Application Note

VeriSens® – Contour Comparison
AN201408/v0.2/2023-08-21

Description

In this document we will give answers to questions that are asked very often regarding the contour comparison feature, the way it works and the uses it can be put to.

Products

*VeriSens®* Vision Sensors

Preparation

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1 *VeriSens*® Contour Comparison FAQs

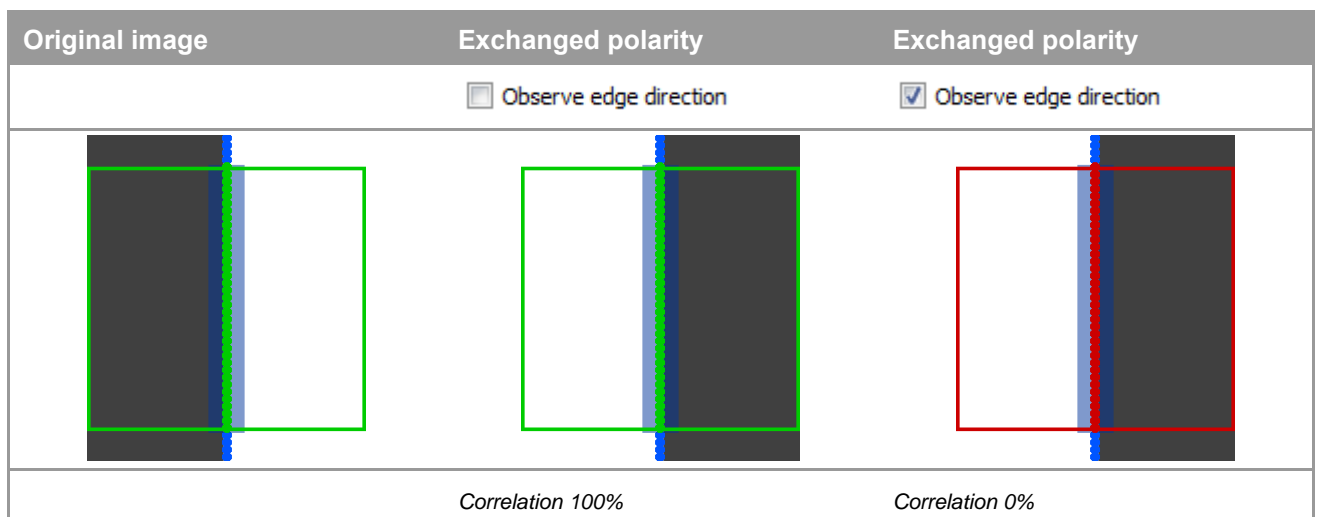## 1.1 How does the contour comparison work?

For each dot of the taught contour *VeriSens*® checks, whether the dot in the current image lies within a specified radius (=tolerance). If the dot is "OK", it will be green. If there is no dot found within the tolerance radius of the taught dot, the result is "NOK" (not OK) and colored red. The tolerance area is marked blue in the image. The correlation is determined by the number of "OK" dots divided by the number of taught dots.

In the following image a contour of exactly 100 dots has been taught. The tolerance was set to 2 px. In the image on the right side, *VeriSens*® could not find a dot within the radius of 12 out of 100 contour points. So the correlation is 88%.
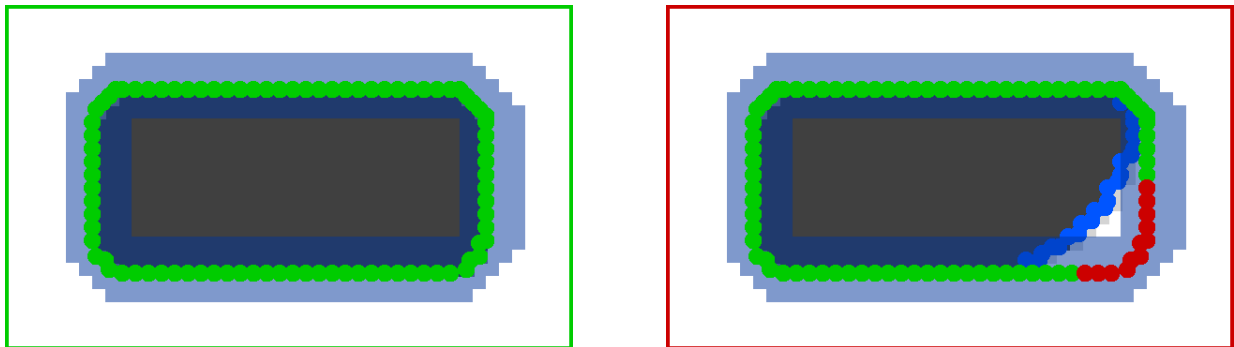
1.2 What does the parameter "Observe edge direction" mean?

