

Line Inspector

Inspect real circuit boards and review anomalies and errors.

Real images · VisA · Recorded 2026-10-09 · CPU execution

 **QUARKEON** LABS

Company portfolio > LOCAL DEMONSTRATION

APPLIED ENGINEERING / EVIDENCE YOU CAN INSPECT

Line Inspector

Inspect real PCB images. Review anomaly maps, held-out errors and human corrections.

DATA & CONTEXT
Real public benchmark · VisA PCB1 · CC BY 4.0

01 / INPUT 02 / PROCESS 03 / EVIDENCE 04 / REVIEW & EXPORT

Choose an input

01

Demonstration case

Anomalous PCB · held-out image



Run analysis

Inputs stay on this machine.

► Use your own files

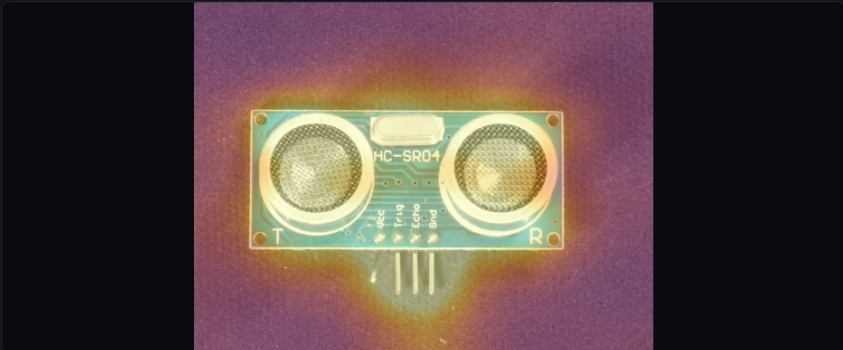
► Evaluation & limitations

Inspect the evidence

02

• Analysis complete. Inspect the evidence and record a review.

Decision candidate	Anomaly score	Normal-only threshold
anomaly candidate	2.56	1.73



Patch anomaly evidence Original PCB image

Threshold fitted only on calibration normals. Ground-truth labels are shown for review and were not used during fitting or inference.
VisA PCB1 public benchmark, Zou et al. (2022), CC BY 4.0. This small deterministic subsample is not a production acceptance study.
The heat map is a patch distance, not a pixel-accurate certified defect segmentation. Human decisions are stored separately and do not overwrite the measured predictions.

The problem

An inspection alert needs reference data, separate evaluation and review of false positives.

What the demo does

A ResNet18 patch memory is fitted on 60 normal VisA PCB1 images. Another 20 calibrate the threshold; 80 separate images evaluate the result. The interface displays the heat map and preserves human corrections.

Recorded evidence

Check	Recorded result
Held-out images correctly classified	76 of 80

Data and method

Real VisA PCB1 images (CC BY 4.0). 60 training normals; 20 separate calibration normals; 40 normal and 40 anomalous test images from the official test split.

Limits that matter

Small deterministic PCB1 subset, not the full VisA benchmark or independent factory acceptance. Normal-only 95th-percentile calibration: 4 false positives, 0 false negatives on these 80 test images. No claim on unseen production data.

What we could build with you

An inspection pilot with a data audit, normal references, acceptance checks and integration.

What we would agree first

Part types, defects, capture, variation, false-positive/false-negative costs and your own acceptance dataset.

Evidence and contact

Video, complete evaluation and bilingual case: <https://quarkeon-website.pages.dev/en/projects/line-inspector/>

Discuss a scoped pilot: <https://www.upwork.com/agencies/2108116767018789544>

Independent demonstration, not customer work. Metrics apply only to the described inputs and checks. Photos, data and model provenance are recorded in the private application repository; public data retains its original license.