AI-Powered
Assembly Inspection AOI

Elevate your manufacturing quality with intelligent inspection systems designed for diverse industries.

Challenges in Assembly Inspection

- Seven key bottlenecks in the inspection workflow
- Difficulty in realizing equipment value in complex assemblies
- Trade-offs between cost and performance in high-mix production

What’s Holding Back Inspection Lines

- *No unified standards – hard to quantify quality.*
- *Frequent manual handling reduces efficiency.*
- *Missed defects & re-checks waste resources.*
- *Reliance on operator judgment = poor consistency.*
- *No closed-loop data for traceability or optimization.*
- *Systems can’t cope with high-mix product lines.*
- *No closed-loop data for traceability or optimization.*

Fast Setup, No Coding, Minimal Training

Rapid Model Training

Build in 30 seconds using a single good sample — no defect images required.

User-Friendly Operation

No coding needed; intuitive UI allows fast training and deployment

High Detection Accuracy

100% defect coverage,
0 missed defects, with accuracy exceeding 99.97%

Continuous Algorithm Optimization

Feedback from marked defects is used to adjust the model instantly and improve accuracy over time.

Web-Based Operation

One browser-based platform for setup, operation, and remote access — no app switching

Seamless Production Line Integration

Seamlessly connects to existing lines — no retrofitting, install-ready in minutes

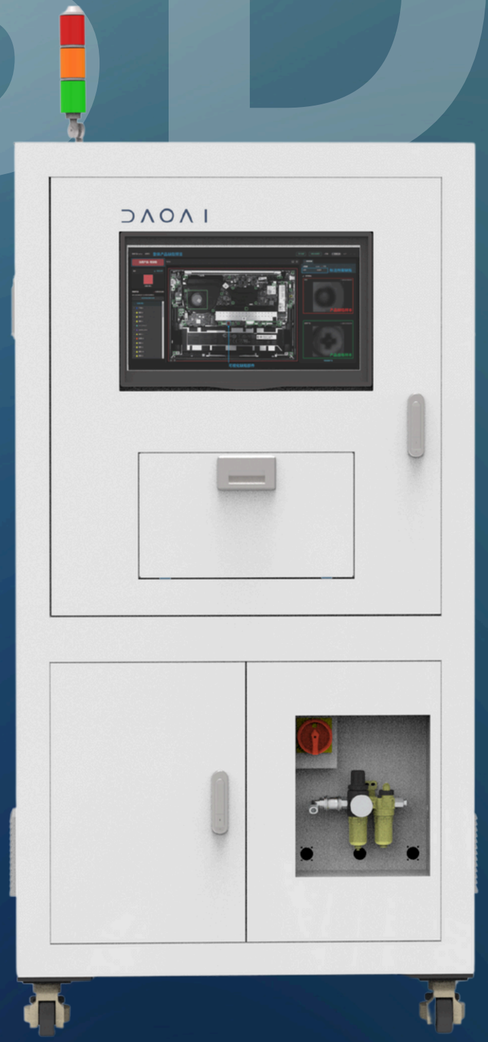
Operational Benefits: Traditional AOI vs. DaoAI

	Traditional AOI	DAOAI AOI	Estimated Annual Savings
Programming Time	Over 1 hour	10 minutes	$14,000 / per line
Personnel Needed	Engineers	Operators	$14,000 / per person
Customer Complaints	Frequent	Over 10× reduction	$14,000 / per quality incident
Deployment Time	Slow	10× faster	Shorter lead time

Product Highlights

- Product Overview
- Inspection Capabilities
- Operation & Configuration Features

3D



AI

Smart Assembly Inspection System

SAI3D-470

SAI2D-500

2D

DAOAI

3D

SAI3D-470

Inline Integrated System

No need to modify existing production lines seamlessly integrates with current conveyor systems.

Synchronized 2D + 3D Inspection

Equipped with the high-speed DaoAI AD-470 3D camera, enabling simultaneous 2D and 3D image acquisition.

