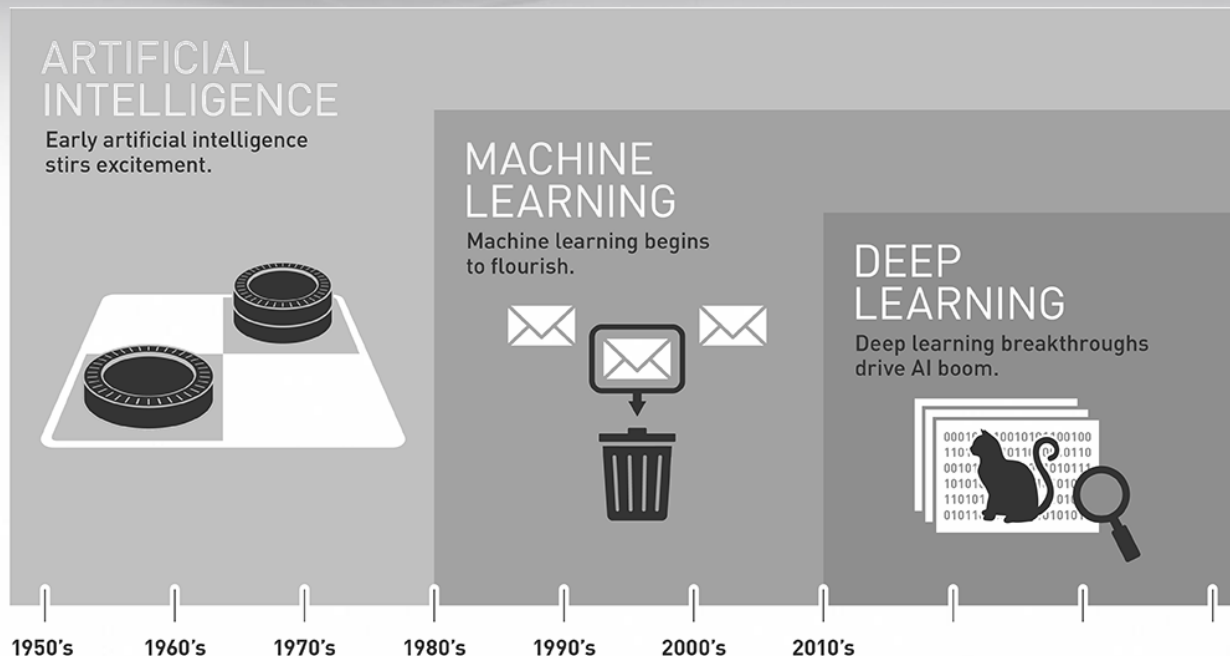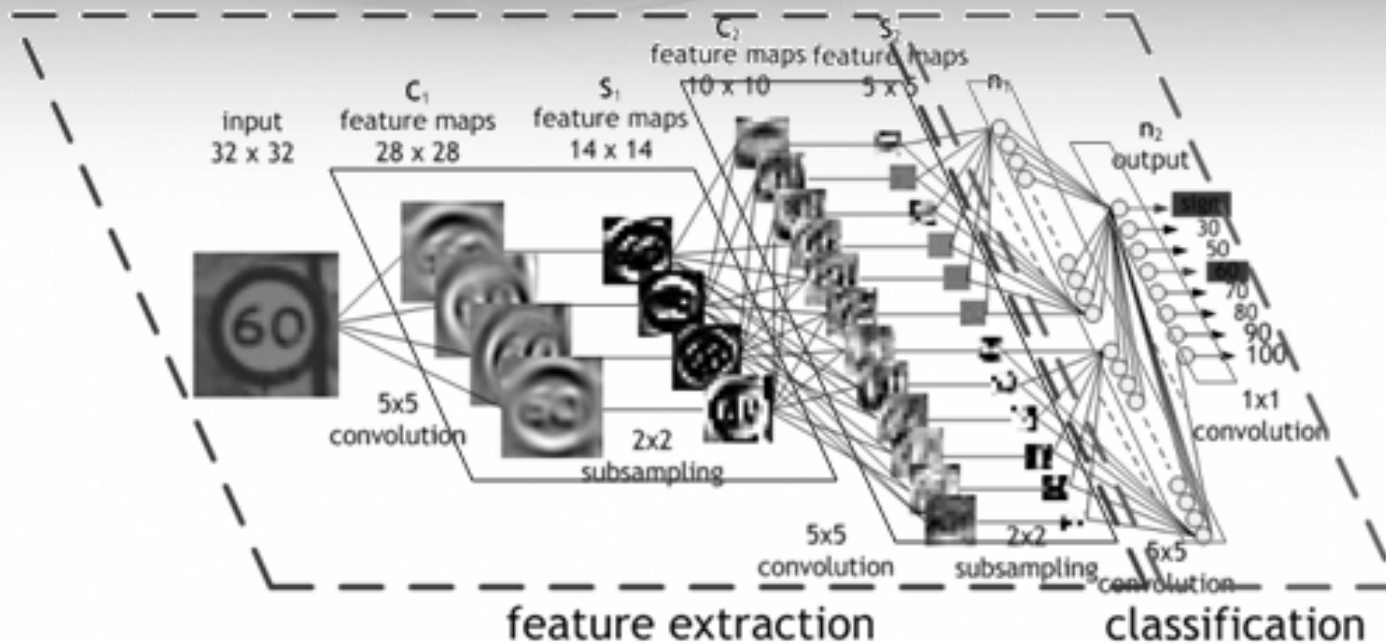# Demystifying Machine Learning for Machine Vision

