99%+
High Accuracy Rate

Compared to traditional rule AOI systems, DaoAI AOI leverages advanced AI capabilities to identify and classify defects with exceptional precision, delivering significantly higher accuracy across a wide range of applications.

10ms
Inspect time

Efficiently inspect complex components and variations with remarkable speed and precision, achieving results within 10ms per region.

4x4
Pixel precision at detail

Equipped with AI-powered image optimization, DaoAI AOI effectively processes and detects defect as small as 4x4 pixel resolution, ensuring a smooth and exceptional user experience.

DaoAI AOI SYSTEM

The built-in AI of DaoAI's AOI system learns from defect-free samples and can detect defects such as scratches and angle deviations with exceptional speed and accuracy. The system integrates camera configuration, model training, and data management into a web platform, enabling seamless deployment for users.

■ AI-BASED DEFECT INSPECTION

All Positive Data Training

Traditional vision systems rely on extensive data of both defect and non-defect images for training. In contrast, DaoAI AOI requires only a few good reference images to complete the learning process and build the AI model, enabling swift and efficient on-site deployment.

|	**All Positive Data Training**	Edge AI	Typical Deep Learning
Data Requirement	1-20 good sample reference images	10-20 good and defect data	100+ sample and defect data
Learning Time	1 minute	Several minutes	Several hours to days
Accuracy	High	Medium	High

Feedback Loop

Similar to how humans learn from experience, DaoAI seamlessly integrates human feedback into its learning process. When defective products are detected on the production line, on-site personnel can review and verify them and confirm or give feedback within the system , enabling real-time model updates. This approach ensures continuous improvement in accuracy over time.
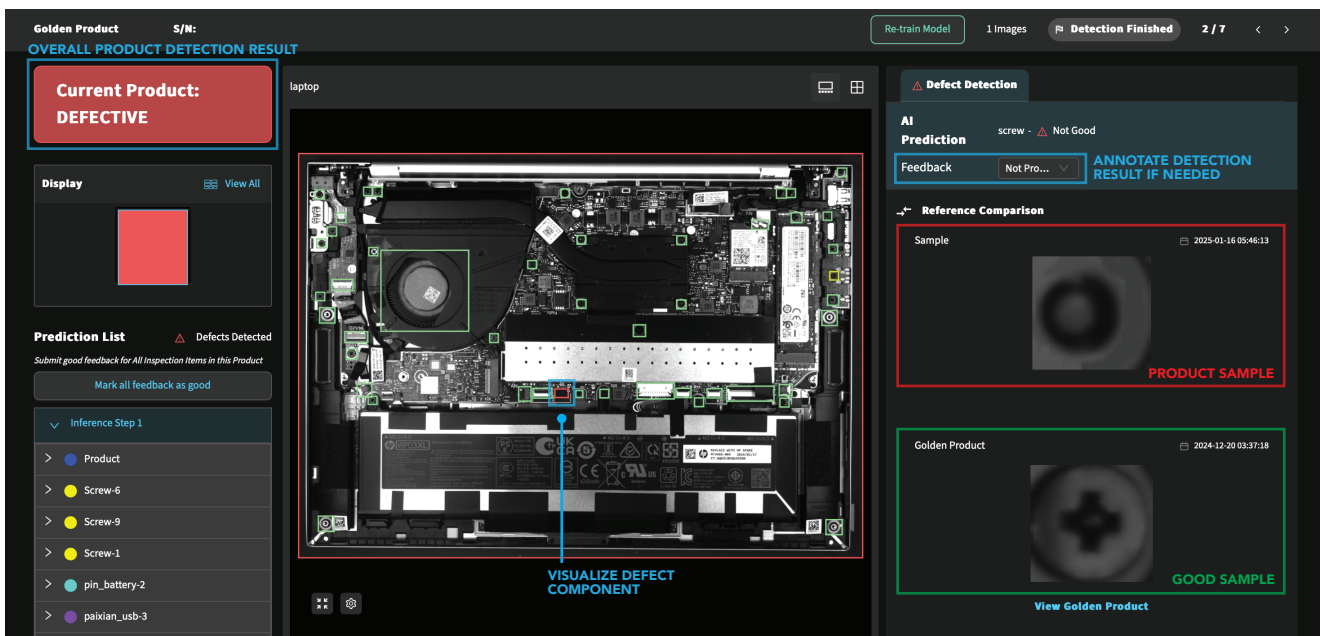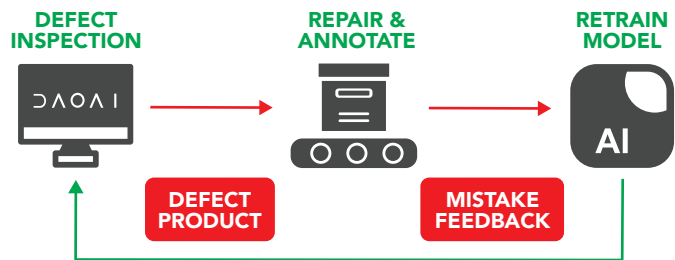
# IDEAL FOR ANALYZING COMPLEX SURFACES WITH CHALLENGING FEATURES

