

## NEW FEATURES ADDED TO NEUROCHECK® APRIL 2001

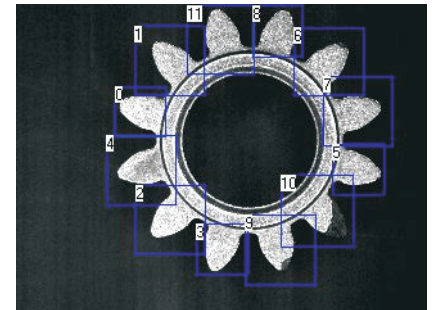
NeuroCheck® evolves on an ongoing basis to continue to offer the newest, most powerful machine vision software capabilities combined with the reliability, maturity and support that has made it one of the world standards. Version 5.0.3006, released in April 2001, continues this process with the addition of significant new tools plus enhancements in other areas. Perhaps the most noteworthy is the eagerly awaited addition of rotary template matching. These new features are also available as a free service pack for all 5.x versions, or as an economical upgrade for pre-5.x versions.

### New in Template Matching

Function Template Matching offers the following new features in this version:

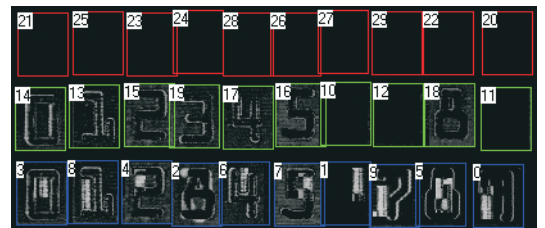
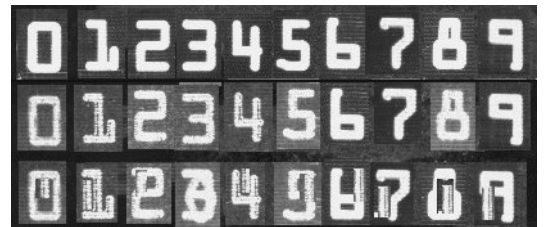
#### **Rotary Template Matching**

The function is now capable of turning each template within a specified angle range to detect rotated objects. The teeth of this gear have been found using a single template of a good tooth.



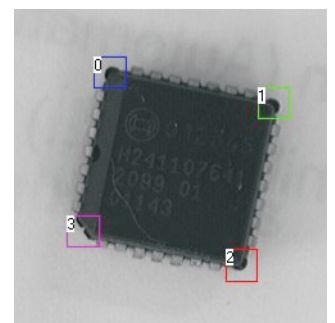
#### **Output Image**

The function creates an output image. It can optionally display the original templates, differences between the templates and the detected objects or the rotated objects. Note: this output image is a new output data object for the function. Check functions added subsequently will automatically use this output image as their input image. In check routines from older NeuroCheck versions, the original data flow will remain consistent. The "Rotated patterns" option draws objects found by rotated templates into the image in their reference orientation. This can be used, for example, to present rotated letters to a classifier in upright position so that the classifier does not need to be trained on tilted letters. Output of difference images can be used, for example, for dynamic print quality inspection. The top line of digits in the image contains the original patterns, the center line shows patterns with some background noise, whereas the patterns in the bottom line exhibit significant deviations from the original patterns. This can be clearly seen in the difference image and can be used to inspect the markings on a part.



#### **Groupwise Search**

For each group of regions you can select that only patterns of a specific class are to be found inside that area. This allows to detect the corners of parts without any risk of confusion.



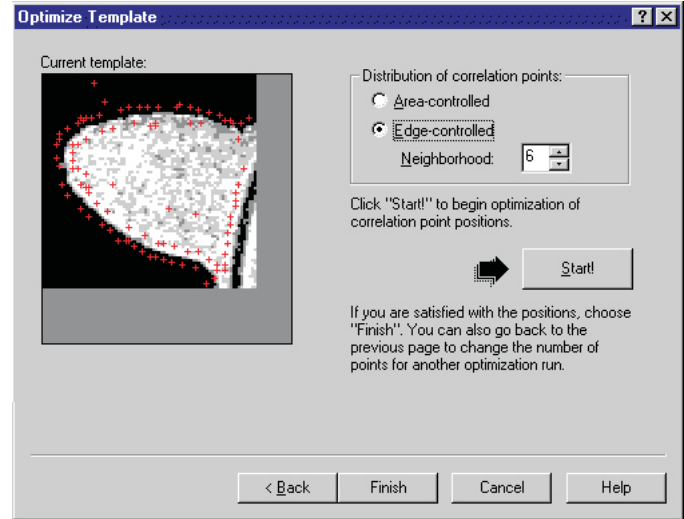
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## Template Overview

The Template Wizard now offers an overview dialog displaying all patterns of a selected class on one page. It behaves just like the overview dialog of function "Classify ROIs". When you click a pattern and close the dialog, NeuroCheck® jumps to that pattern. For example, this may be used for changing erroneous class information.

