ADVANTECH

Enabling an Intelligent Planet

Smart City Transformation with Video AI Solutions

Moderator: David.Jen, Director, Advantech IIoT Group

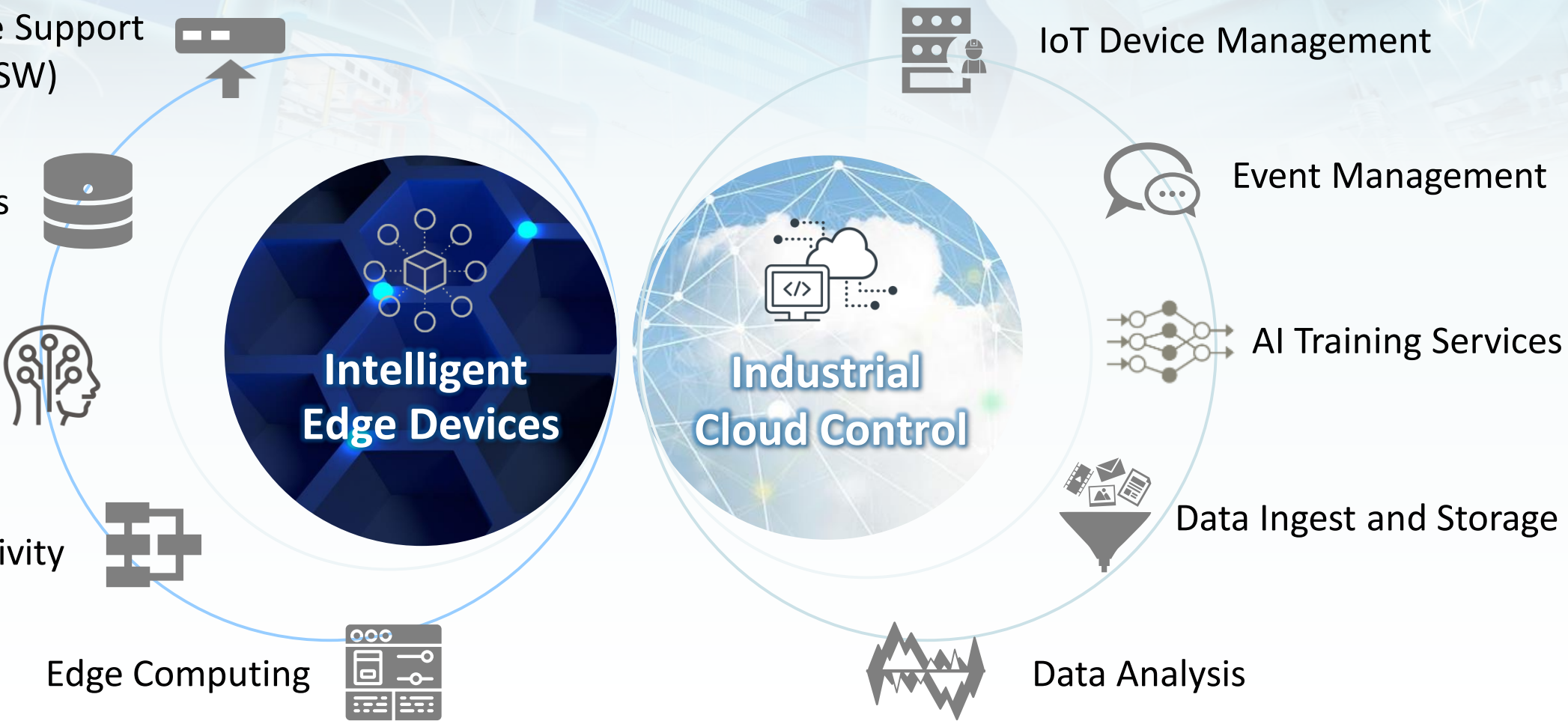
Panelist: HuengPei Lin, VP of RD & Business Management, YUAN

Ray.Chi, Project Assistant Manager, Advantech IIoT Group

Daniel Hsu, Senior Manager, Advantech IIoT Group

2019.Dec.6th

Hyperscalers Push Cloud to the Edge



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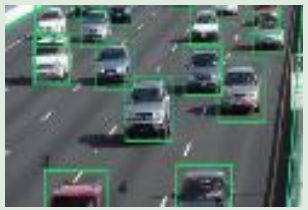
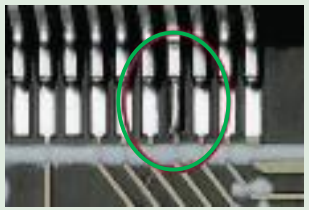
Bringing AI to the Edge

Pre-built AI Models
(ISV Partners)

People Detection


Vehicle Classification


PCB AOI

Textile AOI

Agriculture Sorting

Cloud Services

AI Framework Service

- Code IDE
- Hyper Parameter
- Data Pre-Processing
- Model Management
- Inference Engine Deploy
- Compute Resource Mgmt.

