



Solution Snapshot

iLens Delivers 100% Operations Accuracy and Efficiency¹

The Challenge

A leading India cement manufacturer needed to achieve throughput with 100 percent accuracy of bag counts as part of loading operations onto their trucks and wagons coaches and improve operational efficiency to 100 percent. It turned to Knowledge Lens' iLens Industry 4.0 – AI enabled Vision Analytics for Cement Bag Detection and Counting solution. To achieve desired results, iLens needed to be able to inference up to 30 cameras in real-time.

Based on vision computing and analytics with AI algorithms trained for cement bag processing, integrating Intel® Distribution of OpenVINO™ toolkit into the iLens solution could optimize their resource-hungry models. Running on 3rd Gen Intel Xeon® Scalable processors could also improve overall performance compared to 2nd Gen Intel Xeon Scalable processors.

Delivering Industry 4.0-grade Vision Computing Analytics for Manufacturing

Knowledge Lens assists manufacturers and industries with Artificial Intelligence (AI), Industrial IoT, Big Data, and other technologies that help transform enterprises into Industry 4.0-grade operations. Their vision computing and AI enabled analytics solutions are designed for each type of operation, such as cement manufacturing.

Cement is a common building material throughout the Middle East, India, and other countries across Asia. Cement factories need to maintain high throughput and high efficiency to deliver on the demand of customers. At the rates that manufacturers must achieve and the number of steps along the way, iLens vision analytics for cement bag processing requires highly performant algorithms for real-time inferencing.

Real-Time Inferencing for High Throughput Operations

The iLens Industry 4.0 AI enabled Cement Bag Detection and Counting Solution uses many cameras that monitor conveyor belts and packaging stations. Inferencing image streams in real-time, the iLens solution counts bags—including conjoined bags—to be shipped, analyzes operations for efficiency, and provides proactive alerts, intelligent dashboarding, and reporting with live insights. The solution can also integrate with a customer's ERP system to automatically exchange information about the number of bags associated with the loading/purchase order.

Benefits

Using the optimized iLens solution, a cement manufacturing customer:

- Achieved its highest satisfactory score by its customers with regard to accurate and timely delivery of a purchase.
- Reduced turnaround time of loading, counting, and dispatching by 35-40%.¹
- Saved 1.8 Cr INR (\$238,925 USD) in loading operations.¹

Knowledge Lens was able to:

- Retain core AI models without loss of accuracy.
- Reduce process space consumption by 20 to 30% with the ability to run up to 30 parallel streams on a single machine.¹

See backup for workloads and configurations. Results may vary.

“We worked with the AI Builders engineering team on our predictive maintenance and vision use cases to use OpenVINO, and learned a lot in the process, specifically how to effectively pin cores, work on multiple sockets, understand accuracy, quantization, and post training optimization on our models. Thanks to this optimization for multiple use cases we have seen 2 to 3X improvement in performance while not compromising accuracy.”

Ganesh Iyer, CTO of Knowledge Lens



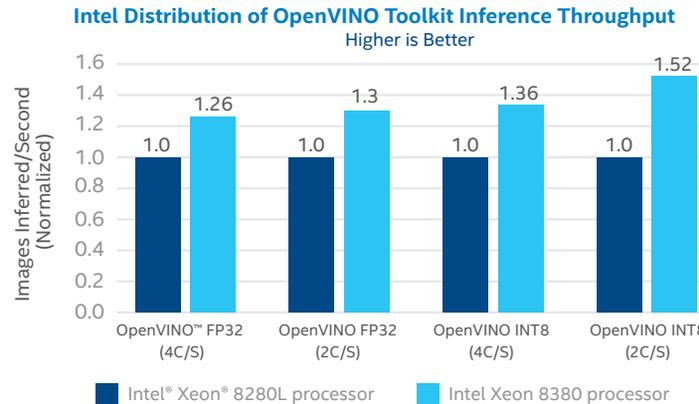
For more information about iLens, visit knowledgeLens.com/products/iLens

Learn more about the Intel AI Builders program at builders.intel.com/ai

Intel® Distribution of OpenVINO™ toolkit improves model performance and latency²

iLens AI algorithms were trained on cement bag and conveyor belts attributes and truck-loading machinery in multiple bays. Working with Intel engineers, Knowledge Lens optimized their algorithms using Intel Distribution of OpenVINO toolkit.

Benchmarking Intel Xeon Platinum 8280L processor versus Intel Xeon Platinum 8380 processor illustrates the flexibility and performance gain of latest gen processors. By varying cores per stream, the workload can be tuned for higher throughput or lower latency, depending on the objectives. With optimizations, iLens can run a large number of models in parallel on the same server, enabling the architecture to run up to 30 cameras.



KNOWLEDGE LENS provides cloud-based and on-premises Industry 4.0-grade solutions for transformative operations in enterprises across multiple industries.

¹ Source: Knowledge Lens.

² BASELINE: Test by Intel as of Mar/2021. 1-node, 2x Intel® Xeon® Platinum 8280L CPU @ 2.70GHz Processor, 28 cores HT On Turbo ON Total Memory 384 GB (12 slots/32GB/2934 MHz/DDR4), BIOS: SE5C620.86B.02.01.0011.032620200659 (ucode: 0x5003003), Ubuntu 18.04.5 LTS, 5.4.0-70-generic, gcc 7.5.0 compiler, Inference Framework: OpenVINO (2021.2.185), Intel® MKL-DNN, Perimeter intrusion detection: Yolo V3, customer data, 1 instance/2 socket, Datatype: FP32 / INT8.
NEW: Test by Intel as of Mar/2021. 1-node, 2x Intel® Xeon® Platinum 8380 CPU @ 2.30GHz Processor, 40 cores HT On Turbo ON Total Memory 256 GB (16 slots/16GB/3200 MHz/DDR4), BIOS: SE5C6200.86B.0022.D08.2103221623 (ucode: 0xd000270), Ubuntu 18.04.5 LTS, 5.4.0-70-generic, gcc 7.5.0 compiler, Inference Framework: OpenVINO (2021.2.185), Intel® MKL-DNN, Perimeter intrusion detection: Yolo V3, customer data, 1 instance/2 socket, Datatype: FP32 / INT8.

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