MATROX
IMAGING

# From AI to ML to DL



Source: "What's the Difference Between Artificial Intelligence, Machine Learning, and Deep Learning?" by Michael Copeland
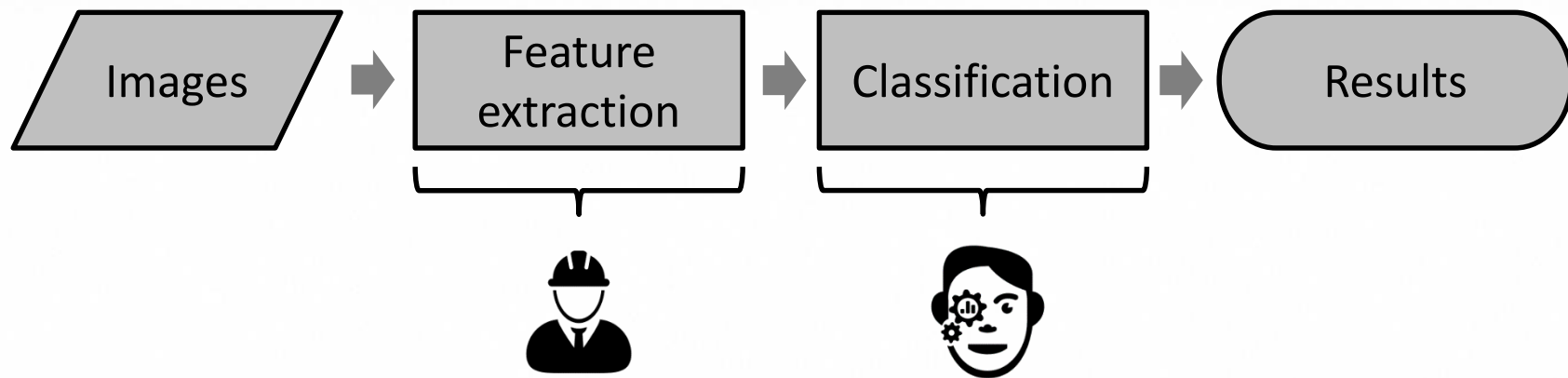
# CNN: DL for images