< 1s Measurement Time

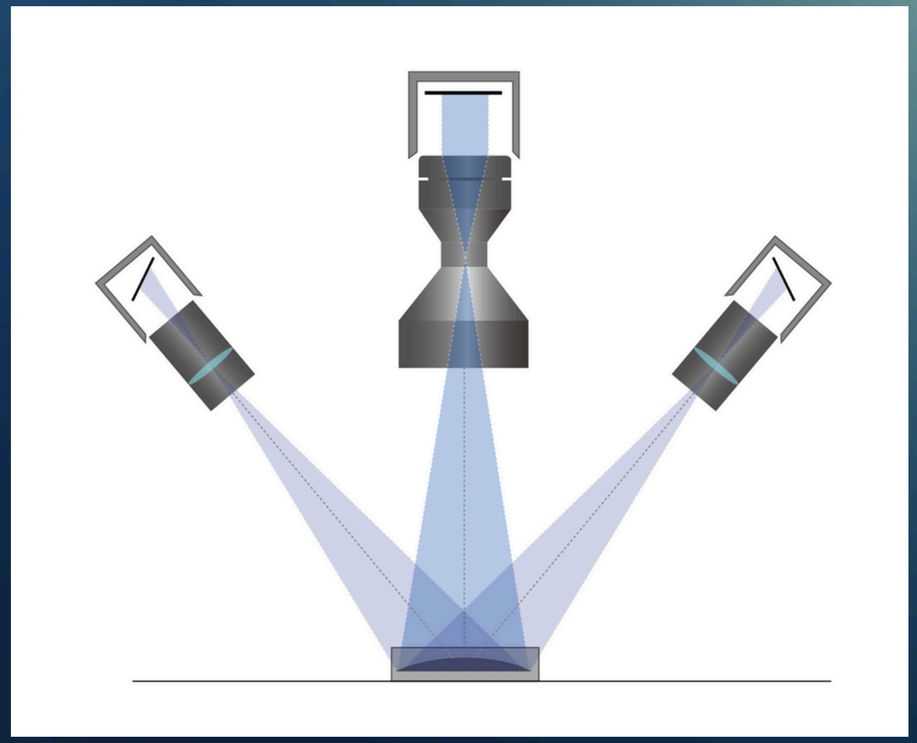
Multi-part simultaneous inspection with rapid response and enhanced efficiency.

DAOAI

3D

3D Structured Light Solution

High-Precision Imaging with SAI3D-470



18MP High-Speed Monochrome Center Camera + Dual-Side Structured Light Projectors

Wide FOV
477 x 435mm @510mm

Repeatability
40um

Optical Resolution
0.11mm

DAOAI

2D

SAI2D-500

■ *Mobile All-in-One Inspection Unit*

Easily rolled into position connects to existing production lineswithout modification.

■ High-Precision 2D Inspection

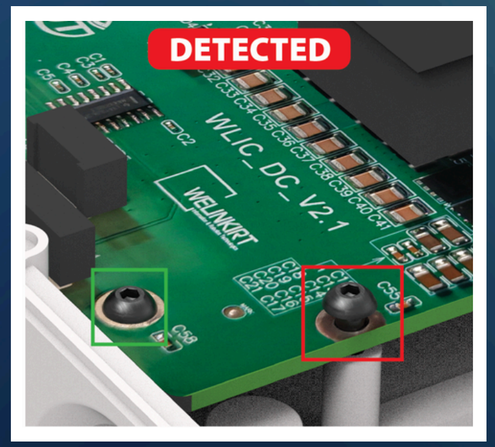
Equipped with a 25MP industrial-grade high-resolution camera to accurately detect fine defects.

■ Advanced AI Inspection Algorithms

Handles complex conditions with ease; effective against reflective surfaces, dark materials, and other challenging textures.

