

EasyModel AI



EasyModel AI: Train your own AI models effortlessly with EasyModel

This zero-code programming tool allows you to quickly enter the world of artificial intelligence, even without prior knowledge. With the VisionLine Detect option AI Filter you improve feature detection and make your process less dependent on external influences such as difficult lighting situations or fluctuating pre-processes. Often, a few training data is enough to achieve good results. EasyModel is the ideal tool to optimize your production using AI.

EasyModel AI: Cloud-based training of AI models made simple

Experience the power of EasyModel AI, your solution for creating AI models based on deep learning.

EasyModel AI is a cloud-based AI training platform that allows you to easily label data. As a customer, you can train your own imagebased AI models to fit your requirements and your component. The best part is that you don't need any expert programming knowledge. The user interface and operation of EasyModel AI is as simple and intuitive as you know it from painting and drawing programs on your smartphone or computer. The amount of required training data is manageable. At the same time, hardware requirements have been reduced to desktop standards thanks to cloud architecture. In addition, the tool has efficient data management and storage as well as the ability to version projects with labeled images and models, allowing you to easily invite and collaborate with colleagues on projects.

Zero Code Labeling:

Easy labeling of relevant features without programming knowledge.

Low data requirements:

Few labeled training images are enough for powerful AI models.

Flexible AI model training:

Adaptation to any use case, easy retraining possible.

Intuitive user interface:

Easy operation without training or expertise.

Expand the capabilities of VisionLine Detect

TRUMPF's VisionLine Detect image processing reliably detects the position of your components and ensures precise welding at the correct location.

Option AI Filter for VisionLine Detect

With the AI Filter option for VisionLine Detect, the AI models from EasyModel AI can be applied. Based on the AI model, the filter makes a precise distinction between relevant image areas such as the part to be processed and other areas such as fixtures, contaminations or reflections. Particularly noteworthy is the improved robustness of VisionLine image processing to external influences such as variable part quality (e.g., burrs, scratches, dirt) and changing illumination conditions.

By combining artificial intelligence and conventional image processing algorithms, we extend the capabilities of VisionLine Detect. Our hybrid process uses the trained AI model to identify the component. Conventional image processing algorithms are then used to generate the desired measured values. In this way, the process remains transparent and the results are traceable.



Robust detection:

Thanks to AI Filter, significantly less dependent on component quality and lighting situation.

Versatile application:

Handle challenging lighting and component situations.

Transparency:

Traceable measurement process thank to standard algorithms. Retain full control over your data.

Increase efficiency:

Thanks to highest detection rates.

Workflow of EasyModel AI and VisionLine Detect

EasyModel AI is seamlessly integrated into TRUMPF's digital product portfolio. In the following, we explain how the cooperation between your production, the VisionLine AI Filter and EasyModel AI takes place:

Step 1: Generate training data

Step 2: Access EasyModel AI

Step 3: Create a project

Step 4: Upload the training data

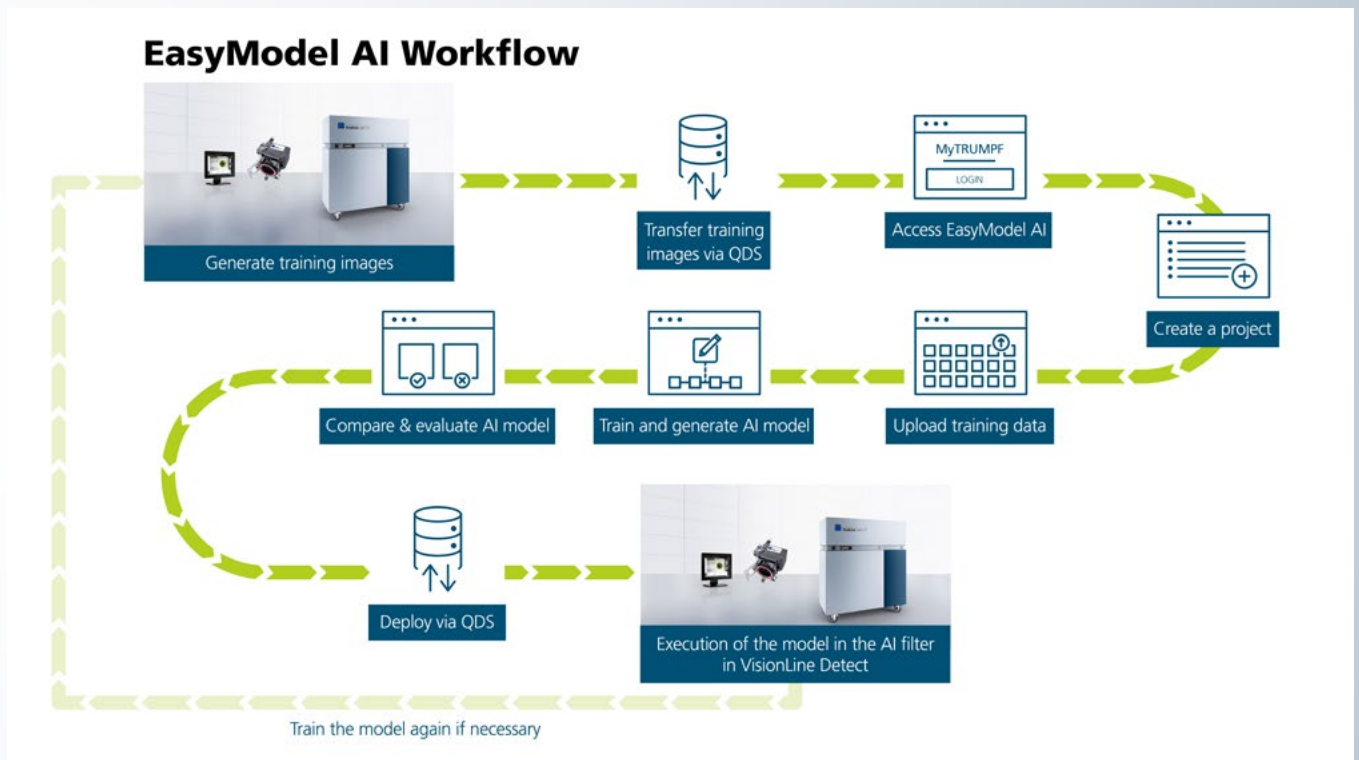
Step 5: Train and generate the model

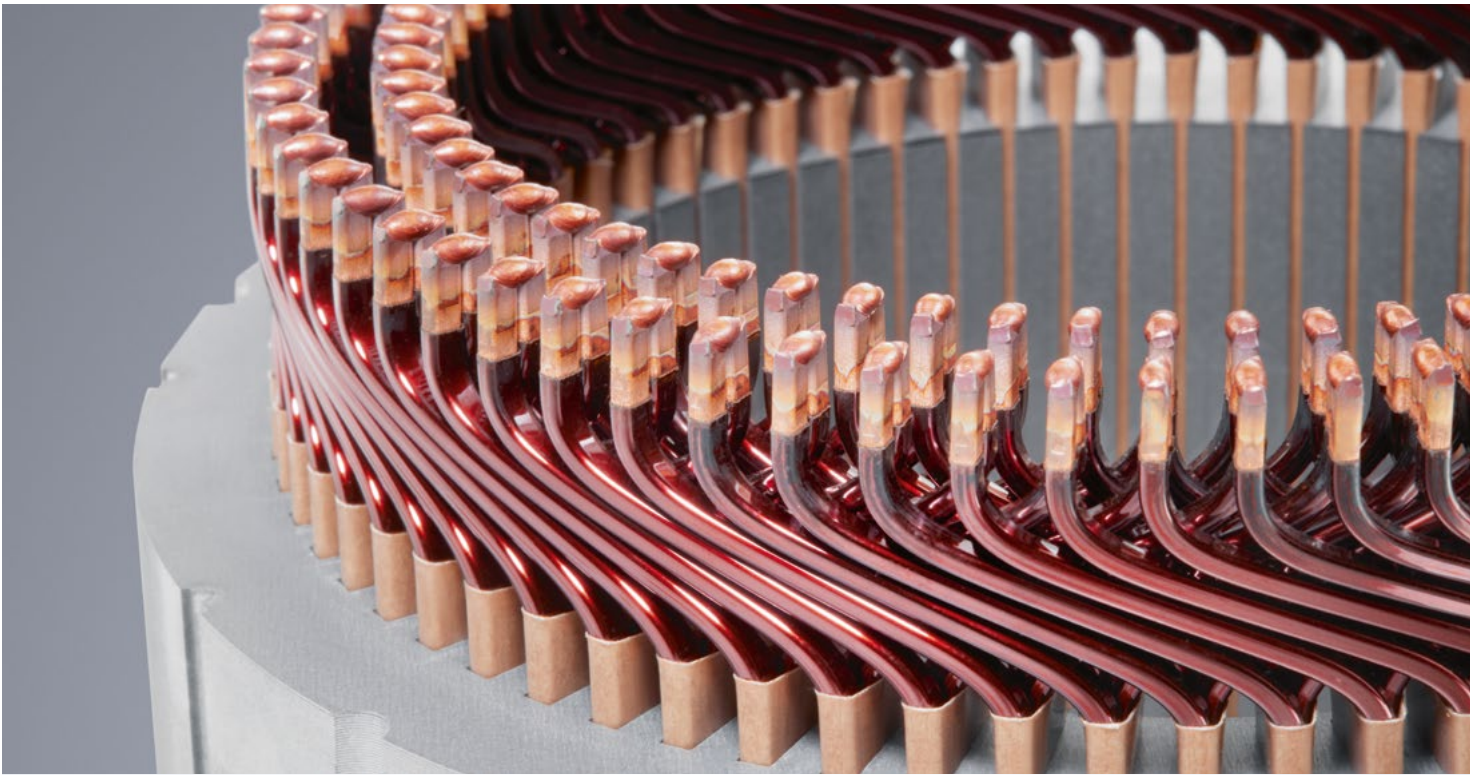
Before it can be used, the artificial intelligence must first be trained. For this purpose, the user marks the relevant component areas in the corresponding image material and then exports the finished model. This is stored in the production system and is used during the execution of the AI Filter for VisionLine Detect image processing.