Source: "Neural Network Simulation: The recognition application" – Parallel Architecture Research Eindhoven (PARsE)
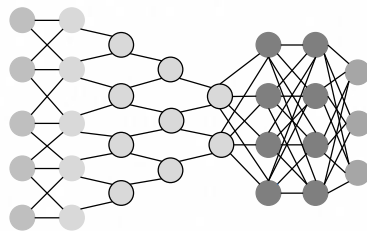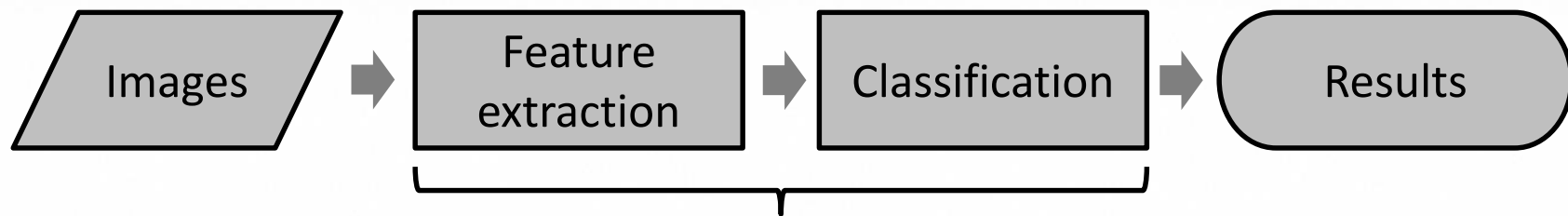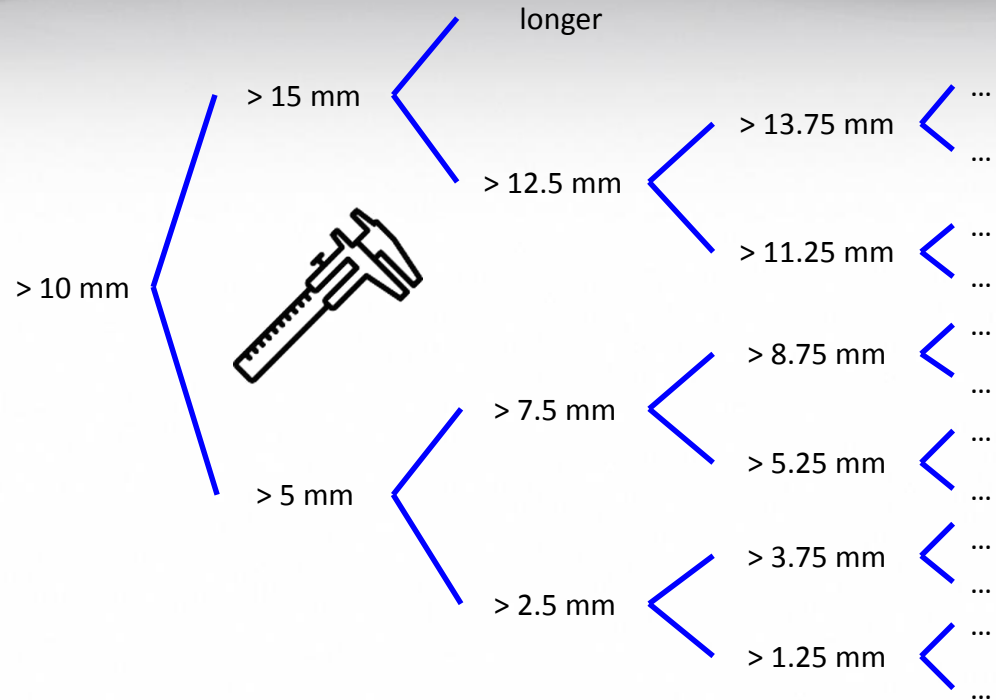
# Significance of DL for MV

