

Embedded

Edge Inference Solution for Roadside Monitoring

AI-Enabled Smart Transportation

Edge
Solution Ready
Package

ESRP-LPR-ARK2250S



Movidius™
Myriad™ X VPU



AI Pre-trained
Model

ADVANTECH

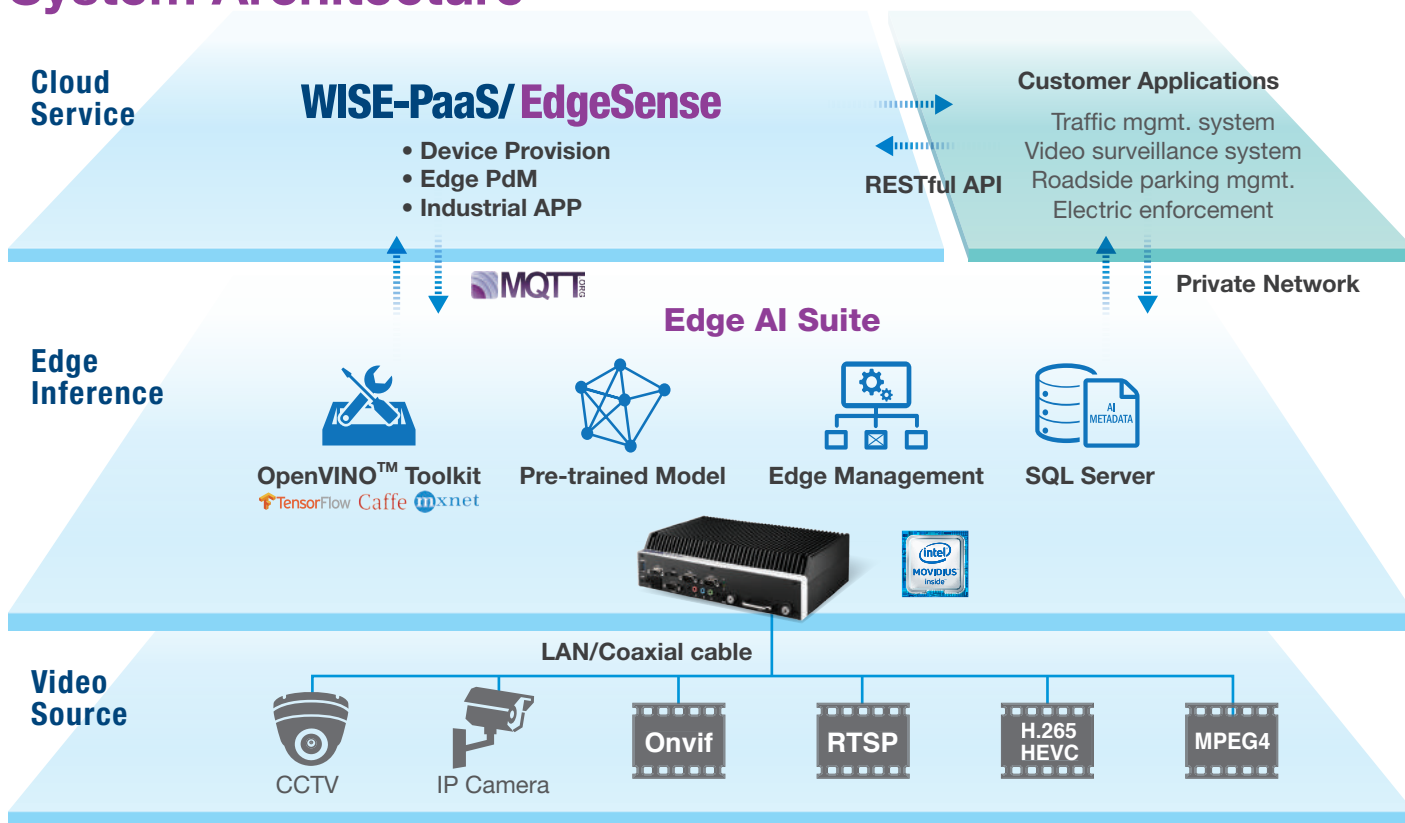
Enabling an Intelligent Planet

POWERED BY
ADVANTECH
WISE-PaaS

Empowering AI-enabled Smart Transportation

AI technology is helping to improve traffic monitoring and data analytics in the transportation sector with greater detection accuracy and real-time responsiveness to reduce congestion and enhance safety. Advantech edge AI solution for roadside monitoring combines big data analysis and deep learning artificial intelligence to provide license plate recognition, vehicle classification, traffic alerts, and pedestrian detection. Our ready-to-use solution integrates Intel® Movidius™ Myriad™ X VPU and edge AI suite, which includes pre-trained models, Intel OpenVINO™ toolkit, SQL server and edge management software for fast deployment.

