

Case Study

Retail Video Analytics
AI Vision/Deep Learning



Video Analytics Help Boost Retail Sales

Grocery chain harnesses the power of AI video analytics for shopper insights



"We believe that in order to manage, one needs to measure. PM AM's ML/AI-powered video analytics solution is one such initiative in this direction for the retail world. Intel's technical help, testing environment, and partner network enabled us to deploy this solution in 60 days. Without Intel, it probably would have been more like six months."

—Pankaj Kumar, CEO of PM AM Corporation

Overview

Driven by the need for accurate information about shopper demographics and behaviors, Texas grocery chain Town Talk Foods recently implemented i3Di, an AI-based video analytics platform from PM AM Corporation.

Six months' worth of actionable insights from i3Di on shopper demographics, hours of operation, inventory outages, customer journey maps, and footfall projections enabled the retailer to optimize its marketing, operations, and merchandising. As a result, Town Talk was able to achieve 2021 sales goals two months early.¹

Challenge

Town Talk is a long-standing family-owned chain of grocery stores in Texas. As a licensed salvage retailer, they purchase groceries and restaurant supplies that would otherwise not be salable under strict industry regulations—enabling them to offer extreme discount prices to customers who enjoy hunting for bargains in their constantly changing inventory.

Grocery retailers face a continual challenge from their online counterparts, with customers having to choose between the convenience of purchasing online and the hands-on shopping experience of a brick-and-mortar store. Online retailers benefit from the use of data analytics to optimize their product and price mix and stay ahead of the competition.

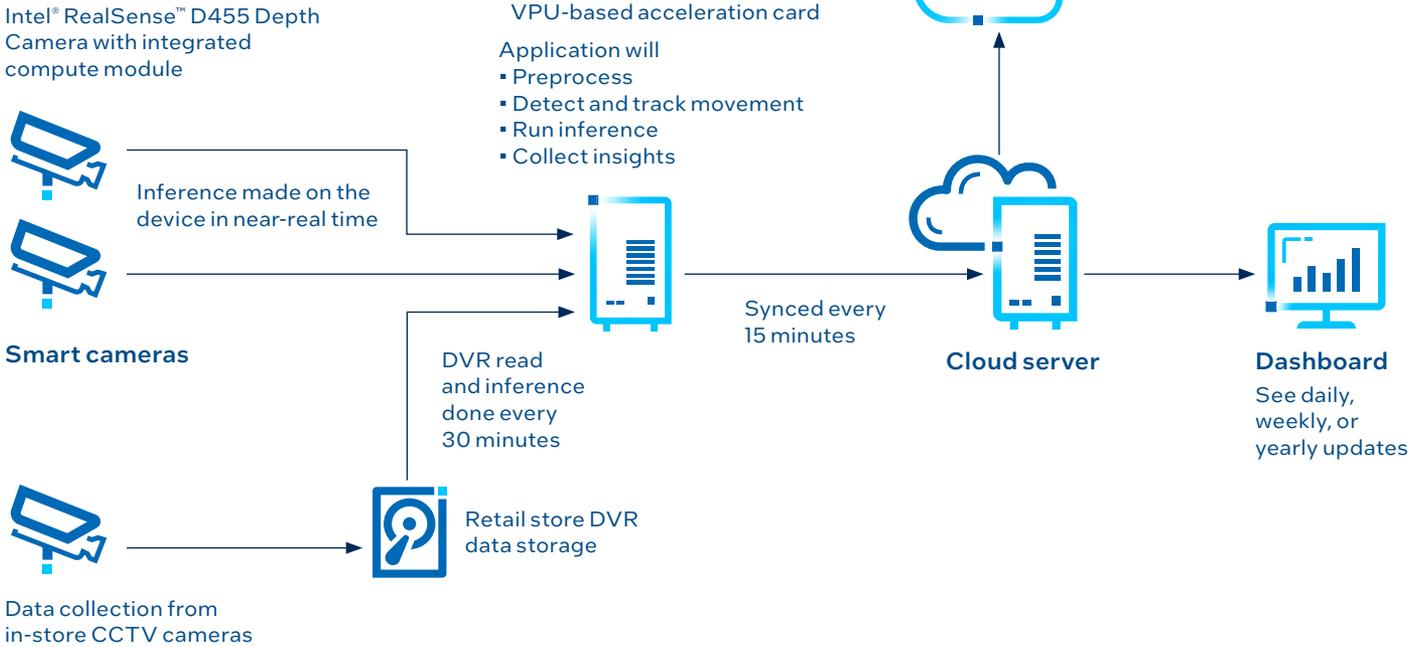
In Town Talk's 30,000-square-foot store in Arlington, Texas, sales were flat and profitability was marginal, despite a growing local population. Town Talk needed insight into in-store visitor patterns in order to optimize their product and price mix and attract more customers.

