



Leading retail firm uses artificial intelligence to combat stock shrinkage and check POS behaviors

A leading retail and pharmaceutical chain wanted to reduce shrinkage and improve asset protection through increased visibility into point-of-sale (POS) transactions, delivery processes and merchandise tracking. The organization needed a more efficient way of managing its assets that didn't rely on manpower—the sheer scale and volume of stock made this a costly and time-consuming option—and that also would allow them to gain richer insight into POS behaviors.

The company required richer asset protection throughout the value chain, from bad products through to dock delivery issues, to stolen merchandise and POS losses. The firm became aware that there were discrepancies at POS terminals with legacy challenges around missed scans and “sweethearting”. This refers to the practice of an employee who scans the lower-priced item, rather than the higher-priced item. This contributes enormously to stock losses and affects the business’s bottom line. The company needed a solution that would allow it to reduce shrinkage, improve the camera visuals throughout the stores, and ensure consistent compliance with legal requirements, as well as the protection of personally identifiable information (PII).

Thanks to its proven expertise with computer vision at the edge, particularly in the retail space, Neal Analytics was selected to provide the organization with a trained artificial intelligence (AI) model that could automatically compare POS scans, integrate insights, and leverage edge compute with accelerated edge AI to detect and track products throughout transactions.



Artificial intelligence model that's capable of automatically comparing point-of-sale scans with the algorithms



Edge compute with accelerated-edge artificial intelligence to detect and track products throughout transactions



Integrated insights provide comprehensive visibility throughout all enterprise systems



Improved insights into point-of-sale activity and shrinkage across thousands of store locations

INDUSTRY: Retail industry

SUB-VERTICAL: Retail

INDUSTRY SCENARIO: To minimize shrinkage through improved visibility into asset location and protection by leveraging automated processes and systems.



Intelligent visibility

As asset protection was the primary priority for the company, it was essential that several boxes would be ticked from the outset. The first was to ensure that the customer's security cameras were upgraded. The company needed a security camera set-up that was capable of leveraging the Internet of Things (IoT) and Microsoft Vision AI to assess behaviors and asset movements, and then send this data to the edge to achieve improved visibility and enable decision-making.

With Neal Analytics' consultative support, the company was able to implement the camera solution across four stores to test how effectively the solution met their needs. At the same time, they could ensure that each camera was correctly installed to achieve absolute visibility throughout, and that the cameras were PII compliant. The latter was key—the solution had to block out people's faces and identities. To resolve this, Neal Analytics placed a colored block over the algorithm element that's designed to identify faces. This ensured that the faces of the customers remained masked when the information was sent to the cloud.

In addition to Microsoft Vision AI, the solution used the Azure Stack on the edge with the Intel FPGA IoT Hub, Azure Blob Storage, and Azure Percept—all carefully selected to ensure seamless integration within the organization's existing Azure cloud infrastructure, and to provide a flexible edge-to-cloud architecture capable of evolving and growing with the company and its changing requirements and expectations.

The infrastructure implemented throughout the retail chain had to remain accessible and easy to architect and to manage, while aligning with the company's forward-thinking ethos. To this end, Neal Analytics provided an architecture that could be readily built on and expanded to meet different use cases, while simultaneously remaining relevant and accessible.

Catching the data at the source

In addition to an intelligent security camera system, the solution included a trained Vision AI model that's capable of automatically comparing POS scans with what

the AI algorithm can see, thereby providing immediate visibility into missed scans or "sweetheart" scans. It uses edge computing with accelerated edge AI to detect and track products throughout each transaction, and then integrates the insights with other enterprise systems to provide alerts for possible further investigation. The solution provides highly relevant insights into POS transaction processes, while flagging irregularities.

The solution allows for the company to fully realize the potential of data and analytics to find trends and measurably reduce shrinkage, without compromising on PII or manpower availability. Even with the solution only implemented across four stores, the company has reduced shrinkage and benefitted from significantly increased visibility into POS activity. Leveraging edge AI, the company is experiencing the benefits of capturing data close to the source, and then using this data to improve understanding into use case scenarios and behaviors, and to pinpoint precisely where shrinkage was occurring.

"The final solution provides our customer with insights into POS transaction processes, detects and flags missing scans to reduce shrinkage at POS, and delivers visibility into behaviors and asset management that has transformed shrinkage and POS management," says Edwin Webster, Practice Director for Edge and IoT at Neal Analytics.



About Neal Analytics

Neal Analytics, a Fractal Company, is a Microsoft Solutions Partner that focuses on infrastructure, data, artificial intelligence (AI), digital and application innovation. The company's solutions accelerate data-driven transformation initiatives for enterprises committed to the Microsoft cloud and has, since 2011, taken pride in its ability to drive verifiable and measurable growth for customers. Neal Analytics delivers best-of-breed AI, machine learning, data and cloud engineering, data visualization and insights, edge and Internet of Things (IoT) and digital customer experiences.