AI Training Computing System

NVIDIA. TESLA

SKY-6100

SKY-6200

SKY-6400

SKY-6420

AI Edge Inference System

NVIDIA. Jetson™

intel Movidius™

MIC-710IVA

MIC-720AI

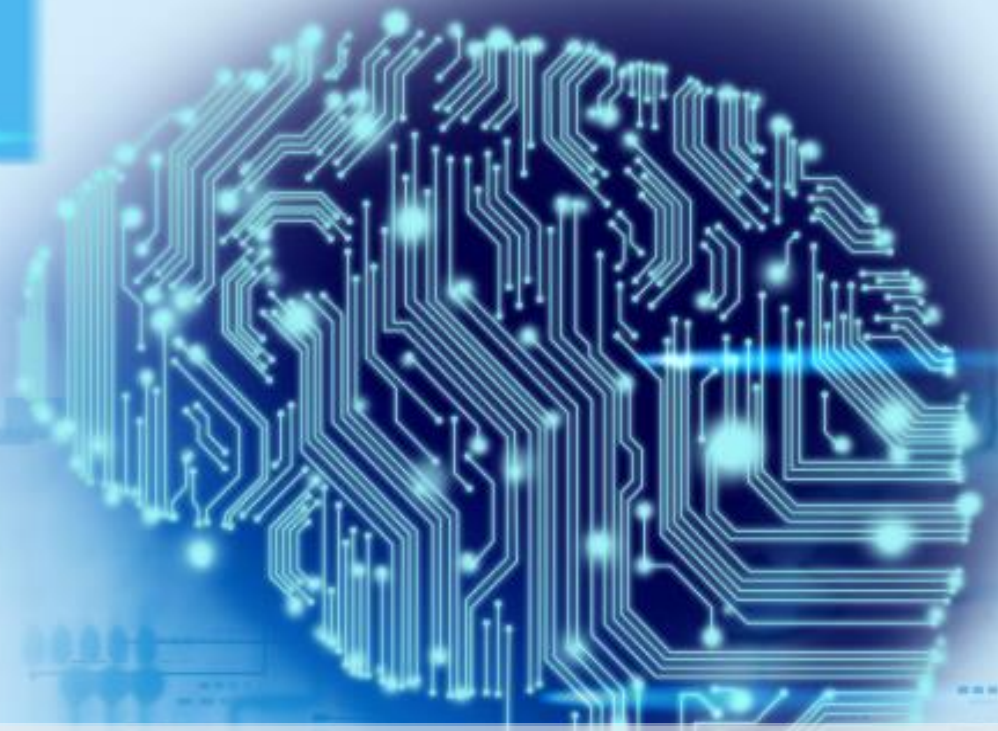
MIC-730AI

MIC-770

MIC-770

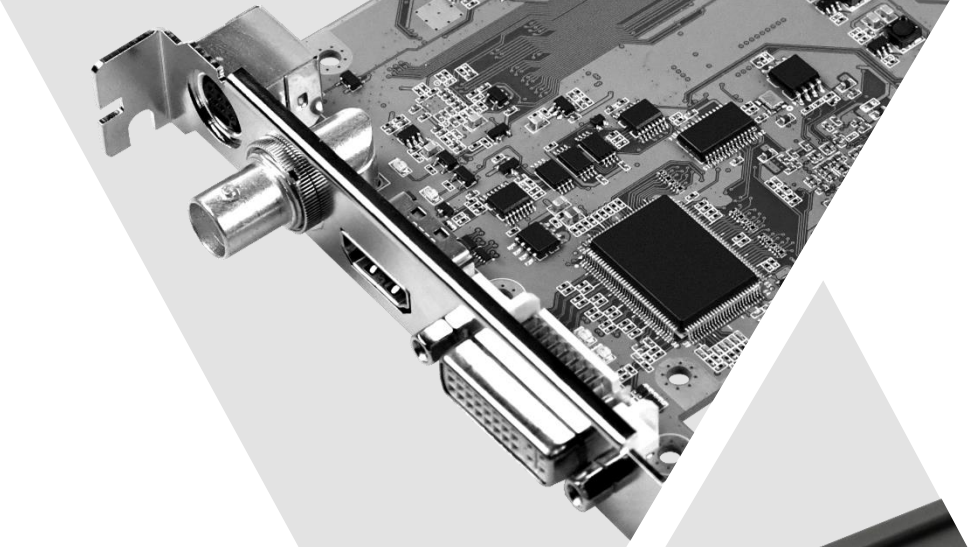
ADVANTECH

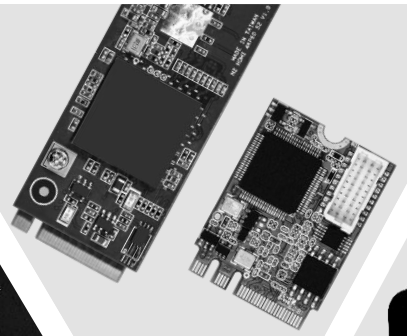
AI Solution



Video AI Software and Service

ADVANTECH





YUAN

YUAN High-Tech Development Co., Ltd.

