Cybord

AI-Driven Secure Electronics Manufacturing: Detecting Counterfeit and Hardware Tampering

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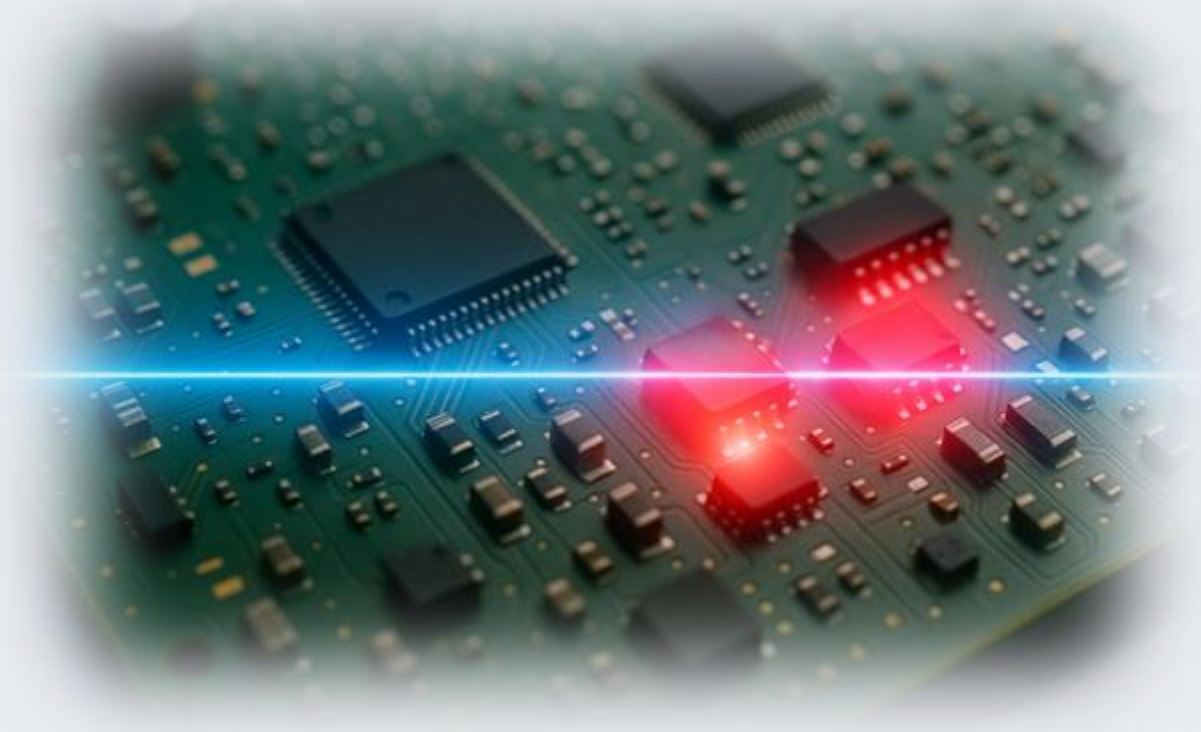
An Industry at Risk



Growth in high-reliability electronics manufacturing is **exposing customers to cyber security, traceability, and integrity** issues.

Risking regulatory compliance, brand trust, and severe financial or existential consequences.

Combining Vision AI with Big Data

Goldendoodle

Common nicknames	Doodle
Origin	Australia & United States
Foundation stock	Golden Retriever & Poodle
Breed status	Not recognized as a breed by any major kennel club.

