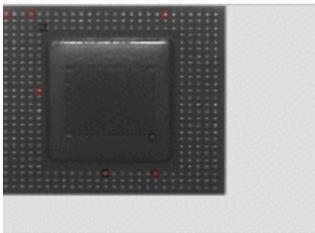


Application Note

EXAMPLES OF APPLICATIONS DEMONSTRATED WITH IMAGE KNOWLEDGE BUILDER

The Image Knowledge Builder software is delivered with the following example projects and their accompanying images.

BGA INSPECTION



Observe how the powerful non-linear classifier of a NeuroMem network is a simple remedy to learn a diversity of examples in a few mouse clicks.

Learn a variety of good solder balls and get their total count immediately.

Try to achieve the same results in less than a minute with a threshold technique!

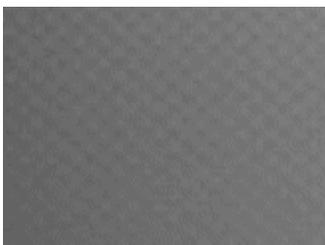
INKJET CHARACTER RECOGNITION



Observe how the feature extraction can impact the ease of deployment of an application, and particularly reduce the number of examples to teach without compromising the accuracy of the recognition.

Image Knowledge Builder has been designed so you can easily find the best feature extraction for your application using the same images and annotations.

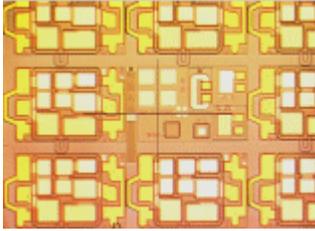
GLASS SURFACE ANOMALY DETECTION



Observe how the neurons can autonomously model a good texture, even a patterned texture such as a solar glass panel, and later be used to detect anomalies in new images which are basically locations which do not look similar to the models they hold in memory.

A simple illustration of the power of the NeuroMem RBF classifier to detect novelty which in this case represents the occurrence of an anomaly.

WAFER INSPECTION



Observe how a large NeuroMem network can be used to store an entire reference image (wafer, printed circuit, printed material), and later be used to report locations in new images which do not match the right pattern at the right position.

A simple illustration of an unsupervised learning and high-speed template matching.

KANJI CHARACTER RECOGNITION



Observe the power of the NeuroMem non-linear classifier to discriminate between many models, and how the recognition time is not impacted by the number of models which constitute the knowledge base (360 in this case).

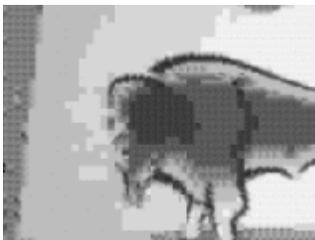
FACE RECOGNITION ON SOCCER TEAMS AND THE FERRET DATABASE



Observe how the model generator of a NeuroMem network can automatically over-generalize and correct mistakes if applicable.

The network taught with 7 faces of soccer players from a team can detect the faces in four other teams but also the faces from the ferret database!

INTRODUCTION TO IMAGE COMPRESSION WITH NEUROMEM



This example illustrates the use of an unsupervised learning method to build a codebook of reference codes over one or multiple images and reconstruct simpler images by replacing the original blocks by their closest matches.