2019·12·02

www.yuan.com.tw

IPO : 2001/03/20

FOUNDED : 1990/10/01

CODE : 5474

About YUAN

SmartVDO

Hardware Designer & Service Provider of Professional Video Products

B2B / OEM / ODM

300+
Capture

100+
Converter

50+
Embedded

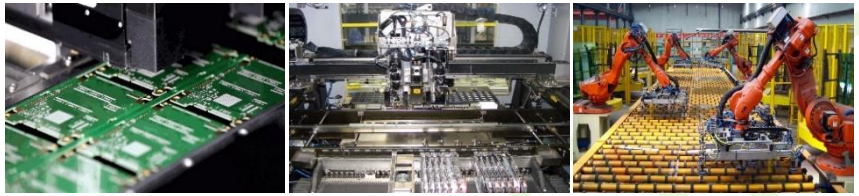
Professional Video Market

SmartVDO

Surveillance

Broadcasting

Industry



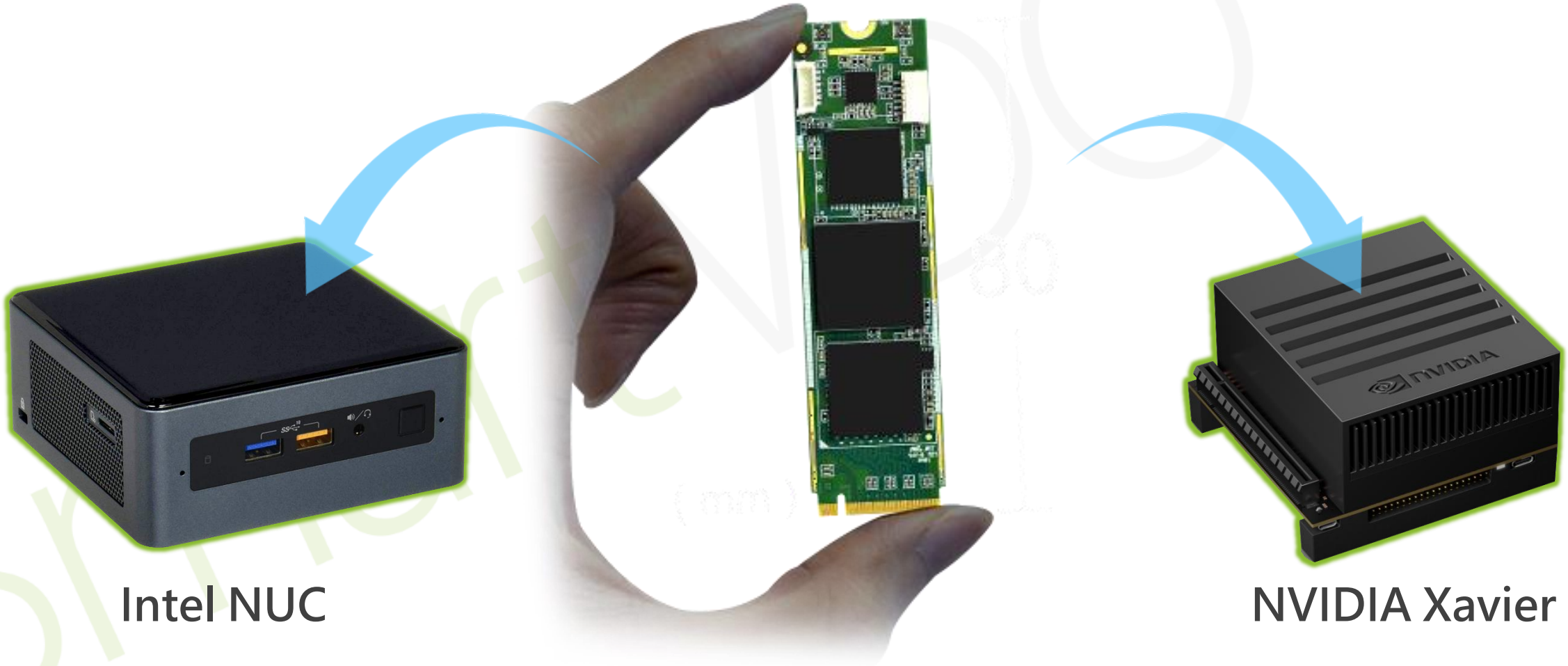
Medical

Live Streaming

Education

4K60 Video Capture Module

SmartVDO



Intel NUC

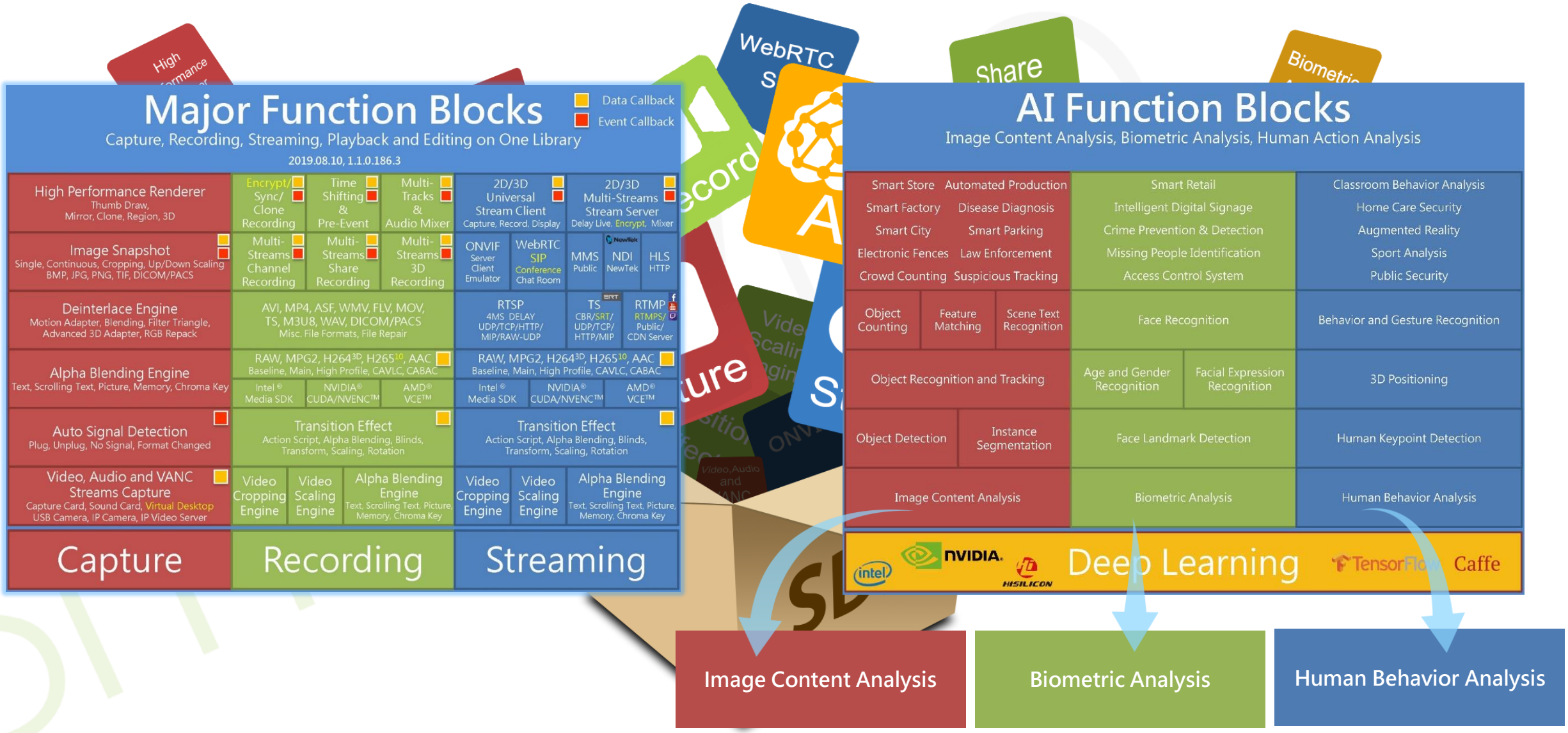
NVIDIA Xavier

Powerful SDK Software Service

SmartVDO

Powerful SDK Software Service

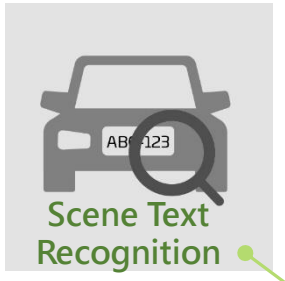
SmartVDO



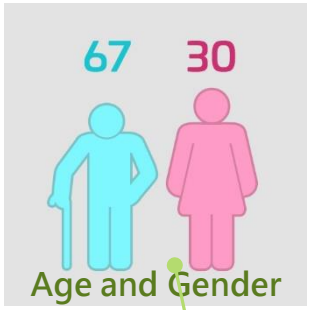
Video AI Service

martVDO

Object Counting

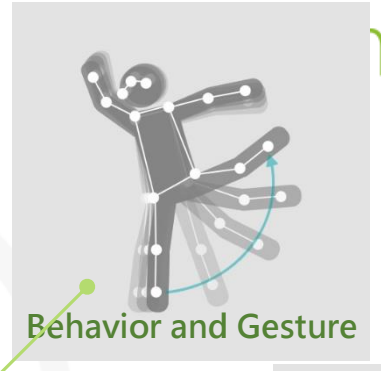


Scene Text Recognition

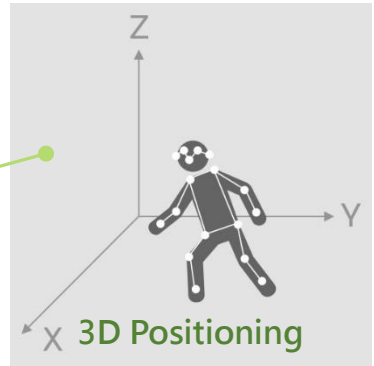


Age and Gender

Face Recognition

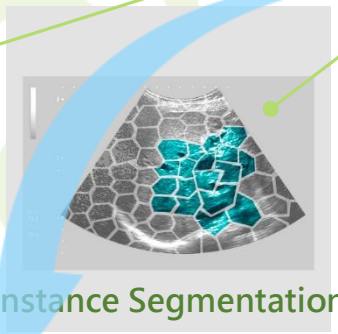

Behavior and Gesture

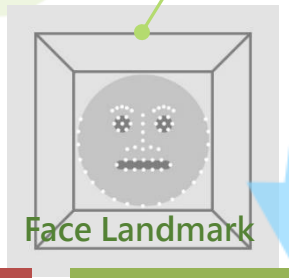
Feature Matching

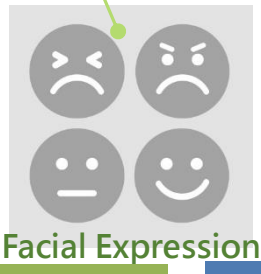


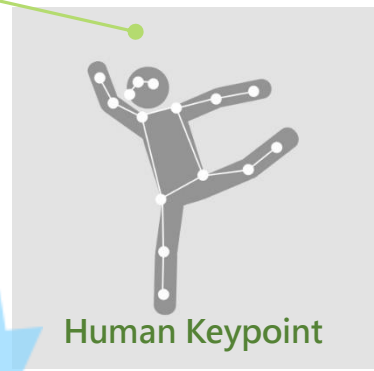
3D Positioning

Object Detection


Instance Segmentation


Face Landmark


Facial Expression


Human Keypoint

AI Function Blocks

Image Content Analysis, Biometric Analysis, Human Action Analysis

Smart Store, Automated Production, Smart Factory, Disease Diagnosis, Smart City, Smart Parking, Electronic Fences, Law Enforcement, Crowd Counting, Suspicious Tracking		Smart Retail, Intelligent Digital Signage, Crime Prevention & Detection, Missing People Identification, Access Control System	Classroom Behavior Analysis, Home Care Security, Augmented Reality, Sport Analysis, Public Security
Object Counting, Feature Matching, Scene Text Recognition		Face Recognition	Behavior and Gesture Recognition
Object Recognition and Tracking		Age and Gender Recognition, Facial Expression Recognition	3D Positioning
Object Detection, Instance Segmentation		Face Landmark Detection	Human Keypoint Detection
Image Content Analysis		Biometric Analysis	Human Behavior Analysis

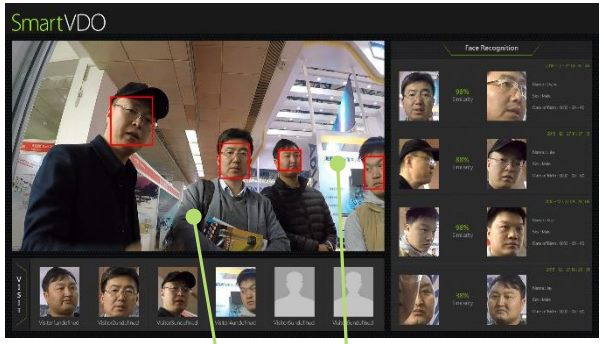
Deep Learning — NVIDIA, intel, HISILICON, TensorFlow, Caffe