Traits [hide]

Height	Typically 17–24 in (43–61 cm)	
	Males	22 inches
	Females	20 inches
Weight	Typically 15–80 lb (6.8–36.3 kg)	
	Males	55–75 Lbs
	Females	40–65 Lbs
Coat	Long haired	
Color	Cream, red, black, gold, apricot, brown, white or a combination	
Litter size	3–6	

Dog (domestic dog)

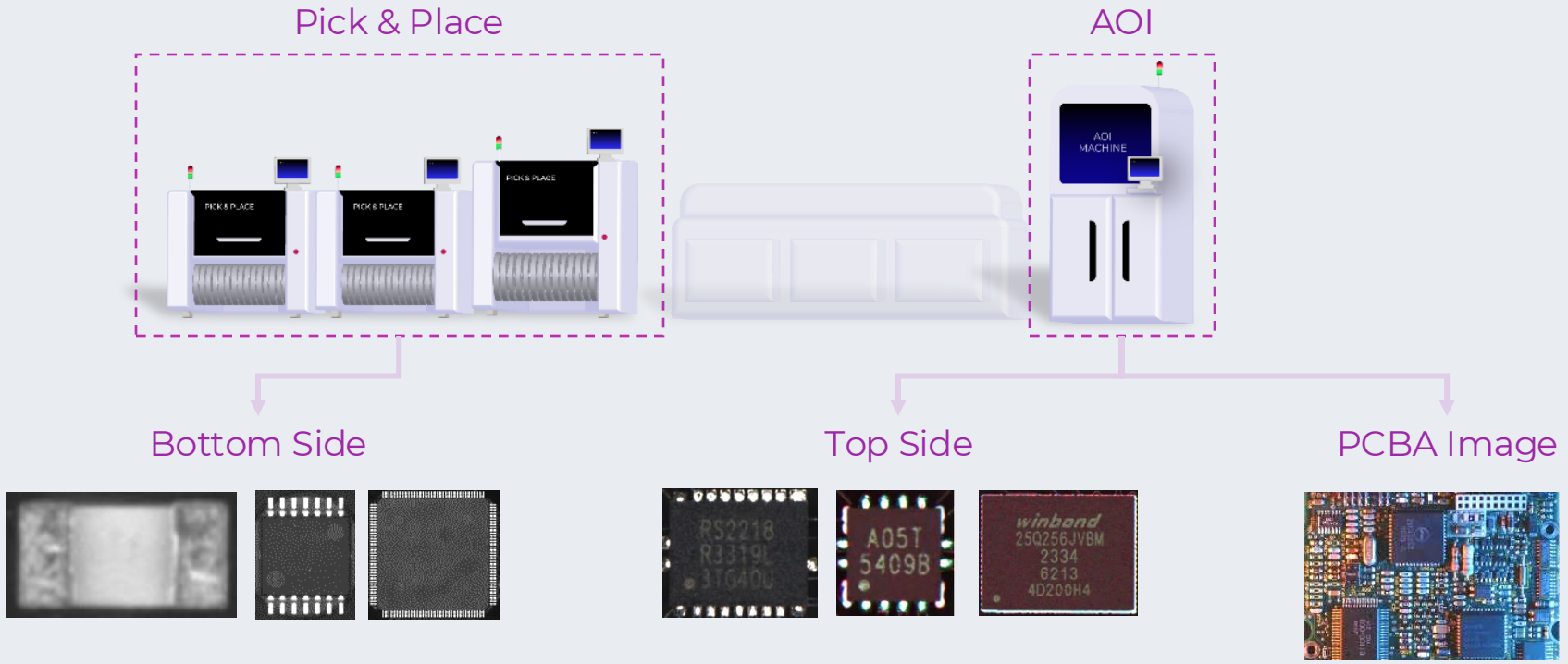
Chicken tenders

Alternative names	Chicken fingers, chicken fillets, chicken goujons, chicken strips
Course	Appetizer, main course
Place of origin	Manchester, New Hampshire, United States
Serving temperature	Hot
Main ingredients	Chicken, breading

Media: Chicken tenders

Advancements in Vision AI have created new opportunities and methods for analyzing supply chains