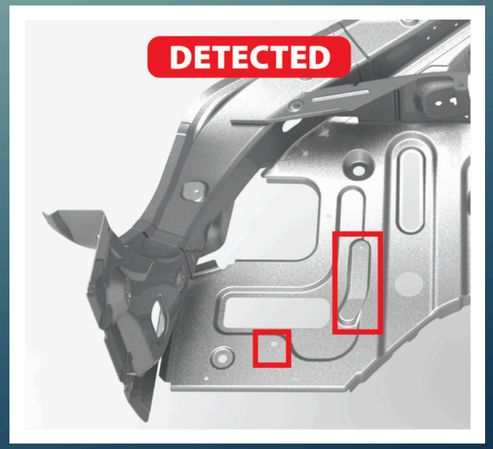
Versatile Detection Capabilities

3D Component Tilt Detection



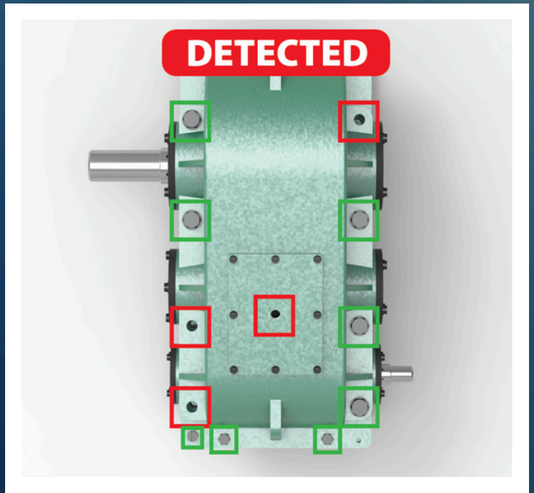
Identify angular deviations in components like screws to ensure assembly precision and stability.

Reflective Object Inspection



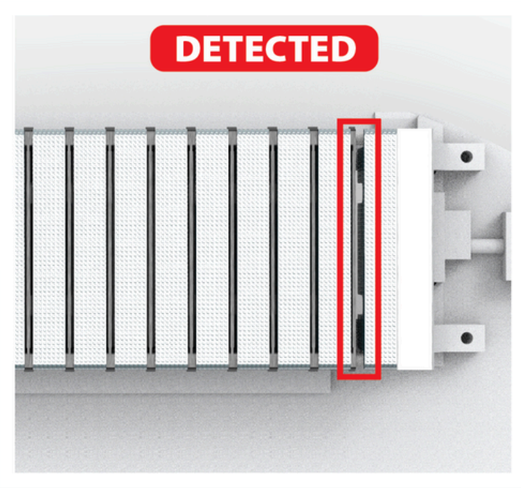
Specialized AOI algorithms detect defects on reflective and dark-colored surfaces.

From Missing Parts to Misalignments



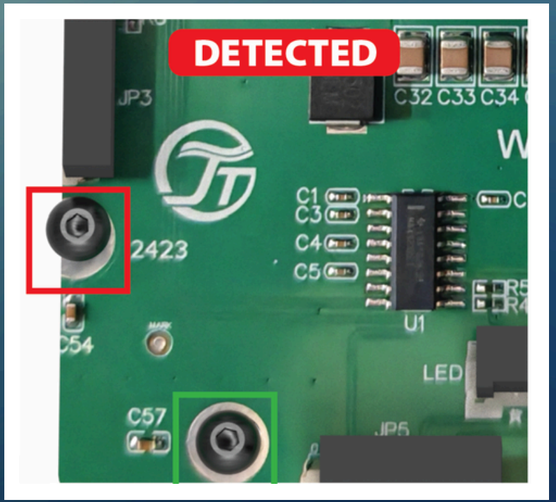
2D Component Absence Detection

Detect missing or improperly assembled key components to ensure structural integrity.



2D Assembly Anomaly Detection

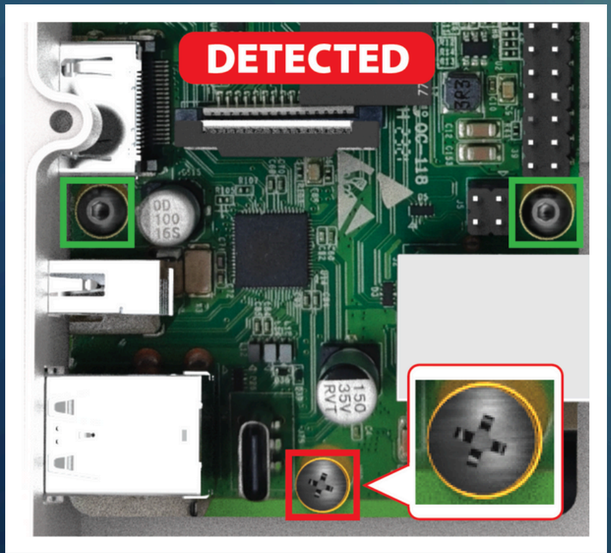
Accurately identify misalignments, missing, or uninstalled components in module arrangements.



2D Position Verification

Detect dimensional deviations, misalignments, or incorrect angles in components.

From Missing Parts to Misalignments



Foreign Object/Wrong Material Detection

Identify incorrect components or foreign objects to ensure material consistency.

Surface Defect Detection

Detect scratches, cracks, and other surface imperfections on plastic housings.

Surface Contamination Detection

Detect oil stains, dust, and other contaminants on component surfaces.

