Application Story

Edge Computing: Picking Automation for Warehouses

Industry: Warehouse, Logistics

Product: COM-CFHB6

Introduction

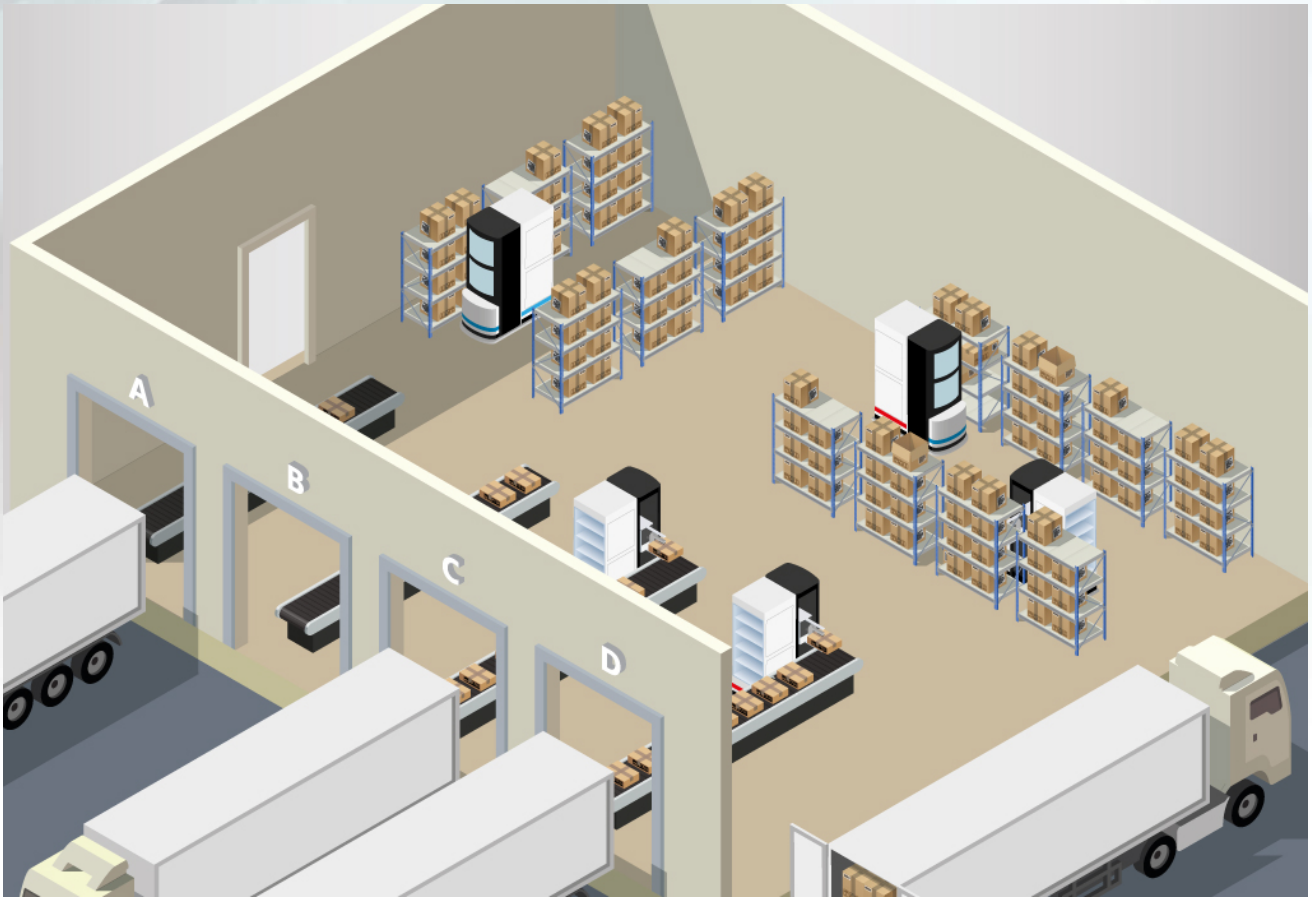
Warehouses are a vital link in the logistical chain between manufacturers, retailers and customers. With increased demand from online shoppers, and the focus on just-in-time stocking for retailers, warehouses are experiencing ever increasing workloads for workers and staff. This increased workload can often lead to unsafe and unsustainable conditions for warehouse workers, even with an expanded or flexible workforce.

To solve this issue, many warehouses have turned to employing order picking robots to automate various parts of their facilities. These robots are employed to locate and pull inventory, gathering requested items for an order, then delivering those items to warehouse workers who prepare the items for shipping to customers. This helps to reduce workloads and the level of stress for employees, allowing warehouse workers to focus on more urgent orders and ensuring accuracy before shipping.

One company was looking to design and build an order picking robot which takes advantage of edge computing and AI frameworks to create a smart and cost-effective solution to the needs of warehouses. To meet their demands, the company was faced with several challenges in picking an appropriate board to power their project.

