



## Case Study

# AI-Based Detection & Monitoring System for Train Station Safety

## Improving Public Safety in Train Stations by Edge AI

Dangerous incidents at train stations, such as passengers falling onto train tracks or violent attacks, occur much more frequently than almost anyone realizes. Therefore, with the popularization of AI and edge computing, they have been deployed in countless train stations to keep passengers safe by detecting abnormal behaviors and sending out warnings and staff to help timely.

### Challenges

The customer, which was a system integrator headquartered in Europe, has been providing smart solutions across various domains. For this case, the customer wanted to procure an embedded edge AI system powered by the NVIDIA® Jetson Xavier™ NX System on Module for superior performance. Regarding the field site, it should have at least an IP40 rating, fanless operation, and a compact design. Additionally, the system should have a wide operating temperature range and support PoE for connecting a camera.

### Main Requirements

- NVIDIA® Jetson Xavier™ NX
- 15W GbE PoE for camera
- Wide range operating temperature from -30°C
- IP40 rating for harsh environment

### AIE100-903-FL-NX: Tailored for Smart City Innovation with NVIDIA® Jetson Xavier™ NX

Specifically designed for smart city applications, Axiomtek recommended the AIE100-903-FL-NX, which features the NVIDIA® Jetson Xavier™ NX SoM that packs the power of a supercomputer. With up to 21 TOPS of accelerated computing, it provides superior performance to enable users to run multiple modern neural networks in parallel and process data from multiple high-resolution sensors, meeting the requirements of a complete artificial intelligence system.

The AIE100-903-FL-NX is specifically designed and applicable for smart city applications. The edge AI system provides 16GB or 8GB 128-bit LPDDR4x onboard system memory. It offers one full-size PCI

Express Mini Card slot and one SIM slot for wireless connectivity with two antenna openings. The HDMI 2.0 outlet supports 4K Ultra HD resolution. It provides one 15W PoE port for peripheral devices. The storage includes onboard 16GB eMMC, M.2 Key M NVMe SSD slot, and one Micro SD slot.



## Application

### The Edge AI Secures the Safety of Train Stations

The AIE100-903-FL-NX, with its seamless integration with a cutting-edge 3D camera, goes beyond the conventional functionalities of a surveillance system. By harnessing the power of this technology, it not only excels in creating a virtual fence for enhanced safety but also introduces a spectrum of advanced features. In the event of a passenger approaching dangerously near the platform edge, the edge computing system promptly issues a warning signal, swiftly transmitted via Wi-Fi to the control center. This real-time alert enables station staff to conduct immediate checks, ensuring the well-being and security of passengers. Moreover, the exceptional performance of the platform allows it to concurrently execute various AI models, contributing to a multifaceted enhancement of station operations. Beyond its primary function, the AIE100-903-FL-NX proves invaluable in passenger flow detection and abnormal behavior recognition. These additional applications significantly elevate the safety standards of train stations, creating environments that

are not only secure but also technologically advanced and responsive to diverse scenarios.



## System Configurations of the AIE100-903-FL-NX

- NVIDIA® Jetson Xavier™ NX, 384-core NVIDIA Volta™ GPU
- One 15W GbE PoE for camera
- Wide operating temperature from -30°C to +50°C
- JetPack supported
- 24/7 secure remote monitoring, control, and OTA deployment empowered by Allxon

## Why Axiomtek

As a member of the NVIDIA Preferred Partner, Axiomtek has been in close collaboration with NVIDIA in driving AI innovation at the edge. With expertise and relentless devotion to computer products,



Axiomtek offers reliable and high-performance edge AI platforms for various applications and demands based on NVIDIA's cutting-edge technology to help build a smarter world.

## **About Axiomtek Co., Ltd.**

Axiomtek has experienced extraordinary growth in the past 33 years because of our people, our years of learning which resulted in our tremendous industry experience, and our desire to deliver well-rounded, easy-to-integrate solutions to our customers. These factors have influenced us to invest in a growing team of engineers including software hardware, firmware, and application engineers. For the next few decades, our success will be determined by our ability to lead with unique technologies for AIoT and serve our key markets with innovatively-designed solution packages of hardware and software – coupled with unmatched engineering and value-added services that will help lessen the challenges faced by our systems integrator, OEM and ODM customers and prospects alike. We will continue to enlist more technology partners and increase collaborations with our growing ecosystem who are leaders in their fields. With such alliances, we will create synergy and better deliver solutions, value, and the expertise our customers need.