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... where Acumen drives Innovation

Streamlining Truck Pre-Check-In for a Leading Bottling Company

with Machine Vision and Generative AI

EXECUTIVE SUMMARY

This case study explores how Acuvate's Standard Digital Framework, leveraging a custom machine learning (ML) and machine vision (MV) model, revolutionized the truck pre-check-in process at a leading bottling company's warehouse, resulting in significant time savings, reduced manual effort, and enhanced data accuracy ;along with optimizing the supply chain.

INTRODUCTION

The logistics of managing incoming and outgoing truck traffic in a warehouse setting is a complex operation that can impact a company's efficiency and bottom line. For our client, a prominent bottling company, the manual process of truck check-ins was causing delays and incurring unnecessary costs. For supply chain management teams, this underscores the need for a streamlined, automated check-in system to boost efficiency, reduce costs, and improve overall supply chain performance.

THE CHALLENGE

Before the intervention, the client's warehouses were mired in a manual and cumbersome truck check-in process. Drivers were required to fill out paper forms upon arrival, resulting in long queues, excessive idle times for trucks, and increased labor costs. The process was plagued with:

- Extended truck wait times due to manual scheduling and dock assignment.
- Data inaccuracies from manual entry, impacting billing and logistics tracking.
- Insufficient visibility into the truck flow, leading to suboptimal dock utilization.

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SOLUTION

The comprehensive solution deployed by Acuvate revolved around a bespoke Machine vision (MV) model within the Acuvate Data framework that was designed to process video feeds from Axis cameras, installed at the client's warehouse entry points. The solution consisted of:

Real-Time Analytics

Utilizing Nvidia devices for edge computing, the model analyzed video feeds in real-time to identify truck types, license plates, and arrival times.

Driver Communication

An SMS-based chatbot and web app facilitated driver interaction, allowing for the provision of pre-check-in data without human intervention.

Automated Data Integration

The solution seamlessly interfaced with the pre-check-in app and the client's Oracle Warehouse Management System.

Cloud-Based Infrastructure

Leveraging Microsoft Azure, the solution ensured high availability and scalability across multiple warehouse sites.

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IMPLEMENTATION

The implementation followed a structured approach

Device Assessment

We evaluated and selected the appropriate cameras and edge devices tailored to the specific business requirements, ensuring optimal performance and cost-effectiveness.

Infrastructure Setup

High-definition Axis cameras were strategically placed to capture the necessary video feeds

Model Development

Custom deep learning algorithms were crafted, capable of high accuracy even under variable lighting and weather conditions.

Interface Design

Prioritizing user-friendliness, multiple interfacing options were developed for truck drivers, tailored to different levels of technology access.

System Integration

The backend systems were connected to create a unified data flow, ensuring real-time updates across the platform.

Pilot and Scaling

Following a successful pilot, a DevOps approach was adopted to facilitate the rapid scaling of the solution across the company's warehouse network.

RESULTS

The integration of Acuvate's Digital Framework with the client's warehousing operations led to

Data Accuracy

The automation of the data feed improved accuracy to 95%, significantly reducing errors.

Operational Efficiency

Manual efforts decreased by 60-70%, freeing up resources for more strategic tasks.

Cost Reduction

The streamlined process diminished truck wait times and associated costs, presenting substantial savings.

Scalability

The solution proved its replicability, with the potential for deployment in additional locations without substantial re-investment

BUSINESS IMPACT

Beyond the immediate operational improvements, the solution provided the client with

Latency Reduction

The automated system reduced processing times, leading to quicker truck turnover and improved warehouse throughput.

Traceability and Accountability

Enhanced data collection provided a robust audit trail for logistics operations, improving oversight.

Predictive Operations

The system enabled more accurate forecasting of dock availability, contributing to better resource planning.

Future-Proofing

The framework laid the groundwork for future enhancements, such as post-check-out tracking and integration with additional logistics modules.

CONCLUSION

Through the strategic application of Acuvate's end-to-end data services—collecting, processing, analyzing, and utilizing data effectively—the client witnessed a marked improvement in their logistics operations. From data collection to generating actionable insights via advanced AI and ML. It demonstrates how these technologies can revolutionize traditional processes and drive innovation and efficiency across the logistics and supply chain industry.

About Acuvate

With over 17+ years of experience in digital solutions, accelerating enterprise-wide digital transformation with our AI accelerators, we provide solutions and services that modernize, automate and support organizations. We help our customers transform their conventional processes to match the next-generation technological trend. We have a strong presence in the US, Europe, and the Middle East, where we serve multiple Fortune 500 companies. We specialize in New-age AI solutions, Migration & Modernization, and Digital Workplace Solutions. With our multi-skilled experts and packaged AI accelerators, we deliver unparalleled efficiencies and accelerate time-to-value for our customers.

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