If you activate "*Observe edge direction*", *VeriSens*® does not only search the tolerance area for any contour point, but also checks whether it lies in the same direction as the point in the taught model (bright to dark transition).

| Original image	Exchanged polarity	Exchanged polarity
	☐ Observe edge direction	☑ Observe edge direction
	Correlation 100%	*Correlation 0%*

The activation of this option can help to minimize the influence of image noise or disturbing contours in the background.

1.3 Why is the correlation 100% if I have a strongly structured background? How can I avoid this effect?

The feature „*contour comparison*" checks, as described above, whether there is a contour point within a tolerance area of the taught contour. If the background is very noisy or very structured, it displays a lot of contour points. This means that for nearly each taught contour point a point will be found within the tolerance area. Although the contour has obviously nothing to do with the original, a correlation is reached.

You can increase the robustness against such influences by the activation of "*Observe edge direction*".

Original image	Noise	Noise
	☐ Observe edge direction	☑ Observe edge direction
	Correlation 100%	*Correlation 35%*
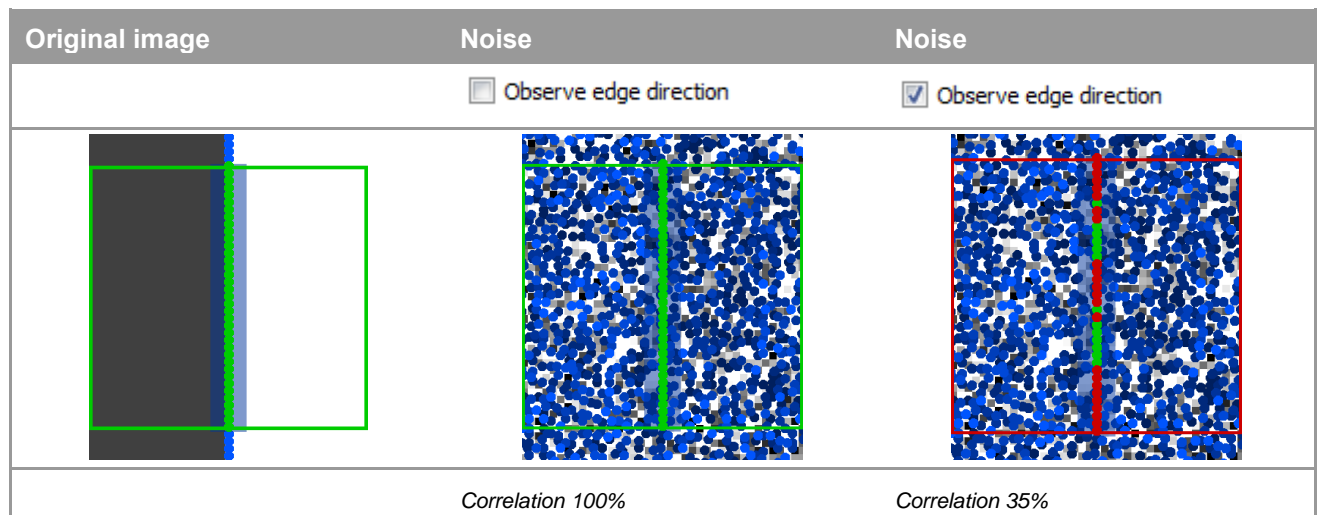
1.4 Why does *VeriSens®* not recognize an additional object?

The feature "*Contour comparison*" is only capable to check, which correlation rate regarding the taught contour could be found. There is no check to see, whether new parts have been added to the contour.

2   Support

In the case of any questions or for troubleshooting please contact our support team.

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