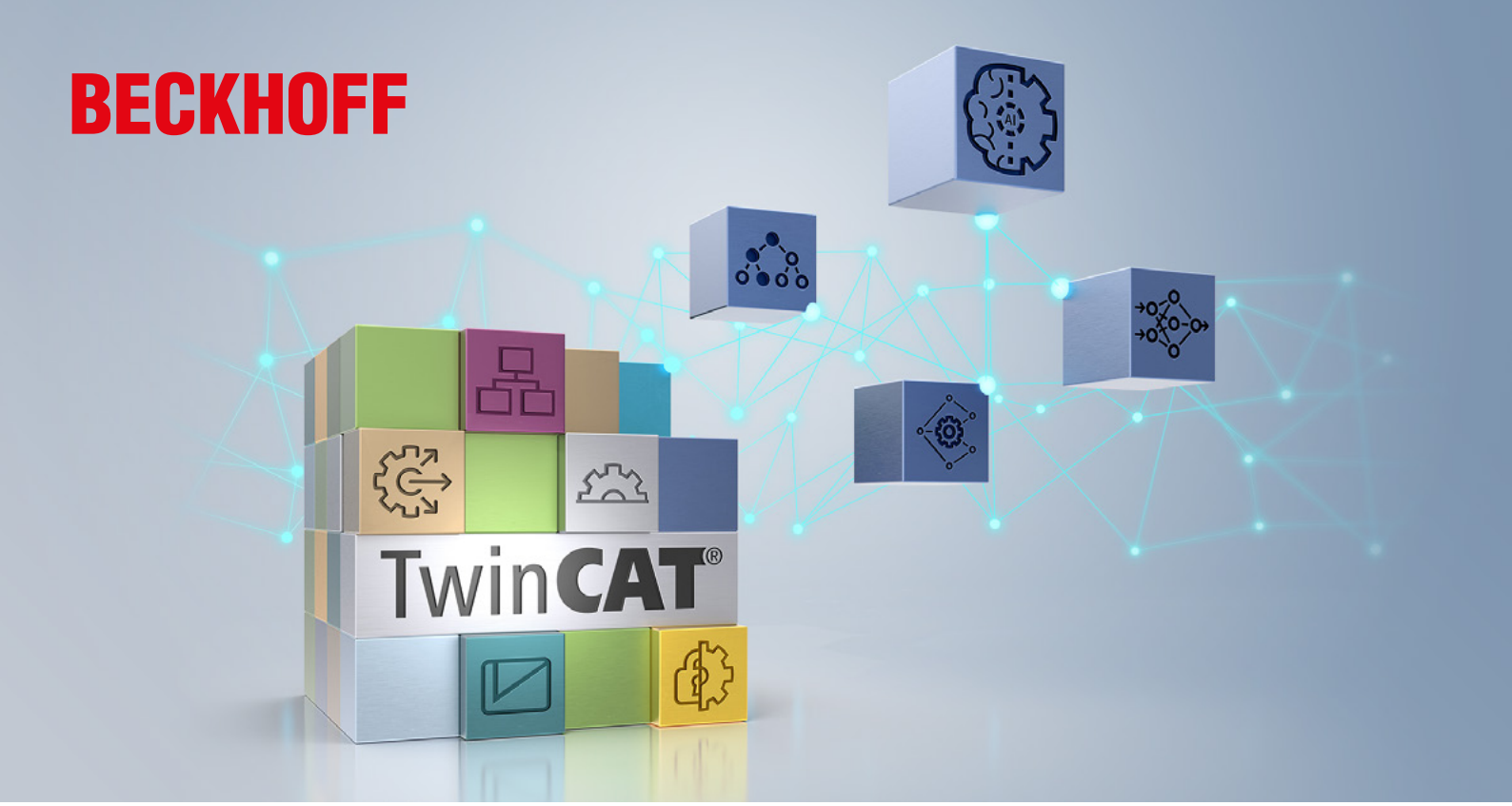
BECKHOFF



Fact sheet
TwinCAT Machine Learning Creator

Create AI models easily and automatically

AI-supported image analyses offer enormous potential for innovation and automation in process and plant engineering. They are used for quality assurance to eject defined components from the parts stream or to detect and realign misaligned parts.

