

Automated Product Counting System

Solution Details

1. Executive Summary

The Automated Product Counting System is an AI-powered solution that enhances accuracy, efficiency, and transparency across logistics and supply chain operations. By leveraging computer vision and deep learning, it automatically detects and counts products such as bags, sacks, cartons, and boxes from video or image streams captured during loading and unloading.

This system addresses long-standing challenges of shipment mismatches, manual counting errors, and revenue leakage. With seamless ERP/WMS integration, audit-ready reporting, and scalable deployment across warehouses and distribution hubs, the solution empowers organizations to prevent losses, reduce costs, and build customer trust.

2. Industry Context & Business Drivers

Logistics and supply chain industries face rising complexity due to:

- High SKU diversity across packaging formats and product categories.
- Growing need for real-time visibility and proof of dispatch and delivery accuracy.
- Rising labor costs and dependency on manual processes.
- Increasing customer expectations for transparency and timely delivery.

Industry surveys show that discrepancies in dispatch vs. delivery quantities account for 5–15% of revenue leakage in large-scale logistics. Drivers such as digital transformation, compliance requirements, and multi-location scalability make automation of product verification and counting a critical priority.

3. Business Challenges

- Quantity mismatches between dispatched and received goods leading to financial losses.
- Manual counting inefficiencies: slow, error-prone, and resource-intensive.
- Lack of real-time visibility and accountability across multiple distribution points.
- Difficulty in providing audit-ready evidence for loss prevention or dispute resolution.
- Operational fragmentation when managing diverse logistics partners and hubs.

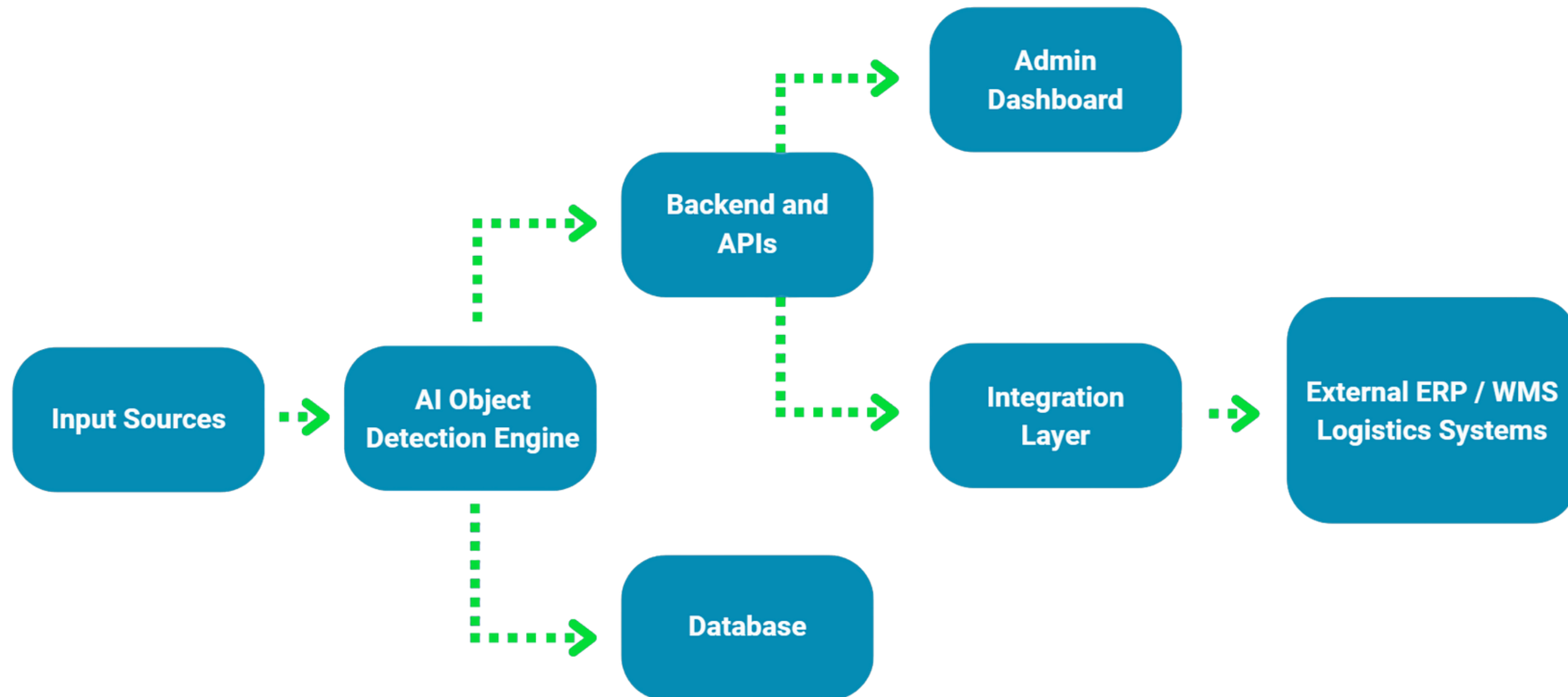
These challenges erode profitability, create distrust among partners, and increase operational overhead.