High Reflectivity Objects with Uneven Lightings

Unlike other machine vision learning systems, AOI's algorithm is capable to detect high-reflectivity objects and dark object, making it suitable for a wide range of applications.
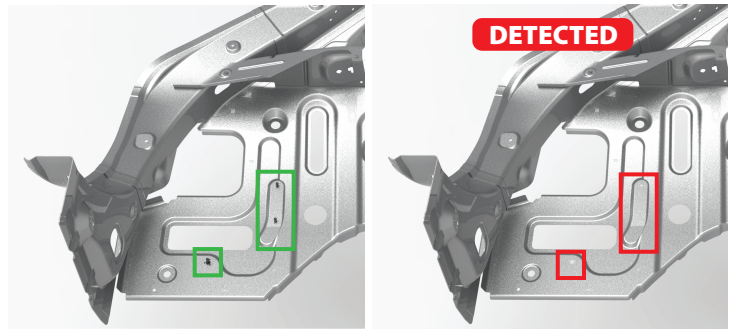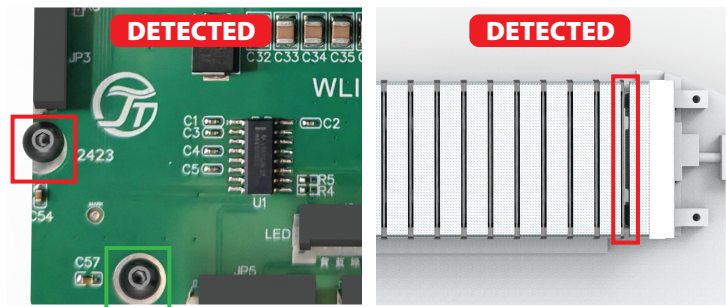
Texture Differences

Accurately distinguishes subtle variations, such as between different types of nails or screws.
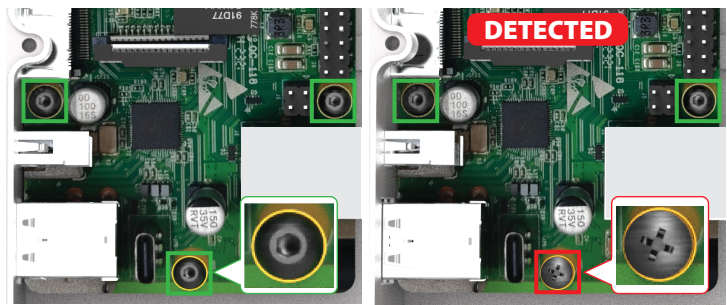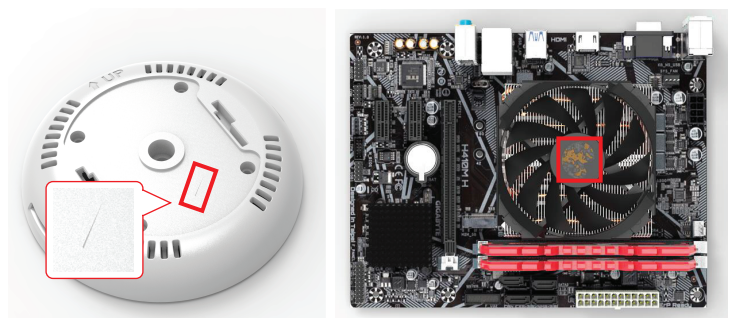
Positional Verification