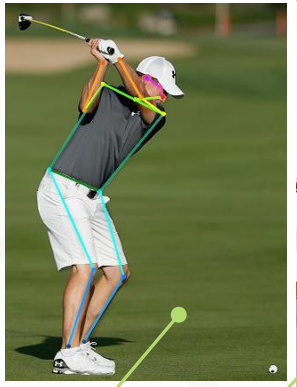
Image Content Analysis

Biometric Analysis

Human Behavior Analysis

Video AI Service





AI Function Blocks

Image Content Analysis, Biometric Analysis, Human Action Analysis

Smart Store, Automated Production, Smart Factory, Disease Diagnosis, Smart City, Smart Parking, Electronic Fences, Law Enforcement, Crowd Counting, Suspicious Tracking	Smart Retail, Intelligent Digital Signage, Crime Prevention & Detection, Missing People Identification, Access Control System	Classroom Behavior Analysis, Home Care Security, Augmented Reality, Sport Analysis, Public Security
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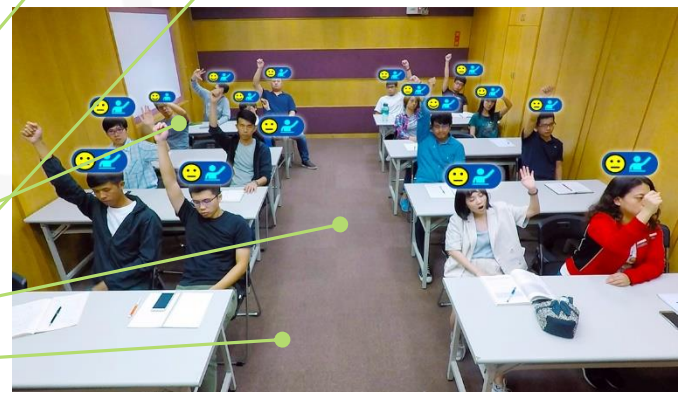
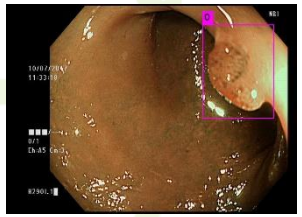
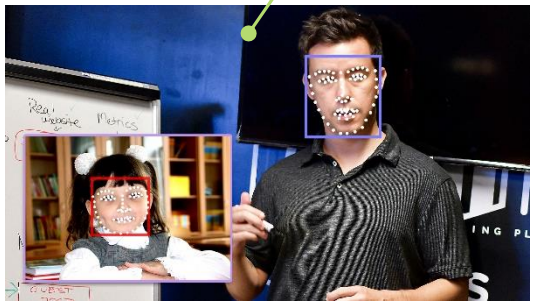
NVIDIA, intel, HISILICON, Deep Learning, TensorFlow, Caffe







Cross Platform of Edge Computing

SmartVDO

Major Function Blocks

Capture, Recording, Streaming, Playback and Editing on One Library

2019.08.10, 1.1.0.186.3

Data Callback / Event Callback

	Capture	Recording	Streaming
High Performance Renderer (Thumb Draw, Mirror, Clone, Region, 3D)		Encrypt/ Sync/ Clone Recording; Time Shifting & Pre-Event; Multi-Tracks & Audio Mixer	2D/3D Universal Stream Client (Capture, Record, Display); 2D/3D Multi-Streams Stream Server (Delay Live, Encrypt, Mixer)
Image Snapshot (Single, Continuous, Cropping, Up/Down Scaling; BMP, JPG, PNG, TIF, DICOM/PACS)		Multi-Streams Channel Recording; Multi-Streams Share Recording; Multi-Streams 3D Recording	ONVIF Server Client Emulator; WebRTC SIP Conference Chat Room; MMS Public; NDI NewTek; HLS HTTP
Deinterlace Engine (Motion Adapter, Blending, Filter Triangle, Advanced 3D Adapter, RGB Repack)		AVI, MP4, ASF, WMV, FLV, MOV, TS, M3U8, WAV, DICOM/PACS (Misc. File Formats, File Repair)	RTSP 4MS DELAY UDP/TCP/HTTP/ MIP/RAW-UDP; TS CBR/SRT/ UDP/TCP/ HTTP/MIP; RTMP RTMPS/ Public/ CDN Server
Alpha Blending Engine (Text, Scrolling Text, Picture, Memory, Chroma Key)		RAW, MPG2, H264 3D, H265 10, AAC (Baseline, Main, High Profile, CAVLC, CABAC); Intel® Media SDK; NVIDIA® CUDA/NVENC™; AMD® VCE™	RAW, MPG2, H264 3D, H265 10, AAC (Baseline, Main, High Profile, CAVLC, CABAC); Intel® Media SDK; NVIDIA® CUDA/NVENC™; AMD® VCE™
Auto Signal Detection (Plug, Unplug, No Signal, Format Changed)		Transition Effect (Action Script, Alpha Blending, Blinds, Transform, Scaling, Rotation)	Transition Effect (Action Script, Alpha Blending, Blinds, Transform, Scaling, Rotation)
Video, Audio and VANC Streams Capture (Capture Card, Sound Card, Virtual Desktop; USB Camera, IP Camera, IP Video Server)		Video Cropping Engine; Video Scaling Engine; Alpha Blending Engine (Text, Scrolling Text, Picture, Memory, Chroma Key)	Video Cropping Engine; Video Scaling Engine; Alpha Blending Engine (Text, Scrolling Text, Picture, Memory, Chroma Key)

AI Function Blocks

Image Content Analysis, Biometric Analysis, Human Action Analysis

Smart Store; Automated Production; Smart Factory; Disease Diagnosis; Smart City; Smart Parking; Electronic Fences; Law Enforcement; Crowd Counting; Suspicious Tracking	Smart Retail; Intelligent Digital Signage; Crime Prevention & Detection; Missing People Identification; Access Control System	Classroom Behavior Analysis; Home Care Security; Augmented Reality; Sport Analysis; Public Security
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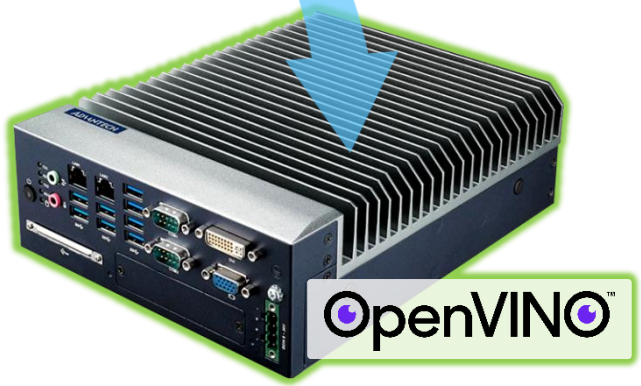
Deep Learning: intel, NVIDIA, HISILICON, TensorFlow, Caffe