Using Vision AI in Electronics Manufacturing

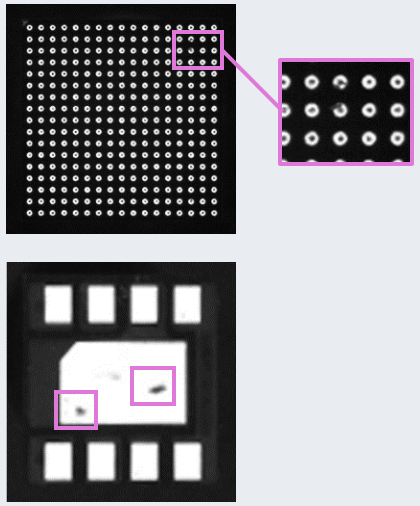


Utilizing existing camera integration in manufacturing line equipment to capture component imaging

Inspect ~ Trace ~ Secure

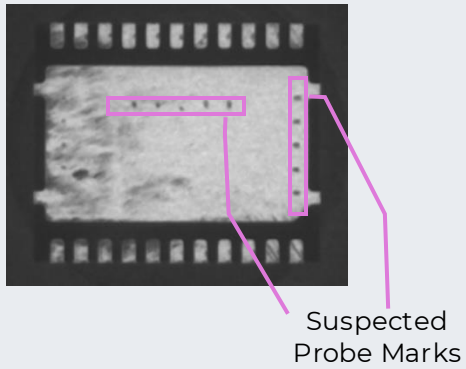
Inspect - Trace – Secure with Vision AI

Component Integrity



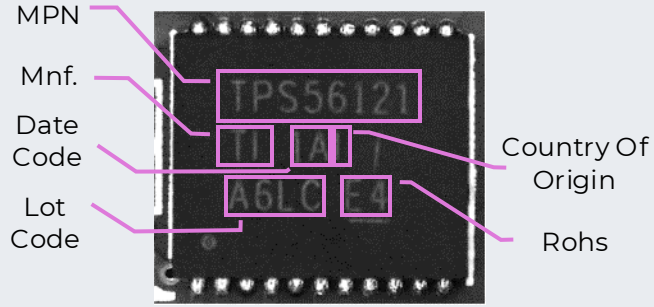
- Body Defects
- Contaminations
- Corrosion

Hardware Security



- Tampering
- Authenticity
- Homogeneity

Micro Traceability



- Visually Validated Traceability
- Country of Origin
- AVL Enforcement

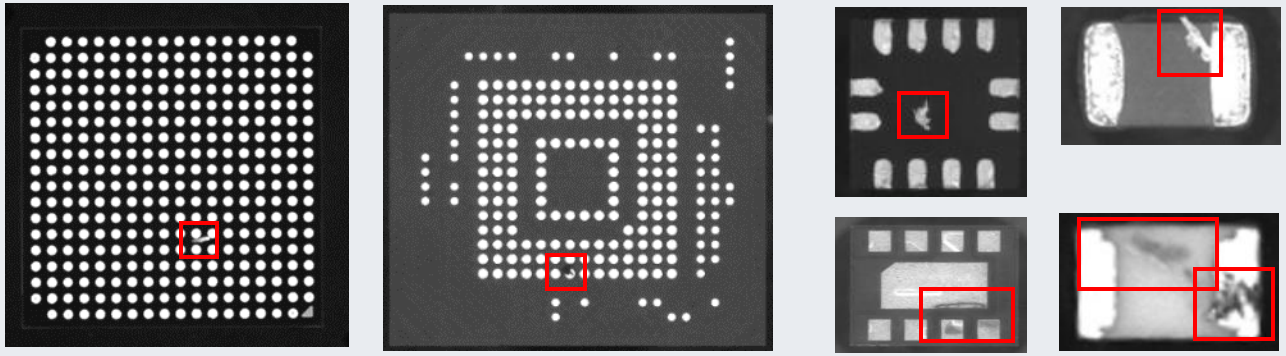
100% Component Inspection With Vision-AI Models