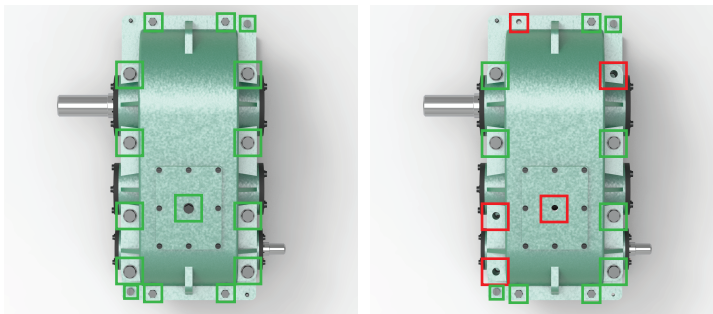Detects deviations in component sizes, misalignments, or incorrect angles.

Surface Defects

Identifies dirt, dents, and other minor imperfections that may compromise quality.
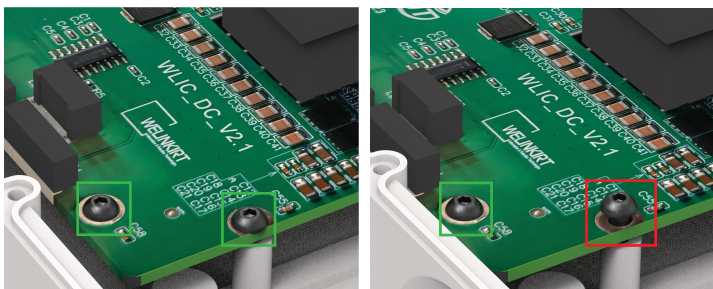
DΛOΛI

Assembly Verification

Detects deviations in component sizes, misalignments, or incorrect angles.


Height Detection

Ensures components like nails are properly screwed in and on correct height level.

Height Detection requires using DaoAI 3D Camera. Learn more about 3D Camera on Page 9.

◼ ALL IN ONE DEFECT & UNLIMITED COMPONENTS INSPECTION

DaoAI AOI supports a wide range of component and surface identification, processing inspections on 50 different components in just 500 milliseconds. For example, defects on connector can be detected across hundreds of parts in mere seconds. This capability is ideal for industries like electronics manufacturing, where hundreds of components must be inspected simultaneously to identify defects such as misalignment, scratches, or plugs.
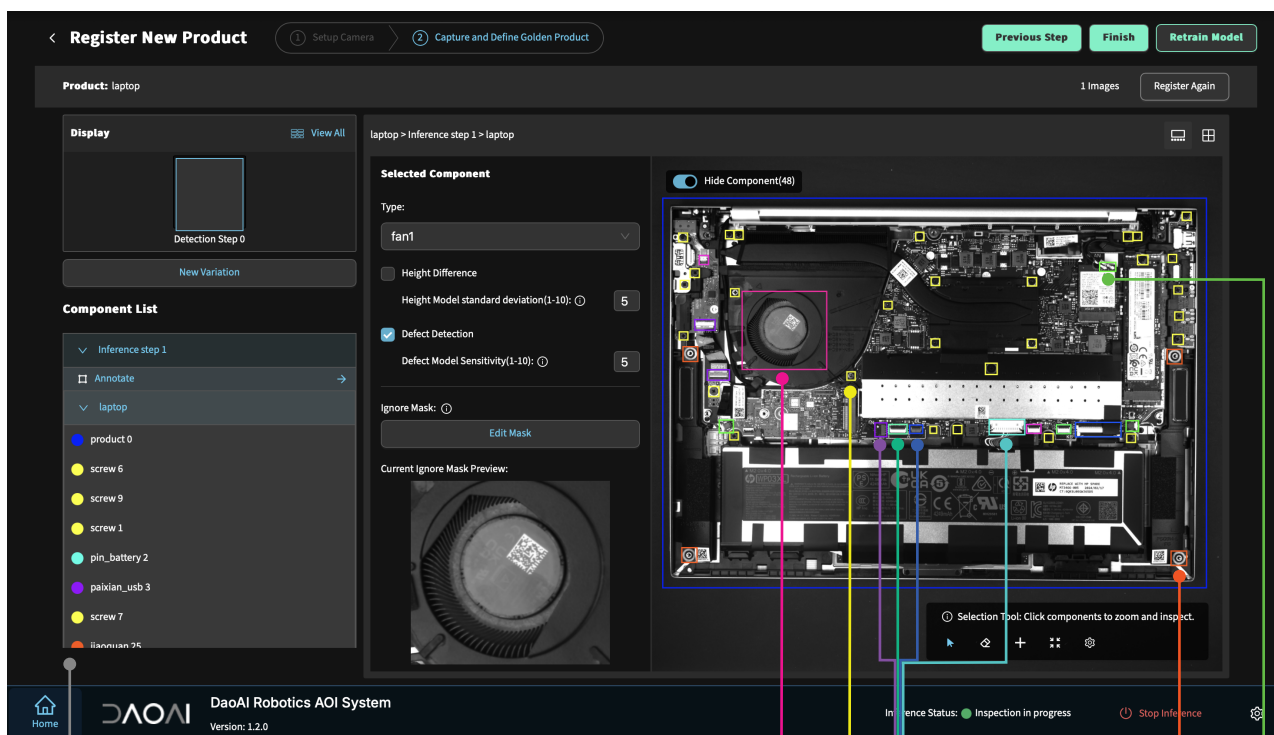
COMPONENT LIST
View all components that are under detection

