seeed studio

NVIDIA | Elite Partner

NVIDIA® Jetson™-Powered Edge Devices

Your trusted hardware partner for advanced embedded AI systems.

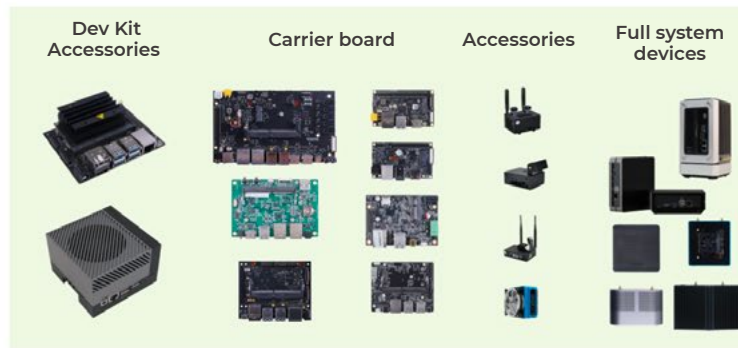Manufacture in Shenzhen & Vietnam

Pioneering Embedded AI Partner

Support every stage of edge AI application

NVIDIA Elite Partner

Sensor
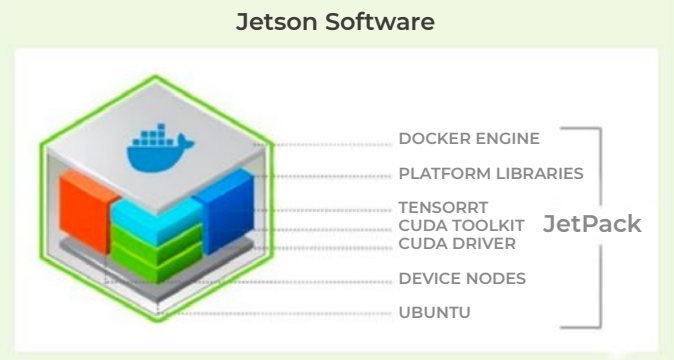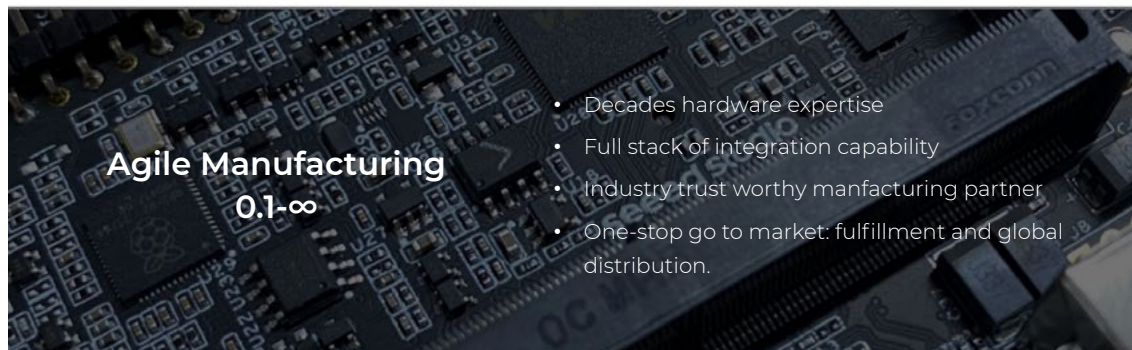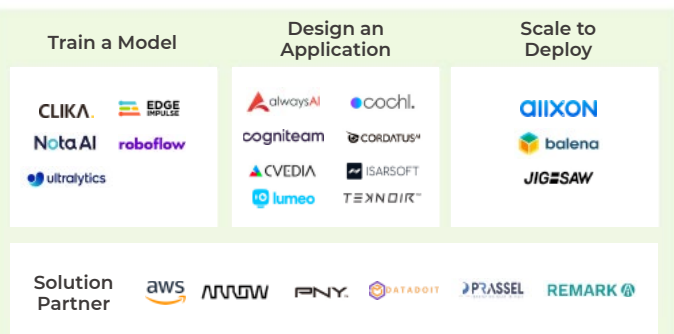
LiDAR   Camera

Full product line from PoC to production

Dev Kit Accessories | Carrier board | Accessories | Full system devices

Deisgn Tools, Tutorials, Software defined application

Train a Model	Design an Application	Scale to Deploy
CLIKA	alwaysAI cochl.	allxon
Nota AI roboflow	cogniteam CORDATUS	balena
ultralytics	CVEDIA ISARSOFT	JIGSAW
	lumeo TEXNDIR	

Solution Partner   aws   ARROW   PNY   DATADOIT   PRASSEL   REMARK

Jetson Software

DOCKER ENGINE
PLATFORM LIBRARIES
TENSORRT
CUDA TOOLKIT
CUDA DRIVER   JetPack
DEVICE NODES
UBUNTU

Agile Manufacturing
0.1-∞

- Decades hardware expertise
- Full stack of integration capability
- Industry trust worthy manfacturing partner
- One-stop go to market: fulfillment and global distribution.

The NVIDIA Jetson Family

For AI at the Edge and Autonomous Machines

Next-Gen: Jetson Orin
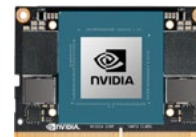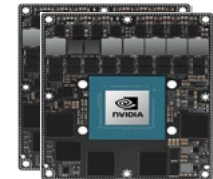
JETSON Orin Nano 4GB	JETSON Orin Nano 8GB	JETSON Orin NX 8GB	JETSON Orin NX 16GB	JETSON AGX Orin Series
20 TOPS (INT8)	40 TOPS (INT8)	70 TOPS (INT8)	100 TOPS (INT8)	275 TOPS (INT8)
7 - 10W	7 - 15W	10 - 20W	10 - 25W	15- 60W
45mm x 69.6mm	45mm x 69.6mm	45mm x 69.6mm	45mm x 69.6mm	32GB/64GB
				100mm x 87mm

Jetson Nano	JETSON TX2 NX	JETSON TX2 series	JETSON Xavier NX series	JETSON AGX Xavier Series
0.5 TFLOPS (FP16)	1.33 TFLOPS (FP16)	1.33 TFLOPS (FP16)	21 TOPS (INT8)	32 TOPS (INT8)
5 - 10W	7.5 - 15W	7.5 - 15W	10 - 20W	10-30w
45mm x 69.6mm	45mm x 69.6mm	50mm x 87mm	8GB/16GB	32GB/64GB
			45mm x 69.6mm	100mm x 87mm

source: NVIDIA

Module Specifications

	Jetson AGX Xavier 32G	Jetson AGX Xavier 64GB	Jetson AGX Orin 32GB	Jetson AGX Orin 64GB
AI Performance	32 TOPS (Dense)		200 TOPS (Sparse) 100 TOPS (Dense)	275 TOPS (Sparse) 138 TOPS (Dense)
GPU	512-core NVIDIA Volta GPU with 64 Tensor Cores		1792-core NVIDIA Ampere GPU with 56 Tensor Cores	2048-core NVIDIA Ampere GPU with 64 Tensor Cores
DL Accelerator	2x NVDLA		2x NVDLA v2	
Vision Accelerator	2x PVA v1		PVA v2	
CPU	8-core NVIDIA Carmel Arm®v8.2 64-bit CPU 8MB L2 + 4MB L3		8-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU 2MB L2 + 4MB L3	12-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU 3MB L2+ 6MB L3
Memory	32GB 256-bit LPDDR4x @ 2133MHz 137 GB/s	64GB 256-bit LPDDR4x @ 2133MHz 137 GB/s	32 GB 256-bit LPDDR5 @ 3200MHz 204.8 GB/s	64 GB 256-bit LPDDR5@ 3200MHz 204.8 GB/s
Storage	32GB eMMC 5.1		64GB eMMC 5.1	
Video Encode	4x 4K60	8x 4K30	16x 1080p60	32x 1080p30 (H.265) H.264, VP9		1x 4K60	3x 4K30	6x 1080p60	12x 1080p30 (H.265) H.264, AV1	2x 4K60	4x 4K30	8x 1080p60	16x 1080p30 (H.265) H.264, AV1
Video Decode	2x8K30	6x4K60	12x4K30	26x 1080p60	52x 1080p30 (H.265) H.264, VP9		1x 8K30	2x 4k60	4x 4K30	9x 1080p60	18x 1080p30 (H.265) H.264, VP9, AV1	1x 8K30	3x 4k60	7x 4K30	11x 1080p60	22x 1080p30 (H.265) H.264, VP9, AV1
Camera	16 lanes MIPI CSI-2 (36 Virtual Channels)	8 lanes SLVS-ECI D-PHY 40Gbps / C-PHY 62 Gbps		16 lanes MIPI CSI-2 (16 Virtual Channels*) D-PHY 2.1 40Gbps / C-PHY 2.0 164Gbps	
PCI Express	16 lanes PCIe Gen 4 1 x8, 1 x4, 1x2, 2x1		22 lanes PCIe Gen 4 Up to 2 x8, 1 x4, 2 x1	
Ethernet	1 GbE RGMII		1 GbE RGMII	1x 10Gbe XFI	
Mechanical	100mm X 87mm 699 pin connector		100mm X 87mm 699 pin connector	
Power	10W to 30W		15W to 40W	15W to 60W