NVIDIA GPU

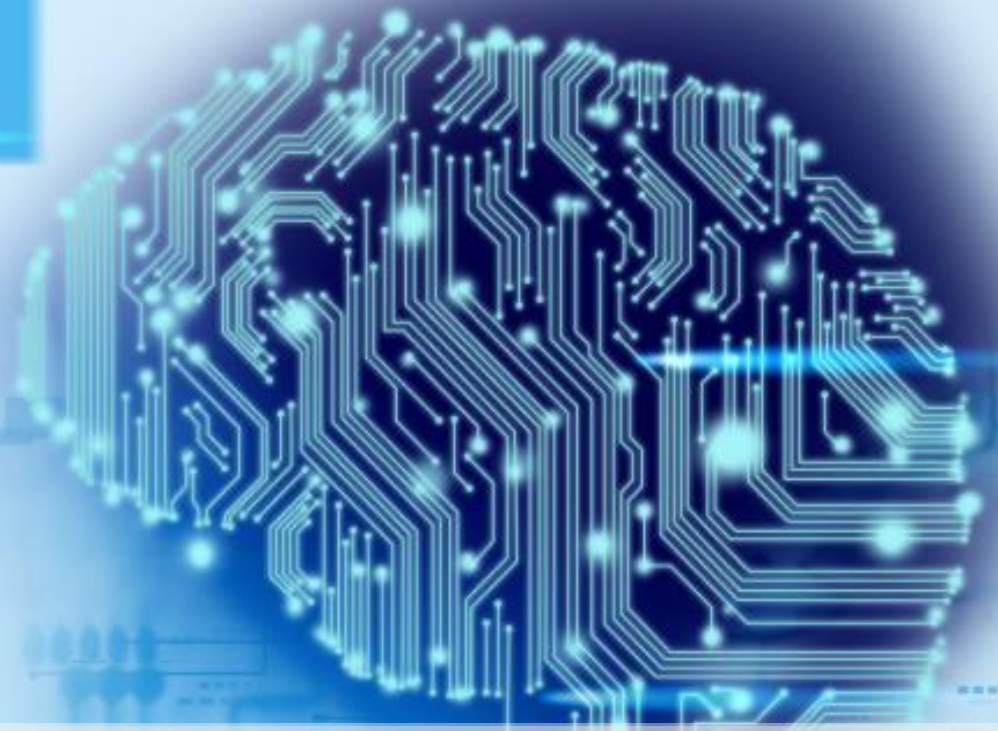
NVIDIA Jetson



Intel Platform

Hi-Silicon SOC

AI Solution



Video AI Solution Ready Package

ADVANTECH

Accelerate AI Process with Edge AI SRP

Start from 0

Data Collection — 2 Months
AI Model Training — 2 Months
SI System Deployment — N Months
2 Months
2 Months

Object Dataset → Object AI Model → AI Model Deployment → Object Detection → Backend System Integration

Start from SRP

- AI Model Ready
- AI Computing Ready
- API/SDK Ready

SI System Deployment — 1 Months
2 Months
1 Months

AI Model Deployment → Object Detection → Backend System Integration

ADVANTECH

Partner Co-creation Step 1: Target Markets and ISV&DFSI

Smart City

ISV&DFSI

鼎漢國際工程顧問 thi consultants inc.

YUAN

Video Surveillance

ISV&DFSI

YUAN

Industrial AOI

ISV&DFSI

SMA SOFT

Medical Imaging

ISV&DFSI

雲象科技 aetherAI

ADVANTECH

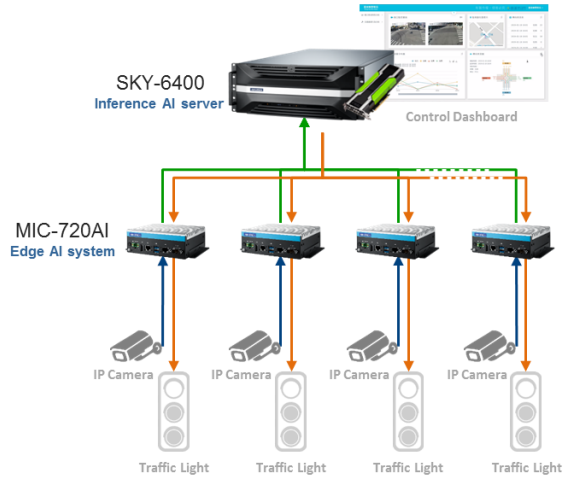
Partner Co-Creation Step 2: Edge AI SRP

Traffic Monitoring Edge AI SRP

YUAN 鼎漢國際工程顧問 thi consultants inc.

SKY-6400 MIC-720AI

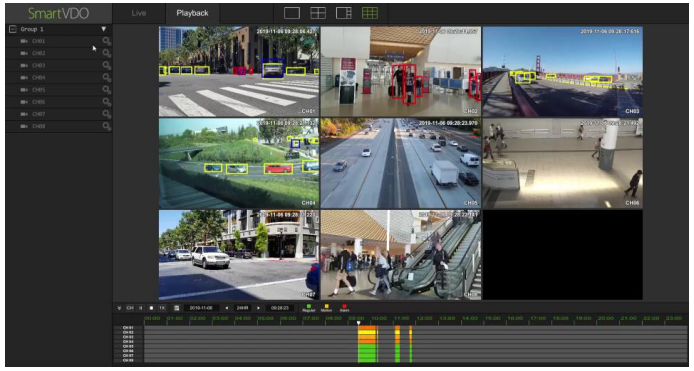
Traffic Monitoring & Law Enforcement



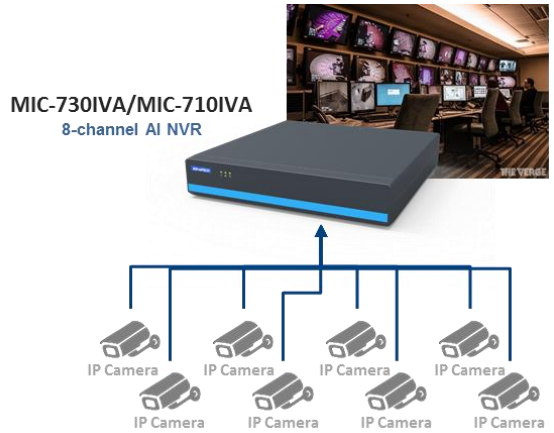
AI CMS/NVR Edge AI SRP

YUAN

SKY-6100 MIC-730IVA



Multi-channel AI CMS/NVR



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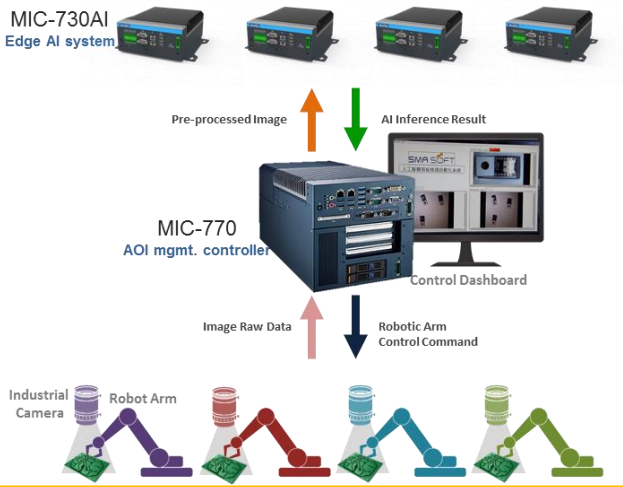
Partner Co-Creation Step 2: Edge AI SRP