Edit + Annotate Anytime

FANS
- Defects (dirt or dents)

SCREWS
- Defects
- Wrong screw types
- Angle precision
- Presense

CONNECTOR
- If plugged in place
- Defects
- Positioning

RUBBERING
- Presense
- Positioning

WIRING
- Postioning

KEY HIGHLIGHTS

- 10/ms detection time per components
- Detecting all necessary components at once
- Instantly retrain model to optimize performance
- Eliminates the need for multiple separate systems

MANUAL ANNOTATION:
Simply self select all components that needs inspection.

AUTO ANNOTATION:
AI detects components based on deep learning results from DaoAI World model.

STREAMLINED INSPECTION AND MANAGEMENT ON CENTRALIZED PLATFORM

DaoAI AOI empowers users to instantly review inspection results and adjust learning models through a user-friendly platform. Also by integrating camera configuration and data management into a unified web-based interface, it eliminates the need to navigate multiple software tools.
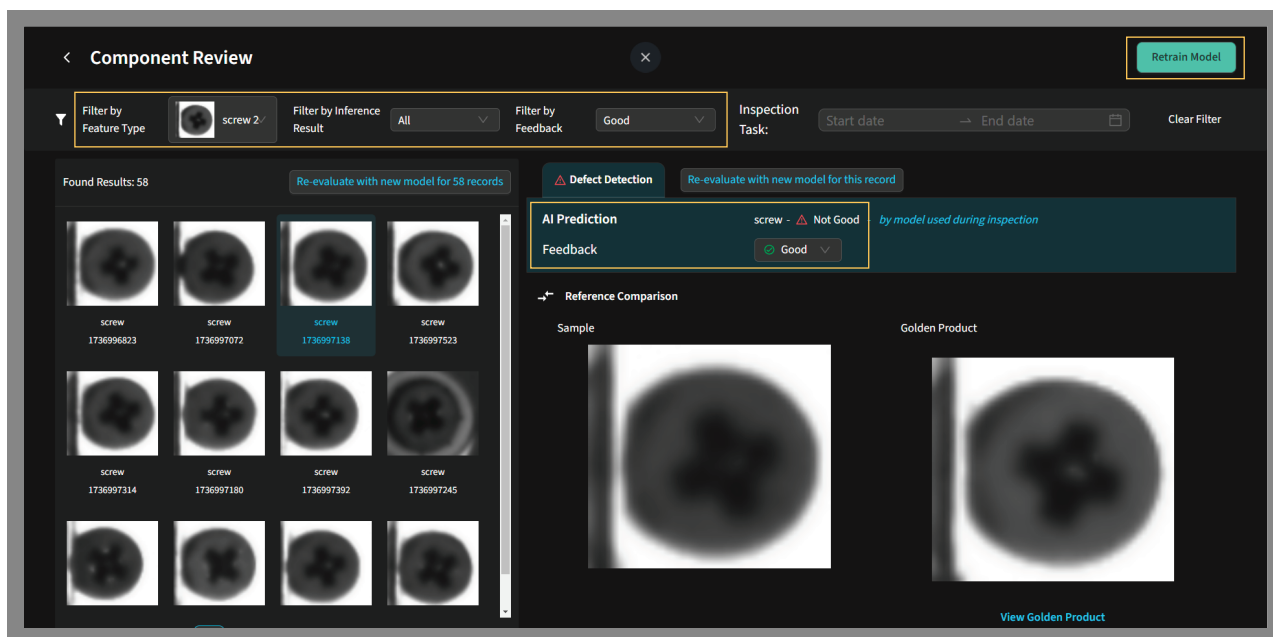

