ADLINK
LEADING EDGE COMPUTING



Unleashing AI for Intelligent Retail Experience

Solution Brief

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Unleashing AI for Intelligent Retail Experience

Overview

The retail industry is undergoing a significant transformation, with market reports projecting a 12.4% CAGR growth from 2023 to 2031. The growth is fueled by rising e-commerce adoption, mobile payments, shifting consumer behavior, and the need for time-saving convenience. As traditional retail structures struggle to meet modern complexities and customer needs, the rise of seamless automatic checkout highlights the need for operational efficiency and shop security.

ADLINK introduces its Deep Learning Acceleration Platform (DLAP) series to tackle these challenges. Utilizing edge AI and leveraging NVIDIA Jetson Orin modules, DLAP is set to transform traditional retail into a smart, proactive environment. This advanced technology enhances store intelligence and productivity, enabling AI-powered analysis of various retail operations from security to store layout optimization. By streamlining processes and improving decision-making, ADLINK's DLAP series aims to create a more efficient and secure retail experience, meeting the evolving demands of the modern retail landscape.



Challenges

Traditional retail struggles to adapt to evolving needs, lacking real-time detection capabilities to prevent security vulnerabilities and financial losses. The growth of retail spaces and the increasing demand for security present challenges because of the expensive costs of hiring security staff and cashiers. While automation offers a promising alternative, many traditional retail stores struggle to integrate these technologies, including AI, effectively, leading to increased operational costs and decreased profitability.

Integration with existing infrastructure is also problematic. Upgrading traditional systems often requires extensive overhauls of current setups, making it costly and impractical. This complexity discourages the adoption of newer, more efficient technologies, leaving retailers with outdated systems that cannot meet modern demands.

Optimizing store layouts for product placement is typically manual and time-intensive. This hinders quick adaptation to changing consumer behaviors and preferences, leading to suboptimal product displays and missed sales opportunities. Retailers need systems that can offer real-time analysis and insights to improve the customer experience and increase sales.

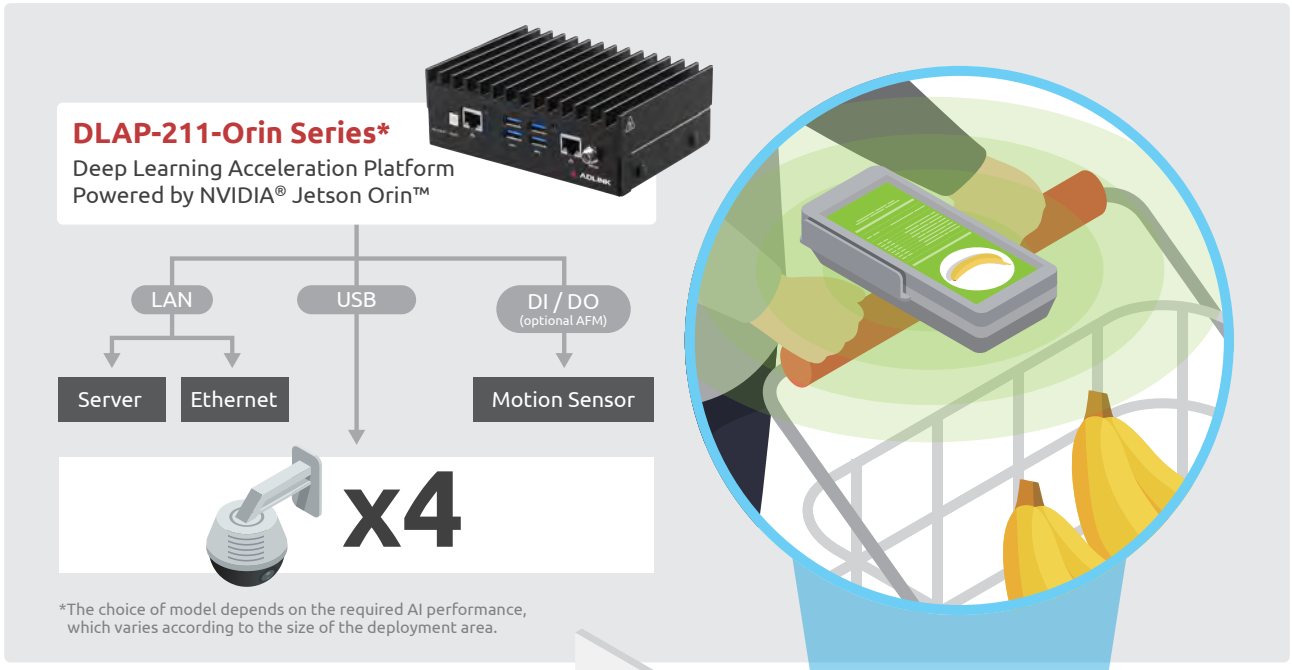
Data analysis is another area where traditional retail systems fall short. Point-of-sale data often offers limited insights into customer behavior and preferences, hindering effective inventory management and targeted marketing strategies. Comprehensive data analysis tools are needed to better understand and anticipate customer needs.

These challenges highlight the necessity for advanced solutions such as ADLINK's DLAP series, which utilizes edge AI to enhance store intelligence, streamline operations, and provide valuable insights for superior retail management.

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Solutions

The DLAP-211 Series offers a compact and powerful solution that effectively addresses conventional retailers' challenges. AI software on the DLAP collects and analyzes footage from store cameras, providing significant advantages for contemporary retailers seeking intelligent, AI-driven solutions.



