

Enhance speed of service, empower your operations team

Autocanteen Brings AI Self-Checkout to Food Service, Catering

The Autocanteen AI self-checkout solution helps catering and food service operations to scale capacity for peak service times at breakfast, lunch and dinner



As organizations seek to encourage their employees to return to the office, onsite food service operations have emerged as an important prerequisite to boost employee satisfaction and productivity.

Providing convenient and high-quality dining options not only demonstrates a company's commitment to employee well-being but also fosters a sense of community and collaboration. Employees who have access to onsite cafeterias or catering services save valuable time that would otherwise be spent commuting to offsite dining establishments, allowing them to focus more on their work and personal development. Moreover, shared mealtimes can lead to meaningful social interactions, enhancing team cohesion and cross-departmental communication.

Long Lines Are a Mealtime Issue

Despite the significant benefits of onsite food services, traditional manual checkout systems often detract from the overall experience due to long queues during peak hours, cumbersome payment processes, and the inefficiencies of human-operated checkouts.

Enter AI-powered self-checkout systems, a solution designed to address these pain points. By leveraging advanced machine learning algorithms and computer vision technologies, these systems can streamline the checkout process, allowing employees to quickly and effortlessly pay for their meals.

Whether it's recognizing multiple items on a tray or integrating with corporate meal subsidy programs, AI-based self-checkout systems offer unmatched accuracy and speed. These systems not only enhance the dining experience for employees but also free up food service staff to focus on more value-added tasks, such as food preparation or providing customer service.

The adoption of AI-powered self-checkout technology in corporate restaurants and catering applications represents a significant step toward a more efficient and employee-centric workplace. Autocanteen is a pioneer of self-checkout systems for catering and food service applications and is an Intel® Industry Solution Builders member.

Autocanteen AI Self-Checkout System

The Autocanteen AI self-checkout solution (see Figure 1) helps catering and food service operations to scale capacity for peak service times at breakfast, lunch and dinner. During catered events, when it feels like there are never enough hands to be attentive to guests, the Autocanteen solution frees up employees for passed tray or table service by allowing guests to check out by themselves. The convenience offered by the system can be a differentiator for winning new catering contracts.



Figure 1. A complete Autocanteen self-checkout terminal includes 3D scanner for food, scale and payment station.

The benefits of the Autocanteen self-checkout solution include¹:

- Terminals that can identify all of a diner’s items/meals and present with a total in one second, with a total transaction time of 10 seconds including payment processing. This is compared to traditional POS stations that can process one transaction in 45 seconds on average.
- Deployed systems that process 2,000 customers daily with 20 customers checking out per minute.
- This check out speed leads to improved customer experience as payment queues are shorter and the guest gets through the queue while their food is still warm.
- Check out staff can be redeployed as it only takes one member of staff to keep an eye on the multiple terminals that make up a busy Autocanteen checkout system.

¹Intel does not control or audit third-party data. You should consult other sources to evaluate accuracy.

3D Scanning and Deep Learning Computer Vision

The Autocanteen Touchless Self-Checkout System uses deep learning computer vision models and 3D scanners to allow for self-checkout with no barcodes. Instead, 3D scanners and AI training enables the system to identify any food item ranging from fruit to packaged goods, beverages and meal plates. The Autocanteen software runs on the Elo touchscreen system powered by Intel® Core™ i5 processors.

As shown in Fig. 2, the system starts by scanning food objects using a 3D image scanner to capture high quality images of food products. Once the scanner captures the image, the intelligent computer vision algorithm breaks the image down by context to detect and classify objects by known classes using a deep neural AI network.

The analyzed data is then sent to the cloud for knowledge-sharing. This provides restaurant managers with access to all their data via a cloud-based dashboard where all menus, inventory, sales, and other data are combined and always available. All data is anonymized, and the system is GDPR compliant.

Solution Uses Intel-Powered Systems from Elo

Autocanteen has standardized its solution touch display computers from Elo with AI inference processing performance provided by Intel® Core™ i5 processors.

The Elo 15-inch I-Series 3 is an interactive touch display designed to meet the needs of retail, hospitality, and industrial applications. It features a 16:9 aspect ratio with touch capabilities and is designed for self-service kiosks, digital signage, point-of-sale systems, and more.

The I-Series 3 is equipped with multiple connectivity options, including USB, Ethernet, HDMI, and Wi-Fi, allowing it to integrate into any existing network or infrastructure. Additionally, it supports modular peripherals such as barcode scanners, payment devices, and cameras, enhancing its adaptability.

The Elo I-Series 3 is powered by a 12th Generation Intel® Core™ i5 Processor with 10 CPU cores. With clock speeds up to 4.40 GHz, this processor features integrated Intel® Iris® Xe Graphics offering extra performance to power the object recognition on self-service checkouts, which is key to providing accurate pricing.