Filter by Feature Type (Compoents)
Filter by Inference Result
Filter by Feedback

AI Inspection Result
Verify; Confirm Result or Feedback
Retrain Model based on feedback

Enable to check overall componentsquality level and modify production.

INSPECTION RESULT OVERVIEW

To find out defect on a specific product, AOI offer to search by product name or serial number.

CAMERA CONFIGURATION
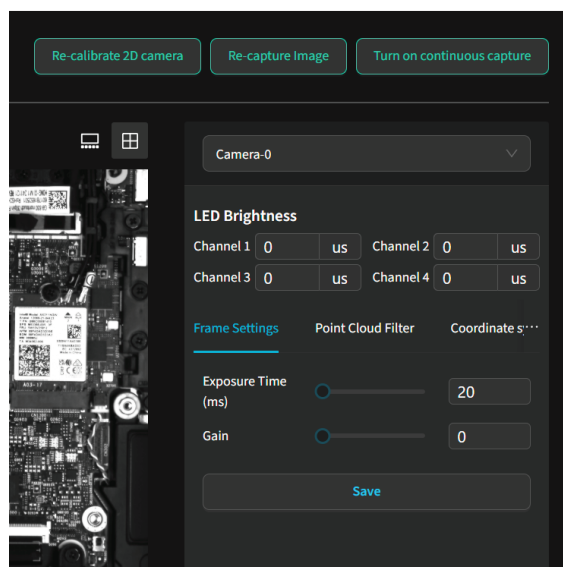
All settings are customizable, edit camera parameters based on different enviroment for better result.

TACKLE AND LEARN AT EVERY STAGE OF THE PROJECT

Learning

All Positive Learning
Learn from a few quality reference images to train the AI model, ensuring fast and efficient on-site deployment.

Feedback Loop
Incorporates human feedback into its learning process, automatically adjusting parameters to refine its model.
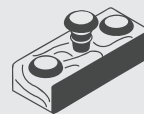
Inspection

AI-image Processing
AOI's detects high-reflectivity objects and adapts to uneven lighting, ensuring versatility across various applications.

Complex Surfaces Analyzing
AOI can identify tasks beyond the capabilities of traditional machine vision, such as screw angle deviations and connector tightness.

Live Dashboard
Check instant inspection results via the "Live Dashboard" and effortless model adjustments on a user-friendly platform.

Management and Refine

Centralized Platform
Unifies camera setup and data management in a web-based interface, enabling highly efficient collaboration.

Review & Retrainning
AOI enables real-time training, allowing instant application of corrections and minimizing production line disruptions.
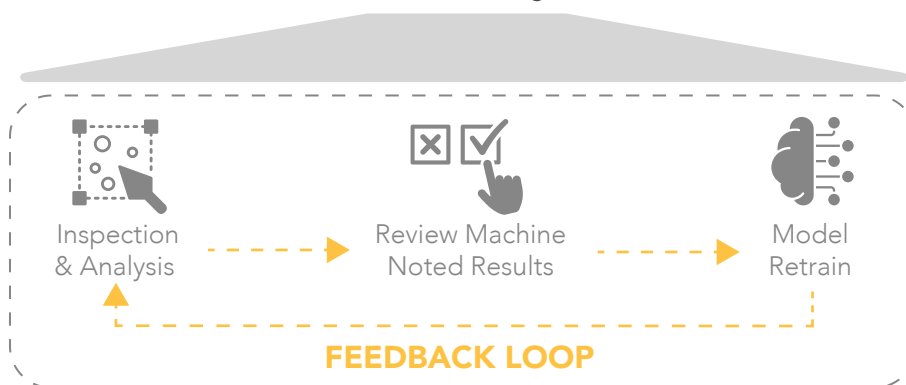
HARDWARE REQUIREMENTS

