A national retail chain leverages AI at the edge to detect stockouts

EXECUTIVE SUMMARY

A national retail chain was facing the typical challenges that empty shelves created for its business. It turned to an AI at the edge solution to help solve these challenges.

The retailer deployed StockView, a solution built on a custom vision AI model developed and trained by Neal Analytics AI experts. StockView runs on an Azure Stack Edge device placed directly in the store. Focusing on shelves with high-value SKUs, it visually detects empty spots on shelves.

This solution provides a more real-time and accurate view (pun intended) of the situation. It can also help with issues such as shrinkage and misplaced SKUs. The retailer can also build multi-store, regional, and national analytics to better monitor stock and optimize its supply chain accordingly.

Power Apps | Shelf Gaps Demo App

7

Stockouts (Cough n Cold)

Cough n Cold Section A

1

2/20/2020 6:08 PM

Cough n Cold Section B

6

Missing revenues

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WHAT WAS THE BUSINESS CHALLENGE THE CUSTOMER WANTED TO SOLVE?

Missing key SKUs could remain out-of-stock for long period of times before being restocked. The retailer needed to find a more reactive and automatic way to detect these high-value missing SKUS.

However, all existing solutions required upgrading their shelves to expensive so-called "smart shelves". StockView allowed them to achieve the desired results without the need to upgrade their existing shelves.

CHALLENGES

In a time when most of the world's products are only a click away (including prescription drugs with the launch of Amazon Pharmacy), customers don't accept empty shelves for essential items at a retail location.

This national retailer wanted to ensure that high-value SKUs would not remain out-of-stock too long. It would hurt immediate sales. The customer satisfaction impact of these missing items could ripple through this sale (the customer might decide to leave the store and purchase everything at the closest competitor's location) and jeopardize future visits.

With a small and busy in-store staff at any given time and therefore limited real-time visibility on out-of-stock events, the real business impact of these missing items could easily go unnoticed for hours, days, or more. This resupply forecast challenge was especially acute as the inventory management system was only updated through PoS sales data (which does not account for shrinkage) and through manual inventory.

Brand	# Out of Stock	All Brands Out of Stock
We didn't find any data to show at this time		

NEAL ANALYTICS STOCKVIEW SOLUTION USING VISION AI AT THE EDGE

Neal Analytics deployed StockView to help alleviate these issues. StockView is an AI-powered solution that automatically detects shelf stockouts but visually detecting missing items on shelves.

To start, the StockView AI model is customized to the retailer's unique needs, such as:

- Size and type of products that needed to be detected
- Shelves configurations
- Lighting conditions

By deploying StockView on Azure Stack Edge, the solution can remain reliable regardless of internet connectivity while also keeping the overall data transmission cost low by capturing and processing the image locally, at the retail location level.

Finally, by offering this solution on an Azure cloud+edge platform, not only was scalability built-in (one device per store), but the integration of all the local deployments into a centralized solution to deploy, update and analyze consolidated data was natively possible.

Microsoft Azure Stack Edge

www.nealanalytics.com

RESULTS

After successfully testing the solution for a few months, the retailer decided to deploy StockView across its nationwide locations. Thanks to the solution's architecture, a progressive and controlled (from a risk and cost perspective!) roll-out was possible.

This test showed that it helped build stockouts trends based on real-life analytics. This, in turn, helped improve the inventory planning process. Moving forward, the retailer used data aggregated from multiple stores to gain even more insight and drive business decisions through advanced multi-location analytics.

Because it is built using standard Azure technologies, the retailer can reuse all its existing Azure subscriptions and purchasing agreements, tools, management software, and expertise for this deployment.

StockView Architecture
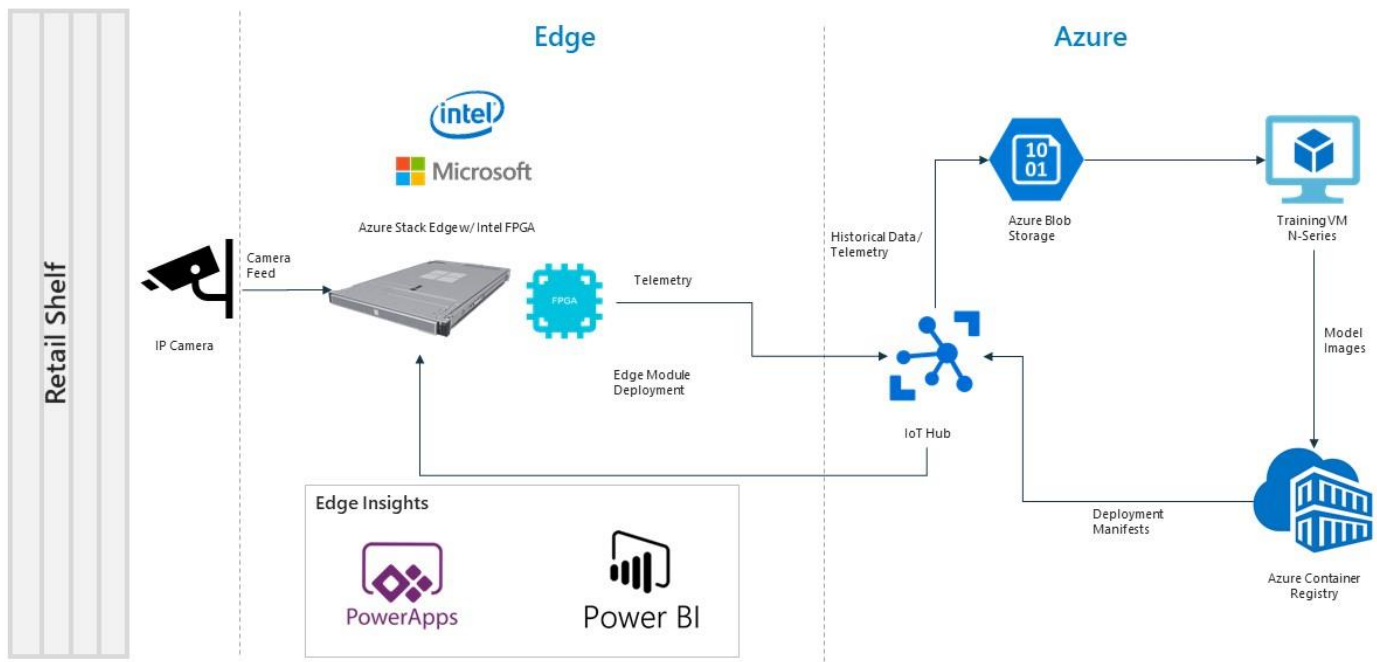
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