

Transform-CV™

Cost-Effective, COTS, Deep Learning-Enabled Computer Vision Solution for Quality Assurance & Inspection Applications

FOR MORE INFO
www.acquiredata.com
www.radxtech.com

OVERVIEW

Transform-CV is a COTS, Deep Learning-enabled computer vision application developed by ADS and RADX Technologies for Quality Assurance applications. Transform-CV analyzes images and performs real-time inference, providing users with crucial insights into product quality to improve manufacturing processes that often rely on manual visual inspection. Transform-CV is readily tailorable to meet a wide range of customer applications, from cable harnesses, to component dimensional analysis to microscopic component defects. Transform-CV is based on industry standard AI tools and libraries combined with COTS commercial hardware (existing or new). Transform-CV supports both PCIe and PXle platforms using NVIDIA-based GPUs under Windows and Linux to address wide range of manufacturing Q/A and test & measurement environments.

APPLICATIONS



Real-Time Defect Analysis

Accurately & repeatably detect & classify a wide range of visible & microscopic defects on a variety of UUTs.



Real-Time Dimensional Analysis

Accurately and repeatably identify dimension features & defects that range in size from cms to microns.



Real-Time Component Classification

Accurately & repeatably verify the presence & location of specified components, labels, & other key assembly items.

BENEFITS



Performance & Repeatability

Higher throughput with improved accuracy, precision, repeatability & reproducibility vs. manual Q/A.



Ease-of-Use: Intuitive GUIs for operator ease-of-use; interoperable with popular manufacturing software to support existing customer workflows.



Flexible: COTS optical components, fixturing, AI software, & scalable GPU support for a wide range of applications and budgets.



Low TCO: COTS hardware and software reduces acquisition cost vs. traditional proprietary CV platforms and customer-enabled training reduces TCO.



HOW IT WORKS

1 IMAGE CAPTURE

Transform-CV employs one or more cameras to capture and transmit the subject image or video. The image data is then preprocessed by the system's GPU.

2 IMAGE ANNOTATION

Annotated images "teach" the system what to look for. As such, these images must reflect the environmental conditions and defect to be detected during inspection.

3 REAL-TIME INFERENCE

Transform-CV references images from inspection against the library of annotated images and performs analysis in real-time.

4 PASS OR FAIL

Transform-CV references images from inspection against the library of annotated images and performs analysis in real-time.

5 HIGH INTERCONNECTIVITY

For each DUT, Transform-CV communicates inspection results locally or via network, and can interface with existing manufacturing Q/A software or MRP/ERP system, if requested.

SUPPORT SERVICES

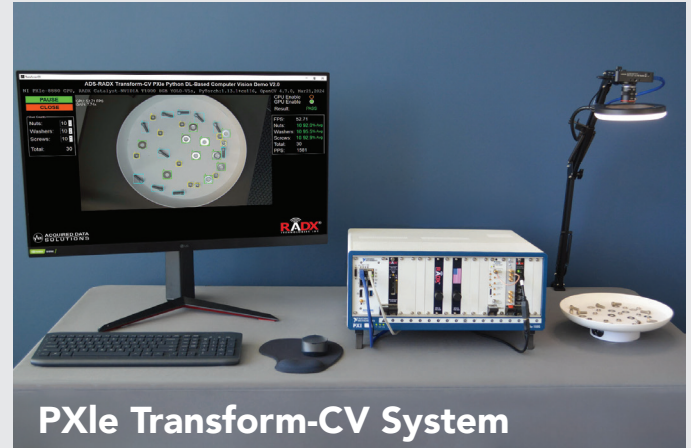
- Tailoring of Model, Feature-Set, GUI, Test Report & Other Application Features to meet Customer Requirements
- Optional: ADS Image Capture
- Training of Initial Data Set
- Remote or Optional On-site Customer Training
- Optional Integration Services

SOFTWARE & HARDWARE

SOFTWARE

- ADS COTS Transformer-CV License (DLL, Executive or Source)
- ADS Modified YoloV5 (or Later) Deep Learning Model Tailored for Customer Application
- PyTorch V1.13, 14 or Later Deep Learning Library
- PyQt V5.15.9 or LabVIEW GUI

HARDWARE



PXle-based Systems - Either Customer Owned or ADS Provided
Typical System: PXle Chassis (NI PXle-1095 or PXle-1092 Chassis recommended), RADX NVIDIA-based Catalyst or Trifecta PXle GPU and PXle Data Storage Module if needed, Monitor, High-Res, High-Frame Rate Camera with Interface Module (if needed), Illuminator, Turntable-based Assembly Line Emulator



PC-based Systems: Appropriate NVIDIA GPU-based PC, Monitor, High-Res, High-Frame Rate Camera with Interface Module (if needed), Illuminator, Turntable-based Assembly Line Emulator

OPTIONAL COMPONENTS

- Microscope or Optical Assembly
- Polarizing Light Filters
- Manual or Automated Fixture
- Robotic Motion Controls
- Additional options for specific customer applications