The main point is that setting up and training AI models for specific applications requires comprehensive automation and process expertise as well as the corresponding AI skills. That, or an experienced data scientist at your side. Beckhoff has developed the TwinCAT Machine Learning Creator to enable companies of all sizes to work efficiently without specialist AI expertise.

No-code platform for automated AI model training

With our innovative TwinCAT Machine Learning Creator, we have automated the development and training of the AI model itself. Previously, this required time-consuming programming work and the integration of specific algorithms. The Machine Learning Creator can now take on these tasks. You only need to provide representative training data – the Creator takes care of everything else automatically and efficiently.

Advantages at a glance

+ no-code platform for automated development of image-based AI models
+ no AI knowledge or data science experience required
+ optimized for real-time applications on Beckhoff Industrial PCs
+ end-to-end workflow through to automatically generated PLC source code
+ can be operated by exporting AI models in ONNX format

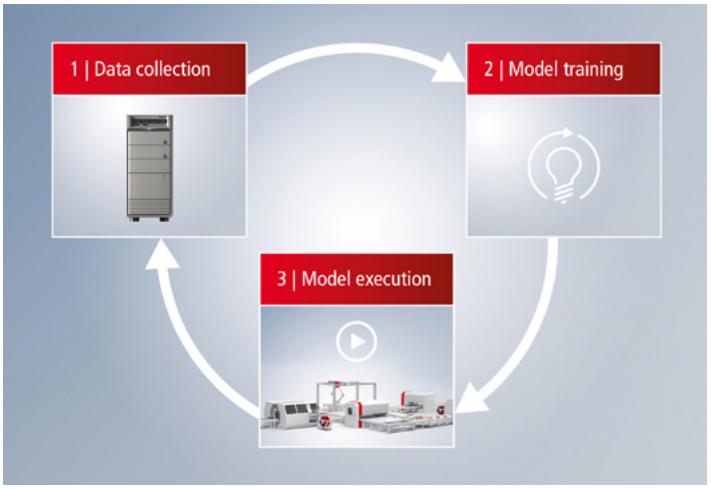
▶ www.beckhoff.com/machine-learning

Machine learning made easy – from data collection to the finished AI model

Machine learning is a complex process consisting of many substeps that usually involves a great deal of development work. The TwinCAT Machine Learning Creator is a tool that carries out all of these steps automatically. The result is an individually optimized, ready-to-use AI model for image-based applications such as quality assurance.

How does it work? The TwinCAT Machine Learning Creator is a no-code development platform that uses the latest automated machine learning methods. These methods automate all tasks that would otherwise require a lot of programming work and time on the part of experienced specialists. The tool automatically searches for a suitable AI model architecture, creates the necessary pre- and post-processing steps, trains the AI model, and evaluates the quality of the algorithm.

You only need to provide the TwinCAT Machine Learning Creator with application-specific image data as training material. For example, you can provide data records with good parts, irregularities, and color deviations. The software will then take care of everything else fully automatically.



Simplified representation of the workflow from data collection and training to the integration of a trained AI model into a production environment

The TwinCAT Machine Learning Creator ...

- reads in your specifically classified image data
- generates a suitable AI model for your individual challenges
- trains the model with the existing data sets
- optimizes the latency and accuracy of the AI model until it meets the requirements for your real-time application

You can easily integrate the created AI model into the machine controller with the assistance of TwinCAT. Even the required PLC code is created automatically.

> “With the TwinCAT Machine Learning Creator, automation and process experts are able to generate AI models for image-based applications in the shortest possible time and highly efficiently. This accelerates engineering projects, saving time and money. In particular, we are massively reducing the entry barrier for AI projects.”

Dr. Fabian Bause
TwinCAT Product Management, Beckhoff Automation

Transparent and open for systems

The TwinCAT Machine Learning Creator generates AI models in ONNX format, making them open for systems and compatible with third-party products. They are optimized for Beckhoff Industrial PCs with TwinCAT products.

Automated reports on the behavior of the AI models, which are generated at the touch of a button and offer transparency and comparability, are a valued feature.

Scan for more:

► www.beckhoff.com/machine-learning