

TRUEYE™

Case: Automated Bag Counting System using Video Analytics for a global-leading consumer goods company



The Situation

A global-leading consumer goods company, faced challenges in maintaining optimal inventory levels due to the time-consuming and error-prone process of manually counting bags on pallets. This method led to inaccurate inventory records, stockouts, and overstocking, negatively impacting warehouse operations and profitability. To address these issues, our project aimed to integrate video analytics to track and resolve the problem of missing bags during palletizing for P&G.

The Challenge

The business challenge was that the current manual counting method resulted in frequent undercounting of packets, leading to significant losses. Ensuring accurate bag counting during operations was crucial to prevent missing bags at distributor locations. The solution was to develop an automated system that would increase accuracy, minimize errors, and provide substantial cost savings.

The Solution Approach

Our approach involved implementing an automated bag counting system using video analytics to track and count bags placed on pallets. This system employed a deep learning object detection model to distinguish between positive and negative scenarios based on predefined criteria. Positive scenarios involved correctly placed bags that should be counted, while negative scenarios involved situations where bags should not be counted.

The Cumulative Results

The implementation of the automated bag counting system resulted in increased accuracy and a significant reduction in counting errors. The solution provided real-time visibility of bags at pallet levels, ensuring accurate inventory records and reducing losses due to missing bags.

The Implementation

1. Analysis and Consultation:

Conducted a detailed analysis of the warehouse layout, camera placement, and lighting conditions to strategize the optimal tracking setup. Gathered frame data from the camera for various activities, aiming for 1500 frames per activity.

2. Custom Deep Learning Model Development:

Developed a custom deep learning model for object detection, tailored to accurately identify and track bags. This model was trained using 13,500 images. We integrated the model with the camera system for live monitoring and packet counting.

3. Object Annotation:

Added markings or labels to specific objects, such as bags within images, to enhance the dataset robustness for training the object detection system. This process covered scenarios including:

- Placing bags on pallets.
- Bags falling while being kept.
- Bags falling after being kept.
- Removing placed bags from the pallet.
- Multiple people placing bags on pallets.
- Multiple removals from the pallet.
- Bags lying around the pallet.

4. Dashboard:

As part of our comprehensive solution to improve packet counting accuracy for P&G, we developed a sophisticated dashboard. This dashboard provides real-time visibility and analytics, enhancing operational efficiency and decision-making.

5. Integration and Testing:

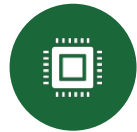
Seamlessly integrated the developed solution with the camera infrastructure and software system.

Indeed, video analytics solutions have the potential to benefit the manufacturing industry in numerous ways. Here are some key points highlighting the significance of video analytics in industrial scenarios:



Safety Monitoring:

Video Analytics can be used to detect unsafe behaviours or situations in real-time, such as workers not wearing proper safety gear, unauthorized personnel entering restricted areas, or potential hazards on the production floor.



Machine Failure Prediction:

By analysing video feeds from machinery, anomalies in operation can be detected early, allowing for predictive maintenance to prevent costly downtime due to unexpected breakdowns.



Quality Control:

Video Analytics can inspect products on the assembly line for defects, ensuring that only high-quality products make it through the manufacturing process.



Inventory Management:

By analysing video feeds of warehouse shelves, inventory levels can be monitored in real-time, helping to optimize stock levels and prevent stockouts or overstock situations.



Supply Chain Optimization:

Video Analytics can track the movement of goods within the manufacturing facility and throughout the supply chain, identifying inefficiencies and bottlenecks for optimization.



Energy Efficiency:

Analysing video feeds from the production floor can help identify areas where energy consumption can be reduced, leading to cost savings and environmental benefits.



Workforce Management:

Video Analytics can monitor worker productivity and identify areas where workflow can be optimized, leading to increased efficiency and throughput.



Security Surveillance:

In addition to traditional CCTV monitoring, video analytics can detect suspicious behaviour or intruders in real-time, triggering alerts for immediate response.

Overall, video analytics deployment at the industrial sites and scenarios offers several advantages, including improved safety measures, enhanced security, enhanced quality control, and optimized logistics management. By leveraging video analytics solutions, they can ensure compliance with safety regulations, reduce operational risks, enhance productivity, and feed their maintenance and levelling up of competitive edge in the market. As technology continues to advance, video analytics will remain a vital tool for optimizing manufacturing processes and driving business success.

Let's wrap it up...

**On Video Analytics, please feel free to write back to us:
Email: nidhi.agarwal@vertexplus.com, info@vertexplus.com
Call: +91 96603 26000**

To know more about VertexPlus Services and Solutions spectrum, please email us at info@vertexplus.com and visit www.vertexplus.com

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Video Analytics

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Contact Us

www.vertexplus.com

www.trueye.io



INDIA NOIDA

C-56/45, 2 & 3 Floor
Sector-62
Noida, Uttar Pradesh 201301

JAIPUR

B-19, 10-B Scheme
Gopal Pura Road
Jaipur, Rajasthan 302018

Sales Enquiry:
+91 9928626000
Support:
+91 9928611000
+91 7230817817
Email: info@vertexplus.com

UAE

E 109, East Wing - 1 Dubai
Airport Free Zone
PO Box: 371909
Dubai, UAE
Email: uae@vertexplus.com

SINGAPORE

VertexPlus Technologies Pte. Ltd.
99 Duxton Road
The Co. Building
Singapore 089543
Voice: +65 91880705
Email: singapore@vertexplus.com

USA

VertexPlus Inc.
5070 Jonquilla Dr. Alpharetta
Georgia 30004, USA
Voice: +1 561 990 1920
Email: us@vertexplus.com

CANADA VANCOUVER

201-110 Cambie Street
Vancouver BC V6B 2M8 Canada
Voice: +1 770-400-9545
Email: canada@vertexplus.com

UK LONDON

No. 230. High Street North
Manor Park
London, E12 6SB



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Document Version 3.0

Last Updated in June, 2024