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AI Computer Vision: Retail Checkout Without Barcodes

AI computer vision is taking the retail sector by storm. It's no wonder: Vision-based solutions benefit every type of stakeholder in the space.

"Retailers can use computer vision technology to solve numerous business problems, from streamlining operations and alleviating staffing shortages to preventing theft," says Zhang Jiabo, Founder and CEO of Winmore Digit, a specialist in AI-enabled retail solutions. "And customers benefit since computer-vision solutions help reduce checkout wait times and provide engaging digital experiences."

Best of all, intelligent retail solutions are built with robust AI software development kits (SDKs) and high-performance hardware designed for edge computing. This makes it easier for retailers and systems integrators (SIs) to tackle business challenges efficiently and cost-effectively. It also opens exciting possibilities for integrating multiple retail solutions to maximize the benefits of AI in retail.

AI Product Recognition Without Barcodes

Identifying products at checkout is a prime example of how computer vision can solve common retail pain points. Everyone knows the frustration of long waits at the grocery checkout. A main cause is shoppers who are purchasing items without barcodes—such as fresh produce or bulk dry goods. Clerks must memorize and manually key in product codes and then weigh the items to obtain the correct price, which is time-consuming and prone to error.

Self-checkout tends to be even more cumbersome, with buyers forced to navigate complicated menus or search for their product by name or image. If they make a mistake, such as an incorrectly weighed item, they must wait even longer for staff intervention.

AI-enabled product detection offers a better way to deal with items that don't have barcodes at the point of sale (POS). The Winmore Barcodeless Goods Identification Kit, for example, pairs AI-powered kiosks and scales to automatically recognize, weigh, and price products—whether or not they have a barcode.

The solution's AI visual recognition model can identify 2,000+ types of common barcodeless goods with more than 99% accuracy. Recognition is fast: less than .2 seconds when using a fully trained model. In addition, the AI computer vision model self-trains with machine learning after deployment, becoming more accurate over time in its image processing. The solution benefits everyone involved: reducing overhead and streamlining processes for retailers, improving customer experiences, and freeing up staff to do more meaningful and enjoyable work.

This sort of solution would have seemed like science fiction even a decade ago—but thanks to advancements in edge processing hardware and open-source AI SDKs, innovative solutions providers are building and deploying such systems all over the world.

Intel technology plays a central role in bringing Winmore's solution to market. "The Intel® OpenVINO™ toolkit is a powerful resource for developing and optimizing AI visual recognition models," says Zhang Jiabo. "Intel processors are also crucial since they are performant, stable, and especially well-suited to AI computer vision workloads."

Global Retailer Modernizes Operations

AI-powered solutions built on robust, easy-to-integrate technology can be deployed quickly and efficiently at scale. This offers retail businesses a golden opportunity to modernize brick-and-mortar locations without high capital expenditure.

Winmore's deployment at a large retailer is a case in point. Its customer is a U.S. Fortune 500 company with more than 10,500 stores worldwide. The retailer was looking to modernize operations at its locations in China. It had taken steps toward digital transformation, but its equipment was already becoming outdated and couldn't process the large amounts of data needed for vision-based applications.

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Winmore worked with the retailer to implement an edge server solution that provides the additional computing power needed to support its advanced product recognition algorithm. To keep costs down, Winmore looked for opportunities to use existing infrastructure whenever possible—for example, by transforming compatible in-store equipment into AI-recognition electronic scales. The result was a modernized POS infrastructure and improved efficiency across multiple retail locations.

"A big advantage of computer vision-based solutions is that they tend to be quite flexible and modular," says Zhang Jiabo. "Our experience shows that it isn't always necessary to replace in-store infrastructure completely. Retailers can modernize operations by starting with their existing equipment and add to it as needed."

> When the vision-powered self-checkout and AI loss prevention solutions are deployed together, retail locations can move much closer to autonomous operations than they could with either solution in isolation.

Solution Integration Enables Autonomous Operations

Another example of the flexibility and modularity of AI-enabled retail solutions is the way they can be combined with one another. This allows retailers and SIs to deliver integrated solutions that are greater than the sum of their parts.

Winmore, for instance, offers a loss prevention solution that can be combined with its Barcodeless Goods Identification Kit. The platform works in concert with the product ID solution's intelligent weighing capabilities—and collects video data through in-store cameras, performs behavior analysis at self-checkout kiosks, and watches for abnormal events like missed scans and incorrect barcodes.

When the vision-powered self-checkout and AI loss prevention solutions are deployed together, retail locations can move much closer to autonomous operations than they could with either solution in isolation. This kind of "compound benefit" to stacked AI deployments is typical of digital transformation in the retail space.

"AI-enabled solutions are mutually reinforcing," says Zhang Jiabo. The more intelligence one has in a retail location, the more efficient operations become. In addition, when businesses begin to acquire, centralize, and analyze a greater amount of data, they are able to make smarter decisions going forward."

Growing the AI Ecosystem

There are many benefits of computer vision-based technology for retail stakeholders. And as more businesses adopt AI-powered solutions, the benefits will extend beyond retailers and shoppers.

In the future, the widespread adoption of smart retail will also create valuable opportunities for hardware manufacturers, independent software vendors (ISVs), and SIs.

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Winmore provides its solution as an application to hardware partners that want to develop a complete AI recognition solution without getting involved in AI development. The company also offers its computer vision algorithm to ISVs via an SDK—allowing development shops specializing in POS or weighing software to incorporate AI functionality with ease.

This is why computer vision in retail is a win for *everyone*—both inside the retail sector and beyond.

Learn more about The Winmore Barcodeless Goods Identification Kit and other <u>Winmore Digit IoT solutions</u>.

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