Automatic Optic Inspection Edge AI SRP

SMA SOFT

MIC-770 MIC-730AI

Distributed AI AOI System

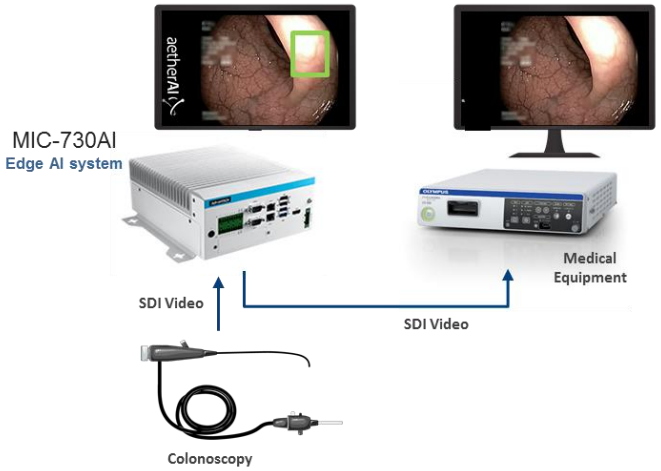


Medical Equipment Edge AI SRP

雲象科技 aetherAI

MIC-730AI

Real-time Automatic Detection of Colorectal Polyp



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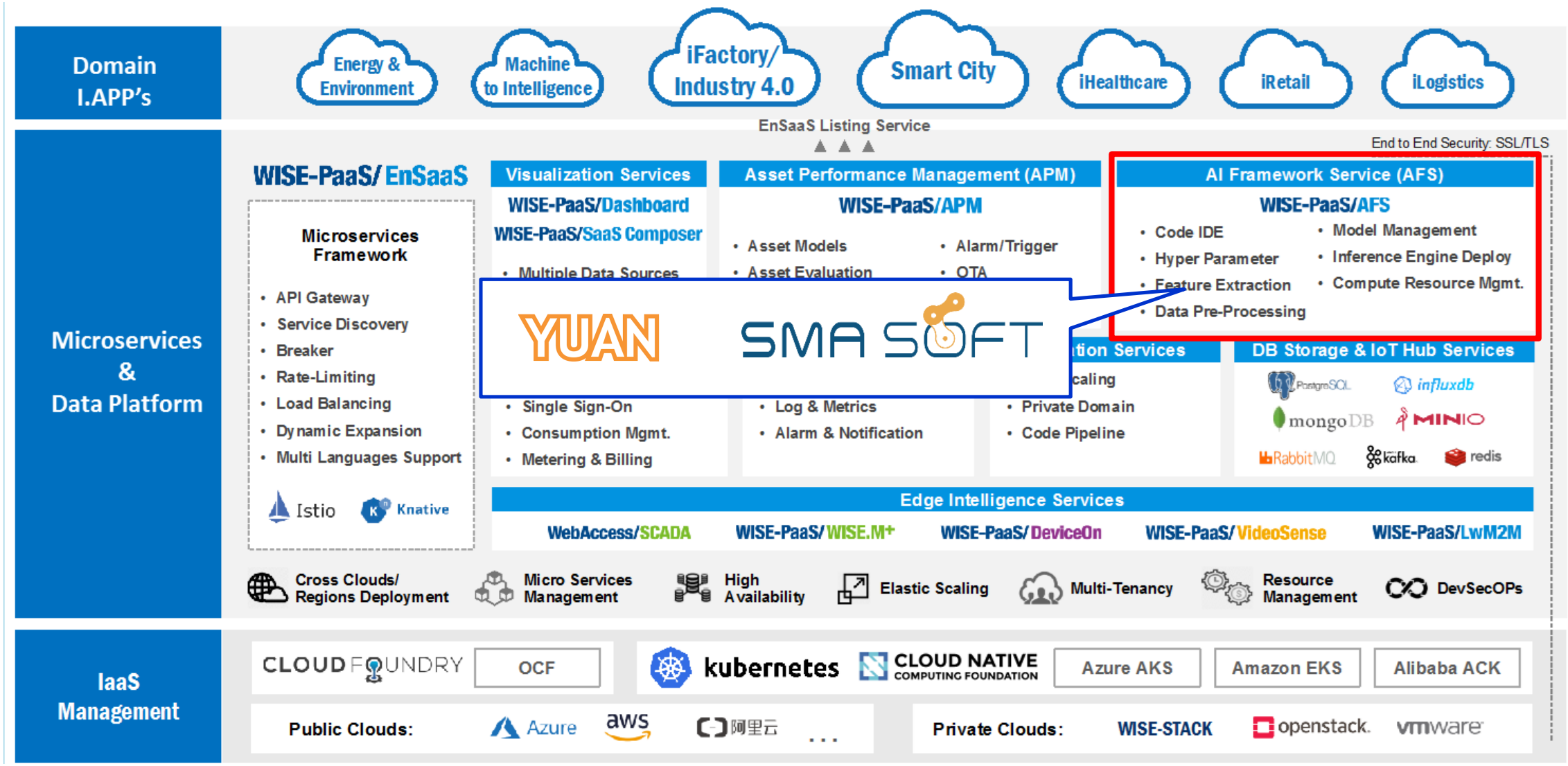
Partner Co-creation Step 3: WISE-PaaS/AFS Integration



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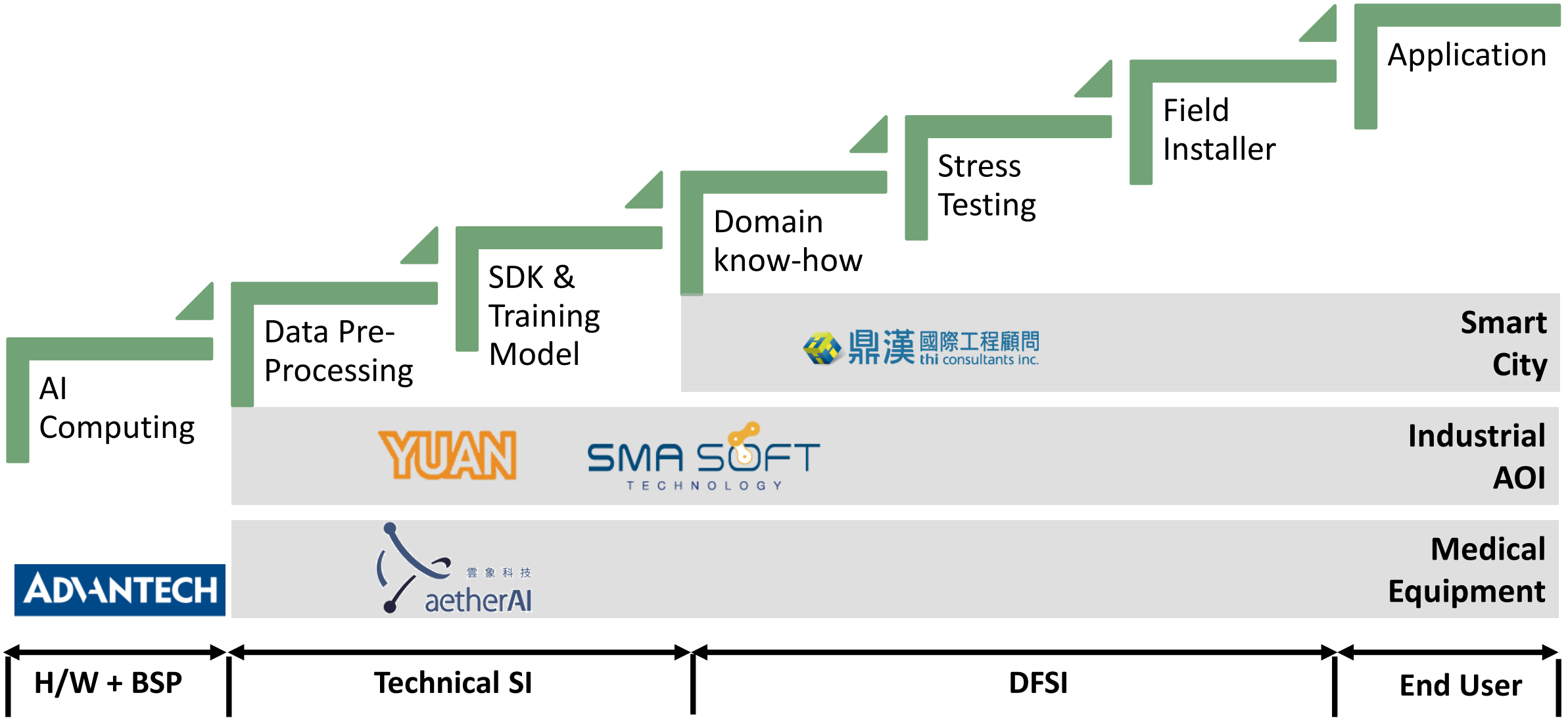
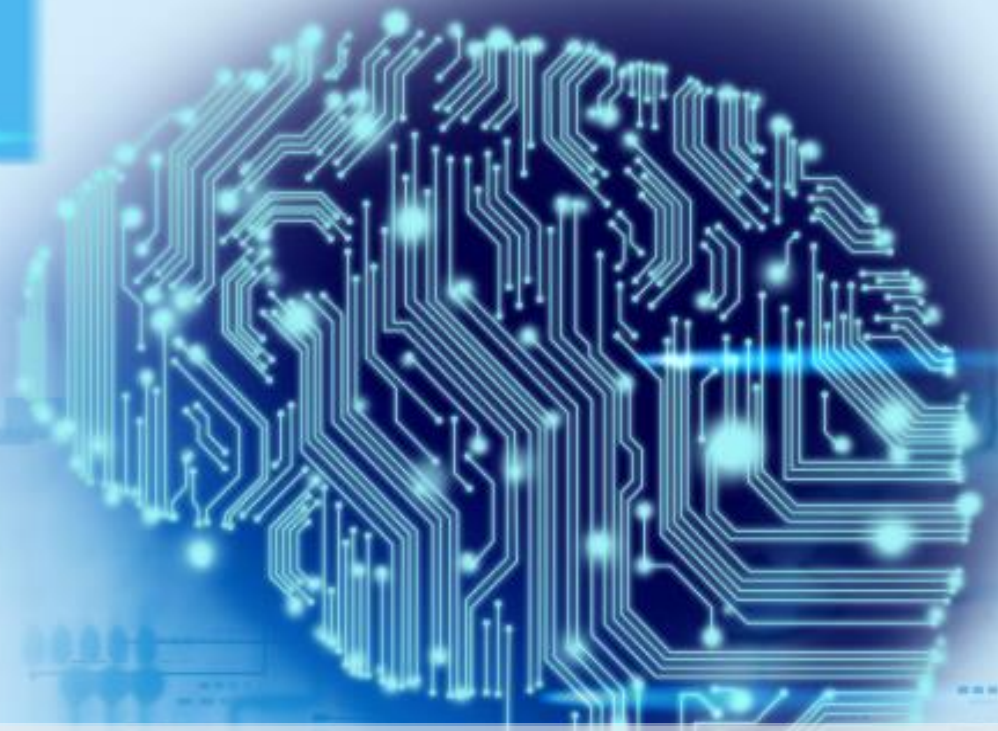
Landing AI with Advantech Eco-System



