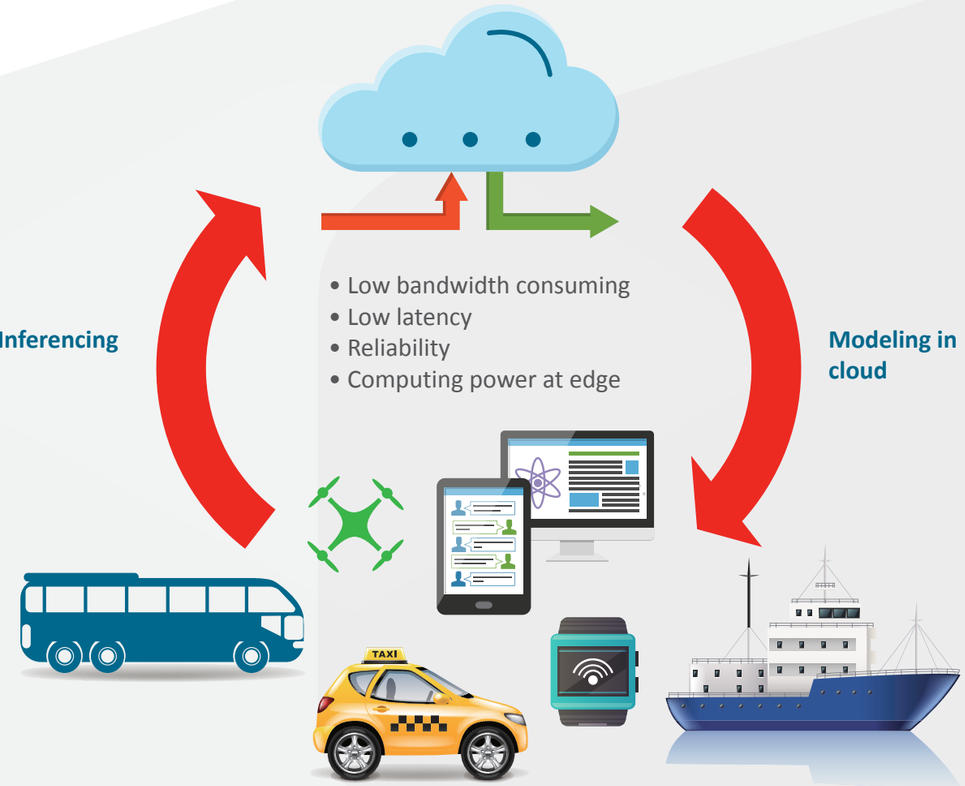
Enabling An Intelligent World

Artificial intelligence Computing

WiBASE

www.wibase.com

WiBASE Empower Artificial Intelligence To Your Edge



Customization to your environment

The artificial intelligence revolution is reshaping the way how businesses to solve challenges from customers. We're racing toward a future where every customer interaction, every device, and every service offering will be enhanced by AI. The future requires a computing platform that can accelerate AI capability, enabling businesses to create new customer experiences, reimagine how they meet—and exceed—customer demands while effectively scale their AI-based products and services.

WiBASE, as a strategic subsidiary of Wistron, a TSP (Technical Service Provider) ranked within Fortune 500, we enjoys the advantages of manufacturing support from Wistron while playing the role of developing IIoT business for the Wistron group.

Hence, the whole customizing service is based on DMS (Design / Manufacturing / Service) practice, which leverages well-defined industrial practices. With responsive design to your customized needs, accurate and ERP-managed manufacturing abilities and foresight in choosing key components, WiBASE DMS services meet to your unique requirements of tailor-made, high quality, long life cycle and time to market.