System Architecture



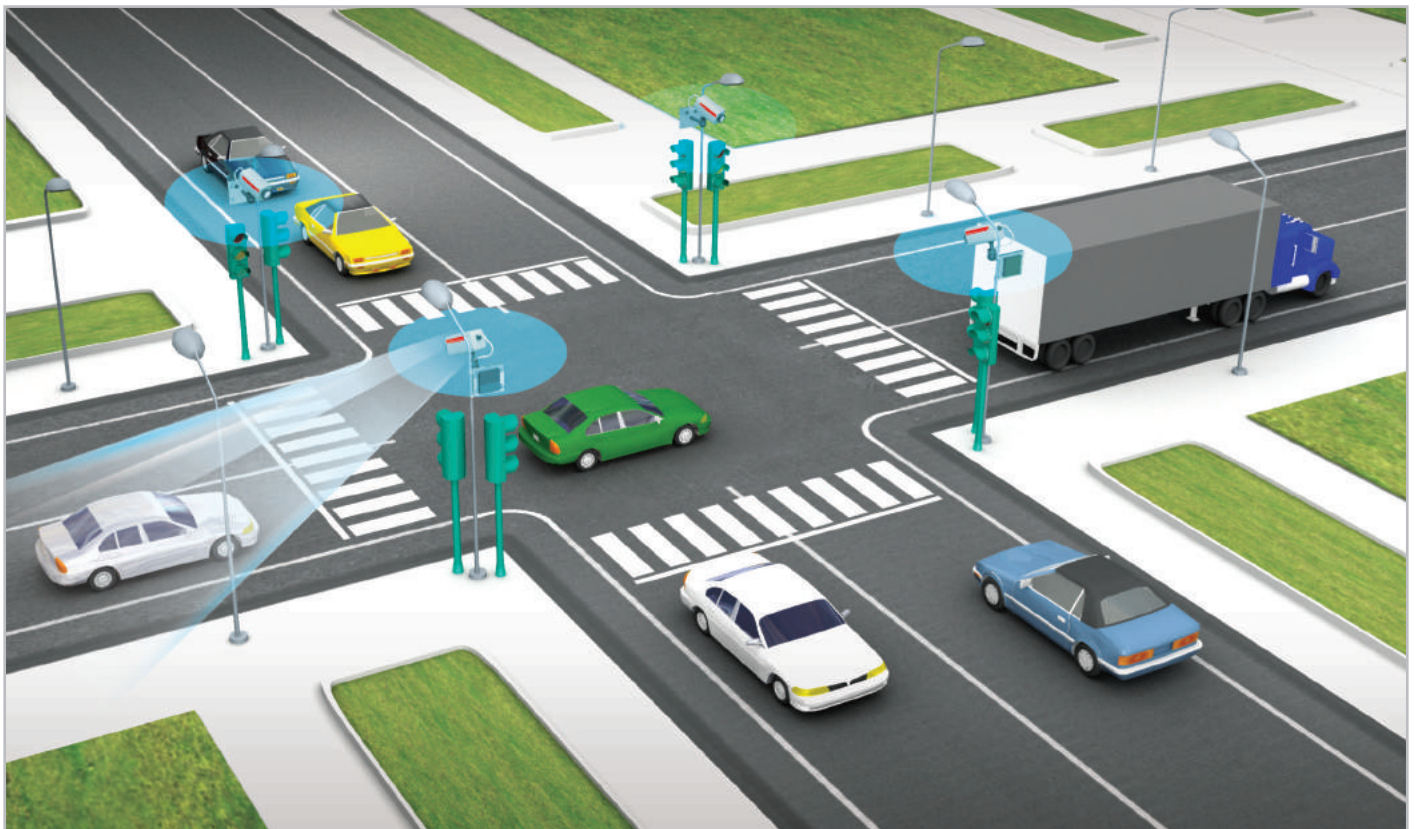
Edge AI Suite Built-in

Advantech Edge AI suite provides an inference engine, graphic-accelerator libraries, and management tools that help customers speed up their application development and make smart transportation solutions easier to integrate. The suite includes Intel OpenVINO™ toolkit which provides an inference engine to optimize AI-based vision analysis, pre-loaded license plate recognition, extremely accurate vehicle classification trained models, and WISE-PaaS/EdgeSense for edge system management, monitoring, and OTA upgrades.