Quality Inspection

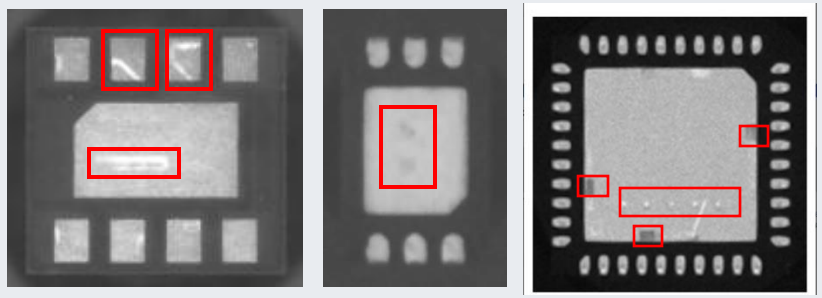
Bottom-Side analysis

- Body Defects
- Tampering
- Authenticity
- Contaminations
- Homogeneity
- Bent leads
- Material aging
- Setup failures

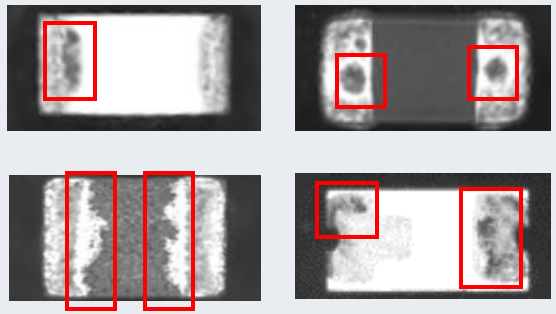
Body defects



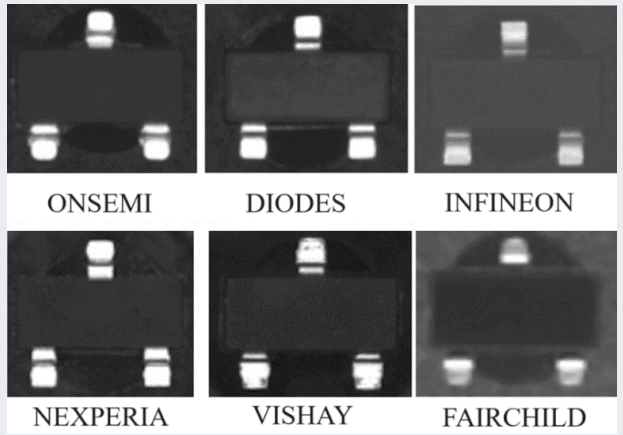
Tampering



Contaminations



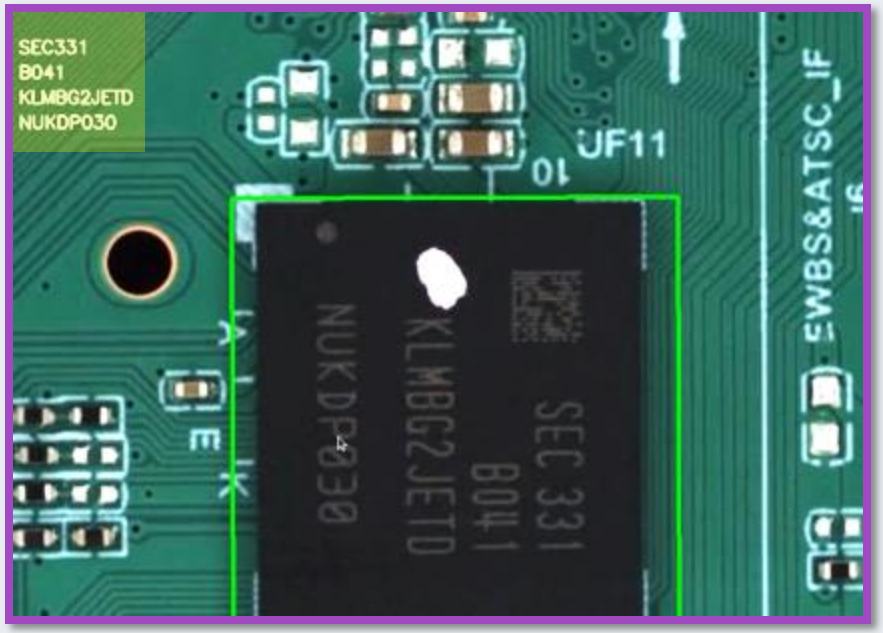
