Improving Quality Control with AI-Powered Machine Vision in Automotive Manufacturing

Industry: industrial automation

Client: Automotive Component Manufacturer, Chennai, India

The Challenge

- ✓ Manual inspections prone to fatigue
- ✓ High rejection & audit penalties
- ✓ Lack of traceability for quality defects

Our Approach

We deployed a deep-learning-based **machine vision system with industrial cameras and AI:**

- ✓ Trained models with real defect data
- ✓ Live rejection with image-based evidence
- ✓ Dashboard for defect categories & trends
- ✓ Automated component sorting & tagging

Key Solutions

- ✓ AI Visual Inspection System
- ✓ Rejection Line with Auto Sorting
- ✓ Image-Logged Traceability System
- ✓ Real-Time Dashboards for QA Teams

Tech Stack

NVIDIA · TensorFlow · OpenCV · python · PostgreSQL · Power BI

Impact Summary

Metric	Before	After
Defect Detection	82%	98.7%
Inspection Time	1.5 sec/unit	0.5 sec/unit
Human Errors	High	Minimal
Rework Costs	₹7.2L/month	₹3.5L/month

Results at a Glance

98.7%	3X	80%	50%
detection accuracy	faster inspections	fewer human QC errors	real-time field visibility

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