source: NVIDIA

Module Specifications

	Jetson Xavier NX 8GB	Jetson Xavier NX 16GB	Jetson Orin NX 8GB	Jetson Orin NX 16GB
AI Performance	21 TOPS (Dense)		70 TOPS (Sparse) 35 TOPS (Dense)	100 TOPS (Sparse) 50 TOPS (Dense)
GPU	384-core NVIDIA Volta™ GPU with 48 Tensor Cores		1024-core NVIDIA Ampere GPU with 32 Tensor Cores	
DL Accelerator	2x NVDLA		NVDLA v2	2x NVDLA v2
Vision Accelerator	2x PVA v1		PVA v2	
CPU	6-core NVIDIA Carmel ARM® v8.2 64-bit CPU 6MB L2 + 4MB L3		6-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU 1.5MB L2 + 4MB L3	8-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU 2MB L2 + 4MB L3
Memory	8 GB 128-bit LPDDR4x @1600 MHz, 51.2GB/s	16 GB 128-bit LPDDR4x @1600 MHz, 51.2GB/s	8GB 128-bit LPDDR5 @3200 MHZ 102.4 GB/s	16GB 128-bit LPDDR5 @3200MHZ 102.4 GB/s
Storage	16GB eMMC 5.1		-(Supports external NVMe)	
Video Encode	2x 4K60	4x 4K30	10x 1080p60	22x 1080p30 (H.265) H.264, H.265, VP9		1x 4K60	2x 4K30	5x 1080p60	11x 1080p30 (H.265) H.264, H.265, AV1	
Video Decode	2x 8K30	6x 4K60	12x 4K30	22x 1080p60	44x 1080p30 (H.265) H.264, H.265, VP9		1x8K30	2x4K60	4x4K30	9x1080p60	18x 1080p30 (H.265) H.264, H.265, VP9, AV1	
Camera	Up to 6 cameras (36 via virtual channels) 	12 lanes MIPI CSI-2	D-PHY 1.2(up to 30 Gbps)		Up to 4 cameras (8 via virtual channels*) 	8 lanes MIPI CSI-2	D-PHY 1.2(up to 20 Gbps)	
PCI Express	5 lanes PCIe Gen 3 1x4, 1x1		7 lanes PCIe Gen 4 1x4, 3x1	
Ethernet	1 GbE via MDI		1 GbE via MDI	
Mechanical	69.6mmx45mm 260-pin SO-DIMM connector		69.6mmx45mm 260-pin SO-DIMM connector	
Power	10W to 20W		10W to 20W	10W to 25W
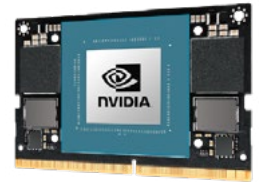
source: NVIDIA

Module Specifications

|	Jetson Nano	Jetson TX2 NX	Jetson Orin Nano 4GB	Jetson Orin Nano 8GB
AI Performance	0.5 TFLOPS (Dense)	1.33 TFLOPS (Dense)	20 TOPS (Sparse) 10 TOPS (Sparse)	40 TOPS (Sparse) 20 TOPS (Sparse)
GPU	128-core NVIDIA Maxwell™ GPU	256-core NVIDIA Pascal™ GPU	512-core NVIDIA Ampere GPU with 16 Tensor Cores	1024-core NVIDIA Ampere GPU with 32 Tensor Cores
CPU	4-core Arm® Cortex®-A57 MPCore Processor, 1.5 GHz	2-core Denver 64-core CPU and 4-core Arm® Cortex®-A57 MPCore Processor 2.0 GHz	6-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU, 1.5 GHz 1.5MB L2+ 4MB L3	6-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU, 1.5 GHz 1.5MB L2+ 4MB L3
Memory	4 GB 64-bit LPDDR4x @1600 MHz, 25.6 GB/s	4 GB 128-bit LPDDR4x @1600 MHz, 51.2GB/s	4GB 64-bit LPDDR5 @2133 MHZ, 34 GB/s	8GB 128-bit LPDDR5 @2133 MHZ, 68 GB/s
Storage	16GB eMMC 5.1	16GB eMMC 5.1	-(Supports external NVMe)	-(Supports external NVMe)
Video Encode	1x 4K30	2x 1080p60	4x 1080p30 (H.265) H.264, H.265, VP9	1x 4K60	3x 4K30	4x 1080p60	8x 1080p30 (H.265) H.264, H.265, VP9	1080p30 supported by 1-2 CPU cores	1080p30 supported by 1-2 CPU cores
Video Decode	1x 4K60	2x 4K30	4x 1080p60	4x 1080p30 (H.265) H.264, H.265, VP9	2x 4K60	4x 4K30	7x 1080p60	14x 1080p30 (H.265) H.264, H.265, VP9	1x 4K60	3x 4K30	6x 1080p60	12x 1080p30 (H.265) H.264, H.265, VP9, AV1	1x 4K60	3x 4K30	6x 1080p60	12x 1080p30 (H.265) H.264, H.265, VP9, AV1
Camera	12 lanes MIPI CSI-2	D-PHY 1.2(up to 18 Gbps)	Up to 5 cameras (12 via virtual channels*)	12 lanes MIPI CSI-2	D-PHY 1.2(up to 30 Gbps)	Up to 4 cameras (8 via virtual channels*)	8 lanes MIPI CSI-2	D-PHY 1.2(up to 20 Gbps)	Up to 4 cameras (8 via virtual channels*)	8 lanes MIPI CSI-2	D-PHY 1.2(up to 20 Gbps)
PCI Express	4 lanes PCIe Gen 2 1x4	3 lanes PCIe Gen 2 1x2, 1x1	7 lanes PCIe Gen 2 1x4, 3x1	7 lanes PCIe Gen 3 1x4, 3x1
USB	1x USB 3.1 (5 Gbps)	1x USB 3.1 (5 Gbps)	3x USB 3.2 gen2 (10 Gbps)	3x USB 3.2 gen2 (10 Gbps)
Ethernet	1 GbE via MDI	1 GbE via MDI	1 GbE via MDI	1 GbE via MDI
Mechanical	69.6mmx45mm 260-pin SO-DIMM connector	69.6mmx45mm 260-pin SO-DIMM connector	69.6mmx45mm 260-pin SO-DIMM connector **	69.6mmx45mm 260-pin SO-DIMM connector **
Power	5W to 10W	7W to 15W	5W to 10W	7W to 15W

source: NVIDIA

Application Scenarios

AI Camera for Retail & Factory

Autopilot Robots & Cars

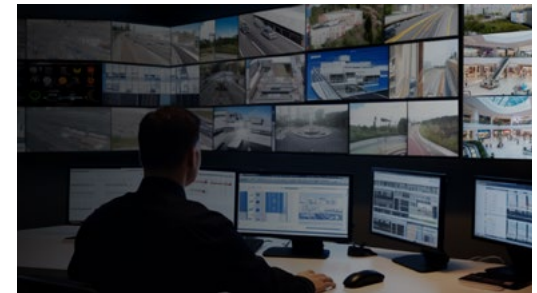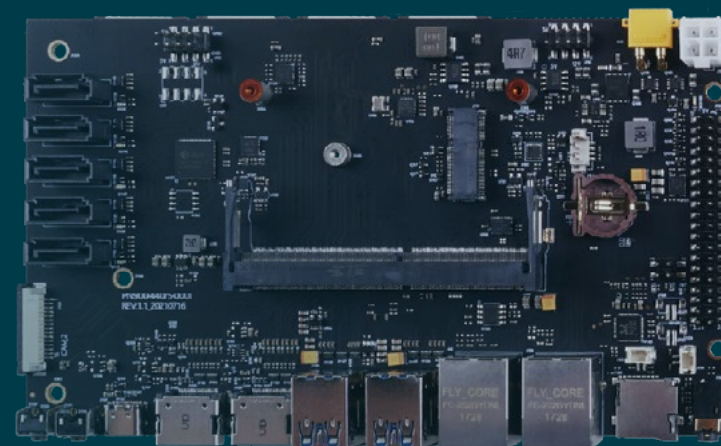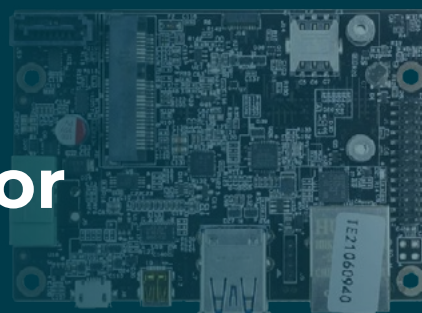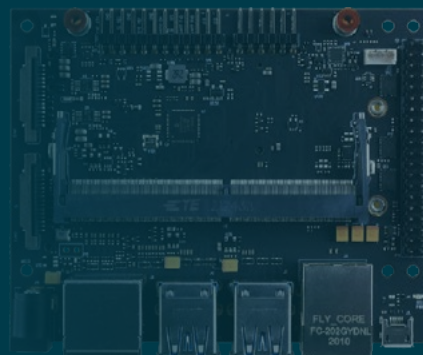

Drones
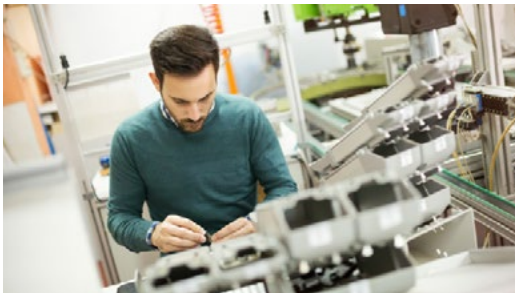
Education & Training Tools

Medical & Biological Vision
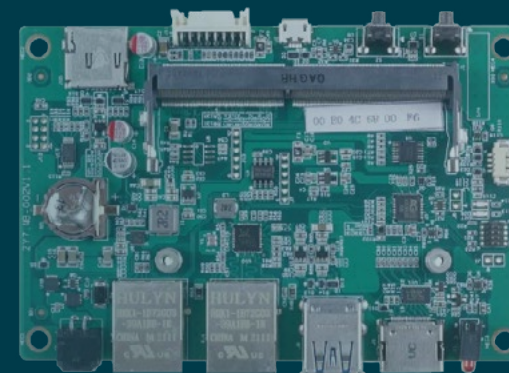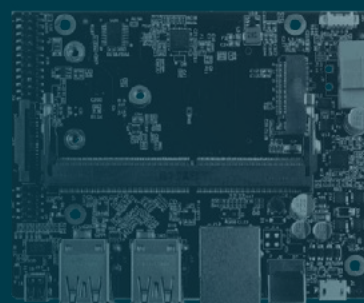

AI Security at the Edge

Carrier Boards for NVIDIA Jetson

Designed For Different Edge AI Deployments

Various Form Factors Rich I/Os

Compatible with Jetson Orin Nano/ Orin NX

Compatible with Jetson Nano/ TX2 NX/ Xavier NX

Carrier Board

Product Name	reComputer J101 carrier board
Dimensions	100mm x 80mm
Module Compatibility	Jetson Nano
SKU	102991694
Certification	RoHS CE FC UKCA REACH
Introduction	reComputer J101 is a cost-effective, high-performance, and interface-rich NVIDIA Jetson Nano compatible carrier board.