4. Solution Approach

ThirdEye Data's Automated Product Counting System applies AI-driven object detection models to count and verify products in real time.

- Computer Vision Models: Pre-trained and fine-tuned YOLOv8 for SKU detection and counting.
- Flexible Input Sources: Works with CCTV feeds, IP cameras, or handheld device captures.
- Audit-Ready Proof: Generates logs with timestamps, images, and counts for complete transparency.
- Seamless Integration: REST APIs connect with ERP, WMS, and logistics management platforms.
- Scalable Rollouts: Standardized deployment across warehouses, 3PLs, and retail hubs.

4.1 Solution Architecture



5. Core Capabilities in Depth

- Multi-SKU Recognition: Detects and counts 200+ SKU types across varied packaging (bags, sacks, cartons, boxes).
- Real-Time & Post-Event Processing: Counts goods instantly during loading/unloading or later from recorded footage.
- Visual Audit Trail: Creates timestamped logs with visual overlays and bounding boxes for proof.
- Adaptability: Works under diverse lighting, environmental, and camera conditions.
- Scalable Deployment: Standardized deployment model for multi-location logistics networks.
- Continuous Learning: Models retrain with enterprise-specific data for improved long-term accuracy.

6. Business Value Delivered Across Functions

- Operations: Automates repetitive counting tasks, cutting workforce strain and errors.
- Finance: Prevents revenue leakage by ensuring 95%+ shipment accuracy.
- Compliance: Provides transparent, audit-ready logs for dispute resolution and compliance checks.
- IT & Systems: Easily integrates with ERP/WMS platforms via REST APIs.
- Customer Service: Enhances delivery reliability, leading to higher customer trust and satisfaction.
- Management: Provides real-time visibility into multi-site logistics operations for better decision-making.

7. Real-World Impact & Benchmarked Results

- 15% reduction in revenue leakage through accurate shipment verification.
- 80–90% reduction in manual counting efforts, freeing up workforce capacity.
- 30–40% increase in operational efficiency at loading/unloading docks.
- Improved customer satisfaction scores by 20% due to transparent, accurate deliveries.
- Deployment-ready for global logistics providers, FMCG distribution networks, and manufacturing supply chains.

8. Technologies Powering the Solution

- AI Models: YOLOv8 (object detection & counting), R-CNN (complex scenarios).
- Frameworks: Streamlit (prototype UI), FastAPI/Flask (API inference).
- Frontend: Web-based dashboards with React/Angular.
- Databases: PostgreSQL/MySQL for structured logs and reports.
- Infrastructure: Cloud-native (AWS/GCP/Azure) or on-premise for compliance-sensitive setups.
- Integration: REST APIs with ERP/WMS platforms for real-time syncing.



See It in Action

Experience how the Automated Product Counting System can bring unmatched accuracy and transparency to your supply chain

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