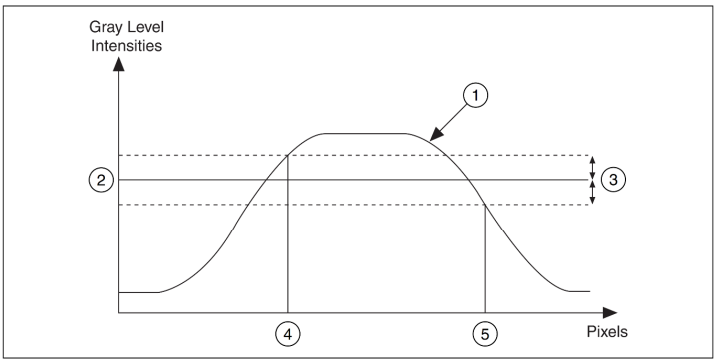
Edge Detection: parameters.



1	Grayscale Profile	3	Hysteresis	5	Falling Edge Location
2	Threshold Value	4	Rising Edge Location		

Figure 6-6. Simple Edge Detection

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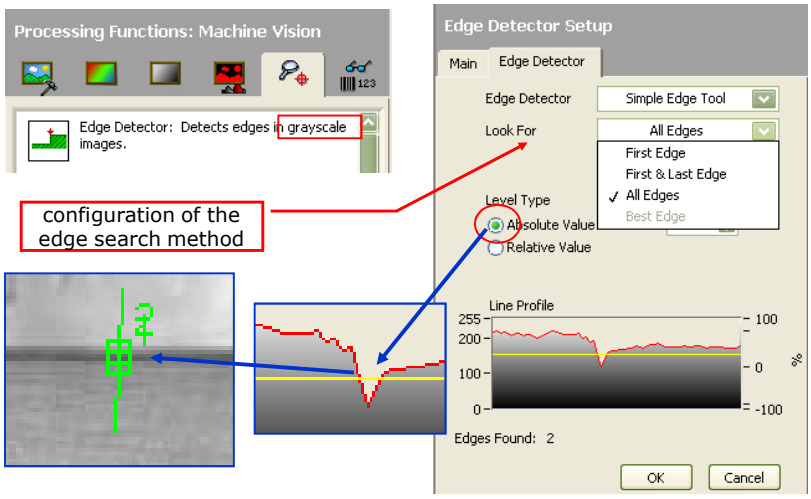
Vision Assistant: Machine Vision / Edge Detector function



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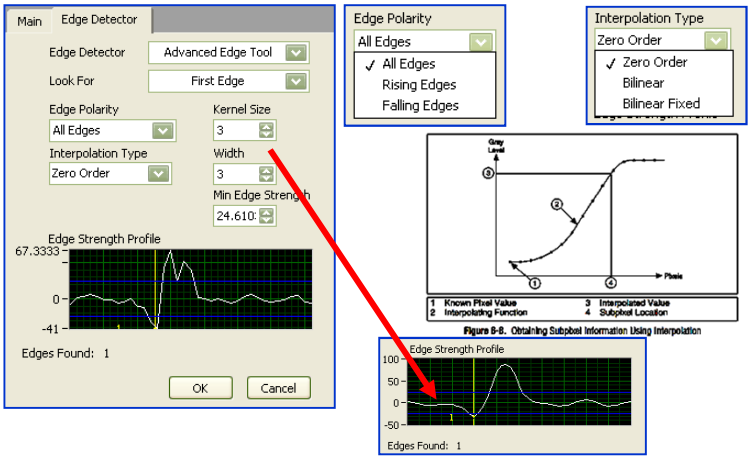
Vision Assistant: Machine Vision / Edge Detector function

The **Advanced Edge Tool** option allows for more accurate profile analysis.



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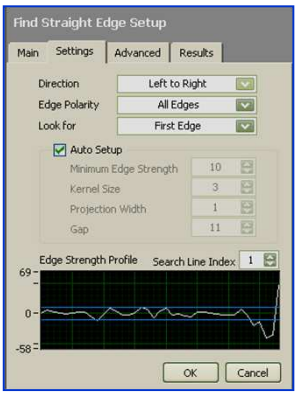
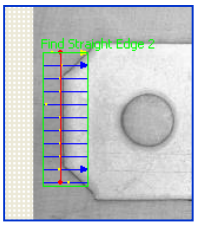
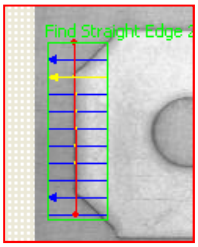
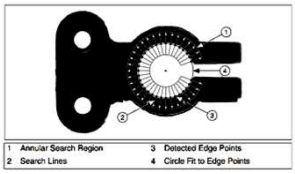
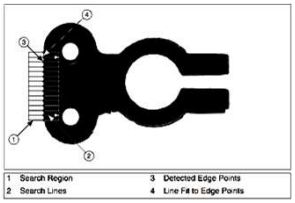
Vision Assistant: Machine Vision / Find Straight Edge function











