Cleared for Takeoff

How the UP Squared Pro 710H Powers Smart Airport Access Control

Introduction

When it comes to air travel, efficiency and security are paramount. Everything from flight scheduling to the logistics of passenger luggage transport relies on precise organization and as such, it is not surprising that transportation industry is one of the key adopters of modern, AI-driven solutions aimed at streamlining complex logistical systems.

One area in which automation has become commonplace is in airport access control, or ‘e-gates’. Security is justifiably prioritized at both the departure and arrival stages of air travel. However, while it is a necessity, traditional means of identity verification and access control can be inefficient, unpredictable, and can place high demands on manpower.

To streamline terminal access control at airports, one systems integrator sought AAEON’s help in finding a suitable method of automating the process, with the aim being to utilize AI inferencing for identity verification. AAEON proposed the UP Squared Pro 710H as a potential candidate for the job, and after proof of concept had been established, the customer’s journey to deployment was underway.

Checking In

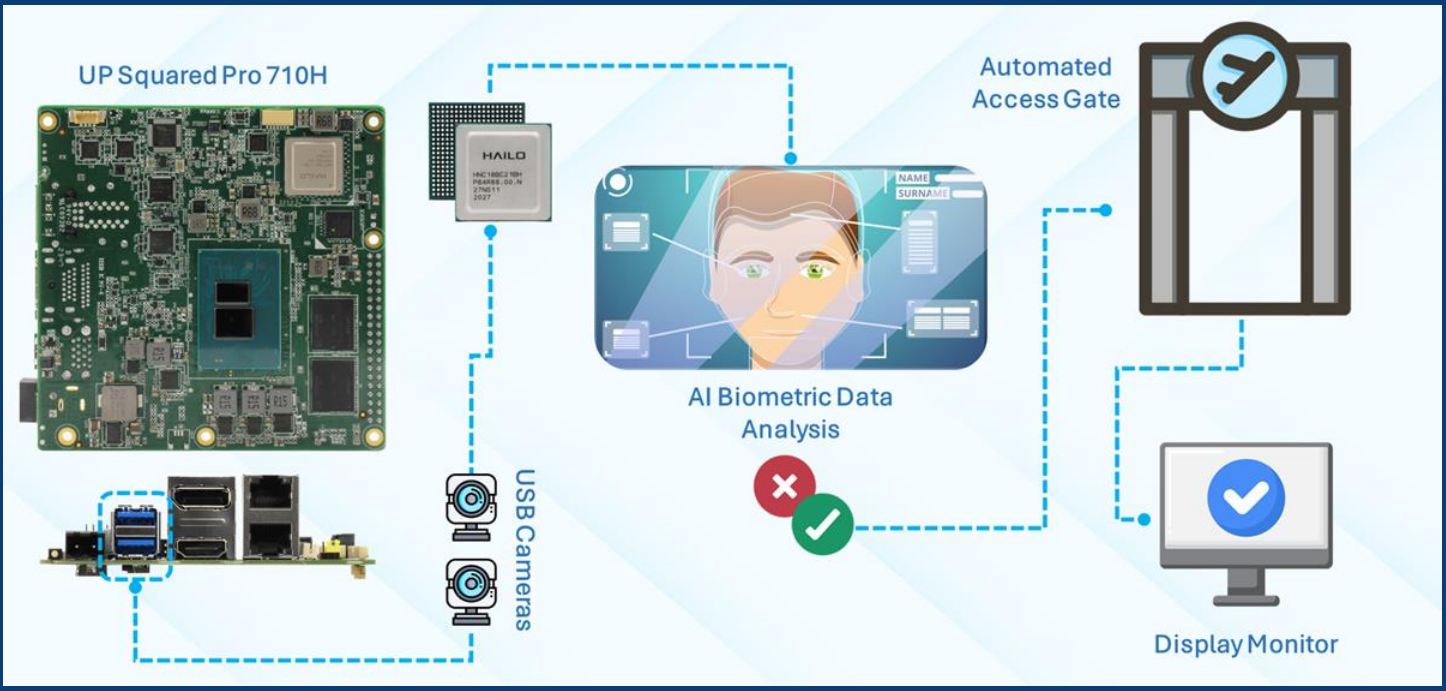
There were several key functions that the customer required of the platform chosen to power their application, chief among them being the capability to run complex AI models to match biometric data with the passenger at the gate. To facilitate this, the solution would also need to be able to support multiple cameras for image acquisition, sufficiently high-bandwidth memory and storage, and a way to feed the unit's display screen with the results of its biometric analysis.

While these needs could be met relatively easily with a number of options available within the embedded computing market, AAEON's client was mindful of both the practicality and efficiency of their proposed solution. As such, if they were able to deploy a platform that was compact and equipped with most of the necessary functionality integrated, it would be a major boost to the project's scalability and ease of deployment.

Project Takeoff

The UP Squared Pro 710H was able to meet the client's expectations in every way, while even providing some additional benefits. For one, it addressed the need for a solution capable of running complex AI algorithms for biometric passenger recognition through its integrated Hailo-8™ edge AI accelerator, as well as processing ancillary data efficiently with the help of the board's low power Intel® Processor N97 CPU.

