premio

Your Success,
Our Commitment

INDUSTRIAL EMBEDDED SYSTEMS

Reducing Airport Security ID Checks to Just 20 Seconds using GPU Embedded Computing for Facial Recognition and Machine Learning

Premio Benefits

- High-end graphics processing power for facial recognition technology with an NVIDIA GeForce GTX 1050 Ti.
- Rapid time to sample with a custom design for rich I/O expandability featuring 12x USB and 8x COM to support all connected devices.
- Proven reliability to operate continuously 24/7 with minimal latency and downtime.

Real-world Challenge

International tourism has well surpassed one billion travelers each year and accounts for 10% of the world's GDP according to the United Nations World Tourism Organization (UNWTO). Escalating crowds at airport security checkpoints pose a risk for staff and travelers alike. While increasing wait times put a slight burden on tourists, bottlenecks become real problems on the business and security of air travel. To solve this larger complex issue begins with a step in the right direction utilizing technology advancements in computing and machine learning.

Premio's client is a company devising a solution to install unmanned biometric security gates for an international airport ranked in the top 8 for most passenger traffic worldwide. The newly initiated gates are available for passengers to streamline their check-in process with improved accuracy and speed while skipping the need for manual checks from border security. This addition marks the airport's first phase in facilitating passengers with more reliable and efficient machine biometric scanning to reduce overall traffic and enhance airport security procedures.

In order to build these automated security gates for airport integration, Premio's client required a high-performance computing solution with increased reliability and flexibility to power facial recognition technology. In addition to having the necessary processing performance for multiple sensors and scanners, it was also necessary for the application to operate continuously with minimal downtime to provide a seamless experience. Travelers using the automated security gates were able to cut their travel time substantially and proceeded through security in only 20 seconds all by using facial recognition.

Application Diagram
RCO-6020-1050Ti

Face Recognition System

Passport Scanner

Border Control System
Local Server

RCO-6020-1050Ti

Premio's Application Solution

Based on Premio's outstanding industrial product strength and capability, our client was able to customize accordingly with their required engineering specifications. The selected solution for the central compute unit powering facial recognition technology was Premio's RCO-6020-1050ti, an industrial GPU embedded computer capable of supporting high-performance edge workloads.

Powered by NVIDIA's GeForce GTX 1050 Ti, Premio's GPU embedded systems deliver the necessary processing power for better imaging analysis and accuracy in facial recognition technology that satisfies international travel regulations. The highly specialized architecture of GPUs have impressive graphic processing capabilities and can also perform parallel computation workloads through the GTX 1050 Ti's 768 CUDA cores with exceptional single or double precision. Each security gate system built on Premio's edge computing platform also supports machine learning capabilities for progressive improvement overtime as it compiles massive amounts of data everyday.

What sets the RCO-6020-1050ti apart from the competition was the ability for customization. In this specific scenario, Premio modified the original design

for additional expansion utility supplying a total of 12x USB and 8x COM ports in order to capture all the data points transmitted from the security gate's connected IoT sensors and devices. Premio's GPU computing system has the flexible capacity to control the displays, scanners, sensors, cameras, and even the mechanical security gate itself.

Premio's industrial GPU computers are constructed for long-term reliability capable of continuous 24/7 operation which is essential for a busy international airport. Every product is validated through rigorous testing methods under extreme conditions to accommodate different working environments.

The RCO-6020-1050ti is rated for wide power input at 9~48VDC with protection measures against over voltage, overcurrent, and reverse polarity. Premio's custom board design provides a fully cableless layout with a rugged chassis to further enhance its reliability. With a shock rating of 50G and sustaining 5Grms of vibration, the RCO-6020-1050ti is the most rugged industrial GPU computer available for high-performance edge computing solutions.