AI Quality Control Toolkit

Reduces the manual labor required to detect quality problems in manufacturing.

The intelligent Quality Control solution automates manual visual inspection tasks using a set of AI and computer vision technologies that enable manufacturers to transform quality control processes by automatically detecting product defects.

Visual inspection is a highly manual process that can be time-consuming and prone to errors.

Now, rule-based visual inspection machines have emerged, and the market of “smart manufacturing” (industry 4.0) is in a good momentum for remarkable growth.

AI Quality Control Toolkit drastically automates manual inspection operations, fastens time to value, reduces costs and risks, scales production, and makes the supply chain predictable for better management.

Potential Use Cases

Detect Damage

Spot damage to a product's surface quality, colour, and shape during the manufacturing and assembly process.

Identify missing components

Determine and withdraw missing, misplaced, or deformed components from production initially.

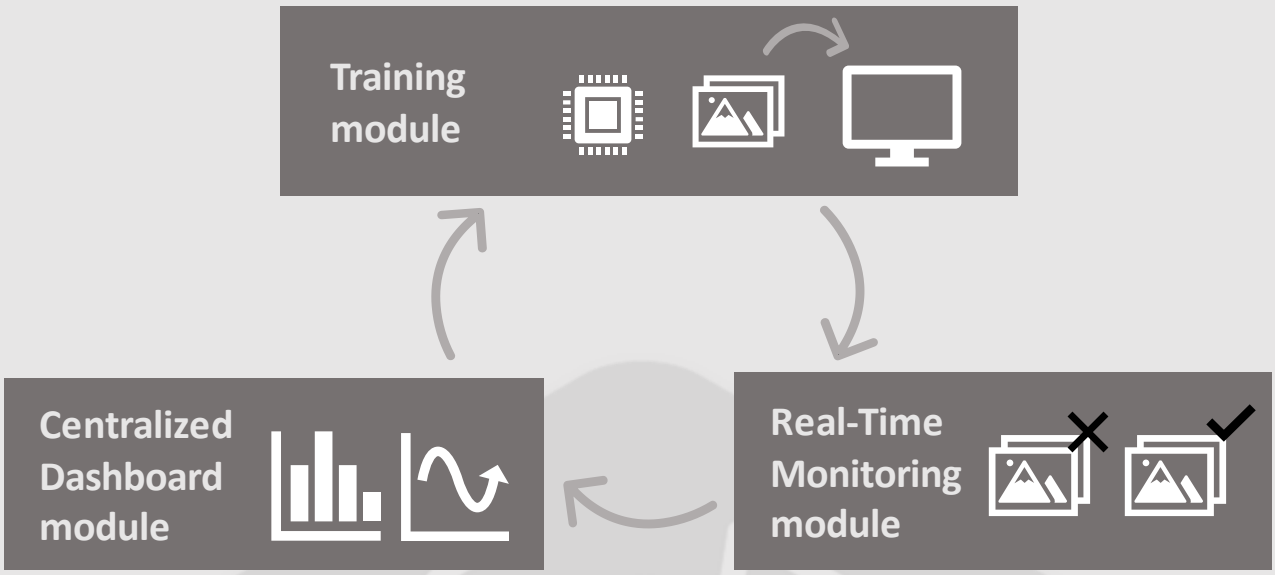
Uncover process issues

Detect and fix defects with repeating patterns that could indicate process issues.

Predict failures

Detect impending failures that could never be detected by the human eye and predict equipment maintenance.

AI Quality Control Toolkit's Modules



Key features

Training module

- Easy to create and train UI-based AI models for different components.
- Active Learning capabilities facilitate labeling work.

Real-Time Monitoring module

- Real-time prediction of components keeps track of model accuracy
- Prevents the stopping of production lines.

Centralized Dashboard module

- Quick overview of the company's performance (production line, factory, country, company).
- Possibility to add other metrics to monitor performance and perform Root Cause Analysis of problems.

AI Quality Control Toolkit

Designed for **Subject Matter Experts**, leveraging **TuplOS,** Tupl's **MLOps Platform**

Key benefits

- **95% detection accuracy**, compared to 85% during the manual inspection
- **Easy to create AI models** for different parts
- **Active Learning capabilities** to facilitate labelling work
- **A centralized solution,** works with any type of camera
- **Real-time prediction** of parts (under 6s)
- **Model retraining** in case of model regression
- **Predictive solution:** prevents stopping of production lines
- **Individual and aggregated statistics** at different levels (production line, factory, country, company)
- **Root Cause Analysis:** monitors the performance of the problem
- **Integration with a real-time MES** (Manufacturing Execution System).

Business impact

Fasten time to value with AI-powered operations

Streamline operational processes to shortcut time to market from months up to several weeks.

Reduced costs with 90% less manual labour

Reduce time for manual scanning up to 90% while increasing the accuracy.

Reduced risks with unplanned downtime prevention

Quickly identify potential failures of the problem and prevent stopping production lines.

Scale business when scaling the ML model

Scale-up any trained model to production – scale up the manufacturing.