It has nearly the same functional design and the same size as the carrier board of NVIDIA® Jetson Nano™ developer kit. |
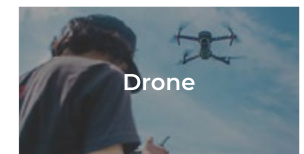

Button Header
Micro SD card (CLK Frequency 48MHz)
M.2 key E
RTC 2-Pin Connector
2* CSI Camera
40 Pin Connector
260 Pin(SO-DIMM) Connector
Fan Header
Type C Power Connector
HDMI Type A
USB 3.0 Type A
2* USB 2.0 Type A
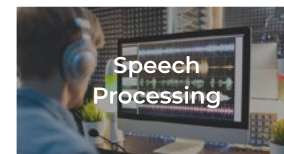Gigabit Ethernet
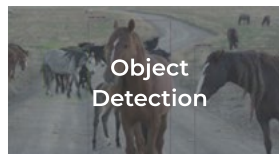Type C (USB 2.0 only)

Features

- HDMI 2.0
- 3 USB Type A
- Micro SD Card Slot
- 2 CSI Camera Connectors
- M.2 Key E
- RTC

Applications

Automation

Image Classification

Object Detection

Speech Processing

Drone

Carrier Board

Product Name	reComputer J202 carrier board
Dimensions	100mm x 80mm
Module Compatibility	- Jetson Nano - Jetson Xavier NX - Jetson TX2 NX
SKU	102991695
Japan Version	reComputer J202 (without power adapter) SKU 102991714
Certification	RoHS ✓ CE FC UK CA REACH
Introduction	reComputer J202 is a high-performance, interface rich NVIDIA Jetson Nano/Xavier NX/ TX2 NX compatible carrier board. It has the same functional design and size as the carrier board of NVIDIA® Jetson Xavier™ NX developer kit and NVIDIA® Jetson Nano Developer Kit-B01.

Same Dimensions As Jetson Nano Dev Kit Carrier Board

Control and UART Header
CAN
RTC 2-pin
Fan Header
MIPI-CSI Camera Connectors(2x)
40-pin Expansion Header (GPIO,12C,UART)
260 Pin SODIMM
USB3.0 Ports(4x)
PoE
DP and HDMI
Gigabit Ethernet Port
LED Light
DC Power Jack
USB Type C

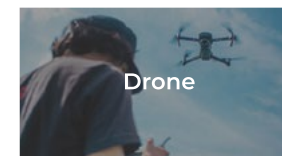M.2 KEY E
RTC Socket
M.2 KEY M

Features

- 4 USB 3.1 Type A ports
- 2 CSI Camera Connectors
- M.2 key E
- M.2 key M
- RTC
- HDMI + DP ports

Applications

Defect Detection in Manufacturing

Smart Shopping Cart

Pose Estimation

Drone

Robotics

Carrier Board

Product Name	**reComputer J401 carrier board**
Dimensions	100mm x 80mm
Module Compatibility	- Jetson Orin Nano - Jetson Orin NX
SKU	102110769
Japan Version	reComputer J401 (without power adapter) SKU 102110770
Certification	RoHS CE FC UKCA REACH
Introduction	reComputer J401 is a high-performance, interface rich NVIDIA Jetson Orin Nano/ Orin NX compatible carrier board. It has the same functional design and size as the carrier board of NVIDIA® Jetson Orin™ Nano Developer Kit

Features

- 4 USB 3.2 Type A ports
- 2 CSI Camera Connectors
- 9V-19V
- M.2 key E
- M.2 key M
- RTC
- HDMI

Applications

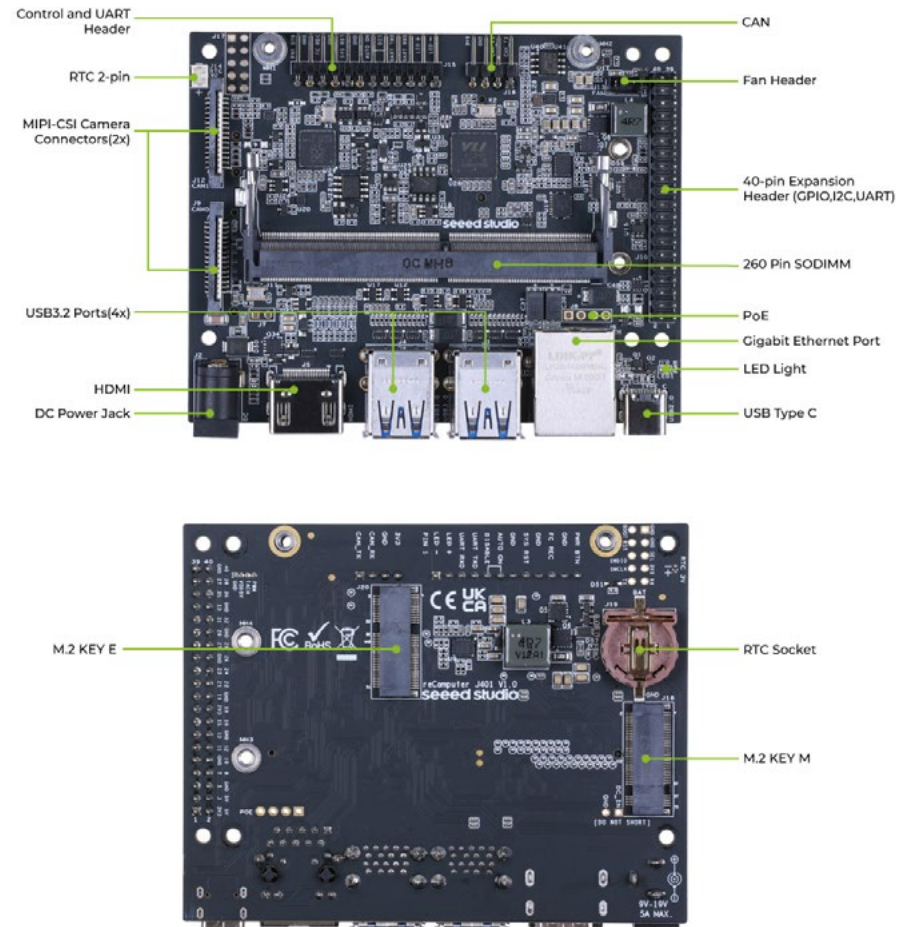Defect Detection in Manufacturing


Smart Shopping Cart

Pose Estimation

Robotics

Carrier Board

Product Name	**reServer Industrial J501 carrier board** `NEW`
Dimensions	176mm x 163mm
Module Compatibility	-Jetson Orin NX -Jetson Orin Nano
SKU	E24081601
Introduction	The reServer Industrial J501 is a carrier board compatible with NVIDIA Jetson AGX Orin, designed for autonomous machines. It supports camera add-ons via MIPI CSI interfaces. An optional GMSL extension board enables advanced vision AI with up to 8 GMSL cameras.

DI/DO/CAN (20pin)
USB3 TypeA x 3
HDMI
M.2 Key-M (2280)
Reset & Recovery Button
Fan Connector (5V PWM)
RTC (2pin connector & CR1220/ML1220)
RS232/RS422/RS485 Connector
RS232/RS422/RS485 Mode Switch
AGX Orin Module Connector
1Gbps Ethernet
Audio I/O
1Gbps Ethernet (POE)
Power Input

USB3 Type-C
USB2 Type-C
SPI TPM Connector
MINI-PCIE
M.2 Key-B (3042/3052)
SATA 3.0 * 2 (with power connector)
M.2 Key-E (2260)
SIM Card Slot

Features

`10G Ethernet`   `16 Lanes of MIPI CSI-2`   `Video Decoding in 8K60 and 3x4K60`

`up to 8 GMSL Connections`   `Hybrid Connectivity (Wi-Fi, 4G/5G, LoRaWAN)`

Applications

Drone

Robotics

Traffic Management

Defect Detection in Manufacturing
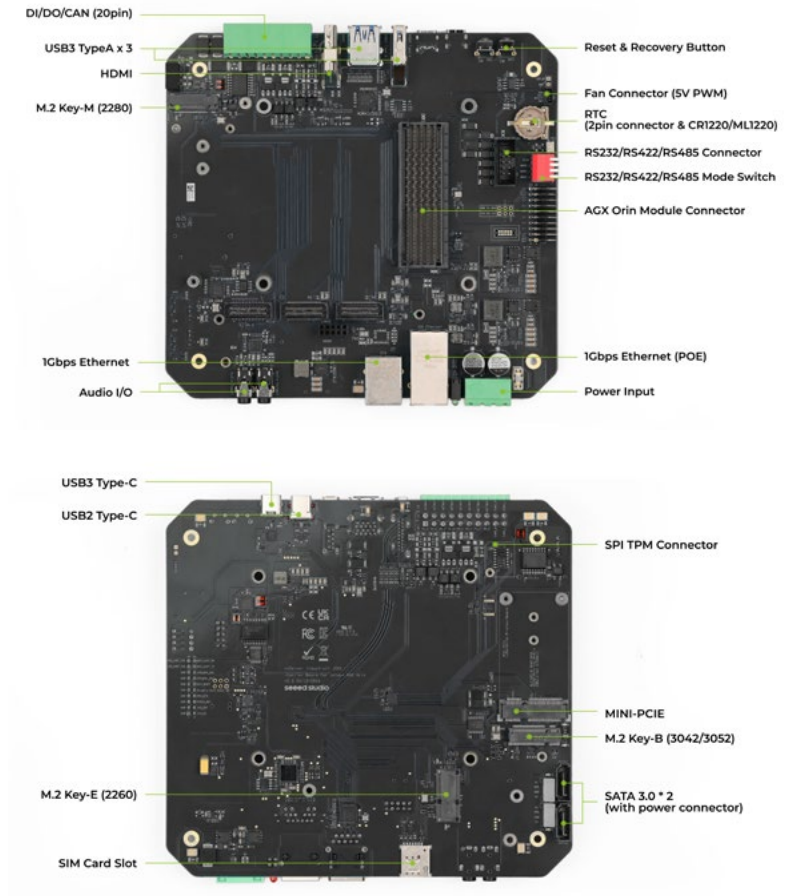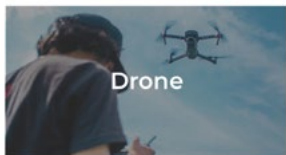
Carrier Board