WiBASE AI Computing Customization

– Standardization whenever possible / Customization whenever necessary

Computing core roadmap

Step 1
Appllication features development

NVIDIA

- Transportation
- Smart city
- Surveillance
- Low enforcement
- Medical

Step 2
Reference product

WIBASE AI Computing

Step 3
Customization

- Carrier board (optional form factor)
- Mechanical
- Accessory
- Mounting kit
- OS & APP fine-tune

Mini-TX | Pico-ITX | 5.25" | 3.5"

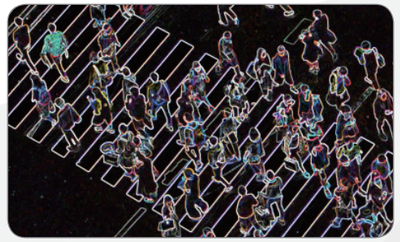
Step 4
Deployment

- 3-month delivery from customization bick-start
- 10 units samples

For valuable AIoT customers, WiBASE commit to deliver the best product solution with forward-looking technology and uncompromising implementation along the course of embedded computing customization. With our experienced project and engineering team, WiBASE takes good care of every stage and communicate with you intensively along with your product development.

AI Software support	SDK / API	Demo sample / Github	ROS IVA/Drone/Industry 4.0	☑Ready to power on ☑Ready to develop ☑Ready to cloud
	Artificial Intelligence / DeepStream	3rd Party Solution ex. Nx Wireless / NVR	**Supported colud** Microsoft Azure Amazon Alibaba	

WiBASE Artificial Intelligence Application



Surveillance

- Identity alert
- Behavior alert
- Abnormal object alert

Law enforcement

- Vehicle type and people detection
- License plate recognition
- Vehicle type classification

Healthcare

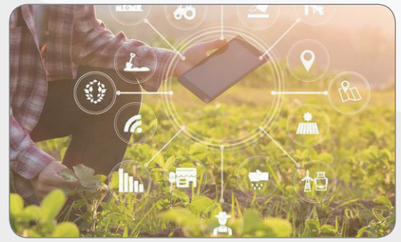
- Aid clinical judgment or diagnosis
- Intelligent workflow and administrative tasks
- Image analysis

Logistics

- Fleet management
- Video surveillance
- Driver assistance
- Traffic lane safety alert

Retail

- Customer shopping behavior modeling
- People counting
- Store heatmap analytics



Agriculture

- Environmental monitoring
- AI irrigator
- Plant growth monitoring

Transportation

- Traffic demand modeling
- Pattern recognition
- Incident detection

Smart city

- Smart meter & sensor hub
- Facility demand modeling
- Internet of Vehicle gateway

Financial / Banking

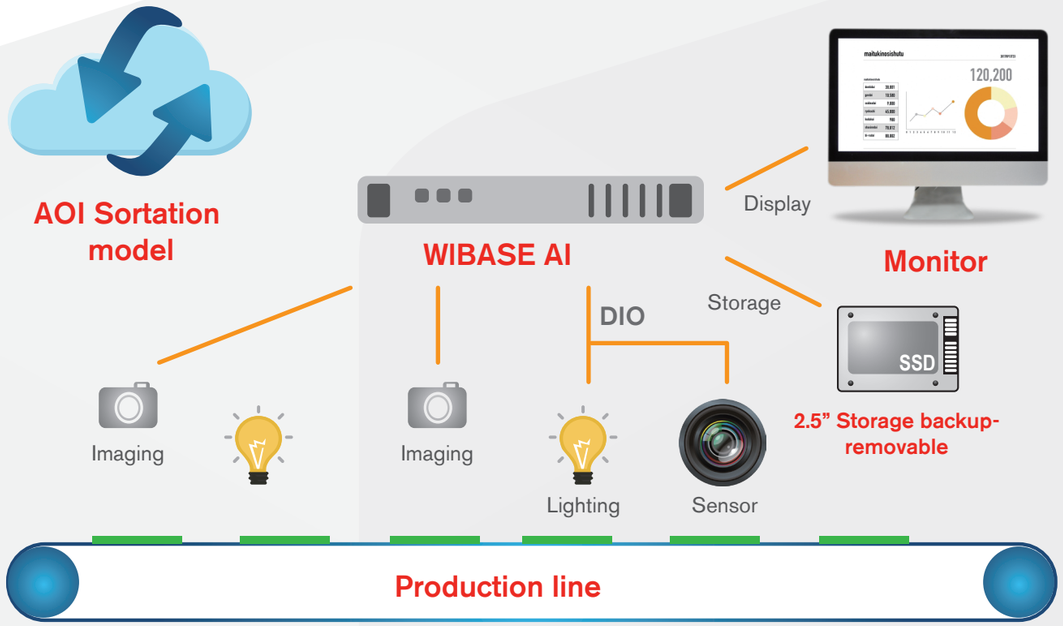
- Identity recognition
- Withdrawer behavior detection
- Fraud alert & prevention