Recommended PC SPEC:

Capability	GPU	CPU	Storage	RAM
2D	**NVIDIA 3060**	Intel 10500K	1TB	32GB
3D	**NVIDIA 4080**	Intel 10500K	1TB	32GB

Minimum PC SPEC:

Capability	GPU	CPU	Storage	RAM
2D	**NVIDIA1050ti**	Intel 10500K	256GB	16GB
3D	**NVIDIA 3060**	Intel 10500K	256GB	16GB

DaoAI AOI supports most 2D machine vision cameras available on the market. We support USB 3.0 and GigE interfaces to ensure optimal stability in industrial applications.

Good Sample Image to Production Line

1-20 Good
Sample Image

DaoAI AOI
All Positive
Data Training

Modbus

Integrate to
Production Lines &
Monitor Performance

Inspection
& Analysis

Review Machine
Noted Results

Model
Retrain

FEEDBACK LOOP

AOI supports the Modbus communication protocol for transmitting information.

COMING: 3D MACHINE VISION CAMERA

AD-080

- HDR 18MP 3D camera, overcoming challenges in measuring metal or black objects.

- Measurement FOV: 77x70mm with & 4μm repeatability, suitable for small component defect inspection.

- Two-direction **Scheimpflug principle** lighting design effectively solves defocusing, occlusion, and reflection issues.

AD-470
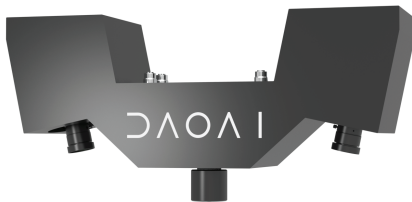
- HDR 18MP 3D camera, overcoming challenges in measuring metal or black objects.

- Two-direction **Scheimpflug principle** lighting design effectively solves defocusing, occlusion, and reflection issues.

- Measurement FOV: 477x435mm & 40μm repeatability, capable of covering objects as large as a laptop.

AQ-060

- An 18MP 3D camera with a telecentric lens performs 3D reconstruction within one second, along with 2D RGB color inspection.

- Proprietary 3D reconstruction algorithm effectively reduces the impact of component reflections and minimizes invalid pixels.

- Four-direction **Scheimpflug principle** lighting design effectively solves distortion and reflection issues, ensuring no inspection blind spots.

- Measurement FOV: 60x60mm with & 2μm repeatability, suitable for PCB inspection and similar objects.

| Model	Working Distance	FOV	DOF	Image Pixel	Resolution	Repeat-ability	Connector	Power	Light	Cooling System
AD-080	186mm	77×70@186	±8mm	18MP	4496×4096	4um	10GigE	24V DC 10A	White LED	Passive
AD-470	510mm	477×435@510	±40mm	18MP	4496×4096	40um	10GigE	24V DC 10A	White LED	Passive
AQ-060	32mm	60×60@32	±5mm	18MP	4288×4288	2um	CXP-12×4	24V DC 12A	White LED	Passive

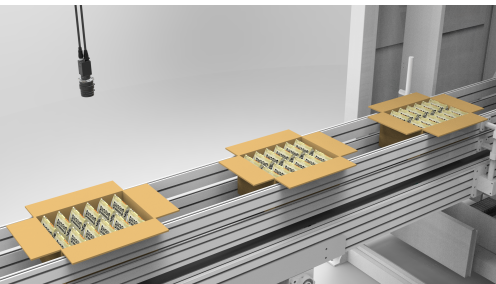*The 3D camera and Daoai AOI system software are sold separately.*