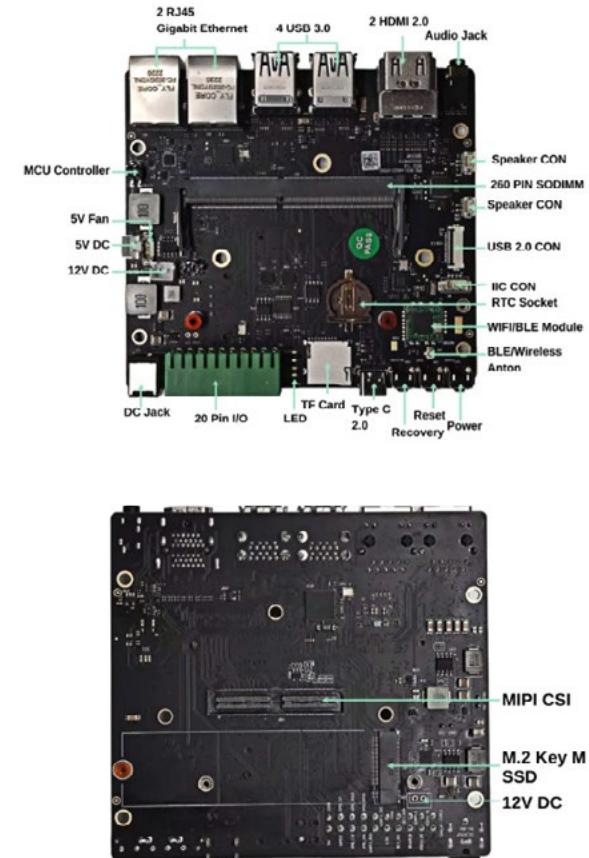| Product Name	A205E carrier board
Dimensions	115mm x 105mm
Module Compatibility	- Jetson Nano - Jetson Xavier NX - Jetson TX2 NX
SKU	102110774
Certification*	RoHS ✓ CE FC
Introduction	Designing for industrial communication use, A205E provides RS232, RS485, and CAN interfaces, high-speed PCIe M.2 Key M(SSD), and M.2 Key E(Wi-Fi). It also provides a rich set of I/Os including a micoSD card slot, HDMI, dual Gigabit Ethernet, 4x USB 3, USB2.0 Type C, SPI, I2C, GPIO, and a fan for different application needs. The board supports operate in the temperature range from -25°C to 80°C.

Features

- 4 USB 3.0 Type A
- USB2.0 Type C
- CAN
- Dual Gigabit Ethernet
- M.2 key E
- M.2 key M
- RS485
- RS232

Applications

Defect Detection in Manufacturing

Agriculture and Farming

Supply Chain

Robotics
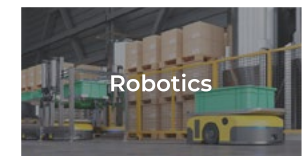
*Some of certification is on going

13

Carrier Board

Product Name	A203 V2 carrier board
Dimensions	87mm x 52mm
Module Compatibility	- Jetson Nano - Jetson Xavier NX - Jetson TX2 NX
SKU	103110043
Certification	✓ RoHS CE FC
Introduction	It is a high-performance, interface rich Jetson Nano/Xavier NX/TX2 NX compatible carrier board. Compared with Jetson Xavier NX carrier board, it is much smaller and thus is suitable for small size AI graphical applications, such as smart-city IoT edge devices, home robots, UAVs, unmanned boats and unmanned submarines.

Features

- Small and compact
- 9V-19V
- RTC
- M.2 E key
- SD card slot
- USB 3.0 ZIF connector

Applications

UAVs

Drone

Unmanned Submarine

Smart Traffic

Home Robots
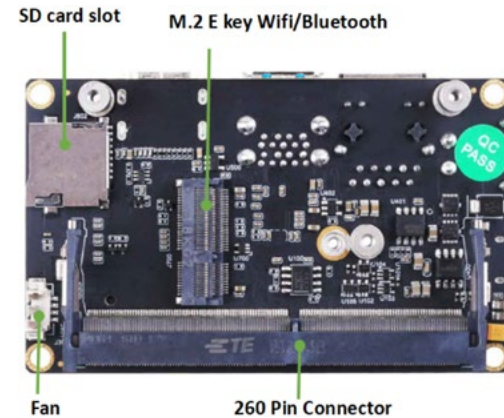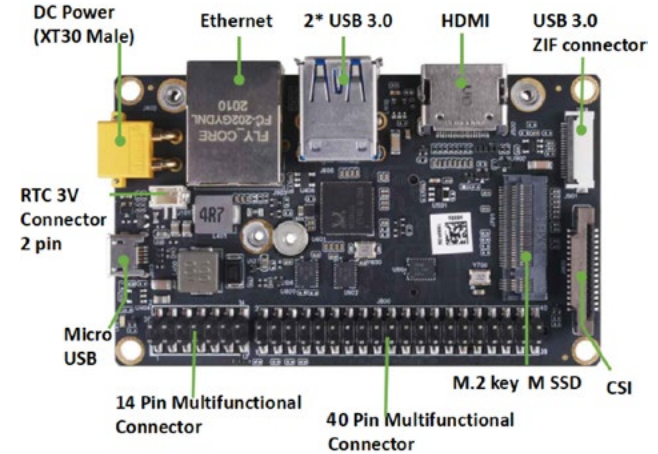
Carrier Board

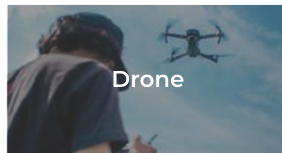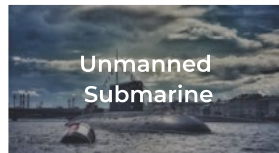|	
Product Name	**A205 carrier board**
Dimensions	170mm x 100mm
Module Compatibility	- Jetson Nano - Jetson Xavier NX - Jetson TX2 NX
SKU	114110048
Certification	RoHS CE FC
Introduction	Bigger size compared with Jetson Xavier NX carrier board. Its rich SATA and multiple CSI Camera connectors make it suitable for complicated AI graphical applications, such as automated optical inspection, in video action, robot control, 3D modeling, drone, and parallel computing for computer vision.

Features

`Dual Gigabit Ethernet` `6 CSI` `5 SATA` `SD card slot`

`2 Ethernet Ports` `4 USB 3.0 Type A`

Applications

Industrial Automation

Traffic Management

Drone

Robotics

Retail
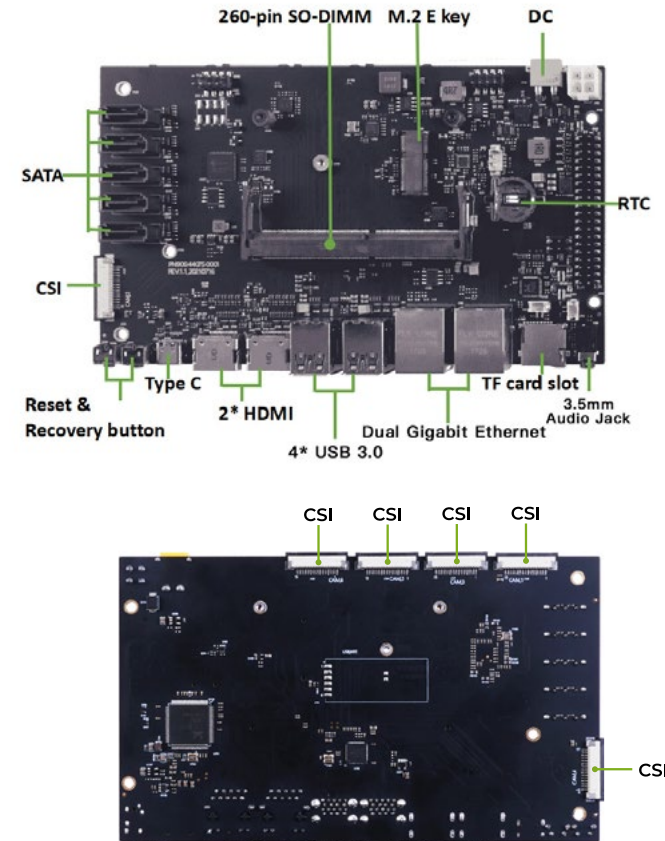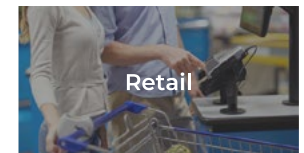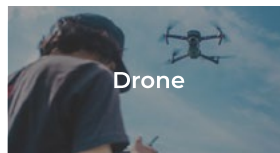
Carrier Board

Product Name	A603 carrier board
Dimensions	87mm x 52mm
Module Compatibility	-Jetson Orin NX -Jetson Orin Nano
SKU	102110840
Certification	RoHS ✓ CE

Introduction

A603 Jetson Carrier Board is a powerful extension board that supports Jetson Orin™ NX/ Orin™ Nano modules. It features 1 GbE port, M.2 Key M for SSD, M.2 Key E for Wi-Fi/Bluetooth, CSI, and HDMI for high-quality video capture and display, containing 2x USB 3.0 ports, fan, RTC, flexible 9-20V power supply. By the compact design, it can be flexible and easy to integrate into a variety of edge computing applications, saving space for UAVs, robots and drone development.

