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TASKS
Image analysis
Defects detection
Segmentation
Classification
Measurement
Annotation
Computer vision

INDUSTRY
Pharma
Cosmetic industry
OEM (original equipment manufacturer)

TECHNOLOGIES
AI-go Studio
AI-go Runtime
Invariant.ai®

REQUEST
The client is a major manufacturer of inspection machines in the pharmaceutical sector, interested in upgrading its machines with an artificial intelligence system for the visual inspection of vials.
The two macro project goals were:
- to improve the performance of the current inspection system, especially in terms of false scrap reduction
- to minimize the effort involved in setting up and managing new formats (different in size and color).

STARTING POINT
The machines involved in this project are responsible for the visual inspection of the upper part of the vials with flip-off cap. The current system is rule-based, i.e. based on the definition of a set of rules that allow the detection of non-conforming parts.

SOLUTION IMPLEMENTED

The machines were equipped with the Vision Cam AI-go, co-developed with IMAGO Technologies GmbH. Through the camera, the operator, without any previous knowledge in AI or computer vision, was able to acquire about 20 images for each class of defect (good / scrap, color non-homogeneity, cosmetic defects such as scratches and misses) used for the model specialization, occurred directly on the device in less than 1 minute. The model was then tested and the output was punctually and easily analyzed by the operator, in order to identify the examples on which the neural network performed badly and, if necessary, to launch a new training. Once the required performance is reached, the model is ready to be activated for production use.

RESULTS

Improved Quality	Better anomaly detectability - even in sub-optimal visual conditions. Quality evaluation objectification. The quality evaluation is more reliable over time.

Model training time ~ 1 minute	**Model inference time ~ 100 ms**	**Compliance to cycle times = 36000 pieces/hour**

Reduction of false rejects	Based on examples from production, the model performs very well even in sub-optimal and variable lighting situations.