Factory automation

- Intelligent product data analysis
- Real-time problem-solving
- Predictive maintenance and monitoring

Successful case

Factory automation – Automatic optical inspection with artificial intelligence



The customer is a well-known electronic TSP (Technical Service Provider) in the world which ranked within Fortune 500 as well. In the condition of billion product shipment, there is no compromise can be accepted to abnormal defect rate. Hence, there is no exception that customer has adopted highly advanced inspection equipment into manufacturing process to maintain high yield rate.

Automatic optical inspection equipment is widely deployed into modern manufacturing. The inspection process is to scan the product and acquire its image data, then match these data to qualified parameters in database to judge if it’s qualified product or not.

However, there is an issue with current inspection method in factory automation practice. Due to requirements of high yield rate, factory usually set inspection parameter to highly strict level which cause over-sortation since AOI equipment can only respond to pre-set parameters mechanically. Secondary, light condition and material characteristics can easily interference the results of AOI inspection.

Once WiBASE AI inference accelerator was bridged into AOI inspection mechanism, WiBASE AI computer can make use of accumulated AOI results (both correct and over-sortation) which being processed by AI training model in cloud server, then WiBASE AI computer can gradually reduce the probability of over-sortation which significantly reduce customer’s efforts of reviewing over-sortation to have benefits of reducing production cost and speed up production speed.

Successful case

Transportation – WiBASE adds brain into legacy surveillance architecture

Traditional surveillance system is more like passive monitoring mechanism which requires operator watching live and multiple footage from video feeds. They’re there as a deterrence, or to provide evidence if something goes wrong. Law enforcement department always need to go back check CCTV database after illegal activities being reported.

Travis artificial intelligence computer is giving surveillance cameras digital brains to match their eyes, letting them analyze live video with no humans necessary which help customer more easily spot abnormal activities.

The customer using legacy surveillance architecture has faced the challenge of transferring standalone system into network-connected security system and enabling the capability of automatic recognition for early-warning. Currently, all installed camera are not network-connected and unable to exchange information with other vehicle or dispatch center. Also, the cost to revamp the entire architecture into AIoT-based will be extremely high beyond expectation.

By adoption of Travis AI computer, the legacy system gets network-connected with IP capability right away. Swappable video-in module (BNC connector) exempt pain from capital spending on IP-based camera. The most importantly, Travis has empowered this legacy system with artificial intelligence capabilities to let customer jumps forward directly into IoT-based system. Now, the customer’s security system has transformed from passive into proactive while artificial intelligence keeps facilitating smart surveillance on the road.

TRAVIS serise Artificial Intelligence Edge Computer

TRAVIS – V

TRAVIS – S

Features

- GMSL camera input x 6
- Mini PCIe - WWAN
- DI x 4 / DO x 4 with isolation circuits
- GPS - optional
- CAN Bus

