Fraunhofer IPK

FRAUNHOFER INSTITUTE FOR PRODUCTION SYSTEMS AND DESIGN TECHNOLOGY IPK

PRESS RELEASE

Good or not? Application partners wanted for new AI-based inspection technology

Fraunhofer IPK has developed a novel technology for AI-based optical quality control of industrial goods with minimal integration effort. In order to test the solution for a wide range of applications, companies are now called upon to send in new and used parts for a potential analysis.

Artificial intelligence can be used to automate a number of industrial processes that previously relied on manual activities. These include incoming goods inspection or quality checks on parts and components being processed. The catch: Most AI systems use supervised learning methods that require large amounts of data. For many companies, associated costs are too high, and personnel requirements are enormous.

In the project »VIADUCT – Effort Reduction for AI Applications in Industry by Reducing Training Data«, researchers from Fraunhofer IPK together with their Armenian technology partner Ngene LLC have developed a novel approach for data-reduced AI solutions: The so-called image-based anomaly detection method enables companies to integrate the benefits of AI-based image processing into their inspection processes without having to accept large efforts in training data collection and annotation.

This is made possible by reformulating the inspection task: Instead of looking for familiar defects, anomaly detection looks for any deviations (anomalies) from a predefined quality standard. For this purpose, the AI is trained on defect-free product samples, which are available in significantly larger quantities than defective samples. Although these flawless parts will still need to be captured in images, the highly time-consuming pixel-by-pixel annotation of defects is no longer required. In an initial study, the Fraunhofer team has already been able to demonstrate that this can save up to 97 percent of the effort required for data collection.

In order to test the new technology on as wide a range of industrial objects as possible, Fraunhofer IPK is now looking for application partners. Various companies have already expressed interest in the technology, including Würth Industrie Service GmbH & Co. KG, Charité CFM Facility Management GmbH, Maschinenfabrik Bernard KRONE GmbH & Co. as well as Metaq GmbH. There is currently an open call to other interested companies to send in products or components and have them examined for their application potential.

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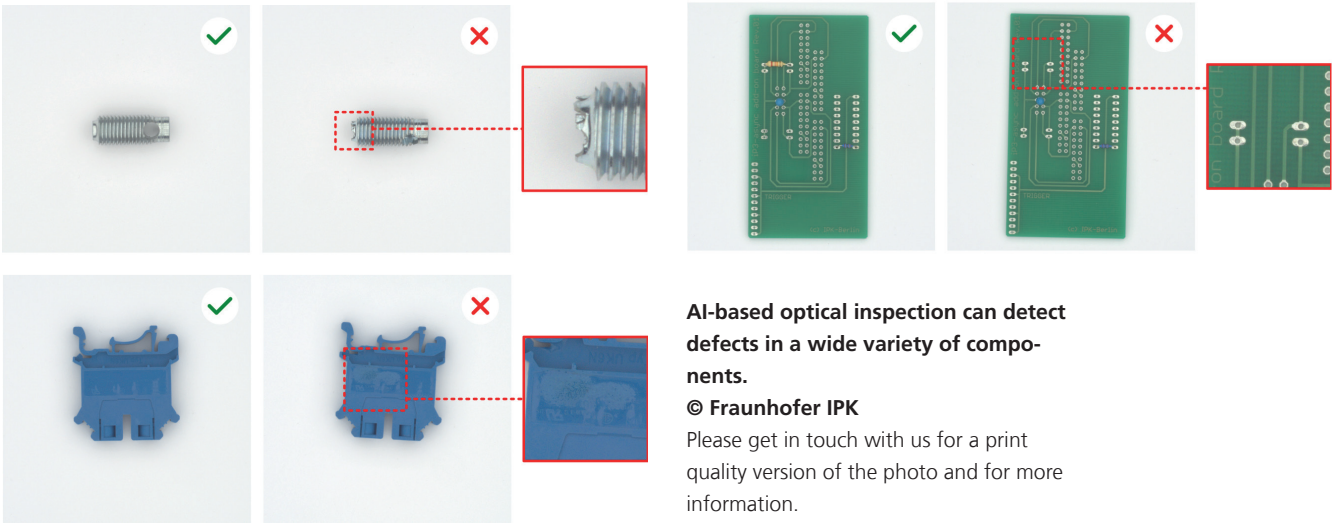
What is needed:

- objects that are well defined in length, width, and height
- at least 10 defect-free objects per product
- at least 10 objects with production-related defects per product
- longest embossment should be at least 5 mm and 500 mm maximum

Participating companies will then receive an individual, free and non-binding potential analysis of how AI-based image processing can be integrated into their inspection processes with little effort. Image material of the submitted products created for this purpose will be transferred to a publicly accessible data set after project completion. If no publication of product images is desired, cooperation outside the project is possible. Submitted products will be returned upon request.

The VIADUCT project has been funded by the German Federal Ministry of Education and Research as part of its strategies for artificial intelligence and for the integration of the Eastern Partnership countries into the European Research Area since September 2020.



AI-based optical inspection can detect defects in a wide variety of components.
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Please get in touch with us for a print quality version of the photo and for more information.

Further Information:
https://www.ipk.fraunhofer.de/en/references/optical-ai-testing.html

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