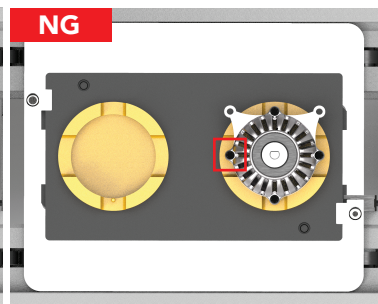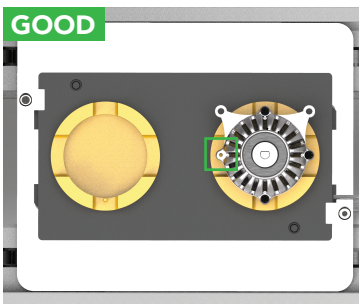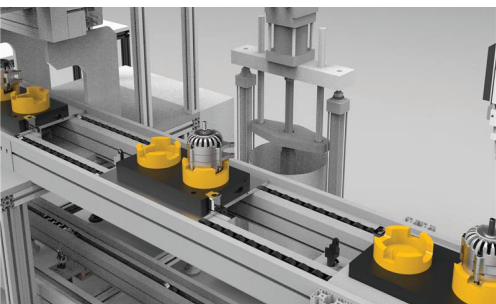# USE CASE

AUTOMOTIVE: Detection of Car Fuse Boxes
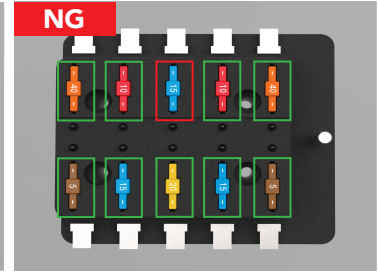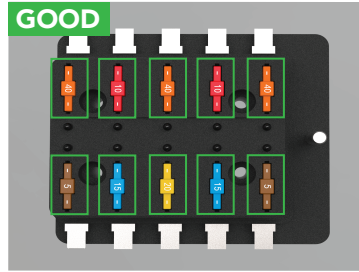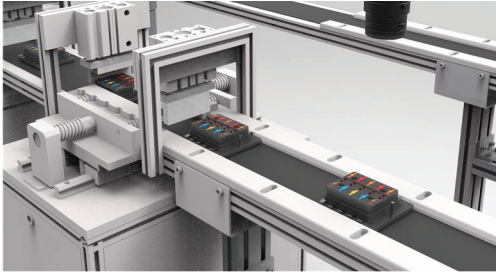
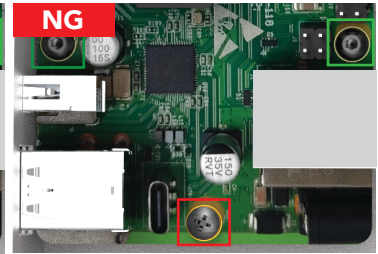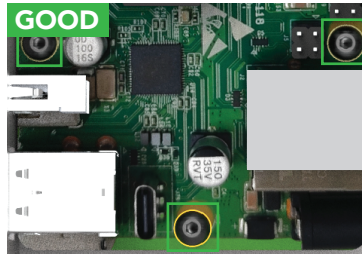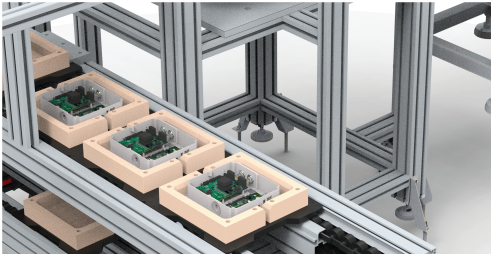**ELECTRONICS:** Detection of the Quantity and Type of Circuit Boards
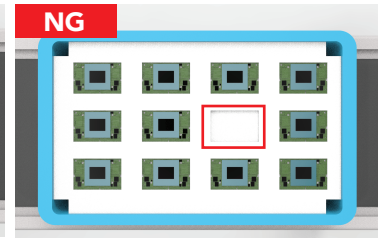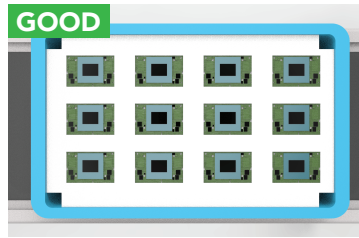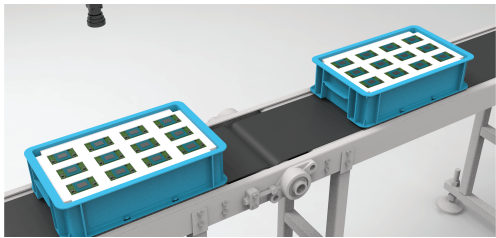
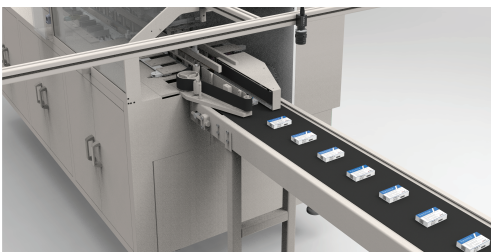**PACKAGING:** Packaged Food Items Quantity Detection
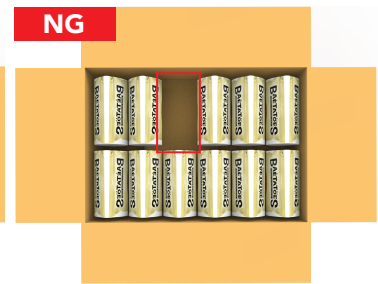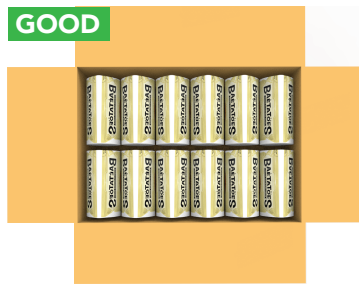
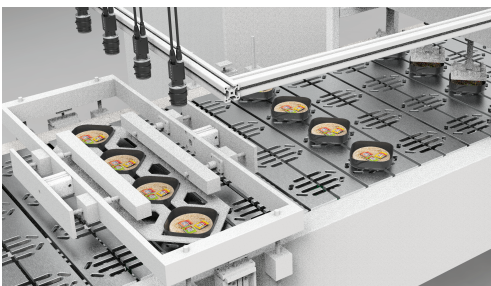**MACHINERY MANUFACTURING:** Component Assembly Inspection