Specification

	TRAVIS – V	TRAVIS - S
System		
Module	NVIDIA Jetson TX2	NVIDIA Jetson TX2
CPU on Module	ARM Cortex-A57 (quad-core) @ 2GHz + NVIDIA Denver2 (dual-core) @ 2GHz	ARM Cortex-A57 (quad-core) @ 2GHz + NVIDIA Denver2 (dual-core) @ 2GHz
GPU on Module	256-CUDA core Pascal @ 1300MHz	256-CUDA core Pascal @ 1300MHz
DRAM on Module	8GB 128-bit LPDDR4	8GB 128-bit LPDDR4
Storage on Module	32GB eMMC	32GB eMMC
Storage		
Expansion Storage (Optional)	Support by M.2 SSD	Support by M.2 SSD
I/O		
SD Socket	1 x SD Socket	1 x SD Socket
GMSL Camera Input	Support 6 x GMSL(1080P) camera with audio in.t	N/A
Display	1 x HDMI-out 1 x FPDLINK Display-out (Optional)	1 x HDMI-out
Audio	1 x Line-in & 1 x MIC-in (3.5mm phone jack)	1 x Line-in & 1 x MIC-in (3.5mm phone jack)
USB	2 x USB3.0 2 x USB2.0 1 x Micro USB 2.0 (Reserve for SW update only)	2 x USB3.0 2 x USB2.0 1 x Micro USB 2.0 (Reserve for SW update only)
Ethernet	2 x GIGA LAN	2 x GIGA LAN
COM	2 x RS232 2 x RS422/RS485	2 x RS232 2 x RS422/RS485
DIO	DI x 4, DO x 4 With isolation circuits	DI x 4, DO x 4 With isolation circuits

	TRAVIS – V	TRAVIS - S
Connection		
WWAN (Optional)	For North America: -LTE category 4, Max 150Mbps (DL) / 50Mbps (UL) -LTE FDD: B2/B4/B12 -WCDMA: B2/B4/B5	**For North America:** -LTE category 4, Max 150Mbps (DL) / 50Mbps (UL) -LTE FDD: B2/B4/B12 -WCDMA: B2/B4/B5
	For Europe: -LTE category 4, Max 150Mbps (DL) / 50Mbps (UL) -LTE FDD: B1/B3/B5/B7/B8/B20 -WCDMA: B1/B5/B8 -GSM: B3/B8	For Europe: -LTE category 4, Max 150Mbps (DL) / 50Mbps (UL) -LTE FDD: B1/B3/B5/B7/B8/B20 -WCDMA: B1/B5/B8 -GSM: B3/B8
WLAN & BT (Default)	- 2x2 MIMO 802.11ac compliant (backwards compatible with legacy 802.11a/b/g/n) - Bluetooth 4.1 ready	- 2x2 MIMO 802.11ac compliant (backwards compatible with legacy 802.11a/b/g/n) - Bluetooth 4.1 ready
WLAN & BT (Optional)	- 2x2 MIMO 802.11ac compliant (backwards compatible with legacy 802.11a/b/g/n) - Bluetooth 4.2 - Adjustable country code / power table for optimal performance	- 2x2 MIMO 802.11ac compliant (backwards compatible with legacy 802.11a/b/g/n) - Bluetooth 4.2 - Adjustable country code / power table for optimal performance
SIM Socket	1 x SIM Socket (used by WWAN module)	1 x SIM Socket (used by WWAN module)
GPS (Optional)	- GNSS supported: BeiDou, Galileo, GLONASS, GPS / QZSS - Untethered Dead Reckoning (UDR) technology included	- GNSS supported: BeiDou, Galileo, GLONASS, GPS / QZSS - Untethered Dead Reckoning (UDR) technology included
CAN Bus	2 x CAN 2.0	2 x CAN 2.0
Power		
Fuse	1	N/A
Power Input	9V ~ 36V DC Power Input @25C	12V DC Power Input (ship with 60W Adaptor)
Input protection tolerance (OVP, OCP, UVP)	Within +/- 5%	Within +/- 5%
UPS	Support external battery	N/A
Environment		
Operating Temperature	-20°C ~ 60°C (Fanless) -20°C ~ 70°C (with Fan Module)	-20°C ~ 60°C
Environment		
Dimension	77(H) x 200(W)x 216mm(D) (Fanless)	77(H) x 200(W) x 216mm(D) (Fanless)

