



Introducing:

INSPECT AI PRO

Technical Documentation

Automated defect detection using YOLOv8 computer vision with real-time quality grading A-D and instant feedback. Eliminate manual inspection and catch micro-level defects at production speed.

Developed By: thirdeyedata.ai



Overview

About the Solution

Inspect AI Pro is a production-grade computer vision platform designed to automate quality inspection and defect detection in manufacturing environments — replacing slow, inconsistent manual checks with real-time AI-powered precision.

Built on YOLOv8 with PyTorch, OpenCV, and CUDA Edge AI, the platform captures and analyzes product images in real time, automatically detects surface defects, and delivers instant A/B/C/D quality grading in under 2 seconds — seamlessly integrating with manufacturing systems for batch processing and historical tracking.



Business Problem / Challenges

In manufacturing and production line operations, a recurring challenge arises when inspecting product quality and detecting defects at production speed:

Manual quality inspection is slow, inconsistent across shifts, and cannot match production line speed

Human reviewers miss micro-level defects, leading to waste, rework, and rejected shipments

Inconsistent inspection standards across shifts create quality benchmarking challenges

Late defect detection causes costly downstream losses that impact profitability and customer satisfaction



Solution Overview

Inspect AI Pro leverages YOLOv8 computer vision and Edge AI to automatically detect surface defects and classify product quality in real time with 95%+ accuracy in under 2 seconds.

By automating the entire inspection pipeline from image capture to quality grading, the system provides:

YOLOv8 processes images in under 2 seconds with annotated defect visualization

Automatic A/B/C/D classification based on defect count and severity

Queue-based workflow handles multiple images with progress tracking

Pass/fail rates, grade distribution, and defect rate analytics

Scan To Try:



Key Capabilities

YOLOv8 processes images in under 2 seconds with annotated defect visualization

Queue-based workflow handles multiple images with progress tracking

Automatic A/B/C/D classification based on defect count and severity

Persistent storage with scan ID tracking and detailed inspection records

Pass/fail rates, grade distribution, and defect rate analytics

Side-by-side comparison of original and annotated defect images



Value Proposition

01

Inspection Time:
80% reduction in
inspection time
through fully
automated AI
quality checks

02

Detection:
Accuracy 95%+
accuracy
eliminating
human error and
inspection
inconsistencies

03

Waste Reduction:
60% reduction in
waste through early
defect detection
preventing
downstream losses

04

Throughput : 2x
increase in
production
throughput with
real-time
automated
processing

05

Transparency: Quality
Grades 4 automated
quality grades – A, B,
C, D – with instant
classification per
product

Scan To Try:



Primary Tools & Technologies

01

AI Models

YOLOv8 with PyTorch and CUDA Edge AI for real-time GPU-accelerated defect detection.

02

Backend APIs

Flask and FastAPI with OpenCV, PIL, and NumPy for image processing and defect analysis.

03

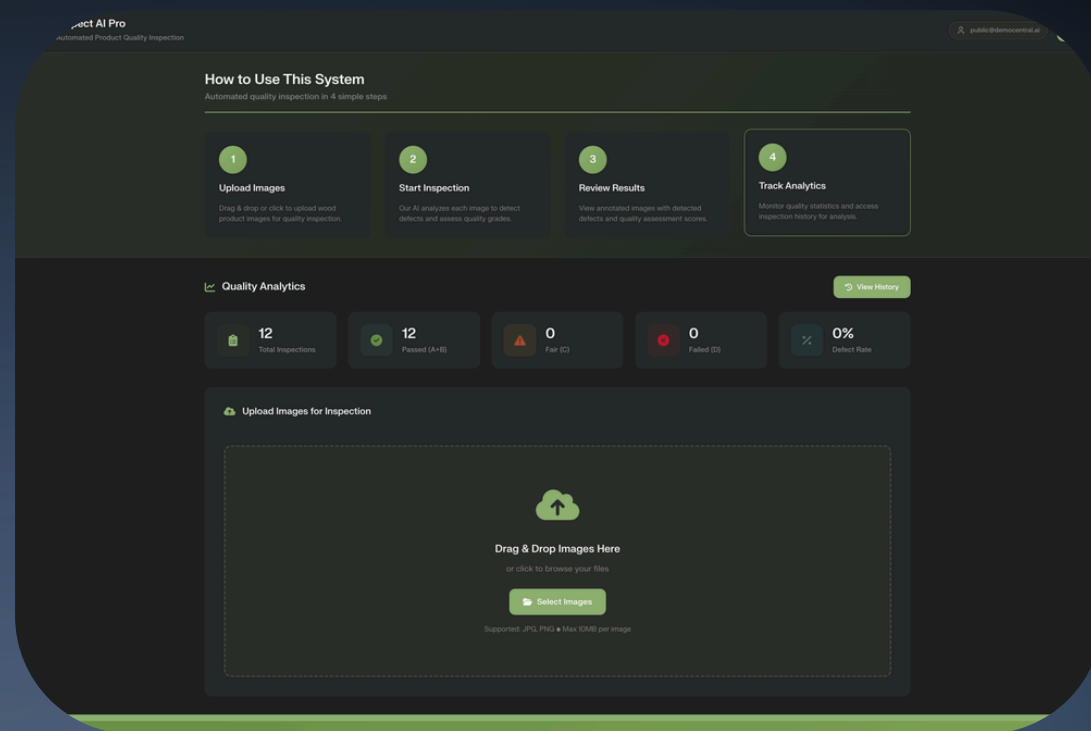
Deployment

Docker and Kubernetes with React 18 frontend for scalable enterprise manufacturing deployment.

