



HALCON

a product of MVTec

EXPERIENCE THE POWER
OF DEEP LEARNING
WITH MVTec HALCON

EN

NEW
VERSION
19.11

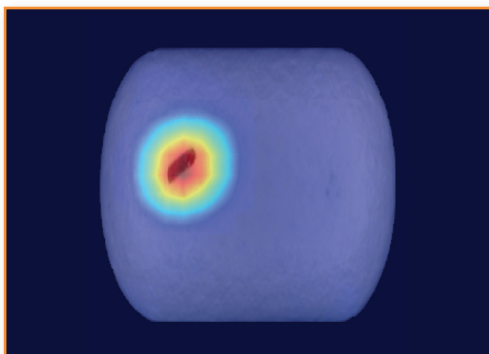
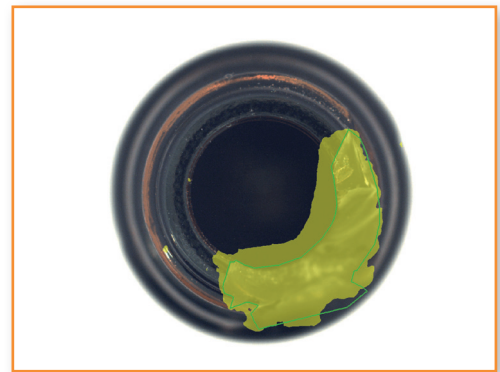
HALCON 19.11 New Features

HALCON 19.11 provides a wide range of new and improved machine vision features. Users benefit from massive simplifications for their applications. Particular emphasis was placed on the integration of further deep learning features.

DEEP LEARNING

CONVENIENT INSPECTION WITH ANOMALY DETECTION

The new anomaly detection feature significantly facilitates the automated surface inspection for, e.g., detection and segmentation of defects. Here, users have to face two challenges: getting enough training images of the respective defect and investing a big amount of time to label these images. However, with HALCON 19.11, you only need a low number of high quality images for training. The technology is able to unerringly and independently localize deviations, i.e., defects of any type, on subsequent images. This means, defects of varying appearance can be detected without any previous knowledge or any preceding labeling efforts. The training of anomaly detection can be performed on a standard CPU.



MORE TRANSPARENCY WITH THE GRAD-CAM HEATMAP

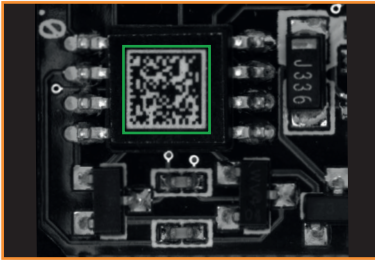
Deep learning networks are often considered as a black box because users do not know what happens with the data during the inspection process. Therefore, it is very difficult to debug in case of misclassifications. HALCON's newly implemented Grad-CAM (Gradient-weighted Class Activation Mapping) supports you in analyzing, which parts of an image have a strong influence for the inference into a certain class. This so-called heatmap based on Grad-CAM is additionally very fast compared to the previously offered method.

HALCON 19.11 SUPPORTS ONNX FORMAT

Many companies work with open source frameworks to train classifiers for deep learning models (CNN). These CNNs can be exported into the ONNX (Open Neural Network Exchange) format. From this version on, HALCON is able to read data in ONNX format, allowing to use previously created 3rd party networks within HALCON.

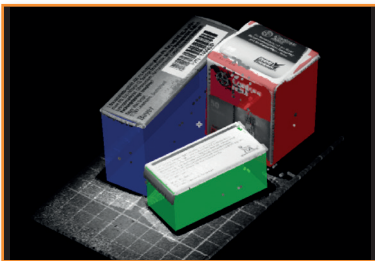


ADDITIONAL NEW FEATURES



SPEEDUP OF THE ECC 200 DATA CODE READER

In HALCON 19.11, the code reader for ECC 200 codes has been significantly accelerated for multi-core systems. This affects especially codes that are difficult to detect and read. For such codes, a speedup of up to factor 3 can be reached. This speedup also increases the viability of embedded-based code readers by taking full advantage of existing hardware capacities.

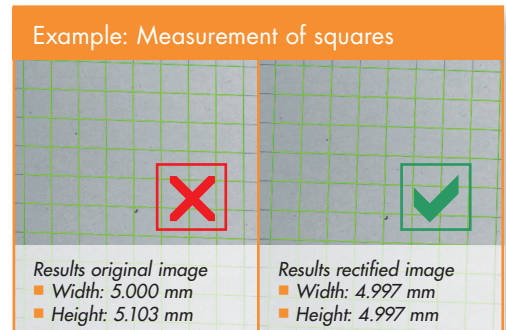


GENERIC BOX FINDER FOR PICK-AND-PLACE APPLICATIONS

The generic box finder allows users to locate boxes of different sizes within a predefined range of height, width, and depth, removing the need to train a model. This makes many applications much more efficient – especially within the logistics and pharmaceutical industries, where usually boxes in a large variety of different sizes are used.

CALIBRATION OF TELECENTRIC LINE SCAN CAMERAS

HALCON has been extended with a new camera model: It provides the functionality to calibrate line scan cameras with telecentric lenses. Images acquired with such telecentric line scan cameras can now be rectified. Thus, measurements can be performed with high precision. In the example shown here, measurements of squares are performed. On the original image (left), squares are not rectified, leading to inaccurate results. The right image has been rectified based on the calibration information, resulting in accurate squares.



Highlights of Previous HALCON Progress Releases

INNOVATIONS

Inference on Arm® processors

Inference for the deep learning technologies...

- classification
- object detection
- semantic segmentation

... can be executed directly on Arm® processors. This broadens the range of possible deep learning applications significantly.

MAJOR CORE TECHNOLOGY IMPROVEMENTS

Shape-based Matching | Surface-based Matching | Speedups of Operators

Handle Variable Inspect lets developers inspect current properties of complex data structures at a glance.

New data structure "Dictionaries" offers users various new ways to work with complex data.

Try HALCON FOR FREE!

Download HALCON and contact a distributor for a free evaluation license or use our free application evaluation service.

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What Is HALCON?

MVTec HALCON is the comprehensive standard software for machine vision with an integrated development environment (HDevelop) that is used worldwide. It enables cost savings and improved time to market. HALCON's flexible architecture facilitates rapid development of any kind of machine vision application.

What Is Included?

MVTec HALCON provides outstanding performance and a comprehensive support of multi-core platforms, special instruction sets like AVX2 and NEON, as well as GPU acceleration. It serves all industries, with a library used in hundreds of thousands of installations in all areas of imaging like blob analysis, morphology, matching, measuring, and identification. The software provides the latest state-of-the-art machine vision technologies, such as comprehensive 3D vision and deep learning algorithms.

What Is HALCON Progress?

HALCON Progress is the fast track to the latest features. With new releases approximately every six months, it gives you access to the newest features quicker and more frequently than ever before. These short release cycles are only available via an annual subscription.

Why HALCON?

The software secures your investment by supporting a wide range of operating systems and providing interfaces to hundreds of industrial cameras and frame grabbers, in particular by supporting standards like GenICam, GigE Vision, and USB3 Vision. By default, MVTEC HALCON runs on Arm®-based embedded vision platforms. It can also be ported to various target platforms. Thus, the software is ideally suited for the use within embedded and customized systems.

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