Manufacturer Identification

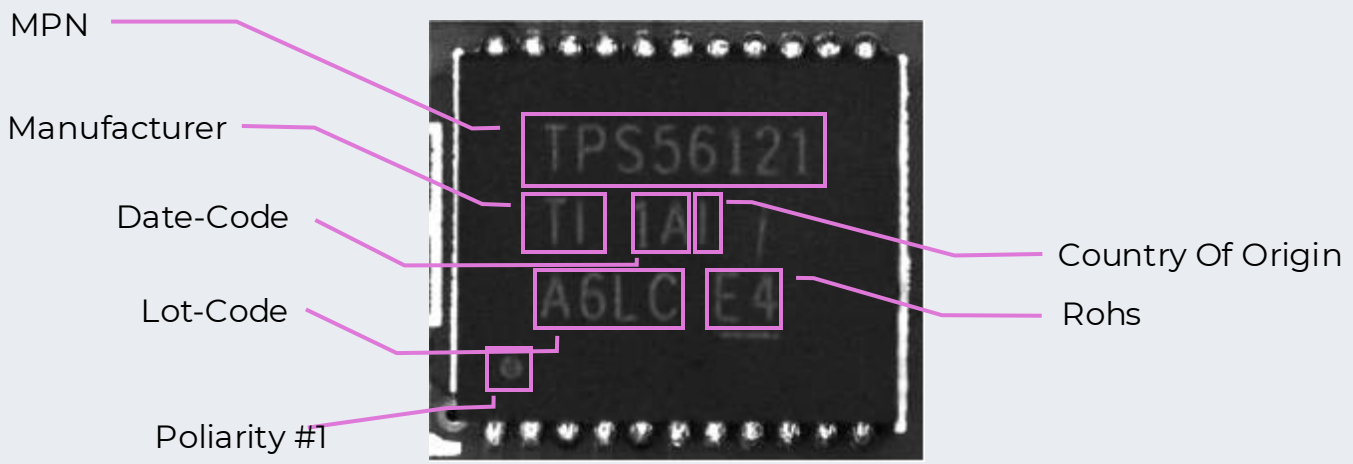


Top Marking Pattern Recognition & Deciphering

Auto Marking Detection powered by AI Pattern recognition engine

- Advanced NLP algorithms
- Pattern recognition enables to understanding of each top-marking sign
- Exportable and comparable data
- Enables unmatched component-level micro traceability