AI Solution



Industrial Video AI Systems

ADVANTECH

Advantech AI Training and Inference Platforms

TRAINING

Advantech SKY Serve + AFS

Training Data

Data Management

Training

Model Management

Re-Training & Re-Deployment

WISE-STACK
Private Cloud

ADVANTECH WISE-PaaS
IoT Edge Intelligence

Azure

NVIDIA TESLA

learn PYTORCH ONNX

Keras TensorFlow

hadoop YARN kubernetes

INFERENCE

Advantech Edge Computers

NVIDIA QUADRO RTX STUDIO

Industrial Equipment Manufacturing

Robot Security Autonomous

NVIDIA Jetson™

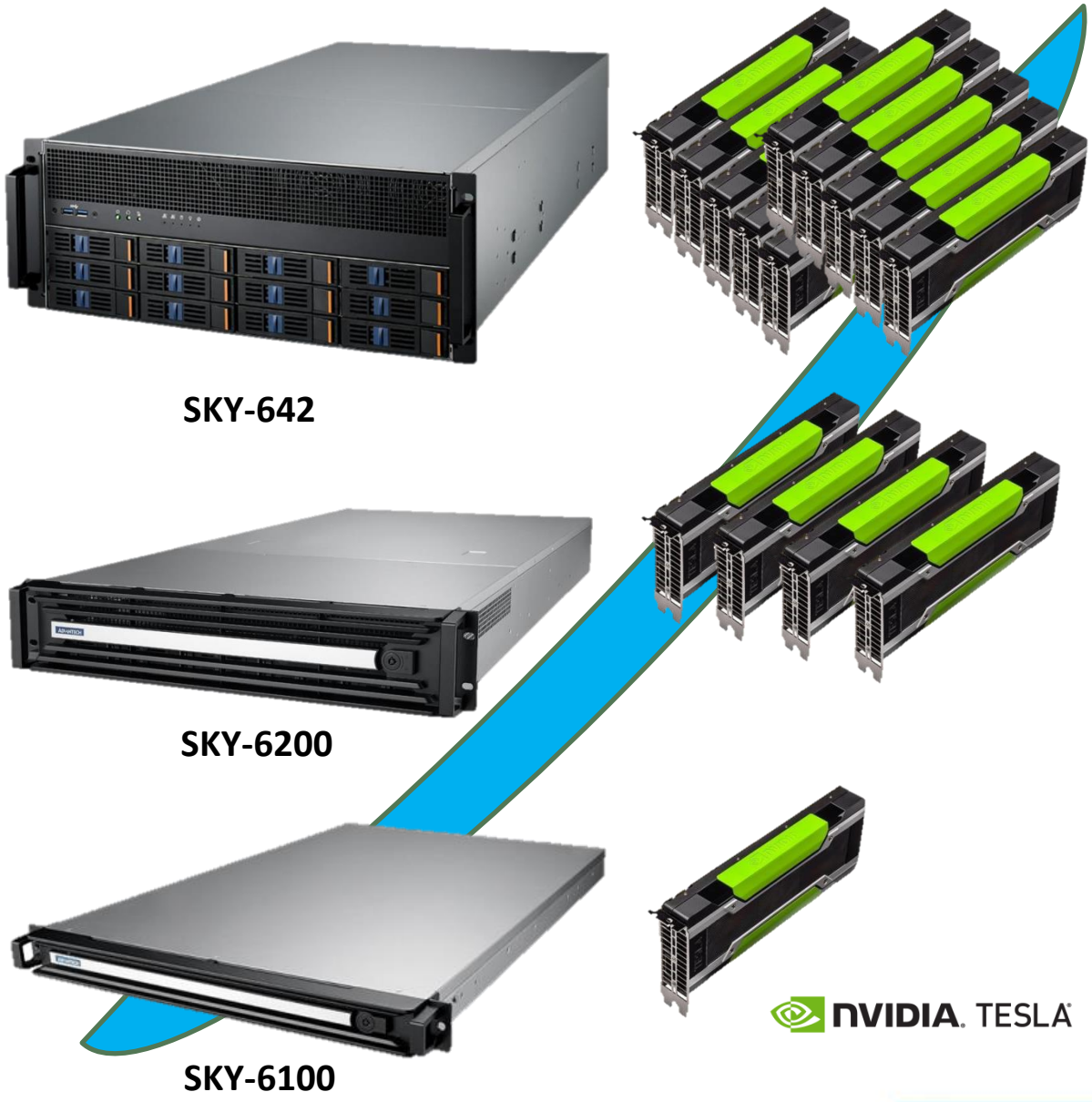
Smart Light Traffic Monitoring

Server in Back-end/Cloud, Multi-GPU Cards

IPC in Front End/Industrial Equipment, Single GPU

Advantech AI Server offering

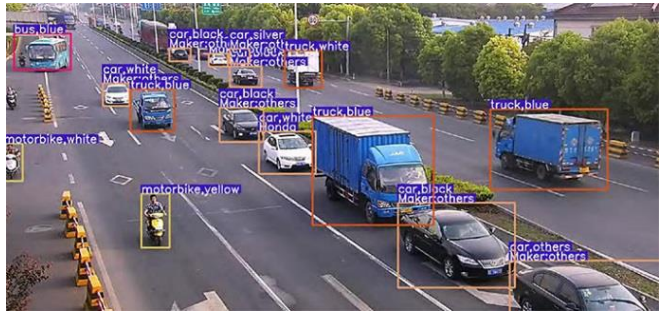
- High density GPU
- Up to 10xGPU, 12x3.5” base storage
- Up to 1250T FLOPS for Deep learning
- 4800W AI, CPU Computing
- Save 97% time than CPU
- Industrial grade system level thermal design
- Longevity support