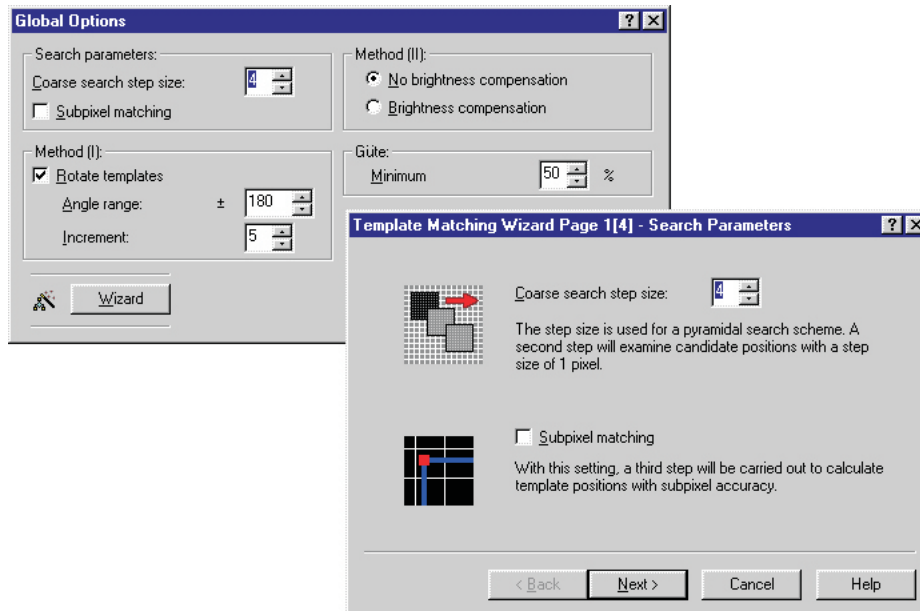
## Edge-based Optimization of Correlation Points

The Template Wizard can now distribute the correlation points in an adjustable distance from edges visible in the pattern. This is especially useful for patterns with clear contours and strong contrasts which can thus be found using less correlation points. This increases detection speed and significance.



## Wizard Interface

The user interface of the function has been revised in accordance with the extensive new functionality. All parameters are presented in a clear overview dialog and are also accessible through a convenient wizard-based approach.



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### Sub-pixel Matching

In addition to the familiar coarse/fine search an additional third step can now be activated which will locate the template positions with sub-pixel Accuracy.

### New in Capture Image Asynchronously

Function Capture Image Asynchronously offers the possibility to "initialize" the frame grabber. This means, the frame grabber is started to wait for the next image while processing in NeuroCheck® runs in parallel. Up to now, this functionality was restricted to the first run of a check routine in order to activate several frame grabbers after a check routine switch. In this version it is now optionally possible to have a frame grabber initialized in every check routine run. This can for example be used to activate a frame grabber for the first camera connected to it at the beginning of the check routine, for the second camera at a later stage in the check routine. Thus, parallel image capturing from several frame grabbers with several connected cameras becomes possible.

### New Version Numbering System

The new version is 5.0.3006; the last number under the previous system was 5.0.2000.46.

### Expanded Frame Grabber Support

There are two things we consider very important when developing drivers for NeuroCheck®: using the capabilities of the hardware to their full extent and to make no restrictions concerning simultaneous use of different boards. The decision to include support for a particular frame grabber in NeuroCheck is therefore made with great care and requires the new hardware to be a technically or an economically interesting alternative for our customers. The frame grabbers added with version 5.0 round off the NeuroCheck® hardware palette at both ends. At the high-end of image processing, the boards for digital line-scan and area-scan cameras are supplemented by frame grabbers for 3-chip RGB cameras, providing a new edge to the versatility and power of NeuroCheck's® intelligent color identification algorithm. At the other end, the outstanding price/performance ratio of a newly supported family of monochrome and color frame grabbers allows users to build extremely cost-effective vision solutions for standard tasks.

