

# Assisted Self-Checkout

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Self-checkout seemed like such a great idea: Let grocery and convenience store customers skip the lines, scan and pay for their own merchandise, and be out the door—freeing employees for other duties. But reality doesn't always measure up to the vision. Lines for self-checkout often exceed those for staffed lanes. Customers take longer to check items than experienced cashiers, and may become confused or make mistakes, requiring them to wait for assistance. And for retailers, shrinkage is a major pain point.

Some stores have experimented with autonomous (cashierless) “just walk out” payment systems, but these stores may offer only a limited selection of goods and require significant technology investments.

Computer vision-assisted checkout—backed up by store personnel—may provide the happy medium both retailers and their customers seek. Fast and accurate, it eliminates the need for item-by-item scanning and allows stores to preserve the “service with a smile” tradition that keeps people coming back.

## Smother Retail Checkout Solution

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Retailers are as frustrated as their customers by service delays, but chronic labor shortages and rising wages often prevent them from hiring additional staff, says [Aykut Dengi, CEO and Co-founder of RadiusAI, a computer vision company focused on AI technology solutions for retailers.](#)

To get a better handle on wait times, retailers started measuring how long it took for customers to get to a checkout stand and complete their transactions. The numbers weren't good.

“They asked us if we could provide technology to solve the problem. So, we created ShopAssist,” Dengi says. ShopAssist replaces checkout-counter scanners with computer vision cameras, which work much faster and require minimal labor from customers or cashiers.

With ShopAssist, customers unload a basket of goods onto the counter. In less than a second, the cameras recognize each item within the group. An itemized bill showing prices, product images, and total cost is displayed on both the customer and cashier screens. The customer is then free to complete their transaction on their own. If they want to use a coupon or purchase an item requiring an ID, ShopAssist immediately informs the cashier for

assistance. The interaction between the cashier and customer is face to face with ShopAssist, as in traditional cashier checkouts. This helps create a favorable experience for customers and employees alike.

In addition to speeding transactions, the computer vision system helps prevent shrinkage, a growing problem for retailers, especially at self-checkout. For example, a person may take a barcode sticker from an inexpensive item and place it on a higher-value product. This technique won't work with ShopAssist, which can read barcodes but pays more attention to a product's image—just as a human would do. Computer vision also prevents problems from customers who neglect to scan items or scan them improperly.

## Improving Retail Inventory Management

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Shrinkage and scanning errors not only cause retailers to lose revenue but also lead to inaccurate inventory tracking. Merchandise without barcodes, such as food service items, are particularly problematic. For example, some stores might offer a variety of grilled food items, such as hot dogs, taquitos, and burritos. These items likely have varied costs and, if not accurately charged to the customer and accounted for, the store will lose profit and inventory will be incorrect. Drink dispensers also cause issues when customers use soda cups for iced coffee, for example.

As convenience stores look to increase the popularity of their offers, freshness and availability are critical. "Prepared food is a growing profit source at convenience stores, but if you cook the wrong items, many end up in the trash," Dengi says. "ShopAssist visually identifies items correctly, lowering food waste and contributing to the bottom line."

ShopAssist's flexibility in product tracking allows merchants to include a wider variety of goods than technology that limits the types of items that can be sold. Autonomous checkout also restricts the way products can be displayed and are complicated and costly to install. "Placing cameras on every shelf is a formidable expense," Dengi says.

The ShopAssist software platform relies on the performance of Intel processors for visual tasks and Intel GPUs for faster inferencing—helping to identify a wide variety of merchandise quickly, including items the system hasn't seen before. Trying new products is important to retailers. "A typical store brings in a hundred new items a week, which often include local or specialized vendors and hometown favorites," Dengi says. "ShopAssist easily captures new images of products not yet introduced to the point-of-sale system and federates them across the enterprise, saving time and expense."

When a product is first introduced, the cameras read its barcode in addition to capturing its image and the technology learns to associate the two. RadiusAI uses the Intel® OpenVINO™ toolkit to continually optimize ShopAssist processes, including product recognition.

RadiusAI also works with retailers and systems integrators to tailor ShopAssist hardware or software to individual needs. For example, in addition to enabling computer vision, the Intel processors can be used to run other devices in the store.

“Retailers are adopting more edge solutions, and they’re familiar with using Intel hardware,” Dengi says. “For example, they can start with using the ShopAssist system for checkouts and later decide to manage their ovens on the same computer.”

Adding the RadiusAI solution called ShopAssist Pulse, retailers can expand the power of assisted checkout, inventory management, and food operations by using the existing store cameras.

“If someone picks up two slices of pizza and puts them in the same box, or eats one while shopping, the system may recognize the customer and correctly charge for two slices. It can also notify staff, allowing a non-confrontational loss prevention strategy. They may also want to put another pizza in the oven for the lunch rush,” Dengi says.

“When it’s implemented the right way, #ComputerVision allows employees to help when necessary, without creating significant overhead” — Aykut Dengi, @RadiusAI via @insightdottech

## **Preserving the Social Experience**

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While customers appreciate speedy transactions, they also value customer service and human interaction—elements that are often missing at autonomous self-checkout. “People don’t go to the store just to buy things, they chat with the employees. It’s a social experience,” Dengi says. Many self-checkout systems are often located away from store staff. This leads to increased loss prevention, slower transaction times, and customer satisfaction issues.

In the future, retail technology itself may become more personalized. For example, RadiusAI is working with CPG companies to create on-the-spot generative AI promotions based on a customer’s purchases. “The best technology is invisible to customers and employees,” Dengi says. “When it’s implemented the right way, computer vision allows employees to help when necessary, without creating significant overhead.”

*This article was edited by Georganne Benesch, Editorial Director for insight.tech.*