» Image analysis before DL…

Images → Feature extraction → Classification → Results

# Significance of DL for MV
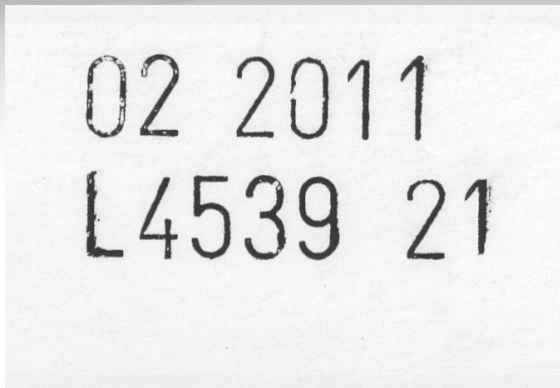
» Image analysis with DL…

# About classification

» Can express many problems in terms of classification…

» …but classification is **<u>not</u>** always the best approach

# Suitable for DL



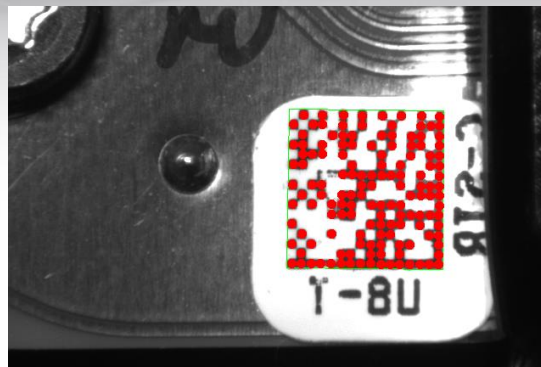Recognition ✓
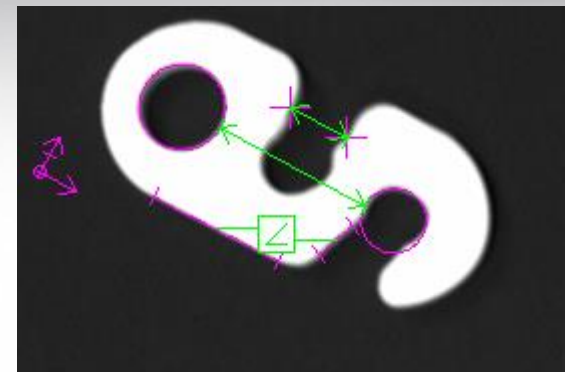
Reading ✓

Detection ✓

# Not suitable for DL



Matching ❌



Decoding ❌



Measuring ❌

# Training a CNN

» Requires

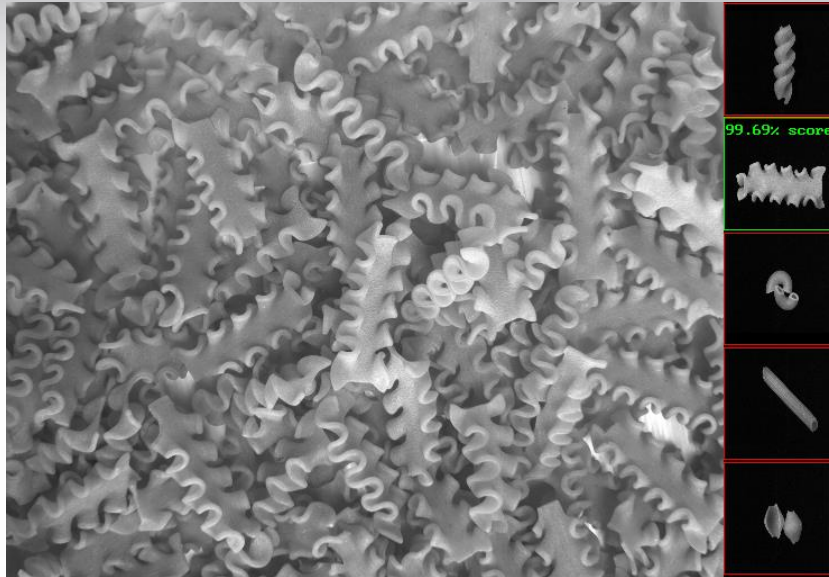   » Large data set   x 1000's

   » Skill and experience

   » Computing power and patience

# New Classification module



» Image content classifier

» Uses deep learning (CNN)

» Inference done on CPU

» Trained by Matrox

» Optimized for application

# Getting the most from DL

## File upload for Matrox Vision Squad

Fields marked by a * must be completed. To read more about how we process information, please see our privacy policy at the bottom of our pages.

Company Name *

Email *

Subject *

Description / Comment

File(s) (50GB max combined per submit) *                    Browse...

Supported extensions: .txt .jpg .jpeg .tiff .bmp .mim .zip .rar .jp2 .png .tif .gif .7z

8 A D S3          Try a new code

Submit    Clear