Vision AI – PCBA Analysis Solution

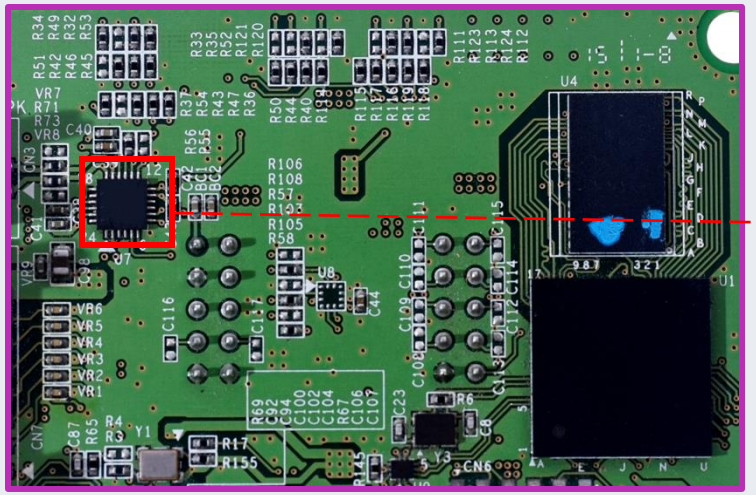


Image	RefDes	Package case	Mnf.	Origin	Marking
	U4	BGA	Marvell	Taiwan	88E1780-LKJ2 TSPFP8608JW 2448A0P TW
	U25	TSSOP-16	NXP	Malaysia	PA9539RPW C5H55005 TnD2448
	U7	QFN	Texas Instruments	Philippines	PZGM TI 4CI AQPZ G4
	Q6	SOT323-6	Diodes	Indonesia	K6N LN
	C98	TCAP	Murata	-	-
	BC2	MLCC	Yageo	-	-

Imaging Machine

1

Tiled image extracted from the AOI machine

AI Analysis

2

Software builds a dedicated AI model and analyzes the board.

User/Operator

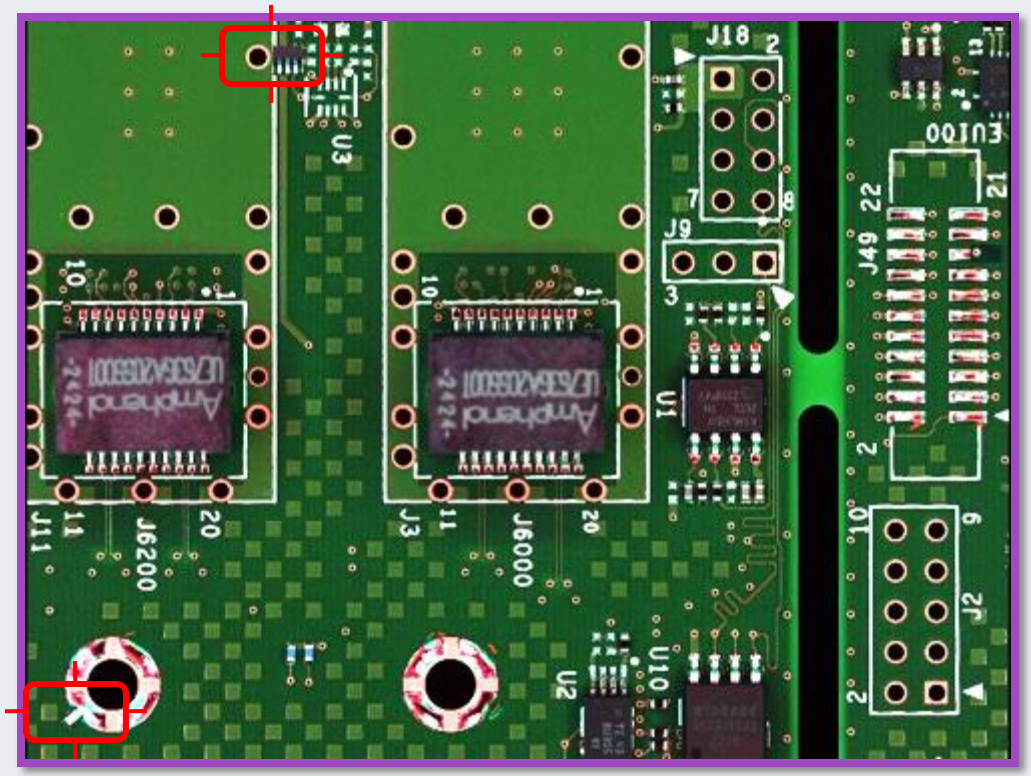
3

All Board components are identified and anomalies are flagged.

