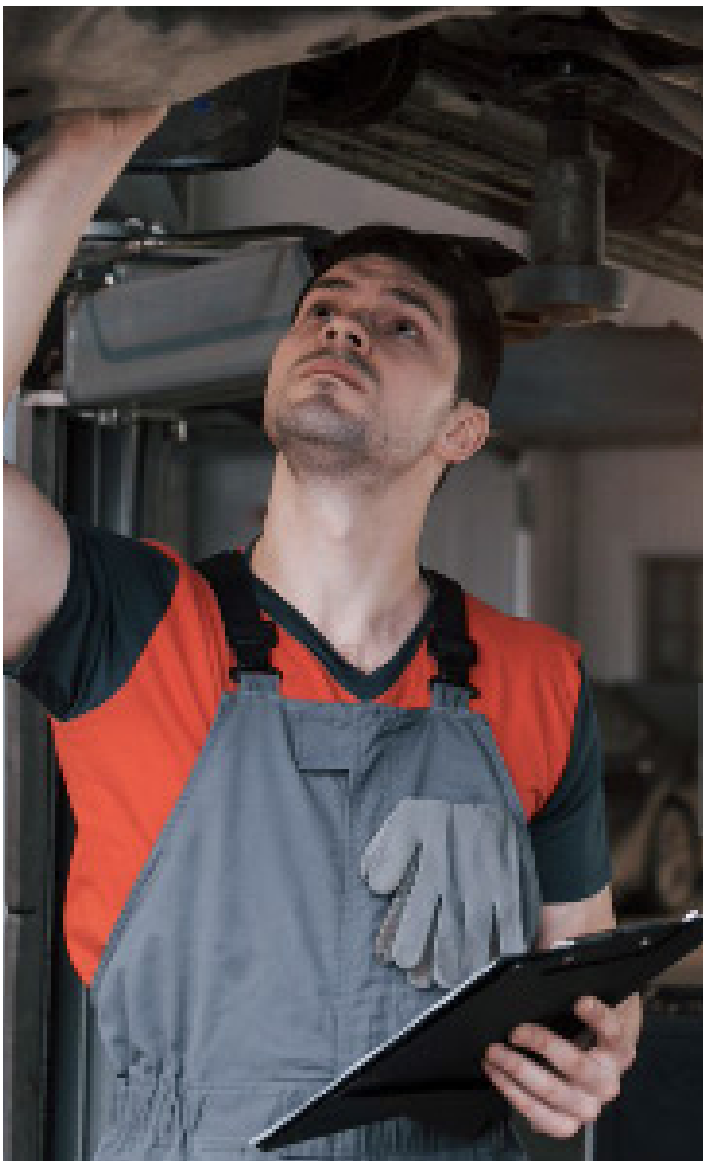
CASE STUDY

AI-Enabled Visual Inspection (AVI) Completes a Full-Vehicle Scan in Just a Few Seconds

About The Client

Established in the automotive industry for over a decade, this manufacturer has built a reputation as a trusted partner to leading vehicle workshops, providing high-quality garage equipment and exceptional service to premier OEMs across the country.



The Problem

The primary challenge for them laid in meeting customer satisfaction as their clients faced extended wait times for vehicle inspections caused by slow traditional manual procedures. Detection accuracy of anomalies was very low, approximately 40 to 45%, across all manually inspected vehicle components. Additionally, the current inspection process lacked transparency regarding identified issues and job card estimates. Due to a fixed number of inspectors, they faced inefficient resource allocation during low-volume periods.

The Approach

We addressed these challenges using AVI technology, integrating Generative AI, Vision AI, and high-resolution machine vision cameras in our Customized Hardware Scanning Stations.

This system scans cars in seconds, identifies problems, assigns severity levels, and determines necessary repairs and maintenance to ensure optimal performance.

Services

AI Vision, Machine Vision, Generative AI, Autonomous inspection, Anomaly/Defect identification.

Azure ML workspace, Deep Learning models, GPU vm's, AKS, ADF, Image noise reduction.

The Process

The process begins with capturing detailed images of vehicles, focusing on components such as tires, exteriors, and undercarriages. These images are then fed into advanced multimodal deep-learning models for processing. Vision AI technology intelligently analyzes the pictures to identify defects in various automotive parts.

Once defects are identified, the technology recommends suitable remedial actions. A key aspect is its ability to assess areas beneath the car that are typically hard for human inspectors to reach precisely. This systematic approach enhances inspection efficiency and accuracy in evaluating vehicle conditions.

The Result

The adoption of Automated Vision Inspection (AVI) technology led to significant improvements in inspection process. It enabled faster identification of defects and recommended effective remedial actions.

The technology's meticulous assessment of areas beneath vehicles enhanced the accuracy of the process. This systematic approach contributed to better resource utilization and solidified the client's position in the automotive inspection industry.

The Outcomes

45 min to 5 min

Reduced inspection time from 45 minutes to 5 minutes, greatly improving efficiency, allowing the garage to serve 60% more vehicles.

100+

Identified over 100 types of defects that were difficult for human inspectors to access, increasing the job card value by 30%.

50%

Inspection costs per vehicle decreased by 50%, leading to substantial cost savings while maintaining high-quality service standards.