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???Wayne Akoka

The summer means retail sales. From July 4 events to back-to-school extravaganzas, retailers are eager to welcome shoppers back to stores, and make no mistake: retail is as strong as ever. Whether they're buying lawn furniture and new grills during an Independence Day sale or spiral notebooks and highlighters for a back-to-school event, shoppers want to feel safe and secure, and so do store associates. But it's getting harder for stores to create both a safe and fun environment. Amid a spike in disruptive shoplifting and violent incidents, Best Buy CEO Corie Barry recently commented that store associates are being traumatized; indeed, of assaults referred to the FBI by law enforcement from 2018 to 2020, the number taking place in grocery and convenience stores rose 63 percent and 75 percent respectively. Violence perpetrated in public spaces has taken its toll on American psyches .

Retailers are at a crossroads. How do they create a great customer experience and a safe one? On the one hand, no one wants to shop in a store that looks and feels like a fortress. But everyone deserves the most safe and secure experience possible.

Fortunately, a noninvasive solution is catching on: behavior anomaly detection.

Behavior Anomaly Detection Defined

Behavior anomaly detection consists of the use of computer vision and pattern recognition to keep stores safe, fight theft, and improve customer service. Behavior anomaly detection builds off computer vision, but it's not the same thing. Computer vision is a form of artificial intelligence (AI) that makes it possible for computers to record visual data such as pictures and video. But computer vision only describes what is happening without meaningful interpretation of an event. Computer vision alone cannot capture the myriad and often subtle ways people behave. People with bad intentions, such as shoplifters, are constantly finding new ways to commit crimes, and computer vision alone does not evolve to keep pace with them. Nor is computer vision scalable for retailers that have traditionally used only point solutions for very specific applications. Computer vision needs pattern recognition to consistently detect behavioral anomalies, such as people in stores who are acting suspiciously. Computer vision describes what is happening; pattern recognition interprets what's happening. But computer vision and pattern recognition together deliver true behavior anomaly detection.

Fighting Theft, Protecting Stores, and Improving the Customer Experience

Behavior anomaly detection helps employees protect stores in three major ways:

- **Fighting theft**. Behavior anomaly detection observes suspicious behaviors such as someone trying to distract or ush an employee at the checkout lane, making multiple purchases, spending too much time going through store inventory, or slipping a product into their purse or overcoat.
- **Keeping the store safe**. Threats to store safety can range from people behaving violently to accidents occurring. Behavior anomaly detection can help a store manage all types. For example, store associates don't always spot potential hazards such as liquid spilled on the floor or improperly stocked merchandise teetering into an aisle. Behavior anomaly detection can find those problem spots in every nook and cranny of a store and alert a store associate to take corrective action.
- **Improving the customer experience**. Behavior anomaly detection can alert a store associate about a customer who might need assistance, such as someone attempting to lift a large box of merchandise. Or perhaps too many store associates are clustered in one area of the store, missing opportunities to provide more complete throughout the entire space. With behavior anomaly detection, a store manager can ensure that store associates focus more of their time assisting customers and helping when someone might need special assistance.

Benefits of Behavior Anomaly Detection

Behavior anomaly detection is becoming more appealing for a number of reasons, including:

- Stores are better equipped to mitigate against the potentially devastating economic impact of spiraling theft, such as store closures and job losses.
- During an ongoing labor shortage, stores increasingly need to do more with fewer store associates. Technology frees up staff to do more fulfilling work, such as helping customers.
- Computers can detect more anomalous behaviors than a human being can, both inside and outside the store, including entrances and parking lots. This is especially important because bad actors with malicious intent are becoming more sophisticated in the way they operate,

including hard-to-detect abuse of product scanners.

At the same time, the deploying of behavior anomaly detection requires very careful planning and consideration, including:

- **Preparation**. For behavior anomaly detection to work effectively, the AI needs to perform effectively, too – and not all AI works equally well. The AI needs to be trained to know what to look for. For instance, AI needs to know the difference between a shopper who is browsing and one who is stealing. It needs to be fueled by annotated/labeled data. The models need to be tested and validated. A human-in-the-loop approach is a necessary and vital part of the process for labeling and validating for accuracy. This process of training AI is known as data readiness. As we discuss in this blog post, data readiness consists of all the tasks a company needs to manage in order to ensure that its AI platforms learn from reliable and relevant data sources. With proper data readiness, a retailer can overcome the cost and expense of training a camera being used for behavior anomaly detection, among other pitfalls.
- **Mindfulness**. Applied without an inclusive mindset, behavior anomaly detection in stores can create ethical issues for retailers, such as profiling shoppers based on their appearance instead of their behavior. Moreover, the technology needs to be used in a way that protects consumer privacy. For instance, stores need to define boundaries for the use of cameras, agree on policies for how visual images can be stored, and decide on how to notify customers that cameras are being used to safeguard the store. It's important that businesses be careful to apply the principles of Mindful AI when developing computer vision, such as relying on a diverse team of development professionals to safeguard against bias creeping into the process of developing data for AI.

Behavior anomaly detection can help any business that manages crowds to save money and, more importantly, protect people. Those businesses include retailers as well as airports, sporting events, casinos, concerts, large urban areas, and anywhere else crowds gather. And Centific can help through our solution, **Scout**.

What Is Scout?

Scout by Centific is a comprehensive store ops-in-a-box platform that puts retailers in control of their stores, empowering them to:

- Reduce shrink.
- Prevent stock-outs.
- Improve customer satisfaction.
- Deliver financial value to stakeholders.

At the heart of Scout is a self-learning behavior anomaly detection. An integrated insights platform provides personalized and prescriptive analytics in real-time, intuitively alerting a store's team to events before they escalate.

Scout's human-in-the-loop foundation mitigates bias through comprehensive AI training data sets, and leverages Centific's global team of risk mitigation experts for real-time situational analysis, decreasing false positives. As Scout's knowledge of patterns grows, they are shared with users through the exclusive and secure pattern recognition network.

Whether it's understanding a particular customer's behavior, detecting fraud at self-checkouts, or identifying on-premises hazards, Scout empowers retailers to act with confidence in real-time.

To learn more, contact Centific.

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