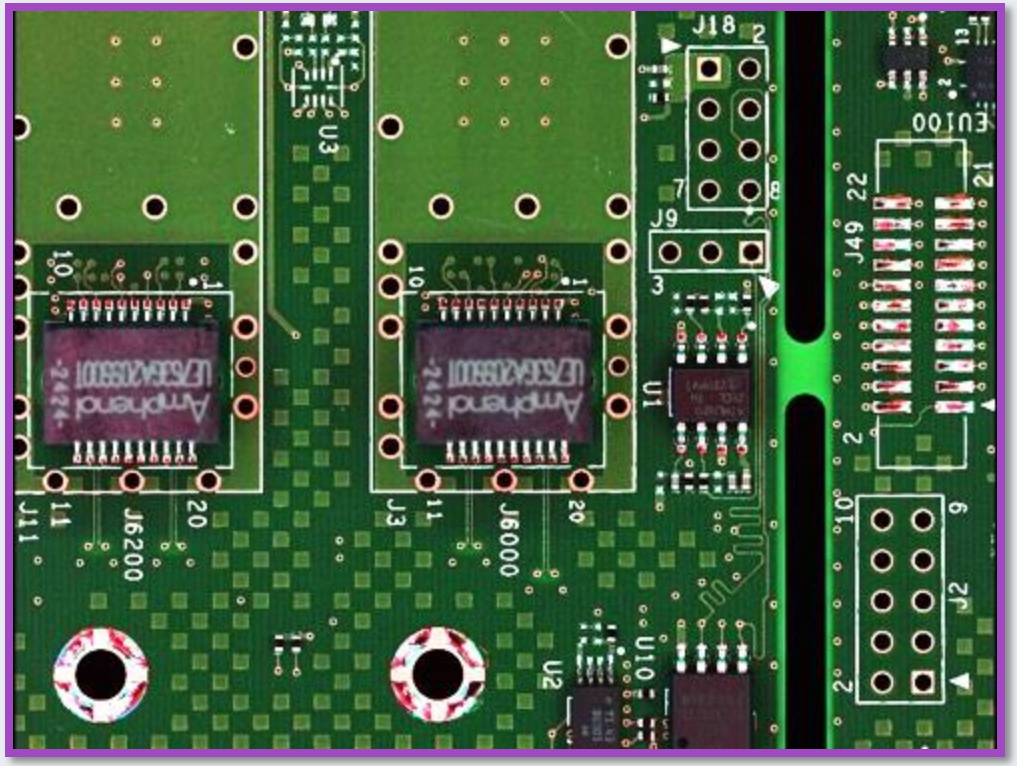
Board Anomaly Detection

Visual AI board anomaly analysis

- AI model uses ~50-100 boards to build the dedicated model
- Understands board-to-board variations, not relying on a 'golden unit' & eliminating false-positives
- Capable of recognizing any modification done on the board



Analyzed



Reference

Critical Compliance With Every Standard

DC / Telecom

ISO 20243

IPC

NIST

Automotive

IATF 16949

ISO 26262

AEC-Q100 Qualified

Medical

CERTIFIED ISO 13485

IEC

CHIPS for AMERICA

Aerospace

AS9100 REV. D

ISO 20243

CHIPS for AMERICA

Defense

MIL-STD 810

ISO 20243

CHIPS for AMERICA

Bringing Value Through AI Data and Verification

Comprehensive Component Repository

- Perpetual digital repository
- Trace and investigate quality
- Data-driven decision-making

Hardware Cybersecurity Safeguards

- Identify cyber vulnerabilities
- Component authenticity
- Protect against counterfeits

Compliance & Traceability

- Transparent sourcing
- Visual evidence to meet regulatory requirements

Exposure Reduction

- Limit large-scale recalls
- Isolate affected products
- Protect brand reputation

Real Time Interception

- Detect, analyze, and reject defect components in real time

The OEM’s single source of truth

Questions?

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Every Component Counts!

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