Key Functionalities Driving Intelligent Inspection

Component Review
Evaluate component quality and adjust production lines, with filtering by features and AI results.

Browser-Based Operation
Web interface integrates camera setup and data management, enabling remote access without extra tools..

Inspection Result Overview
Search product defect results by product name or serial number.

QR Code Reading
Supports QR code scanning via external barcode readers.

Customizable Camera Parameters
Adjust camera settings for different environments to optimize results.

Modbus Communication Support
Enables stable Modbus-based device connections for easy industrial integration.

DAOAI

Why DaoAI Stands Out

- Proprietary AI Training Mechanism
- Continuous Model Optimization Capability
- Traditional Systems vs. DaoAI Smart Assembly Inspection

AI-Powered Smart Inspection

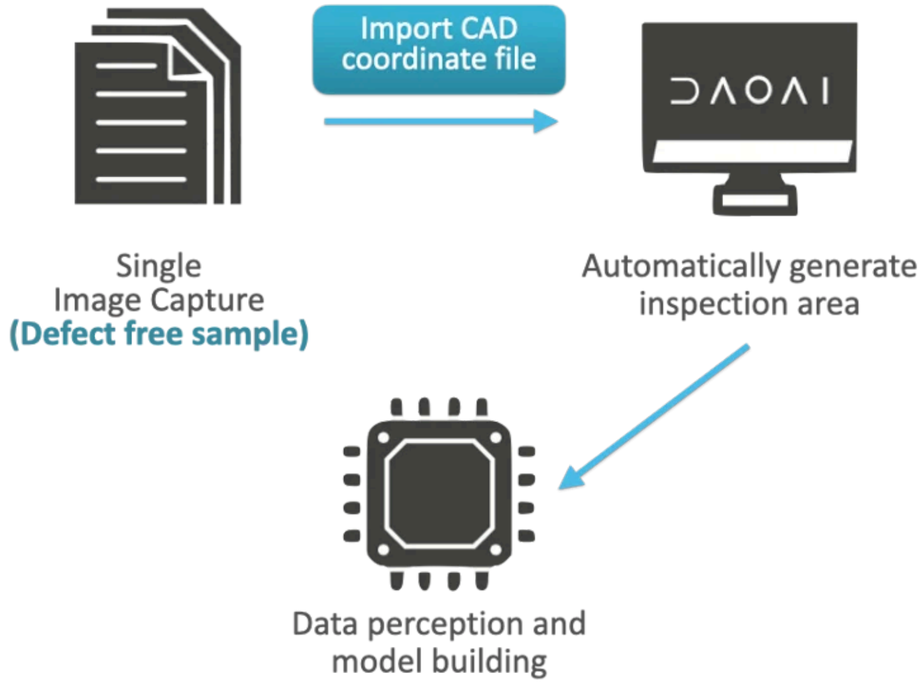
AI training enhanced with reinforcement learning — enabling high-precision, self-evolving models.

- **No defect samples required**
- **No manual defect labeling needed**
- **0 missed defects, 100% defect coverage**

DAOAI

Single Golden Sample Modeling

DaoAI's proprietary training mechanism eliminates the need for large datasets of defect images.
A high-precision inspection model can be trained using just one flawless sample, enabling fast deployment and effortless production integration.



AI-Powered Smart Inspection

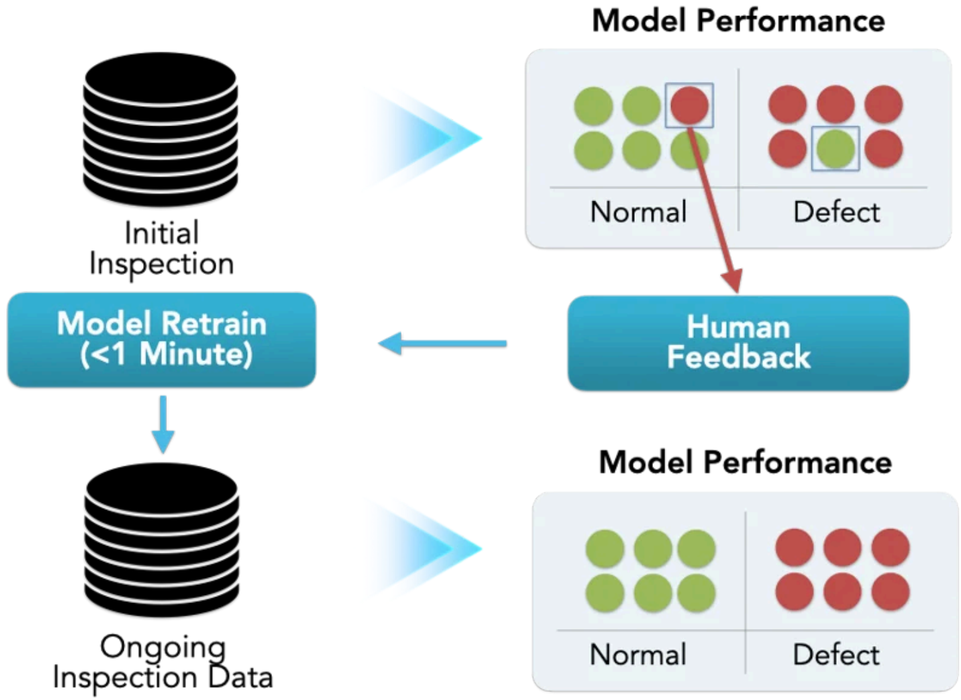
AI training enhanced with reinforcement learning — enabling high-precision, self-evolving models.