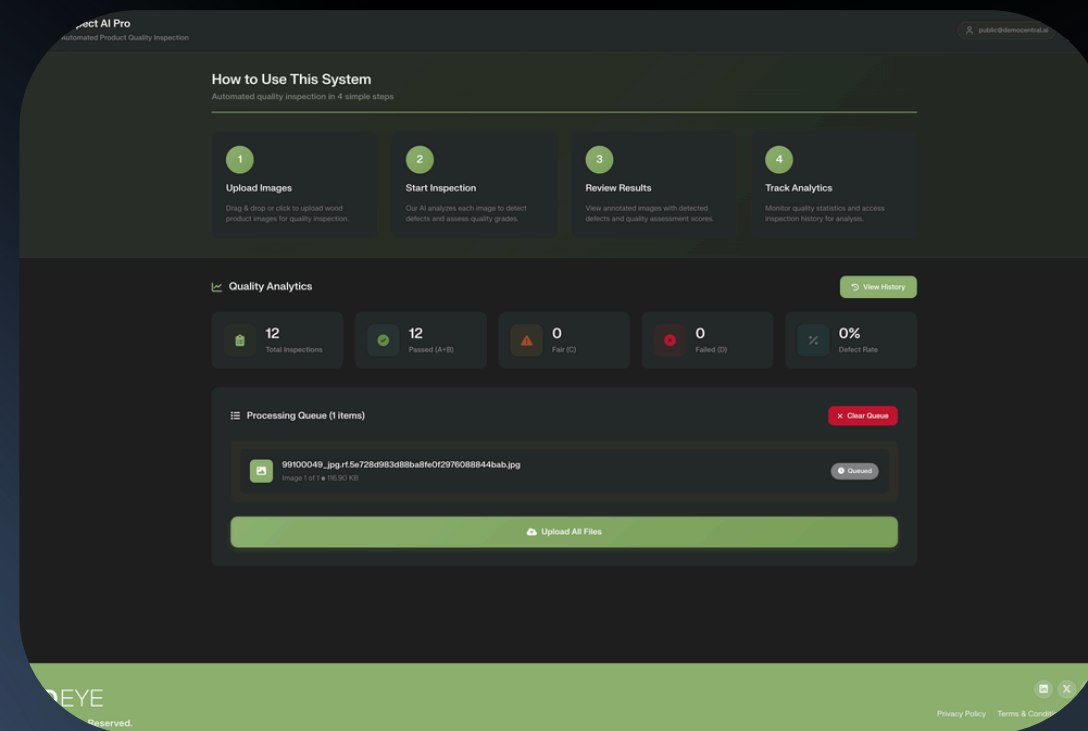


Solution Glimpses

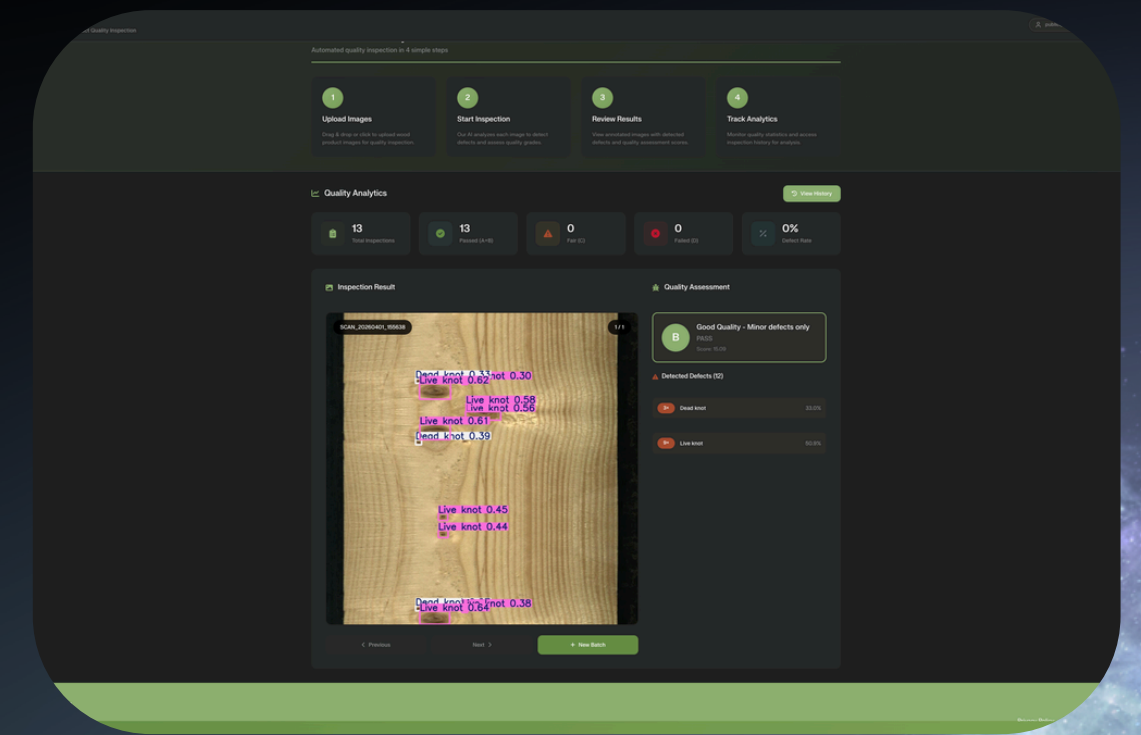
Image Upload



Processing



Inspection Results



Watch the full video on [Vimeo.com](https://vimeo.com) or scan here to watch:



Request a Demo

If you find this solution relevant to your use case, please feel free to try this prototype or request a custom demo.



Interact

[Visit democentral.ai](https://democentral.ai)



Scan to Try



Custom Demo

[Talk To Our Team](#)