Features

- Compact design
- 9V - 20V
- M.2 Key E
- RTC
- 2 x USB 3.0
- 20-pin ZIF

Applications

UAVs Drone Unmanned Submarine Industrial Automation Home Robots
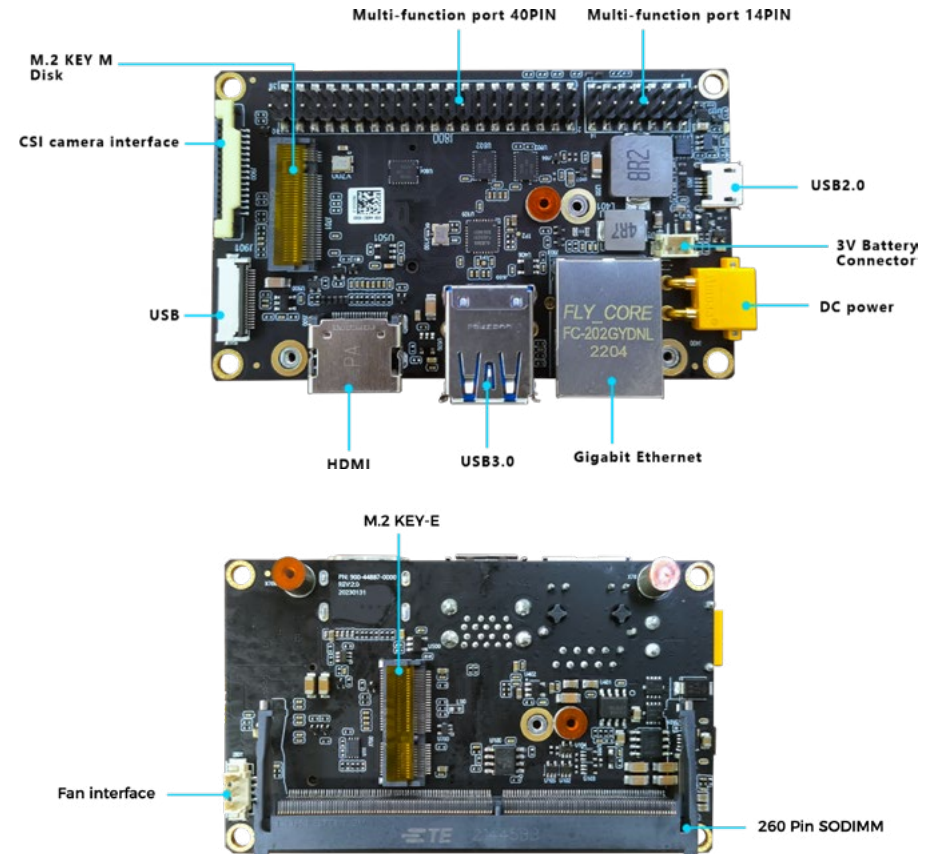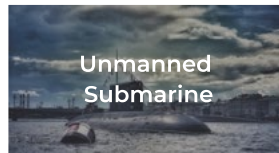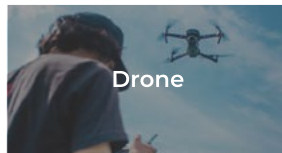
Carrier Board

Product Name	A607 carrier board
Dimensions	115mm x 105mm
Module Compatibility	-Jetson Orin NX -Jetson Orin Nano
SKU	102110841
Certification	RoHS ✓ CE

Introduction

A607 Jetson Carrier Board is a powerful extension board that supports Jetson Orin™ NX/ Orin™Nano modules, featuring high-speed networking and wireless connection with two GbE network ports and a pre-installed SMD WiFi/BlueTooth module. It also comes with CAN, I2C Link, four USB 3.0 Type-A ports, one USB 2.0 / USB 3.0 Type-C, and one USB 3.0 0.5mm pitch 20-pin ZIF for versatile connectivity options. This extension board can enable users to capture and display video content with the 120-pin expansion camera connector and the HDMI port, supporting a wide input range of 12-36V DC, making it flexible to integrate into a variety of computing tasks. It maintains operation in the temperature range from -25°C to 75°C.

Features

- 2 GbE network ports
- pre-installed SMD Wi-Fi/BlueTooth
- M.2 Key M for SSD
- CAN/RS232/RS485

Applications

UAVs
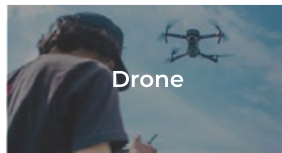
Drone
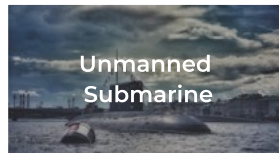
Unmanned Submarine

Industrial Automation

Home Robots
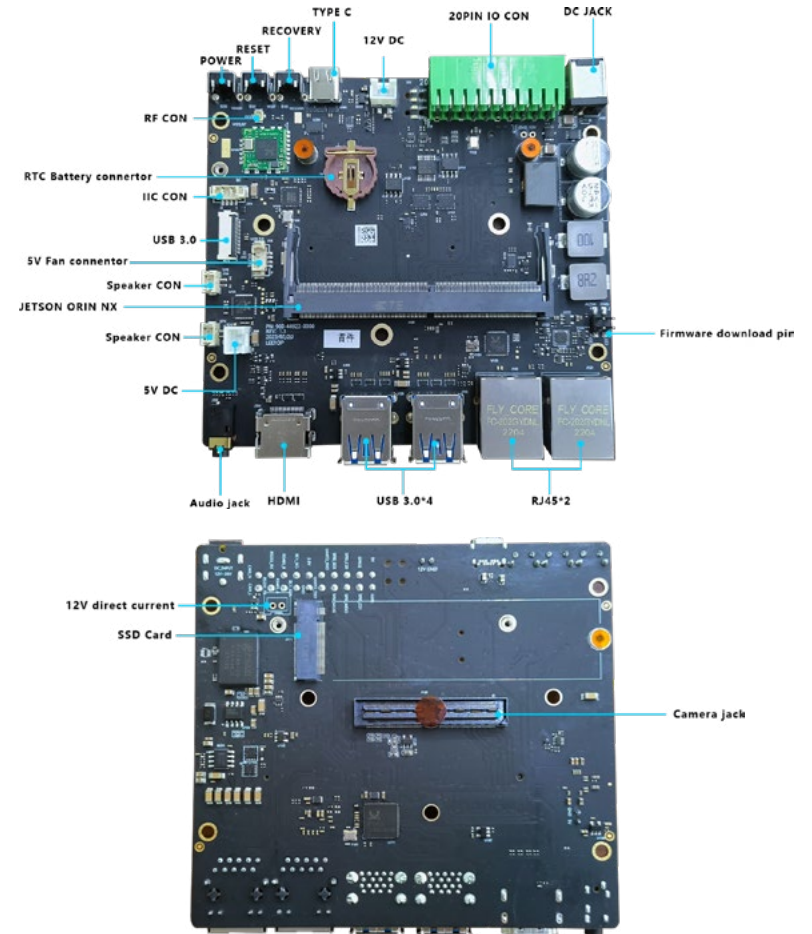
Carrier Board

Product Name	A608 Carrier Board
Dimensions	101.5mm x 95mm
Module Compatibility	-Jetson Orin NX -Jetson Orin Nano
SKU	105110001
Certification	RoHS CE FC

Introduction

A608 Jetson Carrier Board is a powerful extension board that supports Jetson Orin™ NX/Orin™ Nano modules, featuring 2 Gigabit Ethernet ports for fast networking, also coming with 4 USB 3.2 Type-A (integrated USB 2.0) ports, 1 USB2.0+3.2 Type-C port and 1 CAN connector for versatile interface options. This carrier board has been mounted with 1 M.2 Key M, 1 M.2 KEY E and 1 M.2 Key B slots with ample space for flexible storage and wireless connectivity expansion. It's a good choice for handling computer vision tasks, robotics/drone development, and intelligent Generative AI applications in diverse industries. It's especially compatible with JST-GH ports to seamlessly integrate on drones/robots through rich Function CON interfaces, in order to get stable connection in dynamic and collision environments.