Solution

Town Talk partnered with **PM AM Corporation**, a global information technology company headquartered in Dallas, Texas, to deploy i3Di, an AI-based video analytics platform whose name stands for "in-store three-dimensional insights." By combining demographic data with information about shopper location and shelf contents, i3Di delivers near-real-time insights about shopping behaviors, buying preferences, outage notifications, and demand forecasting.

Video cameras were installed around the store, focused on high-traffic areas such as the produce, freezer, and snack aisles, as well as checkout counters. The cameras provided 100 percent coverage on the entry and exit and about 50 percent coverage elsewhere. Signs alerted customers to the presence of video monitoring.

i3Di architecture



How it works

The solution uses video data from smart cameras and in-store closed-circuit TV cameras. Intel® RealSense™ cameras combined with integrated compute modules provide the stereo-depth inferencing capabilities needed to identify shelf outages.

An on-premises server uses an Intel® Xeon® E2 processor and Intel® Movidius™ Myriad™ X VPU, an ultralow-power VPU featuring a dedicated hardware accelerator for deep neural network inference, which enables AI-based video processing for movement detection and facial recognition in near-real time. For privacy and security reasons, i3Di does not store shoppers’ images or personal data from video feeds.

The on-premises server is synced every 15 minutes with a cloud server running i3di on Microsoft Azure. A dashboard gives store management insights based on data gathered by i3Di.

Software development

The AI inference solution was optimized with the Intel® Distribution of the OpenVINO™ toolkit. AI inference models included with the toolkit allow i3Di to identify shoppers’ ages, sex, moods, and movement patterns.

The PM AM development team used Intel® DevCloud as a testing environment. Along with access to Intel technical experts, this helped them analyze and optimize AI models to make them more applicable and effective.

Insights

i3Di provided Town Talk management with a number of actionable insights:

- **Shopper demographics.** The retailer’s marketing agency had focused most of its marketing spend on women and baby boomers. However, i3di revealed that over half of Town Talk shoppers were actually men or millennials, while only a tiny fraction were baby boomers. This revelation is helping the retailer optimize spending on online and in-store advertising.
- **Customer journey maps.** i3Di helped Town Talk map the typical customer path through the store for different demographics and hours, allowing the retailer to identify the top three most-visited areas of the store and to optimize merchandising in those areas.
- **Hours of operation.** By customer request, Town Talk had extended its hours to 9 p.m. But i3Di’s analysis showed that very few customers shopped after 7 p.m., amounting to less than 2 percent of revenue. This knowledge enabled the retailer to optimize staffing by refocusing on the hours of greatest customer demand.
- **Inventory outages.** i3Di’s hour-by-hour monitoring of shelves in high-traffic areas revealed times when shelves were bare, enabling the store to accelerate restocking.
- **Footfall projections.** i3Di can forecast the number of visitors at any given time with a high degree of accuracy (+/- 5 percent) so that Town Talk can ensure the store is always adequately stocked.

Results

With i3Di on board for six months, Town Talk was able to achieve 2021 sales targets with two months left to go in the year.¹ Town Talk CEO Tom Brown identifies i3Di as one of the main reasons for this accomplishment. Town Talk plans to extend the i3Di solution to their other stores and to explore additional use cases:

- Implementation of total video coverage would enable heat mapping. Heat maps show at a granular level which parts of the aisle attract customers of different demographics. Benefits include valuable feedback on new product launches, data to drive a more effective planogram, and stronger negotiations with manufacturers for shelf space and placement.
- Outage tracking ability can be used to validate service level agreements with manufacturers, offering leverage in negotiations and the potential for sharing the solution cost.
- Beacon technology can serve targeted in-store ads and promotions to customers with the store's app on their phones.
- Features can be integrated with the point-of-sale system for insights such as basket size and total spend for various demographics.

"As a salvage grocer, Town Talk Foods is an extremely price-conscious organization. We provide the community with real food at prices that are not found elsewhere. We don't have the luxury of selling products at high margins, and anything that helps us save money translates to a better value for our community. This technology is very effective in determining which products are of value and who most appreciates the value. We are better able to determine the correct products, prices, and store locations than before we were using i3Di."

—Tom Brown, owner and CEO of Town Talk

Learn more

Contact PM AM to see what i3Di can do for your business: pmam.com/i3di

Get more information about Intel® technologies for retail: intel.com/retail



1. Source: Internal Town Talk sales data.

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