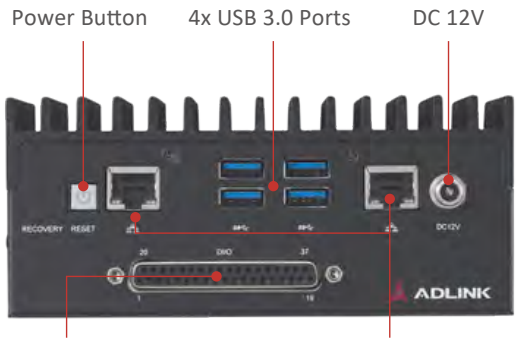


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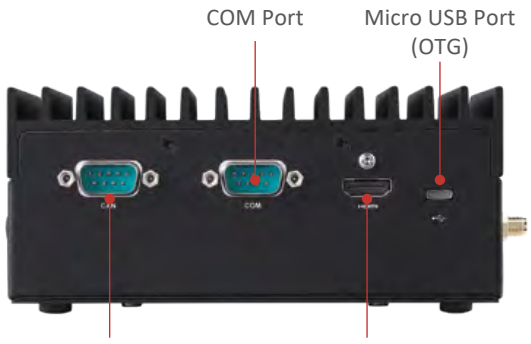
The DLAP-211 Series, powered by the advanced NVIDIA Jetson Orin module, delivers an impressive performance of up to 100 TOPS. This device provides multiple I/O interfaces that are thoughtfully designed to maximize power usage and overall efficiency. It includes four USB 3.0 Type-A ports and two Ethernet ports, offering support for various sensor options such as MIPI, PoE, and V-by-One camera interfaces. Additionally, it offers an optional function module with DI/DO connectors for expansions.

DLAP-211-Orin Series

Front Panel I/O



Back Panel I/O



Analysis of Items in Cart or Sold:

With AI, store owners can gain valuable insights into customer preferences and purchasing patterns by analyzing shopping carts and sold items. This data empowers retailers to make informed decisions regarding inventory management, ensuring more effective stocking of products.

Streamlined Cashless Shopping:

As customers shop, AI-powered cameras track their selections and update virtual shopping carts in real time. Upon exiting, the system automatically processes payments through their preferred digital payment method, making the entire experience seamless and efficient.

Optimizing Store Layouts for Targeted Marketing:

AI offers real-time analysis of store floor plans. By evaluating customer traffic, identifying popular areas, and suggesting optimal product placement strategies, it enhances the overall shopping experience. The data provides valuable insights for targeted marketing campaigns, aiding retailers in effectively promoting products in high-traffic areas and customizing marketing strategies to customer behavior, ultimately leading to increased sales and customer engagement.

Cost-Effective Intelligent Surveillance:

By utilizing existing store cameras, there is no need for an expensive infrastructure overhaul. Connecting the cameras to DLAP allows AI algorithms to monitor and analyze customer behavior at self-checkout counters, identifying faulty scanning or potential theft and enabling timely intervention to prevent losses.

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Labor Cost Reduction:
AI can efficiently monitor large areas, detect any unusual activities, and promptly send notifications. This reduces the need for constant human oversight and leads to significant labor cost savings. Studies report that unmanned stores have the potential to save retailers up to 40% in labor costs.

Hassle-Free Remote Maintenance:
One of the standout advantages of ADLINK's DLAP-211 Series is its easy maintenance facilitated by remote management software—EdgeGO. This capability allows for seamless updates, diagnostics, and troubleshooting from anywhere, significantly reducing downtime and maintenance costs. Retailers can ensure their systems are always running optimally without the need for on-site technical support, enhancing overall operational efficiency.

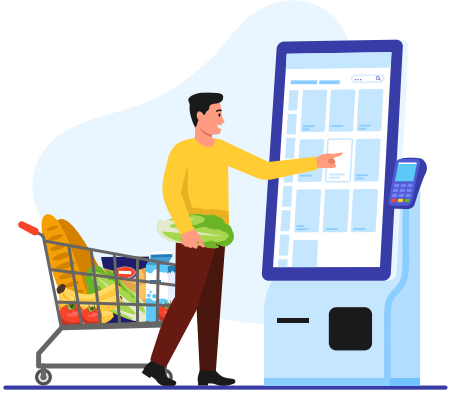
In essence, the DLAP-211 Series delivers advanced AI computing capabilities designed to meet the unique challenges of the retail industry. Its compact size allows for easy deployment, while its high AI performance of up to 100 TOPS ensures seamless integration into existing infrastructure. This platform empowers retailers to implement advanced surveillance measures, optimize operations, and make informed, data-driven decisions. ADLINK recognizes that the optimal solution may vary based on specific coverage requirements, enabling retailers to select the most suitable and costeffective option to lead in technological innovation and retail excellence.

Insight

As AI applications become more prevalent in the retail sector, they are enhancing customer engagement through personalized shopping experiences, optimizing inventory management, and offering predictive analytics. The future of AI in retail holds the promise of even more sophisticated customer interactions and operational efficiencies. Imagine a future where generative AI can create interactive store layouts in a split second and improve customer satisfaction through precise behavior analysis.

Conclusion

The incorporation of ADLINK's DLAP-211-Orin Series not only addresses current retail challenges but also paves the way for future advancements. Leveraging the deep learning capabilities of DLAP, the system undergoes continuous AI enhancement through iterative learning. With each data processing iteration, it refines its algorithms, providing a dynamic and adaptive solution tailored to the constantly evolving retail environment. This transformation elevates the store cameras from a passive tool to a proactive and intelligent AI system, significantly contributing to the overall efficiency and profitability of smart retail stores. Notably, a leading Japanese unmanned supermarket chain is already reaping the benefits of ADLINK's AI-powered DLAP solution in all of their stores.



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