Press release

MVTec Software GmbH

MVTec Introduces New Deep Learning Feature "Continual Learning" in HALCON 25.11

- **New feature: retrain deep learning models quickly and efficiently**
- **Only a few images are required**
- **Continual Learning available with the release of HALCON 25.11 on November 12, 2025**

Munich, 12 November 2025 – MVTec Software GmbH, a leading international provider of standard software for machine vision, has developed a new deep learning feature that enables flexible adaptation to changing production environments. Continual Learning enhances the efficiency and speed of retraining deep learning models and requires only a few images, further reducing time and cost. The new feature is part of the latest HALCON version 25.11, which will be released on November 12, 2025.

Production processes are in constant change

"When certain parameters in production change, deep learning–based machine vision applications must be retrained to maintain robust recognition rates. So far, this process has been complex and time-consuming. With Continual Learning in HALCON 25.11, we now offer a feature that significantly reduces the effort required to retrain classification models," explains Jan Gärtner, Product Manager for HALCON at MVTec. The reasons for changes in production processes vary. Lighting conditions often shift when new illumination is installed, or a production line is expanded or relocated. Supplied parts and preassembled components also tend to show variations over time, for example, in color, material, or surface texture. Such differences are especially common when switching suppliers. These altered conditions can strongly affect quality inspection processes: even minor variations can greatly impact defect detection. This is particularly relevant when new product classes are added or entirely new types of anomalies appear.

Fast, simple, and efficient: retraining with Continual Learning

Continual Learning addresses these challenges by allowing existing classification models to be retrained quickly and easily, enabling flexible adaptation to new requirements in industrial environments. Typically, only five to ten images are needed, minimizing both effort and cost. Another key advantage: Continual Learning is resistant to the so-called "catastrophic forgetting." This means that during retraining, the neural network continues to correctly recognize the classes and features it originally learned. In addition, Continual Learning requires only a standard CPU instead of an expensive GPU, making it ideal for embedded and edge devices such as smart cameras and sensors. Existing classes can be updated, and new ones added, without the need for complete retraining. Finally, retraining with Continual Learning is so straightforward that it can be performed even by users without in-depth machine vision expertise.

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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, Benelux, Spain, China, Taiwan, and South Korea, as well as an established network of international distributors, MVTec is represented in more than 35 countries worldwide. www.mvtec.com

About MVTec HALCON
MVTec HALCON is 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. MVTec HALCON provides outstanding performance and 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. 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 use within embedded and customized systems. www.halcon.com

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