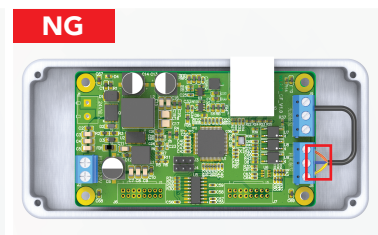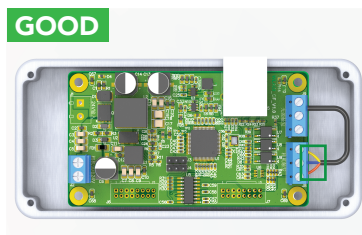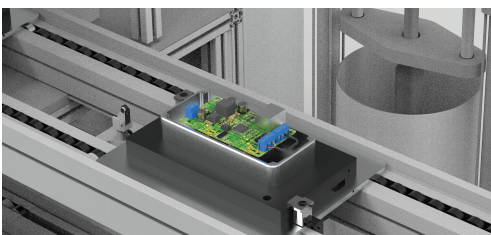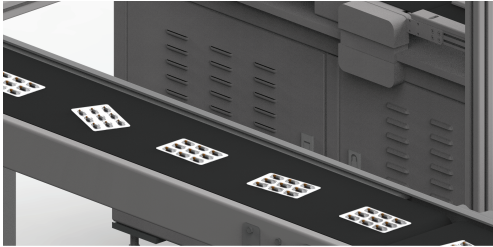## ELECTRONICS: Components Texture Variation Detection

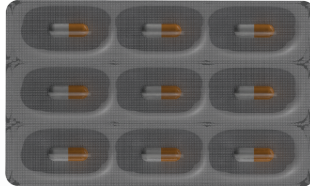## PACKAGING: Medicine Package Detection

FOOD: Food Assembly Verification

ELECTRONICS: Lining Verification

DAOAI

PHARMACEUTICAL: Medication Assembly Verification

GOOD

NG

DAOAI

DaoAI Robotics

We supercharge industrial automation and manufacturing inspection with AI and 3D vision. With our powerful AI-driven machine vision, automation isn't just the future—smarter inspection is available now.

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