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Partner Ecosystem

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Lenovo and C2RO AI Solution for End-to-End Retail Analysis in the Physical Space

Improve Operational Efficiency, Targeted Marketing Campaigns & Increase In-Store Sales Performance

Summary

The use of AI in Retail allows companies to understand customer behavior, prevent theft and improve performance by providing Retailers with accurate in-store analytics, but not all providers offer a solution that delivers results and respects people's right to privacy.

C2RO ENTERA™ is the only patented 100% faceless AI-SaaS Video Analysis platform designed to provide organizations a simple and effective method of understanding all aspects of in-store behavior including footfall, socio-demographics, highly complex journey analysis and product interactions including potential theft/shrinkage scenarios.

ENTERA's AI Video Analytics, which does not rely on biometrics, ensures that it never captures, collects, records, or analyzes personally identifiable information. The data it generates is in real-time and specifically excludes any association with individuals' faces or personal details. This strict adherence to European GDPR and Canadian PIPEDA data privacy laws guarantees full compliance while providing retailers with valuable insights for their growth.

Challenge

Many businesses that manage large numbers of locations have been seeking technology to allow them to monitor unique KPIs across the entire portfolio of locations in a centralized and automated manner and with the powerful analytics capabilities that are available on e-commerce platforms in the digital world.

Adoption of computer vision and video analytics AI is hindered by strengthened data privacy regulations, high cost of scale out, and very low accuracy due to generic AI model usage. Gas stations face a complex challenge at the pump and the retail store. They require a solution to better understand customer behavior, reduce drop out due to long wait times and at the same time they also need to increase walk ins to maximize profits. Safety is also a concern from pump to retail store as they need to prevent theft and reduce equipment tampering.

Solution

Lenovo in partnership with C2RO offers a solution for a new class of 'non-biometric' video analytics AI systems delivering comprehensive, accurate, and 100% FACELESS journey insights, detailed socio-demographic breakdowns, and full-conversion funnel analysis including engagement and impressions. It seamlessly scales across thousands of locations around the globe, at an ultra-low cost, with full leverage of existing video security infrastructure and up to 10X savings on Edge investments.
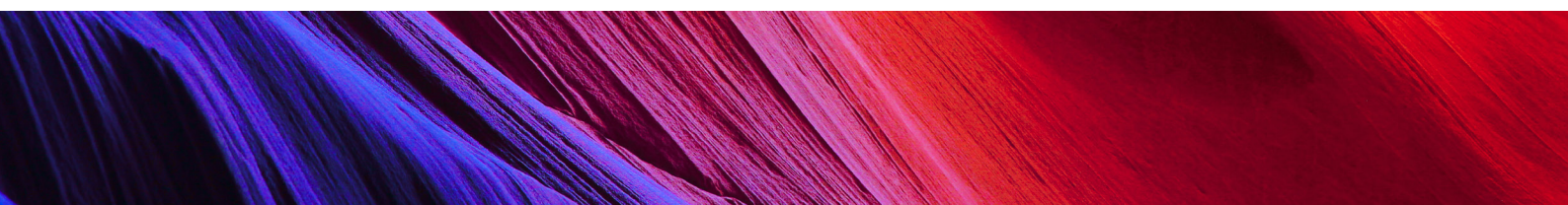
This biometric-free solution uses a partitioned architecture to ensure both data privacy regulation compliance and hyper-scalability. Proprietary CNNs are accelerated on x86 standard edge processing by strategically leveraging an AI toolkit provided by Intel® OpenVINO™ This dramatically reduces solution CAPEX and greatly simplifies procurement.

Lenovo provides integrated Edge solutions for the enterprise customers, offering seamless integration and trusted configuration tools and management.

Results

Advertising and Promotional Campaign Benchmarking

Retailers have the ability to quantify product engagement metrics, measure 1:1 advertising impressions & conversion rates, and link brand and sales/inventory data to visitors' socio-demographic classes to maximize the ROI for in-store promotions and align product inventory with regional trends.
- Faster TTM of new creative promotional rules with formal A/B testing metrics.
- Save costs by eliminating advertising campaigns that do not work
- Reduce printing spend or digital campaign buys

Queue Drop-out rate reduction and Increased Conversion Rates

Retailers can reduce queue wait times and dynamically allocate POS staffing based on real-time quality of service metrics collected through-out the day.
- Increase customer conversion in the queue funnel by reducing wait times and negative experiences.
- Optimize staff and operations Adjust the promotional prices on the fly for all channels.

