

Edge AI Solutions

Empower your AI Business at the Edge

- Overview
- Solution Offering
- Software & Services
- Application Stories
- Selection Guide



AI Model
Deployment



ROS



Facial
Recognition



ubuntu
Windows



ADVANTECH



Enabling an Intelligent Planet

www.advantech.com

“ According to the latest forecast by Gartner, by 2027, machine learning in the form of deep learning will be included in over 65% of edge use cases. ”

Empower your AI Business at the Edge

In the current environment, the development and deployment of Edge AI and IoT on a large scale is a major challenge, especially in industrial environments. This is exactly what Advantech aims to solve. Advantech Edge AI solutions are powered by NVIDIA Jetson and RTX hardware and software to help accelerate AI deployment across industries such as manufacturing, transportation, retail and smart city development.



AI Model Deployment & Monitoring



DeviceOn for Edge AI

- Inference performance optimization
- Container & OTA deployment
- Large-scale mgmt. & remote monitoring

AI Facial Recognition



FaceView

- SDK integrated, UI/ API ready
- Up to 99.7% precision rate
- Ideal for surveillance and access control

ROS Design-in Services



ROS Suite

- A complete package with everything included
- Integrated SDK/Tool/API
- Cross-platform support: X86 and Arm



Edge AI Acceleration Cards

The VEGA-300 series provides low-power plug-in modules to easily accelerate AI inference on edge devices using Movidius VPU.



Plug and Play



Up to 32 TOPs



Power Efficient

Compact AI Box

Powered by NVIDIA Jetson family, AIR Edge AI Systems deliver scalable AI performance and ready-to-use software integrated in a compact form factor.



Compact Size



Up to 275 TOPs



Rugged Design



High-Performance AI System

AIR High-Performance AI Systems support up to two RTX GPU cards for extreme AI deep learning performance or efficient retraining on a large scale.



Extreme Performance

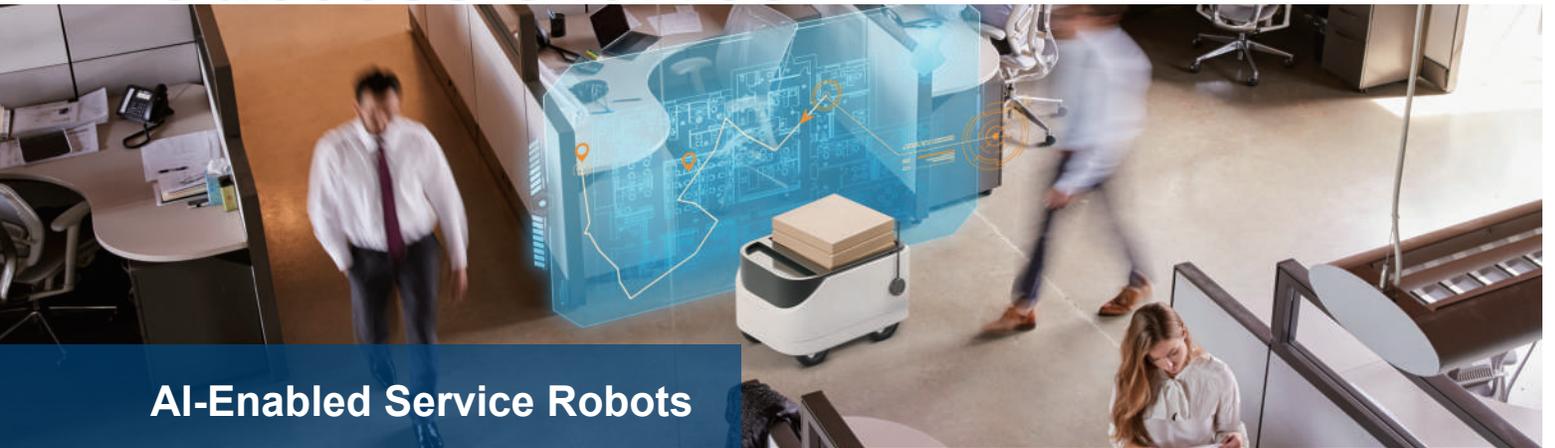


Multiple GPUs



Server Management

Success Stories



AI-Enabled Service Robots

The AI service robot is designed to deliver items such as food or packages in public areas. AI is enabling automated path findings, obstacle detections, and finding the most efficient ways to deliver items. In this project, the AIR-020 acts as an AI engine platform with NVIDIA Jetson Xavier NX. Its lightweight design and wide input voltage range makes it easy to install for this kind of application. It also provides a sufficient number of I/O ports including USB 3.2, COM, DIO, and CANBUS to connect camera sensors such as lidar sensors, cliff sensors, and ultrasonic sensors to avoid obstacles and deliver items to the assigned locations.