On-Site Confirmation → Model Fine Tuning → Continuous Optimization

- **Optimization completed within 1 minute**
- **Closed-loop learning drives accuracy to over 99.97%**

Instant Model Update

When an anomaly is flagged, on-site personnel can confirm and provide correctional feedback.
The model is quickly refined — becoming more accurate with every iteration.



DaoAI Smart Assembly Inspection	Traditional Inspection Systems
Up and running in 10 minutes; minimal training needed	Complex operation; long training time
2D + 3D inspection (depends on camera module)	Only 2D or 3D inspection, not performed simultaneously
AI model trained with 1–20 golden samples; high accuracy	Requires large datasets; poor model generalization
Feedback mechanism continuously updates AI model	Parameter setup is complex; relies on operator experience
Runs entirely in browser	Requires desktop software; local access only

DAOAI

Product Information & Contact info

- System demo
- Technical specifications
- Contact info

DaoAI AOI System

In industrial manufacturing,
collecting defect samples is extremely challenging.

AI 3D Inspection
Ensuring Assembly Accuracy

SAI3D-470

- ***Inline All-in-One System***
- **Synchronized 2D + 3D Inspection**
- **Measurement Time < 1s**

Equipment Spec	
Conveyor Height	750±20mm(distance from belt to floor)
Conveyor Width	400mm
Drive System	Dual-axis with 100 mm stroke; manually adjustable via screw rod
Flow Direction	Left-to-right or right-to-left (customizable)
Positioning Mechanism	X/Y direction positioning with dual fixed points; right side manually adjustable
Power Supply	220V ± 10%, 50/60Hz, standard national plug
Dimensions	850 × 900 × 1655 mm (excluding signal tower light)
Display	21.5" monitor
Status Indicator	Tri-color light + buzzer
Camera Spec	
Camera	18MP high-speed camera (DaoAI AD-470)
FOV	477 x 435 mm
Optical Resolution	0.11mm
Working Distance	510 +- 50mm
Illumination	Supports external light source
Inspection Capabilities	Height, missing components, misplacement, direction, position, surface defects, improper installation, missing labels, OCR, and foreign objects
3D Technology	Dual structured light projection

3D

Redefining 2D Assembly Inspection

Equipment Spec	
Conveyor Height	750 ± 20 mm (measured from floor level)
Conveyor Width	400mm
Drive System	Z-axis with 100 mm stroke, screw-driven, manually adjustable
Flow Direction	X/Y direction positioning with dual fixed points; right side manually adjustable
Power Supply	220V ± 10%, 50/60Hz, standard national plug
Dimensions	850 × 850 × 1650 mm (excluding signal tower light)
Display	21.5" monitor
Status Indicator	Dual-color light + buzzer
Camera Spec	
Camera	20MP high-speed camera
FOV	500 x 400 mm
Optical Resolution	0.1mm
Working Distance	400-500mm
Illumination	Top-down ring light
Inspection Capabilities	Missing parts, misplacement, orientation, position, surface defects, installation errors, labeling/OCR mistakes, and foreign objects

SAI2D-500

- ***Push-in Deployment***
- **High-Precision 2D Inspection**
- **Advanced AI Inspection Algorithm**

2D

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SAI2D-500

SAI3D-470

Ready to transform your inspection line?

Contact us by

Inquiry form

business@daoai.com

Thank you