Real-time Demand Forecasting

Retailers can measure complex conversion funnels in real-time to understand in the moment traffic/demand compared to historical demand. This is critical in fresh and prepared food applications.
- Optimize inventory to reduce waste and maximize sales for fresh and prepared foods.
- Analyse preparation tasks for duration and completeness for quality and streamlined operations

Identify tampering and shoplifting scenarios to reduce shrinkage

By combining journey sequences, physical product interactions, and specific transaction/inventory metrics, retailers can identify patterns that lead to bottom line losses related to theft.
- Isolate customer / associate behavior in relation to product engagement and loss prevention
- Isolate equipment tampering events and link them to security footage through dynamic AI-playback functions

Validated Architecture

C2RO ENTERA™ is deployed as a hybrid technology, with on-premise as well as cloud elements. The cloud based elements allow for access to the anonymized and aggregated data via dashboard or software API for integration into customer owned BI or ERP tools.

The solution leverages existing customer videosurveillance infrastructures simplifying the deployment at customer sites. No custom hardware is required. A Lenovo edge device connected to a network switch with access to the internet and the cameras is all that is required.

The specific configuration is provided on a case by case basis, prior to deployment and the chosen Lenovo Edge device depends on the KPIs required as well as the number of cameras to analyze at the customer site. A typical deployment can use a ThinkSystem SE350 with an Intel® Xeon® D or a ThinkEdge SE450 with an Intel® Xeon® Scalable processor with 4 or 8 cores or an Intel® X710-T2L.

Customers never access the edge device. It is not necessary. In order to access their site data, customers would access a cloud-based dashboard, or API provided data. C2RO ENTERA™ uses AI and machine learning to analyze the accessed videostreams in real time. No videos are ever recorded. All images are analyzed onsite, and no personal or private data is ever exported.
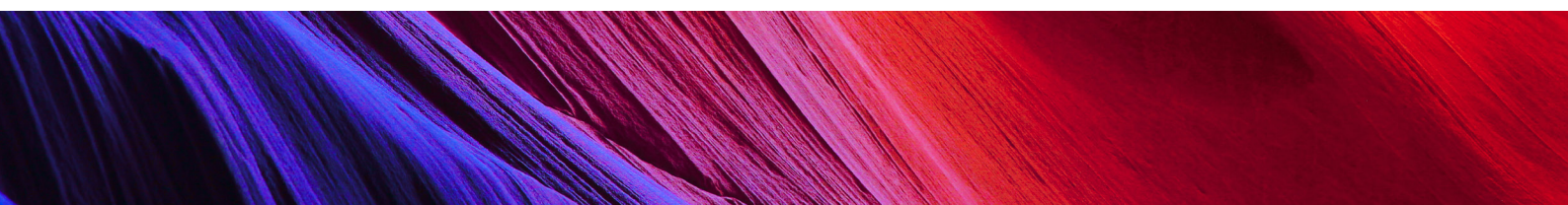
Design Components

	Servers	CPU	Networking	Software
Edge	ThinkEdge SE450	Intel® X710 T2L	10GBASE-T 2-port OCP Ethernet Adapter	C2RO ENTERA™
	ThinkSystem SE350	Intel® Xeon® D-2123IT 4C 60W 2.20 GHz	10GBASE-T 2-port OCP Ethernet Adapter	C2RO ENTERA™
	ThinkSystem SE350	Intel® Xeon® D-2143IT 8C 65W 2.20 GHz	10GBASE-T 2-port OCP Ethernet Adapter	C2RO ENTERA™

Resources

- Explore Lenovo's AI Innovators Program
- Explore the Lenovo HPC and AI Innovation and Briefing Center
- Lenovo Validated Design for AI Infrastructure on ThinkSystem Servers
- C2RO Website
- C2RO Entera Product Page
- Lenovo Intel Alliance

Why Lenovo

Focused on a bold vision to deliver smarter technology for all, Lenovo is developing world-changing technologies that create a more inclusive, trustworthy, and sustainable digital society. By designing, engineering and building the world's most complete portfolio of smart devices and infrastructure, we are also leading an Intelligent Transformation to create better experiences and opportunities for millions of customers around the world.

Why Intel

Intel is at the forefront of developing new semiconductor technologies, products, and solutions as building blocks for an increasing smart and connected world across a broad spectrum of markets. Intel offers a wide portfolio of products; Intel CPUs, GPUs, and FPGAs are flexible processors designed to handle the most demanding types of workloads.   Intel® Core™ processors are ideal for edge technology that require low-latency such as AI at the Edge, Computer Vision with AI, robots, and drones. Intel® Xeon® Scalable processors with the most built-in accelerators are the foundation for deep learning deployments from the data center to the edge. Intel also offers a vast ecosystem of software products like Intel® Geti™, Granulate™ and OpenVINO™ to help protect your most sensitive data, improve performance and get more ROI from AI.