Challenges

To meet the needs of a warehouse, an order picking robot must be able to effectively navigate a warehouse, locate the correct items, pull them from the shelf, and deliver the items to a packing area. This requires a system which offers high performance computing, and flexible I/O systems to connect with the various components of the robot. To be competitive in their field, the company also needed a system that wasn't overpriced.



High Performance

To effectively navigate a warehouse and perform order picking tasks, a robot requires a high-performance computing system at its heart. The company also wanted to integrate edge computing and AI software into the system to create an order picking robot that was efficient and intelligent.

PCIe Support

Robots have many components which must connect to the computer system, including input devices such as cameras and sensors, and various motor control components to move about the warehouse and pick out products. An effective system must have the support to connect to all of these components.

Competitive Price

Warehouses are always operating on narrow budgets, so the company's robot needed a system which was reasonably priced. The field of warehouse robots is also quickly filling up with competitors, so a cost competitive solution would help give the company an advantage over their competitors.

Solution

AAEON, an industry leader in embedded systems and edge computing, worked closely with the company to find a solution to meet their needs. The COM-CFHB6 computer-on-module was selected for its power, I/O features, and the competitive price and service AAEON offers.

Intel Core Processors

The COM-CFHB6 features the 8th and 9th Generation Intel Core i3/i5/i7 and Xeon-E processors, formerly Coffee Lake-H. Combined with up to 48 GB of memory with ECC support, the COM-CFHB6 offers high performance computing power, perfect for use with AI frameworks and operating at the edge. The board can also operate in

temperatures up to 60°C, perfect for work within warehouses.

PCIe and I/O Support

The COM-CFHB6 offers support for a wide range of I/O and expansion options. The board supports up to twenty-four PCIe lanes, four USB 3.0 and eight USB 2.0 ports, as well as 8-bit GPIO. This provides a range of flexibility options from connecting to sensors, controllers and motors, to supporting network connectivity for operation on the edge. The high number of PCIe lanes also means the COM-CFHB6 can support a range of GPU and AI modules for building an AI-powered system.

The COM-SKHB6 offers high performance computing power, perfect for AI frameworks and operating at the edge.

Competitive Price and Support

As with all of our products, AAEON offers competitive pricing and support to ensure our clients receive the end-to-end solution they need. AAEON solutions won't break your budget, and with AAEON manufacturer service, boards and systems can be customized to meet your needs, including custom built COM carrier boards or enclosures.

Impact

With the power, I/O support and competitive pricing of the COM-CFHB6, the company was able to create a competitive warehouse order picking robot. With their robot, warehouses are able to enjoy reduced workloads for their employees, greatly increasing quality of life for their staff while also increasing productivity and effectiveness of their operation.

With the success of this project, the company was able to further refine their design to create a common base which could be used for various applications and roles. With the COM-CFHB6 and other embedded boards from AAEON, the company can adapt their robot to fulfill other automated roles, such as medicine delivery in hospitals, automated floor cleaner in big-box retailers, and various other automated applications.

Product

The COM-CFHB6 from AAEON is a compact computer-on-module built to the COM Express Type 6 form factor. The COM-CFHB6 features the 8th and 9th Generation Intel Core and Intel Xeon-E processors, formerly Coffee Lake-H. Paired with three DDR4 slots supporting up to 48 GB of SODIMM memory, with ECC support available for some models, the COM-CFHB6 offers high computing performance for a range of industrial embedded applications.

The COM-CFHB6 is also a flexible system, with support for a wide range of I/O and expansion options. The COM-CFHB6 supports four USB 3.0 ports, eight USB 2.0 ports, and 24 PCIe lanes (typical configuration eight PCIe [x1] and one PCIe [x16]). The COM-CFHB6 is also built to operate in tough environments, with an operating temperature range of 0 to 60°C.

With AAEON manufacturer services and OEM/ODM support, the COM-CFHB6 can be customized and configured for your specific project needs. From board layout to BIOS testing to fine tuning, AAEON offers end-to-end support to bring your project to life.

About AAEON

Established in 1992, AAEON has become one of the leading designers and manufacturers of advanced industrial and embedded computing platforms. Committed to innovative engineering, AAEON provides Industry 4.0 integrated solutions, hardware and intelligent automated services for premier OEM/ODMs and system integrators worldwide, as well as IoT solution platforms that seamlessly consolidate virtual and physical networks. Reliable and high-quality computing platforms include industrial motherboards and systems, industrial displays, rugged tablets, PC/104, PICMG and COM modules, embedded SBCs, embedded controllers, network appliances and related accessories. AAEON also offers customized end-to-end services from initial product conceptualization and product development through to volume manufacturing and after-sales service programs. It is also committed to continuously redefining and harmonizing the management and development processes of the industry.

With its constant pursuit of innovation and excellence, AAEON became a member of the ASUS group in 2011, enabling the company to further strengthen its leadership, access advanced technology from ASUS, and leverage resources from within the group. AAEON is poised to offer more diversified embedded products and solutions at higher quality standards to meet world-class design and manufacturing demands in the years to come.

AAEON is an Associate member of the Intel® Internet of Things Solutions Alliance.

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