New version of MVTec HALCON machine vision software focuses on usability and strengthening core features

- **Powerful shape matching technology now even more user-friendly**
- **Continuous acceleration of algorithmics**
- **Release on May 16, 2024**

Munich, April 16, 2024 – MVTec Software GmbH (www.mvtec.com), a leading international manufacturer of machine vision software, will release the new version 24.05 of its HALCON standard machine vision software May 16. Due to its six-month release cycle, HALCON provides continuous access to the latest technologies for implementing machine vision applications. With this release, MVTec has focused on improving HALCON's ease-of-use and rule-based machine vision. The most significant innovation in HALCON 24.05 is the extended parameter estimation for Shape Matching. "Matching methods are the basis of many machine vision applications, as they are used to find the relevant objects in an image with sub-pixel accuracy. With the new development, we have increased the user-friendliness by adding an automated parameter estimation in HALCON. This means that fast and robust solutions can now be developed even without in-depth expert knowledge," explains Jan Gärtner, Product Manager HALCON.

Continuous technological development with a focus on customer requirements

In addition to the extended parameter estimation for Shape Matching, the new release will also provide customers with higher decoding rates for bar code reading and includes various measures to improve core technologies. As of version 24.05, HALCON natively supports the STEP format, the industry standard for 3D CAD data. Along with this release, MVTec will publish an updated version of its OpenVINO™ Toolkit AI² plug-in. "We always strive to provide our customers with the latest technologies. This also means that we constantly improve existing methods. Thus, we were able to accelerate the performance of our deep learning methods with the new OpenVINO Toolkit AI² plug-in, and our customers also benefit from many performance improvements in rule-based algorithms," says Jan Gärtner.

Extended parameter estimation for Shape Matching

HALCON 24.05 introduces the first iteration of the extended parameter estimation for Shape Matching. With its subpixel accuracy, Shape Matching finds objects robustly and accurately in real-time, even in the most challenging situations. Thanks to the extended parameter estimation, manual parameter adjustments will soon be a thing of the past. Using multiple annotated images, users can now easily optimize for maximum online speed while keeping robustness through automated parameter tuning. Users thus benefit from a faster implementation of shape matching applications, even without specialized expertise.

Bar code reader improvements for stacked bar codes

The bar code reader for GS1 DataBar Expanded Stacked codes has been improved in HALCON 24.05. Depending on the application, customers can expect significant improvements to their decoding rates. This will especially benefit industries such as logistics, retail, and manufacturing, where stacked bar codes are an essential means for tracking and tracing goods.

3D improvements & enhancements: Importing 3D object models from the STEP format
Starting with version 24.05, HALCON supports the STEP (Standard for the Exchange of Product Data) file format, the industry standard for 3D CAD data. Customers can now seamlessly load STEP CAD data directly into a HALCON 3D object model without any intermediate steps or conversions. The STEP format is supported by most common CAD programs, increasing interoperability and efficiency, because models for 3D matching can be taken directly from the planning data in the CAD software.

New version of the OpenVINO™ Toolkit AI² plug-in
Parallel to the HALCON 24.05 release, a new version of the OpenVINO Toolkit AI² plug-in will be released. This update uses the latest LTS version of the Intel® Distribution of OpenVINO™ Toolkit, ensuring compatibility with the latest Intel hardware and boosting the inference performance of deep learning applications. Notably, the new plug-in version enhances support for Intel's 13th generation of Intel Core processors, leading to improved inference performance. In addition, customers can now also utilize Intel's discrete graphics cards for inference, providing greater flexibility in selecting the appropriate hardware for their application.

Speedups and further improvements
HALCON 24.05 also includes several performance optimizations for various core technologies. For example, unwarping byte images using a vector field is now up to 285 % faster on AVX2-capable Intel CPUs. The operator map_image is now up to 25% faster as well.
In addition, HALCON 24.05 provides adjustments to many operators to address performance impacts resulting from Intel's resolution of the "Downfall" security vulnerability.

About MVTec Software GmbH
MVTec is a leading manufacturer of standard software for machine vision. MVTec products are used in a wide range of industries, such as semiconductor and electronics manufacturing, battery production, agriculture and food, as well as logistics. They enable applications like surface inspection, optical quality control, robot guidance, identification, measurement, classification, and more. By providing modern technologies such as 3D vision, deep learning, and embedded vision, software by MVTec also enables new automation solutions for the Industrial Internet of Things aka Industry 4.0. With locations in Germany, the USA, France, and China, as well as an established network of international distributors, MVTec is represented in more than 35 countries worldwide.
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