<p>OpenVINO™ Toolkit</p> <ul style="list-style-type: none"> • Edge Inference engine • OpenCV, OpenVX • Media SDK, OpenCL • TensorFlow, Caffe, mxnet 	<p>Video Analysis & AI Models</p> <ul style="list-style-type: none"> • Traditional video analysis • LPR pre-trained model • Vehicle classification pre-trained model 	<p>Edge Management</p> <ul style="list-style-type: none"> • License mgmt. • Pre-trained model deployment • API/SDK/Restful API 	<p>SQL Server</p> <ul style="list-style-type: none"> • Video streaming • AI metadata
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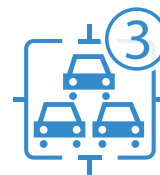
Taking Roadside Monitoring to the Next Level

Deep learning helps enhance detection accuracy in identification and classification significantly compared to traditional rule based intelligent video analysis applications. Advantech provides an integrated edge AI solution for roadside vehicle monitoring which has the inferencing capabilities to analyze and identify vehicles and pedestrians in real-time for further use in traffic control, monitoring, congestion prediction, traffic management, and operating decisions.



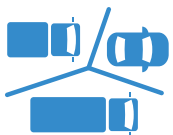
License Plate Recognition

- Supports 23 countries for license plate recognition
- Supports multiple fields: parking lots, roadsides, highway



Vehicle Counting

- Two-way vehicle flow counting
- Counting by various vehicle types



Vehicle Classification

- Vehicle classification (car, truck, motor, bus, bicycle)
- Vehicle color identification






Pedestrian Detection

- Human attribute recognition (e.g., clothes color)

Edge Solution Ready Package

ESRP-LPR-ARK2250S

Solution Package			
ESRP-LPR-ARK2250S License Plate Recognition Edge Inference Solutions	ARK-2250S Edge Inference system		
	CPU	Intel i7-6822EQ QC SoC	
	VPU	Intel® Movidius™ Myriad™ X VPU	
	Memory	2x 16GB DDR4 pre-installed	
	Storage	1x 256GB 2.5" SSD pre-installed	
	Graphic Engine	DirectX 11.3, OGL 4.4, OCL 2.1 Encode: H.264, MPEG2/4, VC1, WMV9 Decode: H.264, MPEG2	
	Dual HDMI	HDMI 1.4a, up to 1080p	
	Dual LAN	GbE Intel i219/210, support WOL	
	OS	Windows 10 IoT Enterprise	
	Operating Temperature	With extended temperature peripherals: -20 ~ 70 °C with 0.7m/s air flow	
	Vibration/Shock proof	MIL-STD-810G, Method 514.6 MIL-STD-810G, Method 516.6	
	EMC	CE, FCC Class B, CCC, BSMI	
	Transportation	NEMA TS2-2016 Environmental	
	Edge AI Suite		
• Video Analysis & AI Models			
• OpenVINO™ Toolkit			
• SQL Server			
• Edge Management Software			

Optional Purchase		
License Plate Capture IP Camera	Parking Lot • 60 km/h (37 mph) • 2MP 3x Zoom Super Low Lux Color	
	Roadside • 120 km/h (75 mph) • 2MP 2.5x Zoom Super Low Lux Color	
	Highway • 200 km/h (124.27 mph) • 1 MP 10x Zoom B/W	
Surveillance IP Camera	Traffic Monitoring 2MP H.265 Super Low Lux WDR Pro IR	
Edge AI Modules	VEGA-330 mPCIe module, 2x Intel® Movidius™ Myriad™ X VPU	
Video Capture Card(CCTV)	DVP-7031E 4-ch H.264/MPEG4 MiniPCIe Video Capture Module with SDK	