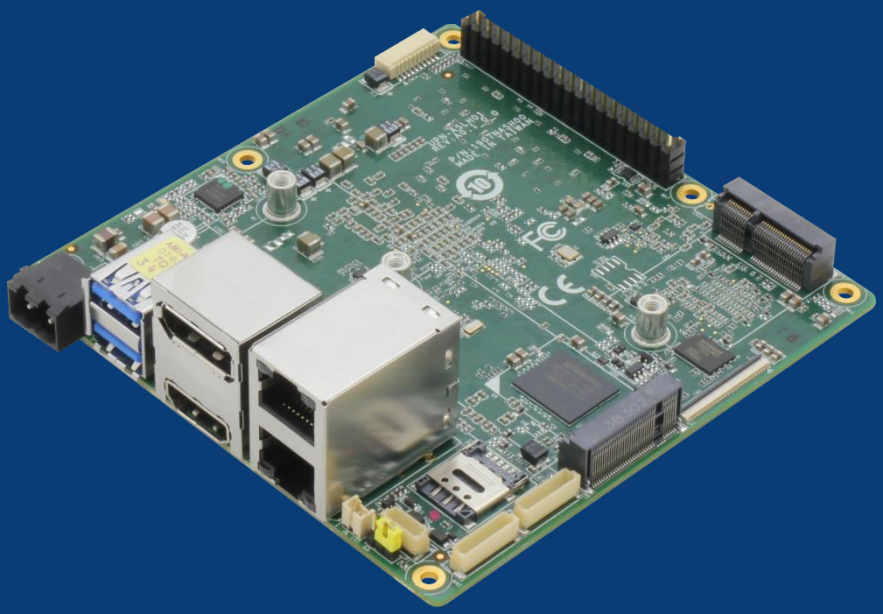
Boasting up to 26 TOPs along with market-leading power-efficiency, the UP Squared Pro 710H's integrated Hailo-8™ edge AI accelerator was perfectly suited to the application's mission, as it meant that once the client's algorithm had been trained for the rapid prototyping of biometric algorithms using machine learning frameworks such as TensorFlow and PyTorch, it could be optimized and painlessly deployed with the chip's native Hailo TAPPAS SDK. As we know, nobody likes having to transfer, so a direct flight from model training to execution was a welcome addition.



To acquire the image data for each passenger using the AI-assisted terminal access gate, cameras were installed via the UP Squared Pro 710H's USB Type-A ports, which offered high-speed USB 3.2 Gen 2 signals for fast transmission from peripheral device to the board. Further, the multitasking and high-speed data processing facilitated by the board's 16GB onboard LPDDR5 system memory allowed for streamlined operation, while also reducing setup time, given the product did not require SODIMM installation.

Providing an avenue to display passenger information and security monitoring dashboards on the AI-assisted terminal access gate unit, the customer utilized the UP Squared Pro 710H's HDMI output, which fed directly into the gate's monitor.

The UP Squared Pro 710H's Sky-High Value



By choosing the UP Squared Pro 710H, the client was not only able to build an exceptionally efficient, AI-assisted terminal access gate, but receive additional benefits that added value to the operation and longevity of their solution. For example, the UP Squared Pro 710H's compact 4" x 4" form factor made it ideal for installation within the access gate, while its broad 12V to 36V power input range made the UP Squared Pro 710H a location-agnostic component capable of being used in various locations without the risk of different power supply architectures affecting the AI-assisted terminal access gate's operation.

The value of the board's versatility was not isolated to its power input range or compact size, with multiple expansion slots available for Wi-Fi and cellular modules allowing it to reliably operate as part of a wider airport ecosystem, regardless of location. This was augmented by the board's integrated TPM 2.0, which boosted the data security of the application by protecting encryption keys and sensitive information, meaning all data deployed, transmitted, and handled during its operation remained safe.

Impact

By instituting AI-driven biometric verification at passenger terminal gates, AAEON's client was able to offer airports across the world a more secure, accurate, and efficient means of identity verification. One of the most significant implications of the application's success was the time and cost savings that were achieved by reducing reliance on manpower at terminal gates, which decreased bottlenecks at such a critical access point in the air travel process.

The application's benefits were not exclusive to the end customers. By streamlining a traditionally mundane aspect of travel, airports that adopted the automated access gate found their use resulted in greater passenger satisfaction, which in turn resulted in more positive public perception of the airports using the AI-assisted terminal access gate.

About AAEON

Established in 1992, AAEON is one of the leading designers and manufacturers of industrial IoT and AI Edge solutions. With continual innovation as a core value, AAEON provides reliable, high-quality computing platforms including industrial motherboards and systems, rugged tablets, embedded AI Edge systems, uCPE network appliances, and LoRaWAN/WWAN solutions. AAEON also provides industry-leading experience and knowledge to provide OEM/ODM services worldwide. AAEON works closely with premier chip designers to deliver stable, reliable platforms. For an introduction to AAEON's expansive line of products and services, visit www.aaeon.com.

Contact Us

AAEON Technology Inc.

6F., No. 28, Baogao Rd., Xindian Dist.,
New Taipei City 231029, Taiwan R.O.C.

+886-2-8919-1234

www.aaeon.com