



Application Scenario

Warehouse AGV

**Warehouse management and environmental air control assistant.**



## Introduction

In response to the era of Industry 4.0, unmanned AGV has been widely used in automation, incredibly as the solution to somewhere people arduous to reach or patrol work for 24/7. By integrating artificial intelligence of machine learning and various sensors, it is like adding robots with visual and olfactory sensing to inspect and monitor surroundings. While online-shopping have higher demand after the pandemic attacked our lives, warehouse management should adjust to catch up with the rapidly changing environment. Therefore, warehouse AGV, as part of the logistic chain in the industry, has exerted its advantages to manage the freight in shorter times and a heavier workload. Meanwhile, against a specific scenario in manufacturing, logistics, and medical-related industries, continuous environment air control keeps the quality and production on the right path also important to warehouse management.

## Challenge

To adapt the online-shopping cycle's speedy process, as a backup, the warehouse needs to sort out the commodity quickly before the shipping time. It requires high AI performance to inference then achieve the sorting work. Besides the fast sorting, AGV would execute patrol work and handle intensive AI

workloads from ultra-high-resolution cameras to more accurate image analysis. Also, freight custody under the right air surroundings is the challenge.

## Solution

Aetina cooperates with Innodisk, Milliontronics, Antzer, and Sysinno to build the SparkBot - Surface. Surface was adopting the Aetina highest AI performance AX720-X32, Aetina's highest AI performance computing platform. AX720-X32 could leverage the NVIDIA® Jetson AGX Xavier™ for over 11 TFLOPs computational performance. The AGV solution with AX720-X32 was trained by object detection in deep learning and color-differentiating technology based upon ROS operating system, integrating with 3x MIPI CSI-2 high-resolution vision detection 4K cameras, so that the robot can navigate and avoid obstacles automatically.

It successfully integrates the Sysinno air quality detector module and Innodisk InnoAGE SSD featuring the out-of-band (OOB) management function through close cooperation and technology integration in advance. The collected data, 4K HD captured video, and inference is all transmitted to the back-end server through Millitronics WiGig module and hub via ultrafast high-speed and low-latency data transmission. In the end, build an information control room to monitor multiple AGVs simultaneously and grasp real-time information of various sensors and devices.

## Results

This solution is especially suitable for high hazardous operating environments for automatic patrol, inspection, monitoring, and help reduce workers loading and maintenance cost. It enables the warehouse to adjust the business changed from generation situation difference. Also, well keeping the warehouse management in roll to protect the product quality and cost from workforce overwork.

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