Features

2 GbE network ports	5 USB	2 4-lane CSI Camera ports	M.2 Key M for SSD

M.2 KEY B for 4G/5G	M.2 KEY E for WiFi	9-20V DC(MAX 60W)

Applications

UAVs | Drone | Unmanned Submarine | Industrial Automation | Home Robots
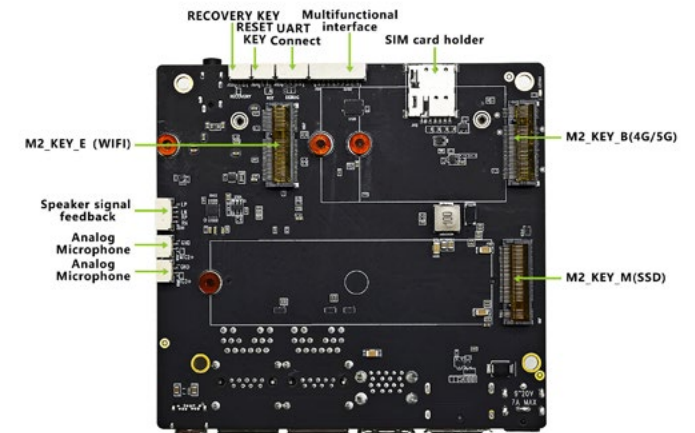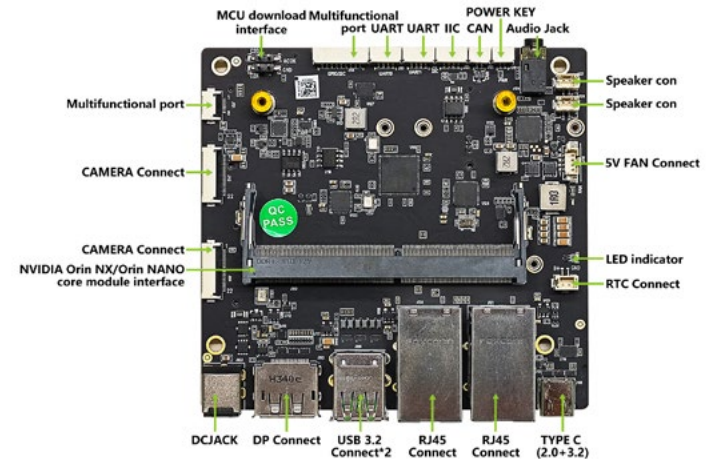
NVIDIA®Jetson Module Compatible Carrier Boards Comparison

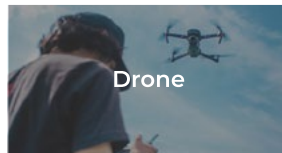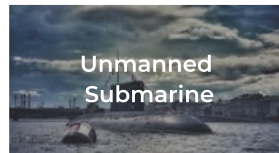|	reComputer J101 carrier board for Jetson™ Nano	reComputer J202 carrier board for Jetson™ Nano/NX/TX2 NX	A203 V2 carrier board for Jetson™ Nano/ NX/TX2 NX	A205 carrier board for Jetson™ Nano /NX/TX2 NX	A205E Carrier Board for Jetson™ Nano /Xavier NX TX2 NX
Carrier board	reComputer J101 carrier board for Jetson™ Nano	reComputer J202 carrier board for Jetson™ Nano/ NX/TX2 NX	A203 V2 carrier board for JetsonTM Nano/ NX/TX2 NX	A205 carrier board for Jetson™ Nano /NX/TX2 NX	A205E Carrier Board for Jetson™ Nano /Xavier NX TX2 NX
Module Compatibility	NVIDIA® Jetson™ Nano	NVIDIA® Jetson™ Nano/ Xavier NX/ TX2 NX	NVIDIA® Jetson™ Nano/ Xavier NX/ TX2 NX	NVIDIA® Jetson ™ Nano/ Xavier NX/ TX2 NX	NVIDIA® Jetson™ Nano /Xavier NX/ TX2 NX
PCB Size / Overall Size	100mm x 80mm	100mm x 80mm	87mm x 52mm	170mm x 100mm	115mm x 105mm
Display	1 x HDMI	1 x HDMI+1 x DP	1 x HDMI	2 x HDMI	2 x HDMI
CSI Camera	2 x CSI	2 x CSI	1 x CSI	6 x CSI	1 x CSI
Networking	1 x Gigabit Ethernet (10/100/1000M) 1 x M.2 KEY E (WiFi) (module not included)	1 x Gigabit Ethernet (10/100/1000M) 1 x M.2 KEY E (WiFi) (module not included)	1 x Gigabit Ethernet (10/100/1000M) 1 x M.2 KEY E (WiFi) (module not included)	2 x Gigabit Ethernet (10/100/1000M) 1 x M.2 KEY E (WiFi) (module not included)	2 x Gigabit Ethernet Connector (10/100/1000) 1 x M.2 KEY E(WiFi) (module not included) 1 x WiFi/ BLE module (4 pin interface)
USB	1 x USB 3.0 Type-A 2 x USB 2.0 Type-A 1 x USB Type C(Not support power input)	4 x USB 3.1 Type-A (Integrated USB 2.0) 1 x USB Type C(Not support power input)	1 x USB 3.0 0.5mm pitch 20Pin ZIF 2 x USB 3.0 Type-A (Integrated USB 2.0) 1 x USB Micro B(Not support power input)	4 x USB 3.0 Type-A (Integrated USB 2.0) 1 x USB 2.0 Type C (Support OTG)	1x USB 2.0 ZIF 20P 0.5mm pitch 4x USB 3.0 Type A 1x USB 2.0 Type C
Storage Expansion	1 x TF_Card (CLK Frequency 48Mhz)	1 x M.2 KEY M	1 x M.2 KEY M 1 x TF_Card	5 x SATA 1 x TF_Card	1 x M.2 KEY M (NVMe SSD) MicroSD card slot
Audio	/			1 x Audio Jack 2 x Microphone interface 2 x Speaker interface	1 x Audio Jack, 2 x Speaker
SPI Bus	2 x SPI Bus(+3.3V Level)	2 x SPI Bus(+3.3V Level)	2 x SPI Bus(+3.3V Level)	2 x SPI Bus(+3.3V Level)	1 x SPI Bus(+3.3V Level)
Fan Connector	1 x Fan(5V PWM)	1 x Fan(5V PWM)	1 x Fan(5V PWM)	2 x Fan(12V/5V) 1 x Fan(5V PWM)	1 x FAN(5V PWM)
CAN	/	1 x CAN	1 x CAN	1 x CAN	1 x CAN
Multifunctional port	1 x 40-Pin	1 x 40-Pin	1 x 40-Pin	1 x 40-Pin	1 x 40-Pin
RTC	Battery not included	Battery not included	Battery not included	Battery not included	Battery not included
Power supply	USB Type C 5V/3A (not include a power cord)	12V/5A power cord only	19V/4.74A power cord only	19V/4.74A power cord only	9V-36V DC
Operating Temperature	0°C~60°C	0°C~60°C	-25°C ~65°C	-25°C ~80°C	-25°C ~80°C

Carrier board	reComputer J401 carrier board for Jetson™ Orin NX/Orin Nano	A603 carrier board for Jetson Orin™ NX/Nano	A607 carrier board for Jetson Orin™ NX/Nano	A608 carrier board for Jetson Orin™ NX/Nano	reServer Industrial J501 Carrier Board for Jetson AGX Orin™
Module Compatibility	NVIDIA® Jetson™ Orin NX /Orin Nano	NVIDIA® Jetson Orin™ NX/Nano	NVIDIA® Jetson Orin™ NX/Nano	NVIDIA® Jetson Orin™ NX/Nano	NVIDIA® Jetson AGX Orin™
PCB Size / Overall Size	100mm x 80mm	87mm x 52mm	115mm x 105mm	101.5mm x 95mm	176mm x 163mm
Display	1 x HDMI	1 x HDMI	1 x HDMI	1 x DP	1x HDMI 2.1 Type A 7680x4320
CSI Camera	2 x CSI	1x 15 pins CSI Camera connect	/	2x 4 CSI Camera	2x Expansion connector (8 lanes of MIPI CSI-2 for each connector)
Networking	1 x Gigabit Ethernet (10/100/1000M) 1 x M.2 KEY E (WiFi) (module not included)	1 x GigabitEthernet (10/100/1000)	2 x Gigabit Ethernet (10/100/1000)	2x Gigabit Ethernet (10/100/1000)	1 x LAN0 RJ45 GbE (10/100/1000Mbps) 1 x LAN1 RJ45 10GbE (10000Mbps)
USB	4 x USB 3.2 Type-A (Integrated USB 2.0) 1 x USB Type C(Not support power input)	2 x USB 3.0 Type A (Integrated USB 2.0) 1 x USB 3.0 0.5mm pitch 20P ZIF 1 x USB 2.0 Micro-AB	4 x USB 3.0 Type A (Integrated USB 2.0) 1 x USB 2.0 / 3.0 Type C 1 x USB 3.0 ZIF 20P 0.5mm pitch	4x USB 3.2 Type A (Integrated USB 2.0) 1x USB 2.0+3.2 Type C	3x USB3.1 1x USB3.1 Type C(Host mode) 1x USB2.0 Type C(Device mode)
Storage Expansion	1 x M.2 KEY M	1 x M.2 KEY M 2242 Interface	1 x M.2 KEY M	1x M.2 KEY M	1x M.2 Key M (PCIE 4.0) 2x SATA III 6.0Gbps at 30 Hz
Audio	/		1 x speaker Connector 1 x audio Jack	1x 3.5 Audio Jack 2x MIC 2x SPEAKER 1x SPEAKER FEEDBACK	3.5mm Audio Connection In/Out
SPI Bus	2 x SPI Bus(+3.3V Level)	2 x SPI Bus	2 x SPI Bus	1x SPI BUS	/
Fan Connector	1 x Fan(5V PWM)	1x FAN connector(5V PWM)	1x FAN connector(5V PWM)	1x FAN(5V PWM)	1x Fan connectors (5V PWM)
CAN	1 x CAN	1 x CAN	1 x CAN	1x CAN (FD)	1x CAN
Multifunctional port	1 x 40-Pin	1 x 40-Pin	1 x 40-Pin	2x IIC; 7x IO 3.3V; 2x UART; 1x DEBUG; 1x POWER; 1x RESET; 1x RECOVERY	4x DI,4x DO, 3x GND_DI, 2x GND_DO, 1x GND_ISO 1x RS232/RS422/RS485 1x TPM 2.0 connector
RTC	Battery not included	1 x RTC socket(rechargeable 3V Lithium Battery Connector)	1 x RTC socket(support rechargeable battery)	1x 3.0V RTC	1x RTC socket (CR1220 included) 1x RTC 2-pin
Power supply	12V/5A power cord only	9-20V DC, 7A	12(7A) - 36V(3A) DC	9-20V(MAX 60W) DC	DC 12V-36V Terminal block 2 pin
Operating Temperature	-10°C~60°C	-25°C~65°C	-25°C~75°C	-25°C to~65°C	-20°C~60°C

