



HALCON

a product of MVTec

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**BENEFIT FROM SHORT
RELEASE CYCLES WITH
HALCON PROGRESS**

**NEW
VERSION
20.05**

HALCON 20.05

More than ever before, MVTec HALCON 20.05 demonstrates the benefits offered by the short release cycle of the HALCON Progress Edition: It provides completely new features and – thanks to the latest customer feedback – improvements for features of the previous HALCON version. This proves again: HALCON Progress customers reap the benefits of these enhancements very quickly.

New Features



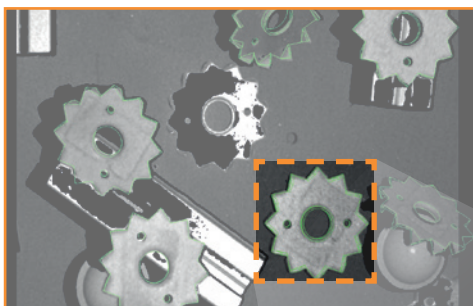
READING VERY SMALL CODES WITH THE SUBPIXEL BAR CODE READER

The bar code reader in HALCON 20.05 has been improved by an advanced decoding algorithm, which increases the decoding rate when reading codes with very thin bars. Thanks to this, it is now possible to even read codes with bars smaller than one pixel, as shown in the picture on the left.



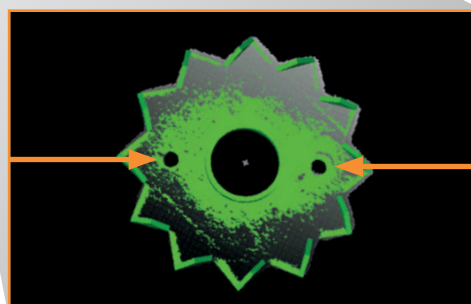
MORE FLEXIBILITY WITH DEEP LEARNING TRAINING ON CPU

With HALCON 20.05, training for all deep learning technologies can be performed on the CPU. By removing the need for a dedicated GPU, standard industrial PCs (that could not house powerful GPUs) can now be used for training as well. This greatly increases customers' flexibility regarding the implementation of deep learning, because training can now be performed directly on the production line, making it possible to adjust the application to changing environmental conditions "on the fly".



MORE ACCURATE AND ROBUST MATCHING RESULTS WITH SURFACE-BASED 3D MATCHING

Especially in the assembly industry, workpieces must be located robustly and accurately to allow for further processing. Often, properties like small holes are the only unique feature to find the correct orientation of the object. HALCON's surface-based 3D matching can now make use of these features to increase accuracy and robustness of the matching result.



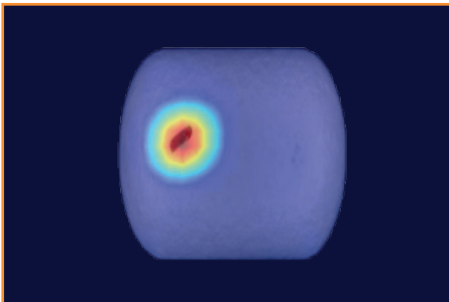
Improvements since the last HALCON Progress release



MORE ROBUST GENERIC BOX FINDER FOR PICK-AND-PLACE APPLICATIONS

The generic box finder, which was released with HALCON 19.11, allows users to locate boxes of different sizes within a predefined range of height, width, and depth, removing the need to train a model.

With HALCON 20.05, it was improved in terms of robustness, performance, speed, and usability. Now, it is much easier to find a wide range of different sizes of various boxes in a robust way.



CPU SUPPORT FOR GRAD-CAM-BASED HEATMAP

The Grad-CAM-based heatmap (Gradient-weighted Class Activation Mapping) supports you in analyzing which parts of an image influence the classification decision. In HALCON 20.05, the heatmap calculation can also be performed on the CPU. Since this can be done without significant speed drops, customers are now able to analyze their deep learning network's class prediction directly.



SIGNIFICANT IMPROVEMENTS FOR ANOMALY DETECTION

The anomaly detection significantly facilitates the automated surface inspection by only requiring a low number of high quality "good" images for training. With HALCON 20.05, training a network for anomaly detection is now up to ten times faster and can therefore mostly be done in a matter of seconds. Combined with an also faster inference, this opens up entirely new possibilities for trying deep learning on new and existing applications.

Trained networks now also require less memory and disk space, which makes HALCON's anomaly detection more viable for the use on embedded devices.

FURTHER IMPROVEMENTS in HALCON 20.05

- General speedups for several operators
- Texture inspection now supports multi-channel images
- Support of .NET Core
- Multiple new tuple operators for various mathematical functions
- Support of multi-view stereo with telecentric line scan cameras
- Socket communication now supports SSL/TLS encryption

HIGHLIGHTS of previous HALCON Progress Releases

- ECC 200 code reader has been significantly accelerated for codes that are particularly hard to detect and read
- Calibration of telecentric line scan cameras makes it possible to rectify images and thus perform measurements with high precision
- Support of ONNX format allows using previously created 3rd party networks within HALCON

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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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