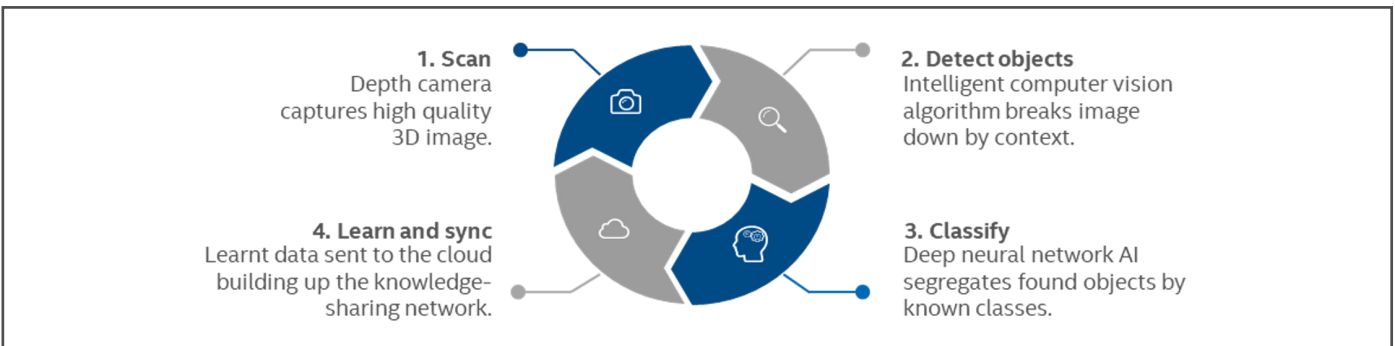


Figure 2. How Autocanteen solution works.

Autocanteen’s software also makes use of the Intel® Distribution of OpenVINO™ toolkit for computer vision inferencing. With this functionality, the system can deliver the performance needed to instantly process 3D computer vision images with up to 10-times improvement in decision making time². OpenVINO™ is an open source toolkit for AI inference acceleration designed for reduced latency and higher throughput while maintaining accuracy, reducing model footprint, and optimizing hardware use. It’s especially effective in computer vision, large language model (LLM), and other generative AI applications.

The performance of the processor enables seamless multitasking that allows for promotion of an event or a new food item. The Elo I-Series 3 supports high-resolution videos, complex interactive content, and enables managing multiple inputs simultaneously. The Intel® Core™ i5 processor features an energy efficient architecture with 15W total power draw.

Professional Services Firm Speeds Employees Through Meal Queue

One customer use case that demonstrates the value of the Autocanteen system, is an implementation for a City of London

²Intel does not control or audit third-party data. You should consult other sources to evaluate accuracy.

professional services firm that won an award for the improvement the system made in its in-house restaurant.

During breakfast and lunch times, the company’s restaurant always had long lines of people waiting to pay. Some of these wait times were up to 15 minutes. In that time food and drinks grew cold, socializing or work time was wasted, and customer satisfaction was reduced – minimizing the impact of what was meant to be a great company benefit.

Autocanteen partner Restaurant Associates was brought in to enhance the service and installed six Autocanteen terminals. The project took four weeks to prepare delivery of the system before it was trained it on the restaurant’s full menu. The system ran at full capacity on its first day of operation. The solution reduced lunch time transactions to 10 seconds each, which allowed 17 customers to be served in a minute and saved 75 hours of queuing time in the first three months³.

The implementation won Restaurant Associates a prestigious “Foodservice Catey 2024” for Best use of Innovative Technology award from The Caterer magazine⁴, where one judge commented that the solution “represents a significant leap forward, revolutionizing the customer experience and enhancing operational efficiency.”

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Conclusion

Caterers and food service operations have a challenge in that everyone goes to breakfast, lunch and dinner at close to the same time. This results in the suboptimal solution of staffing up for the “lunch rush” which eventually dies down, leaving a lot of employees and not a lot of customers. Autocanteen has developed an AI self-checkout system that leverages 3D scanners to scan any and all foods and then taps the power of deep learning to identify the food and present a total charge for the food within one second.

Based on touch-screen technology from Elo, the Autocanteen solution is powered by Intel Core i5 processors and leverages OpenVINO to accelerate AI inference. This hardware foundation provides the performance needed to make this innovative self-checkout system deliver on its promise to make the checkout process for catering and food service operations dramatically more efficient.

Learn More

[Autocanteen AI Self-Checkout Solution](#)

[Digitising Dining: AI Self-checkouts Land in Canary Wharf, London](#)

[Elo I-Series 3 with Intel® Processors](#)

[Intel® Core i5™ Processors](#)

[Intel® Distribution of OpenVINO™ Toolkit](#)

[Intel® Industry Solutions Builders](#)



⁴<https://www.thecaterer.com/news/foodservice-cateys-2024-best-use-of-innovative-technology-award-restaurant-associates>

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