Benefits

- NVIDIA Jetson Xavier NX with Ubuntu image preload
- IP40 compact dimensions and easy to install
- 12-24V wide power and -10 ~ 55 °C working temperature



AI-Based License Plate Recognition in Smart City

A solution provider in Argentina has developed an AI-based license plate recognition solution to enable smart city applications. The solution was deployed to 100+ intersections in the capital Buenos Aires to enhance law enforcement. There is potential future expansion to nearby territories. The Advantech ARK-3532 with VEGA-330 AI module is a perfect solution which provides plentiful I/Os and many expansion options. It also has vision AI acceleration capability to process streaming data from multiple IP cameras to recognize license plates. Furthermore, the fanless and robust industrial design supports a wide range of operating temperatures to cope with harsh outdoor environments.

Benefits

- Intel Movidius VPU inside for AI acceleration
- Scalable for multi-stream video edge inference
- Powerful frame/platform for AI model deployment





AI-Powered Earthquake Warning System

An AI-powered earthquake warning system has been designed for an Asia-Pacific country. The Advantech AIR-300 edge AI system is powered by an Intel® Core™ i7/Xeon® CPU, with a high-performance 350-Watt GPU card and up to 30TB of storage to serve as an edge center for receiving large amounts of data generated by various sensors. It analyzes patterns and sends alerts as early as possible to the data center when an earthquake is detected.

Benefits

- Server class computing power
- High performance visual computing
- Equipped with a 850W power supply

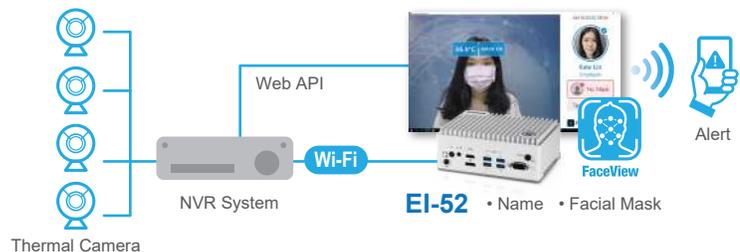


School Pandemic Prevention and Containment

A Taiwanese system integrator specializing in school IT and surveillance system integration has developed AI-based epidemic prevention systems. Advantech EI-52 worked reliably to detect body temperatures and mask-wearing. Following installation, the system was capable of sending the names of students with high body temperatures or without face masks to school staff using LINE push notifications. Advantech helped this SI overcome budgetary and technical challenges — creating a total AI-based facial recognition and thermal imaging solution for schools in Taiwan.

Benefits

- AI engine with 99.7% accuracy rate
- Built-in APIs quickly integrate with school management systems, student information databases, and LINE push notification systems
- High visual recognition performance



Product Selection Guide

Edge AI Inference Systems



Model Name		AIR-020X	AIR-020T	AIR-020N	AIR-030	AIR-101
Platform		NVIDIA Jetson Xavier NX	NVIDIA Jetson TX2 NX	NVIDIA Jetson Nano	NVIDIA Jetson AGX Orin 32 GB / 64GB	Intel® Atom® E3940
AI Processor		Maxwell 384 CUDA	256 NVIDIA CUDA cores	Maxwell 128 CUDA	Up to 2048 NVIDIA CUDA	2 x Intel Movidius Myriad X (VEGA-330)
AI Performance		Up to 21 TOPs	Up to 1.33 TFLOPs	512 GFLOPs	Up to 275 TOPs	Up to 8 TOPS
Display		1 x HDMI 2.0	2 x HDMI			
LAN		2 x GbE	2 x GbE	1 x GbE	3 x GbE (Optional 2 x PoE)	2 x GbE
I/O Ports	GPIO	1 x 8-bit	1 x 8-bit	1 x 8-bit	1 x 16-bit	1 x 8-bit
	COM	2	Up to 2	1	4	2
	USB	3	3	3	5	4
	CANBus	1	-	-	2	-
Expansion		1 x M.2 2280 128GB built-in 1 x full-size mPCIe	1 x M.2 2280 128GB built-in 1 x full-size mPCIe	1 x M.2 2280 128GB built-in 1 x full-size mPCIe	1 x M.2 B-Key 2280/3052 1 x M.2 E-Key 2230 1 x PCIe x16 (Optional, 2nd layer)	1 x M.2 2230 E-Key
Power Input		12-24V, 2-pin phoenix	12-24V, 2-pin phoenix	12-24V, 2-pin phoenix	9-36V, 4-pin phoenix	12-28 VDC
Operating Temp.		-10° ~ 55 °C with 0.7 m/s airflow	-10° ~ 55 °C with 0.7 m/s airflow	-10° ~ 55 °C with 0.7 m/s airflow	-10° ~ 50 °C with 0.7 m/s airflow	-20 ~ 55 °C, with 0.7m/s air flow
Dimensions (mm)		138 x 110 x 43.6	138 x 110 x 43.6	138 x 110 x 43.6	200 x 220 x 74	53.5 x 158 x 114
Operating System		Ubuntu 18.04 with JetPack SDK 4.5.1	Ubuntu 18.04 with JetPack SDK 4.5.1	Ubuntu 18.04 with JetPack SDK 4.5.1	Ubuntu 20.04 with JetPack SDK 5.0.1	Win 10, Ubuntu 20.04