ATHENA Artificial intelligence inference accelerator
Embedded System with NVIDIA® Jetson™ TX2

Features

- 2.5” HDD/SSD removable bay
- Mini PCIe - optional 3G, LTE/WiFi + BT Module
- Optional PoE extension
- DI x 4 / DO x 4
- HDMI x 2
- M.2 x1 (E-Key)

Specification

System	
Module	NVIDIA Jetson TX2
CPU on Module	ARM Cortex-A57 (quad-core) @ 2GHz + NVIDIA Denver2 (dual-core) @ 2GHz
GPU on Module	256-CUDA core Pascal @ 1300MHz
DRAM on Module	8GB 128-bit LPDDR4
Storage on Module	32GB eMMC
Storage	
Expansion Storage	2.5” HDD/SSD Removable Bay Design
Software	
OS	ubuntu 16.04
Connection	
WWAN (Optional)	Support by miniPCIe module
WLAN (Optional)	Wi-Fi/BT by TX2
Function key	
Button	Power button x 1 with LED Reset button x 1 Recovery button x 1

I/O	
LAN	1 x GIGA LAN with 4 ports switch-hub, support PoE function (optional)
Display	2 x HDMI-out
Audio	1 x Line-in & 1 x Line-out, 1 x MIC-in (3.5mm phone jack)
USB	USB3.0 x 3, USB2.0 x 2, OTG x 1
Mini PCIe	1 x Mini PCIe Connector
M.2	M.2 x1 (E-Key)
COM	RS232/RS422/RS485 by SW select
DIO	DI x 4, DO x 4
Socket	1 x SIM Socket 1 x SD Slot
Power	
Power Supply	DC Jack x 1 (12V DC Input) 54V for PoE (optional)
Environment	
Operating Temp	0°C ~ 60°C 0°C ~ 50°C (PoE model)
Mechanical	
Dimension (mm)	260(L) x 200(W) x 54.65(H)

ALVIS Artificial intelligence inference accelerator
Fanless Embedded System with NVIDIA® Jetson™ TX2

Features

- 2.5” HDD/SSD removable bay
- Mini PCIe - optional 3G, LTE/WiFi + BT Module
- Optional PoE extension
- DI x 4 / DO x 4
- HDMI x 2
- M.2 x1 (E-Key)

Specification

System	
Module	NVIDIA Jetson TX2
CPU on Module	ARM Cortex-A57 (quad-core) @ 2GHz + NVIDIA Denver2 (dual-core) @ 2GHz
GPU on Module	256-CUDA core Pascal @ 1300MHz
DRAM on Module	8GB 128-bit LPDDR4
Storage on Module	32GB eMMC
Storage	
Expansion Storage	2.5” HDD/SSD Removable Bay Design
Software	
OS	ubuntu 16.04
Connection	
WWAN (Optional)	Support by miniPCIe module
WLAN (Optional)	Wi-Fi/BT by TX2
Function key	
Button	Power button x 1 with LED Reset button x 1 Recovery button x 1

I/O	
LAN	1 x GIGA LAN with 4 ports switch-hub, support PoE function (optional)
Display	2 x HDMI-out
Audio	1 x Line-in & 1 x Line-out, 1 x MIC-in (3.5mm phone jack)
USB	USB3.0 x 3, USB2.0 x 2, OTG x 1
Mini PCIe	1 x Mini PCIe Connector
M.2	M.2 x1 (E-Key)
COM	RS232/RS422/RS485 by SW select
DIO	DI x 4, DO x 4
Socket	1 x SIM Socket 1 x SD Slot
Power	
Power Supply	DC Jack x 1 (12V DC Input) 54V for PoE (optional)
Environment	
Operating Temp	0°C ~ 60°C 0°C ~ 50°C (PoE model)
Mechanical	
Dimension (mm)	254.4(L) x 200(W) x 45.67(H)

ALEXANDER Artificial intelligence inference accelerator
Embedded System with NVIDIA® Jetson™ TX2