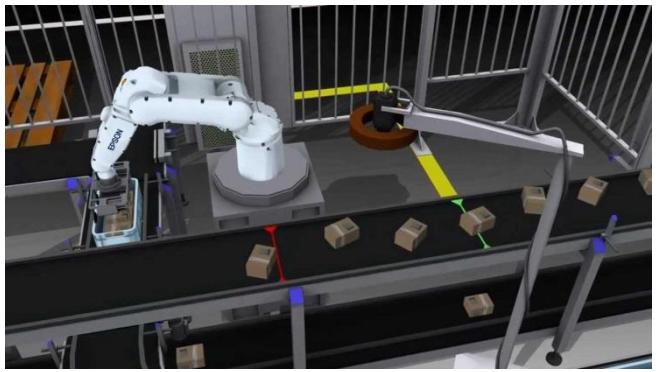


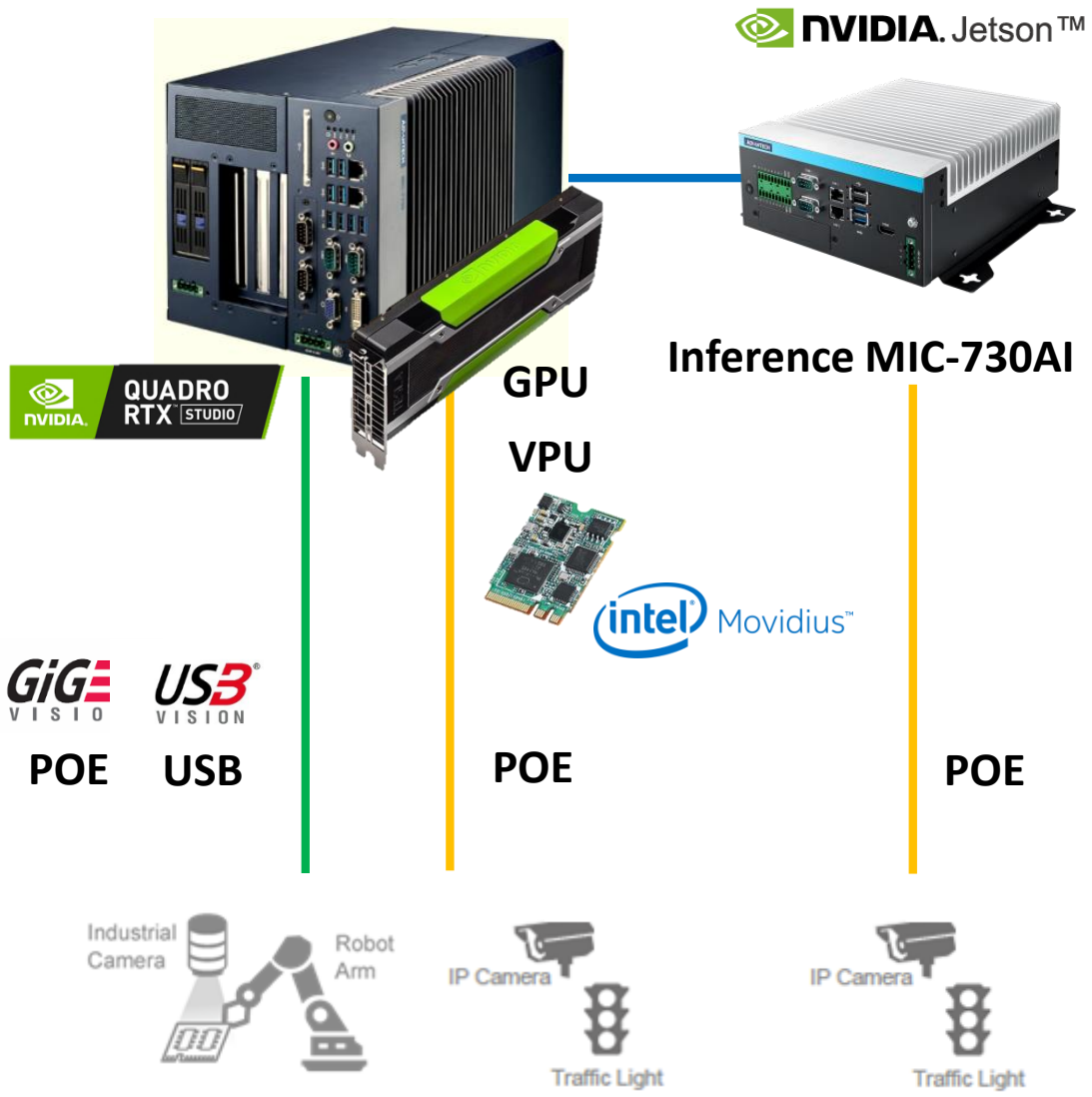
ADVANTECH

Advantech Video AI Edge offering

- 7/24 Reliable operation in any kind of industrial field
- Rich sensing picture/video capability
- Flexible IO for intelligent application
- X86/RISC CPU computing offering
- On demand AI inference computing/SDK option
- Multiple AI networking deployment
- Longevity support







ADVANTECH

Advantech Video AI Edge offering

ACP-4020

MIC-770

MIC-730AI

MIC-720AI

MIC-710IVA

50T FLOPS, 600W

25T FLOPS, 400W

10T FLOPS, 30W

0.5T FLOPS, 7W

ARM CPU system + GPU core

X86 CPU system + GPU card

ADVANTECH

Advantech Video AI Edge offering

Fanless Design

Energy Efficiency

AI Computing

MIC-770

Compact Fanless System with 8th/9th Gen Intel® Core™ i CPU

VEGA-320

m.2 Edge AI Module with one Intel® Movidius™ Myriad™ X VPU onboard

VEGA-330

miniPCIe Edge AI Module with dual Intel® Movidius™ Myriad™ X VPUs onboard

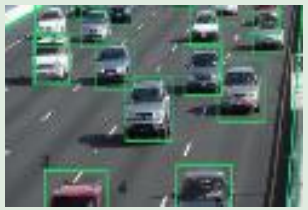
intel Movidius™

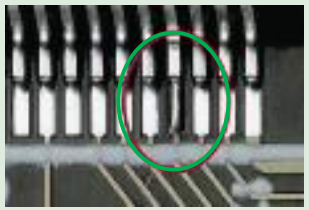
ADVANTECH

Bringing AI to the Edge

Pre-built AI Models
(ISV Partners)

People Detection


Vehicle Classification


PCB AOI

Textile AOI

Agriculture Sorting

Cloud Services

AI Framework Service

- Code IDE
- Hyper Parameter
- Data Pre-Processing
- Model Management
- Inference Engine Deploy
- Compute Resource Mgmt.

AI Training Computing System

NVIDIA TESLA

SKY-6100

SKY-6200

SKY-6400

SKY-6420

AI Edge Inference System

NVIDIA Jetson™

intel Movidius™

MIC-710IVA

MIC-720AI

MIC-730AI

MIC-770

MIC-770

ADVANTECH

Co-Creating the Future of the IoT World