reComputer Series for NVIDIA Jetson

Hand-size Edge AI Device Built with NVIDIA

Advanced AI Embedded Systems
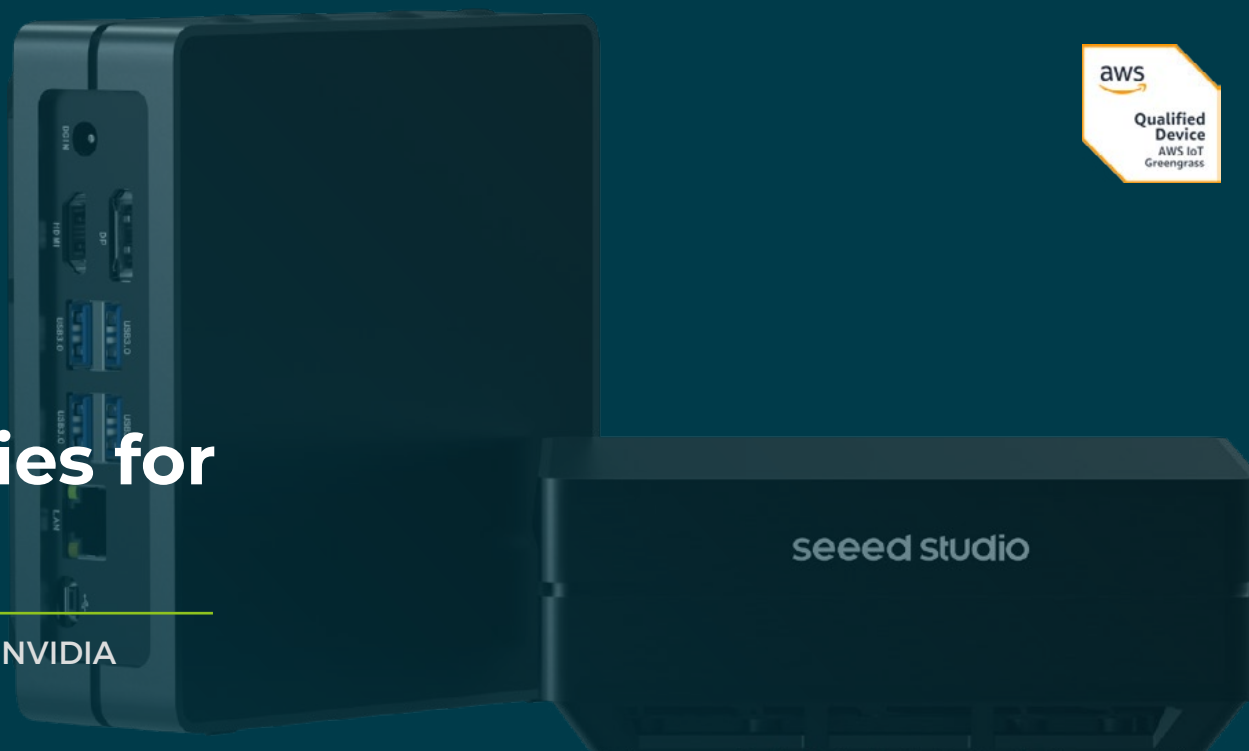
Same Dimension Carrier Board as Official Dev Kit

Jetson Nano/Xavier NX/Orin NX/Orin Nano

Pre-installed Jetpack   Production module

Module Embedded

- Jetson Nano
- Jetson Xavier NX 8GB/16GB
- Jetson Orin NX 8GB/16GB
- Jetson Orin Nano 4GB/8GB

Introduction

reComputer series for Jetson are compact edge computers built with NVIDIA advanced AI embedded systems. With rich extension modules, industrial peripherals, and thermal management, reComputer for Jetson is ready to help users accelerate and scale the next-gen AI product by deploying popular DNN models and ML frameworks to the edge and inferencing with high performance.

Dimensions

130mm*120mm*50mm

Features

- Edge AI box with production module
- Pre-installed Jetpack
- Rich set of I/Os
- Stackable and expandable

Products Overview

Avaliable Version:

reComputer J10 Series

- Jetson Nano
- 4xUSB 3.0
- M.2 key M

SKU: 110061362 / 110061441
Certification: RoHS CE FC IC UK CA

reComputer J20 Series

- Jetson Xavier NX 8GB / 16GB
- 4xUSB 3.1
- M.2 key M, M.2 key E

SKU: 110061381 / 110061402
Certification: RoHS CE FC

reComputer J30 Series

- Jetson Orin Nano 4GB/ 8GB
- 4x USB 3.2 Type-A; 1x USB2.0 Type-C (Recovery)
- M.2 key M, M.2 key E
- 128GB SSD
- WiFi/Bluetooth

SKU: 110110146 / 110110147
Certification: RoHS CE FC IC UK CA

reComputer J40 Series

- Jetson Orin NX 8GB/ 16GB
- 4x USB 3.2 Type-A; 1x USB2.0 Type-C(Recovery)
- M.2 key M, M.2 key E
- 128GB SSD

SKU: 110110144 / 110110145
Certification: RoHS CE FC IC UK CA

reComputer Industrial J20 Series

- Jetson Xavier NX 8GB/ 16GB
- 3x USB3.2
- dual GbE
- PoE
- RS232/422/485
- fanless design

SKU: 110110188 / 110110189
Certification: RoHS CE FC UK CA

reComputer Industrial J30 Series

- Jetson Orin Nano 4GB/ 8GB
- 3x USB3.2
- dual GbE
- PoE
- RS232/422/485
- fanless design

SKU: 110110192 / 110110193
Certification: RoHS CE FC UK CA

reComputer Industrial J40 Series

- Jetson Orin NX 8GB/ 16GB
- 3x USB3.2
- dual GbE
- PoE
- RS232/422/485
- fanless design

SKU: 110110190 / 110110191
Certification: RoHS CE FC UK CA

Discontinued

reComputer J1020

- Jetson Nano
- 4xUSB 3.0
- M.2 key M

SKU: 110061361
Certification: RoHS CE FC

reComputer J2011

- Jetson Xavier NX
- 4xUSB 3.0
- M.2 key M, M.2 key E

SKU: 110061363
Certification: RoHS CE FC

reComputer J2012

- Jetson Xavier NX 16GB
- 4xUSB 3.0
- M.2 key M, M.2 key E

SKU: 110061401
Certification: RoHS CE FC

Optional accessories:

- 128GB NVMe M.2 PCIe Gen3x4 2280 Internal SSD
- 256GB NVMe M.2 PCIe Gen3x4 2280 Internal SSD
- 512GB NVMe M.2 PCIe Gen3x4 2280 Internal SSD

*Certification is ongoing

reComputer J30 series

Product Name	reComputer J3010/ J3011
Module Embedded	Jetson Orin Nano 4GB/ 8GB
Dimensions	130mm x120mm x 58.5mm
SKU	110110146 / 110110147
Certification	RoHS CE FC KC UKCA REACH

Introduction

reComputer J30 series consist of hand-size edge AI boxes built with Jetson Orin™ Nano 4GB and 8GB modules which deliver up to 20 TOPS and 40 TOPS AI performance and has a rich set of IOs including USB 3.2 ports(4x), HDMI 2.1, M.2 key E for WIFI, M.2 Key M for SSD, RTC, CAN, Raspberry Pi GPIO 40-pin and more. It is also equipped with an aluminum case, cooling fan with a heatsink and a pre-installed JetPack System. As part of the NVIDIA Jetson ecosystem, reComputer J30 series is ready for your next AI application development and deployment.

Features

- Cooling Fan
- M.2 Key E
- M.2 Key M
- Pre-installed JetPack 5.1
- 128GB NVMe SSD
- 1x RJ45 for GbE
- 4x USB3.2
- Wi-Fi/Bluetooth
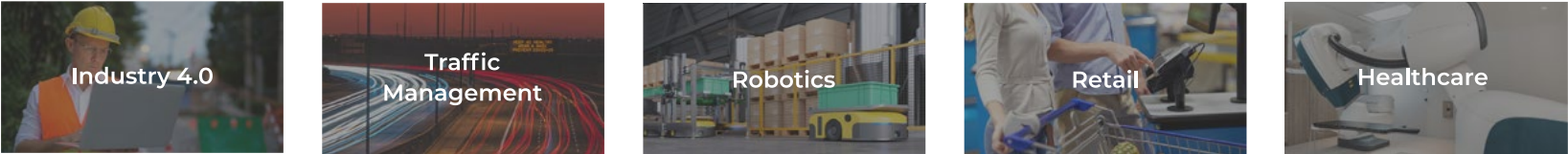
reComputer J3010 Orin Nano 4GB **20TOPS**

reComputer J3011 Orin Nano 8GB **40TOPS**

Price from: **$499**

Applications

Industry 4.0

Traffic Management

Robotics

Retail

Healthcare

reComputer J40 series

Product Name	reComputer J4011/ J4012
Module Embedded	Jetson Orin NX 8GB/ 16GB
Dimensions	130mm x120mm x 58.5mm
SKU	110110144 / 110110145
Certification	RoHS CE FC KC UKCA REACH

Introduction

reComputer J40 series consist of hand-size edge AI boxes built with Jetson Orin™ NX 8GB and 16GB modules which deliver up to 70 TOPS and 100 TOPS AI performance and has a rich set of IOs including USB 3.2 ports(4x), HDMI 2.1, M.2 key E for Wi-Fi, M.2 Key M for SSD, RTC, CAN, Raspberry Pi GPIO 40-pin and more. It is also equipped with an aluminum case, a cooling fan with a heatsink, and a pre-installed JetPack System. As part of the NVIDIA Jetson ecosystem, reComputer J40 series is ready for your next AI application development and deployment.

