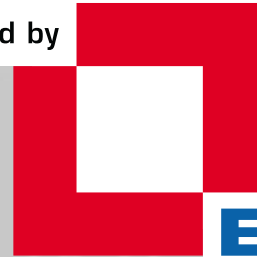
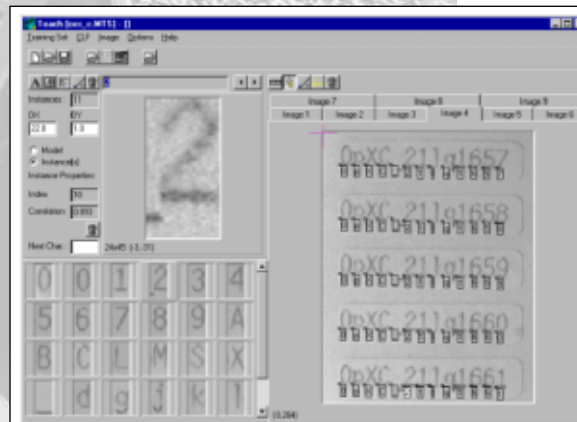


► Minos

powered by

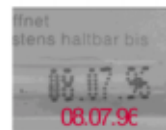


COMMON VISION
BLOX



Fields of Application:

- OCR / OCV
- LCD-Inspection
- Printing Inspection
- Pick&Place Machines
- Part Presence/Absence
- Robotics
- Precision Alignment



The Software Package
for Pattern Matching

► Minos

► Minos Teach - Learning Objects

For many industrial pattern matching applications, it has been historically necessary for the developer to refine the algorithm on an object-specific basis. It has not been generally possible, for example, to use a font recognition algorithm for the location of electronic components - a common requirement in PCB manufacturing. The result is extended development times and high associated costs during the implementation of such systems.

Minos is designed differently: objects of all types are learned in a training program which runs under Windows.

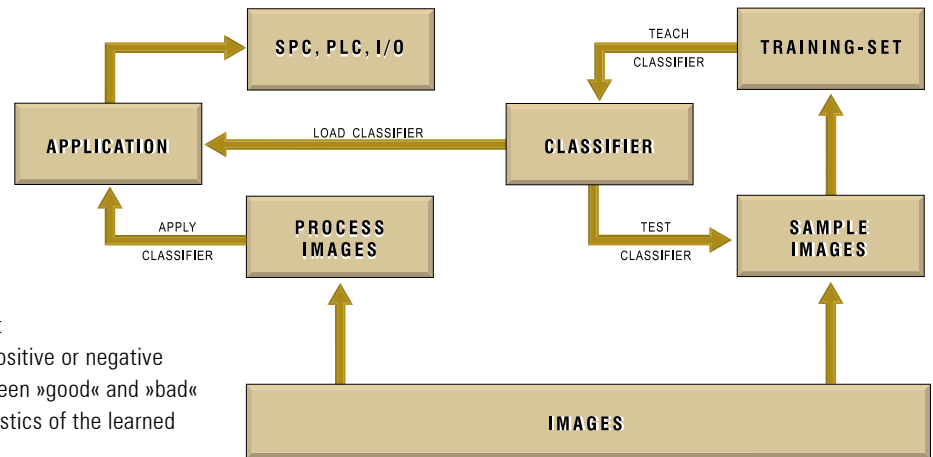
The result of the learning process is a classifier which is then used to find instances of the original pattern in new images. A single classifier may be created with multiple models, in other words it can match many patterns simultaneously. This is a prerequisite for efficient OCR, and adds great flexibility in general applications.

Classifiers are created by recording sample images and marking the object to be identified in these images. The images comprise the training set (Minos Trainings Set, MTS), and users can locate positive or negative examples within it ensuring robust distinction between »good« and »bad« components. The classifier describes the characteristics of the learned objects.

During the training phase, the Minos neural net recognizes the properties of the marked objects and verifies them using the non-marked image areas. Unlike conventional correlation techniques, the classifier does not take account of all the pixels in the objects but instead concentrates on the properties which describe the object. This fact accounts for the high processing speed and high reliability of recognition even when poor originals are used.

The algorithm is extremely insensitive to variations in object illumination. Noise interfering with the object also represents no obstacle to recognition. Within the training process, operators can use all the Minos search functions, thus making it possible to test the classifier as it is created, and extend and improve it using further training images if necessary. Objects can be automatically learned in different angles of rotation and in different sizes.

Special functionality is provided for the creation of very efficient OCR/OCV classifiers. When the training has been successfully concluded, the classifier is saved. It is then read and used by Minos search functions for object location.



► Minos Search - Finding Objects

Minos provides comprehensive and flexible search tools for pattern matching within any image.

Minos Search uses classifiers generated in Minos Teach to identify matching patterns in a search window. The programmer has complete control over the search sequence within the search window (for instance scanning horizontally downwards, or vertically left to right or even diagonal).

Both the search window and/or the classifier may be independently rotated and/or scaled during the search process. Using several different search techniques the user can optimise the speed/accuracy of search results to suit any given application. Special search tools are provided for high speed OCR/OCV.

Minos Key Features

Minos Teach

- For creation of classifiers
- Special functionality for OCR/OCV classifier creation
- Creation of a golden template for normalized gray scale correlation

Minos Search

- Search Optimum - for best pattern match
- Search First - for first pattern match
- Search Subpixel - for high accuracy pattern match
- Read Token - for OCR
- Read Verify Token - for OCV
- Normalized Gray Scale Correlation