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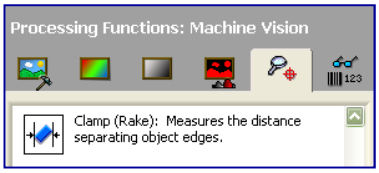
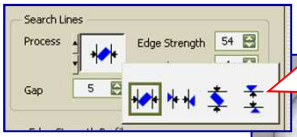
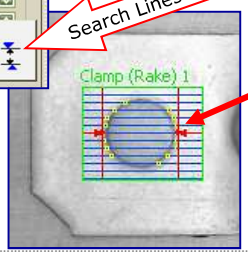
Vision Assistant: Machine Vision / Clamp function

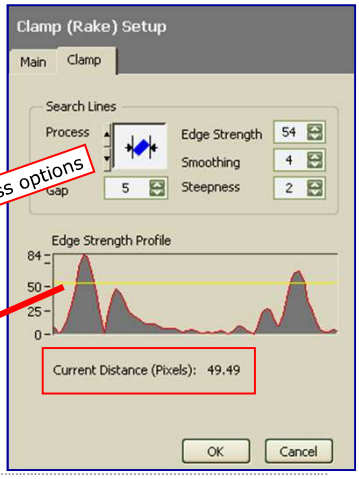
Automatically detect edges and perform distance measurement.







Search Lines – Process options



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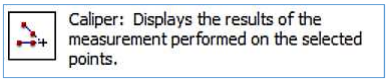
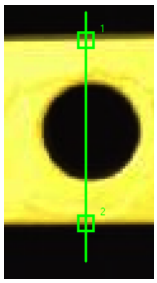
Vision Assistant: Machine Vision / Caliper function

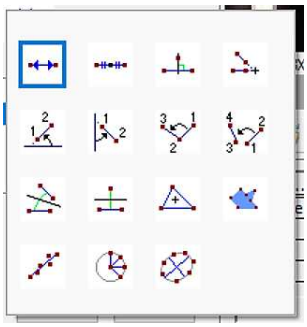
Computes measurements—such as distances, areas, and angles— **based on results returned from other machine vision and image processing functions** (see help for Caliper function).



e.g. poiths form Edge Detector function



Geometric Features Options:



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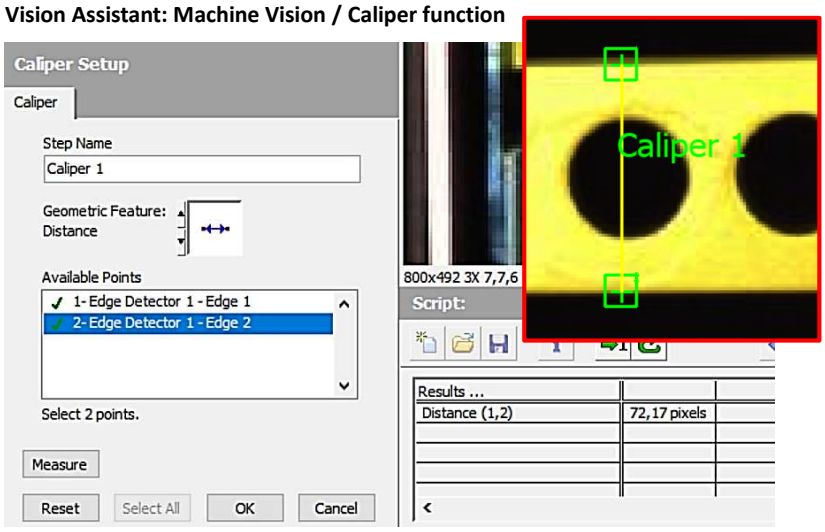
Vision Assistant: Machine Vision / Caliper function



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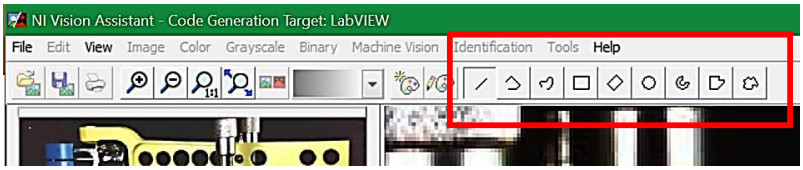
Vision Assistant: ROI – Region Of Interest



ROI is treated as **"sub-picture"** (subimage). It does not contain data from the image, but only stores information about the location **in the area** of the analyzed image.

ROI is used to determine the analysis area within a larger image → smaller region = faster analysis.

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Vision Assistant: ROI – Region Of Interest

Table 6-1. NI Vision ROI Tools

Icon	Tool Name	Function
	Selection Tool	Select an ROI in the image and adjust the position of its control points and contours. Action: Click ROI or control points.
	Point	Select a pixel in the image. Action: Click the position of the pixel.
	Line	Draw a line in the image. Action: Click the initial position and click again at the final position.
	Rectangle	Draw a rectangle or square in the image. Action: Click one corner and drag to the opposite corner.
	Oval	Draw an oval or circle in the image. Action: Click the center position and drag to the required size.
	Polygon	Draw a polygon in the image. Action: Click to place a new vertex and double-click to complete the ROI element.
	Freehand Region	Draw a freehand region in the image. Action: Click the initial position, drag to the required shape and release the mouse button to complete the shape.
	Annulus	Draw an annulus in the image. Action: Click the center position and drag to the required size. Adjust the inner and outer radii, and adjust the start and end angle.