Features

- 2.5” HDD/SSD removable bay
- Mini PCIe - optional 3G, LTE/WiFi + BT Module
- Optional PoE extension
- DI x 4 / DO x 4
- HDMI x 2
- M.2 x1 (E-Key)

Specification

System	
Module	NVIDIA Jetson TX2
CPU on Module	ARM Cortex-A57 (quad-core) @ 2GHz + NVIDIA Denver2 (dual-core) @ 2GHz
GPU on Module	256-CUDA core Pascal @ 1300MHz
DRAM on Module	8GB 128-bit LPDDR4
Storage on Module	32GB eMMC
Storage	
Expansion Storage	2.5” HDD/SSD Removable Bay Design
Software	
OS	ubuntu 16.04
Connection	
WWAN (Optional)	Support by miniPCIe module
WLAN (Optional)	Wi-Fi/BT by TX2
Function key	
Button	Power button x 1 with LED Reset button x 1 Recovery button x 1

I/O	
LAN	1 x GIGA LAN with 4 ports switch-hub, support PoE function (optional)
Display	2 x HDMI-out
Audio	1 x Line-in & 1 x Line-out, 1 x MIC-in (3.5mm phone jack)
USB	USB3.0 x 3, USB2.0 x 2, OTG x 1
Mini PCIe	1 x Mini PCIe Connector
M.2	M.2 x1 (E-Key)
COM	RS232/RS422/RS485 by SW select
DIO	DI x 4, DO x 4
Socket	1 x SIM Socket 1 x SD Slot
Power	
Power Supply	DC Jack x 1 (12V DC Input) 54V for PoE (optional)
Environment	
Operating Temp	0°C ~ 60°C 0°C ~ 50°C (PoE model)
Mechanical	
Dimension (mm)	254(L) x 200(W) x 54.85(H)

WB-N211 Artificial intelligence computer
Embedded System with NVIDIA® Tegra X2

Features

- Compact size
- Wide temperature operation
- Versatile expansion slot
- 2.5” removable HDD
- Optional PoE

Specification

System	
Module	Nvidia Tegra X2 SoM
CPU on Module	- HMP Dual Denver 2/2 MB L2 + - Quad ARM® A57/2 MB L2
GPU on Module	NVIDIA Pascal™ 256-core GPU
DRAM on Module	On Board 8GB LPDDR4 with capacities of up to 8 GB
Storage on Module	On-Board 32GB eMMC (eMMC5.1) for BSP
Storage	
Micro SD card	1x Micro SD card slot for SDXC SD Card
eSATA	1x eSATA for 2.5” Removable HDD, PIN-OUT
Software	
OS	ubuntu 16.04
Connection	
Wifi/BT	802.11a/b/g/n/ac+BT4.0 module (BCM4354)
Function key	
Power button	1x Power button, Auto power-on by MCU or jumper, Physically + PIN-OUT
Reset button	1x Reset button, Physically + PIN-OUT
Recovery button	1x Recovery button, Physically + PIN-OUT

I/O	
LAN	1x Gigabit Ethernet (10/100/1000), RJ45 w/ LED
Display	1x HDMI (Type A or Micro HDMI) for Display
Audio	1x 3.5mm phone jack for Speaker out, audio plug detect 1x 3.5mm phone jack for MIC line in, audio plug detect
Micro USB	1x USB OTG, Physically
USB 3.0	2x USB 3.0 type-A port (compatible to USB2.0)
UART	2 x 3.3V UART, PIN-OUT
Expansion slot	
PCIE	1x PCIE
MIPI CSI	6x CSI
I2C	Yes
M.2	1x M.2 E key (in carrier board)
Power	
Power Supply	DC 10V ~ 13V 54V for PoE (optional)
DC-jack	1X DC jack
Environment	
Operating Temp	-20°C ~ 80°C
Mechanical	
Dimension (mm)	150x125x50 mm
Cooling Method	Active cooling (with Fan), PWM smart fan, PIN-OUT
Cooler Type	Heat-sink+Heat pipe