Step 6: Evaluate the model

Step 7: Implement the model in VisionLine Detect and your production

Step 8: Execute the model and the AI Filter



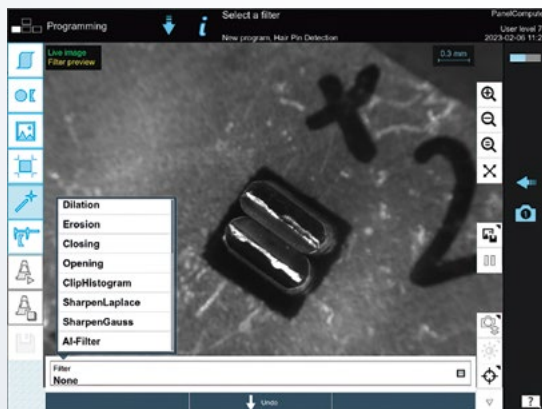


Use case hairpin welding: Efficiency and precision for high-quality components

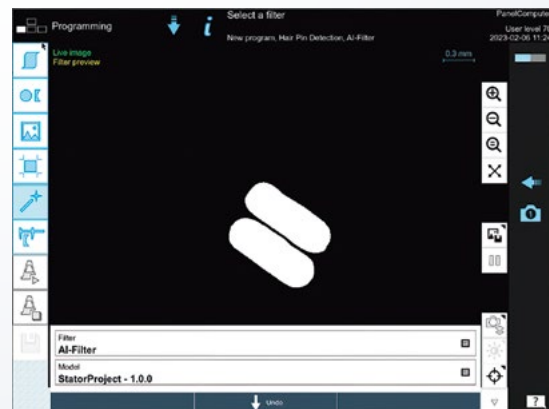
At the end of the production line is one of the most valuable components on the electric car: the stator with, in some cases, over 100 pairs of hairpins that have to be welded. With our combination of EasyModel AI and the AI Filter for VisionLine Detect, you can meet the high demands of series production in terms of quality and cycle time.

By using our AI Filter, the first-time pass rate could be increased **from 99.2% to an impressive 99.8%** on several thousand welds. It is important to note that the remaining 0.2% of parts were classified as "out of order" by VisionLine Detect because specific thresholds such as an excessive part offset or gap were exceeded. Since such parts cannot be welded correctly despite generally possible detection, VisionLine Detect helped avoid scrap. The AI Filter effectively eliminates external influences and ensures reliable production while reducing scrap.

Original image



With AI Filter



The AI Filter can be activated with just one click in the menu selection of the VisionLine interface – very easily and intuitively, even without prior knowledge. The AI Filter gives conventional image processing algorithms perfect contrast, enabling them to generate measured values with the highest reliability.