AI Acceleration Modules



Model Name	VEGA-320	VEGA-330	VEGA-340
SoC	One Myriad X MA2485	One/Two Myriad X MA2485	Four /Eight Myriad X MA2485
Form Factor	M.2 2230 (Key A+E)	Full size miniPCIe	Low profile PCIe x 4
Dimensions	22 x 30 x 3.7 mm	30 x 50.95 x 4.9 mm	171.1 x 68.9 mm
Signal Interface	PCIe x 1, USB 2.0	PCIex1, USB 2.0	PCIex4, Gen 2
Operating Temperature	-20 ~ 60 °C	-20 ~ 55 °C	-20 ~ 60 °C
Power Consumption	3.8W	3.8W / 7.6W	16.8W / 28W
Driver Support	Win10 Enterprise 64-bit, Ubuntu 16.04.1 / Kernel 4.4.0 64-bit		Win10 Enterprise 64-bit, Ubuntu 18.04

Edge AI Servers



Model Name		AIR-300	AIR-500
Platform		6th/7th Gen Intel® Xeon® /Core™ i3/i5/i7 LGA1151	Intel Xeon D-1700 series, 4/8/10 core, up to 67W
GPU Card Support		1 x PCIe x16 GPU card, up to 350W	2 x PCIe x16 GPU card, up to 700W
AI Performance		Depends on GPU (compatible with NVIDIA RTX-A4500)	Depends on GPU (compatible with NVIDIA RTX-A4500, Tesla T4 and Tesla A2)
Display		1 x HDMI + 1 x VGA	1 x VGA via BMC
LAN		4 x GbE	4 x GbE
I/O Ports	GPIO	-	1 x 16 bit
	COM	4 x RS-232/422/485	4 x RS-232/422/485
	USB	8	6
Storage		2 x 2.5" SATAIII SSD	4 x 2.5" SATAIII SSD
Expansion		2 x full-size mPCIe 1 x M.2 2230 E-Key 1 x PCIe x 16	1x M.2 2230/2242/2280/3030/3042/3052 B key 1 x M.2 2230 E key 1 x PCIe x 1 1 x PCIe x 4 2 x PCIe x 16
Power Input		850W PSU built-in 100 ~ 240 VAC	1200W PSU built-in 100 ~ 240 VAC
Operating Temp.		0 ~ 50 °C with 0.7m/s air flow	-10 ~ 50 °C with 0.7m/s air flow
Dimensions (mm)		228.3 x 230 x 399.92 mm	260 x 270 x 399 mm
Operating System		Win 10, Ubuntu 20.04	Win 10, Ubuntu 20.04

AI Facial Recognition



FaceView Facial Recognition

- Fast face attribute detection
- 95-98% accuracy rate
- Age/gender/emotion detection



FaceView Masked Face Recognition

- Proper mask wearing detection (over the nose and mouth)
- Half-covered face identification



FaceView Epidemic Prevention

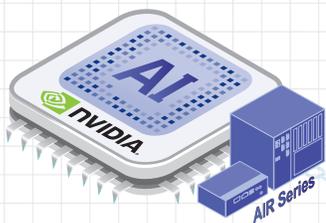
- Independent 3-in-1 application
- Standard & face mask core features
- Body temperature detection

Face Mask Solution Package



Model Name	EI-A52-S2FVM	EI-A52-S6FVT
Platform	Intel 11th Gen Core i3 CPU	Intel 11th Gen Core i5 CPU
Features	Identify and Mark Visitor Faces, Masked Individual Recognition, Mask Detection	Identify and Mark Visitor Faces, Masked Individual Recognition, Mask Detection, Temperature Detection
Advanced Facial Attributes	Age, Gender, Emotion, ID, Head Position	-
Body Temperature	-	Real-time Detection
Power Input	19V	19V
Operating Temp.	-10 ~ 50 °C	-10 ~ 50 °C

Why Advantech Edge AI Solutions?



Reliable & Diversified Product Portfolio

- AI acceleration cards, systems and servers
- Industrial and compact designs

Accelerated Deployment

- Performance optimization
- Container & OTA deployment
- Ubuntu, Yocto OS porting & customization



Large-scale Management

- Large-scale mgmt. & remote monitoring
- Secure TLS/SSL connection



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