Features

- Cooling Fan
- M.2 Key E
- M.2 Key M
- Pre-installed JetPack 5.1
- 128GB NVMe SSD
- 1x RJ45 for GbE
- 4x USB3.2
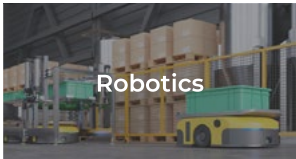
reComputer J4011 Orin NX 8GB **70TOPS**

reComputer J4012 Orin NX 16GB **100TOPS**

Price from: **$699**

Applications

Industry 4.0

Traffic Management

Robotics

Retail

reComputer Industrial Series

Product Name	reComputer Industrial J20 / J30 / J40
Dimensions	170mm x 100mm
Module Compatibility	- Jetson Xavier NX - Jetson Orin NX - Jetson Orin Nano
SKU	110110188 / 110110189 / 110110192 / 110110193 / 110110190 / 110110191
Certification	RoHS CE FC
Introduction	reComputer Industrial series are the edge AI computers based on NVIDIA Jetson modules. It is suitable for the application deployment of edge AI inferencing and processing in complex field environment. Support Nvidia Jetson Xavier NX, Nano, Orin NX, Orin Nano versions.

Features

- Pre-installed Jetpack 5.1
- Fanless Design
- 3x USB3.2
- PoE
- RS232/422/485
- 1xCAN
- NVMe M.2
- Dual GbE
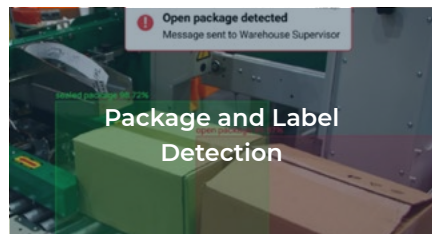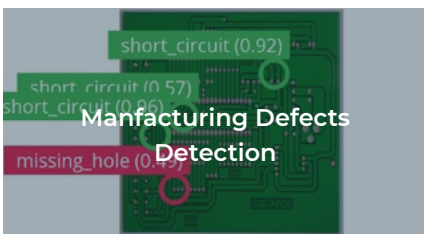
Applications

Package and Label Detection

alwaysAI

Manfacturing Defects Detection

EDGE IMPULSE

J20 Xavier NX
21TOPS

J30 Orin Nano
40TOPS

J40 Orin NX
100TOPS

Price from: **$999**

reComputer Mini Jetson Series

NEW

Product Name	reComputer Mini J30 / J40
Dimensions	63mm x 95mm x 41mm (Without Expansion Board) 63mm x 95mm x 66.7mm (With Expansion Board)
Module Embedded	- Jetson Orin Nano - Jetson Orin NX
Introduction	reComputer Mini is a tiny AI computer powered by NVIDIA Jetson Orin Nano/Orin NX module,delivering up to 100 TOPS AI performance. It's equipped with PCIe port at the bottom to provide rich expansion capabilities, which also can be customized flexibly. The whole systen is designed for embedding into autonomous machines such as drones, patrol robots, delivering robots, etc.

Features

- Dual-channel CAN
- Multi-channel Ethernet
- GMSL Expansion
- 4x USB ports(up to 8 with expansion)
- 1x DP
- M.2 KEY M & KEY E
- 9-60V DC Power Input

Applications

Robot Arm Control

Robot Vehicle Navigation & Mapping
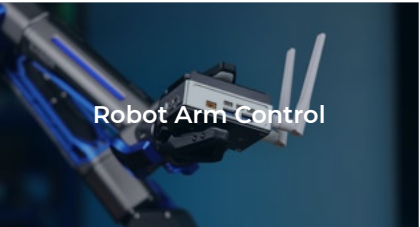
J30 Orin Nano
40TOPS

J40 Orin NX
100TOPS

Release Date: **2024.12**

reServer for NVIDIA Jetson

Inference center for the edge

- (Local Intelligent Video Analytics)
- (Jetson Xavier NX/ Orin NX/ Orin Nano)
- (Pre-installed Jetpack) (5 GbE)
- (2.5 inches 256GB SSD) (PoE)

reServer Jetson

- **Compact design:** Edge AI server with an overall dimension of 132mm*124mm*233mm.

- **Powerful AI module:** NVIDIA® Jetson Xavier™ NX 16GB.

- **Fast network access:** 2.5GbE port, 1GbE port x1.

- **Hybrid connectivity:** Support 5G, 4G, LoRaWAN (modules not included).

- **Rich peripherals:** HDMI 2.0 x1, DP1.4 x1,USB3.1 GEN2 (up to 10Gbit) x2.

- **Expandable storage:** Dual SATA III data connectors for 3.5"/2.5" SATA hard disk drives.

- **Work as stable intelligent NVR system: pre-installed 2.5 inches 256GB SSD *1 and Jetpack, support entire Jetson software.**

Certification*

reServer J2032
- Xavier NX 16GB Module
- Support 2 x 2.5''/3.5" SATA (HDD/SSD), up to SATA3

SKU: 110061403

- reServer for Orin NX(In development)
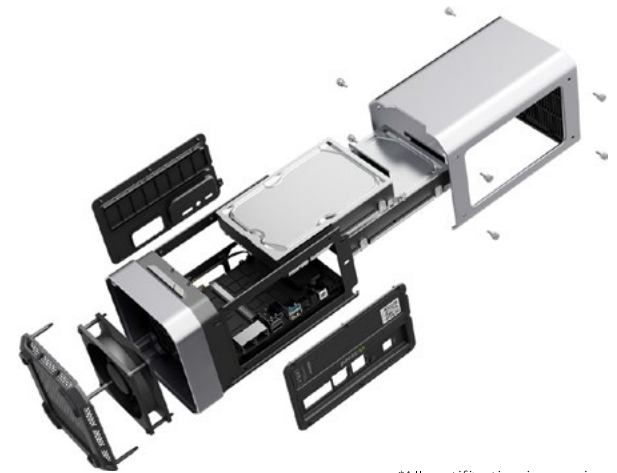
*All certification is ongoing

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reServer J30 series

Local inference center for video intelligences

Product Name	reServer Industrial J3010/J3011
Module Embedded	Jetson Orin Nano 4GB/ 8GB
Dimensions	194.33mm x 187mm x 95.5mm
SKU	114110250 / 114110249
Certification	RoHS ✓ C€ FC ⓚ UKCA
Introduction	reServer Industrial J30 series bring AI-enabled NVR to the edge and features NVIDIA Jetson Orin™ Nano for up to 40 TOPS AI performance, has a fanless design, expandable storage, versatile mounting options, and allows multiple streaming deployment for more harsh environments and heavier loads. Upgrade legacy cameras effortlessly with the reServer, which can also perform on-site video analytics tasks, reducing the need for constant human monitoring. With two 2.5-inch hard drive bays, the reServer Industrial provides ample storage capacity, ensuring you have the space needed for expanding data requirements.

Features

- 5 RJ45 GbE
- 4 PoE Video Input
- 2 Drive bays for 2.5" HDD/SSD
- 1 RS232/RS422/RS485
- 4 DI/DO
- 1 CAN

Applications

AI NVR

Traffic Management

Industry 4.0
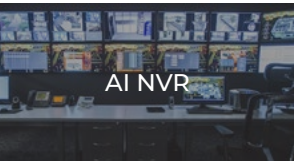
reServer Industrial J3010 Orin Nano 4GB **20TOPS**

reServer Industrial J3011 Orin Nano 8GB **40TOPS**

Price from: **$899**

reServer J40 series

Local inference center for video intelligences

Product Name	reServer Industrial J4011/J4012
Module Embedded	Jetson Orin NX 8GB/ 16GB
Dimensions	194.33mm x 187mm x 95.5mm
SKU	114110248 / 114110247
Certification	RoHS ✓ CE FC K UK CA

Introduction

reServer Industrial J40 series bring AI-enabled NVR to the edge and features NVIDIA Jetson Orin™ NX for up to 100 TOPS AI performance, has a fanless design, expandable storage, versatile mounting options, and allows multiple streaming deployment for more harsh environments and heavier loads. Upgrade legacy cameras effortlessly with the reServer, which can also perform on-site video analytics tasks, reducing the need for constant human monitoring. With two 2.5-inch hard drive bays, the reServer Industrial provides ample storage capacity, ensuring you have the space needed for expanding data requirements.

Features

- 5 RJ45 GbE
- 4 PoE Video Input
- 2 Drive bays for 2.5" HDD/SSD
- 1 RS232/RS422/RS485
- 4 DI/DO
- 1 CAN

Applications

AI NVR	Traffic Management	Industry 4.0
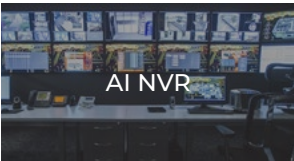
reServer Industrial J4011 Orin Nano 8GB **70TOPS**

reServer Industrial J4012 Orin Nano 16GB **100TOPS**

Price from: **$1099**

Jetson Nano full system comparison

Production Module	Jetson Nano		
Product Name	reComputer J1010	reComputer J1020 v2	NVIDIA® Jetson Nano Developer Kit-B01
SKU	110061362	110061441	102110417
AI Performance	472 GFLOPS		
GPU	NVIDIA Maxwel™ architecture with 128 NVIDIA CUDA® cores		
CPU	NVIDIA Quad-core Arm® Cortex®-A57 MPCore processor		
Memory	4 GB 64-bit LPDDR4, 1600MHz 25.6 GB/s		
Storage	16 GB eMMC 5.1	16 GB eMMC 5.1 1*M.2 Key M connector	microSD slot
Video Encode	1*4K30 | 2*1080p60 | 4*1080p30 | 4* 720p60 | 9* 720p30 (H.265/H.264)		1*4K30 | 4*1080p30 | 9*720p30 (H.264/H.265)
Video Decode	1*4K60 | 2*4K30 | 4*1080p60 | 8*1080p30 | 9*720p60 (H.265/H.264)		1*4K60 | 2*4K30 | 8*1080p30 | 18*720p30 (H.264/H.265)
Networking	1*RJ45 Gigabit Ethernet Connector (10/00/1000)		
USB	1*USB 3.0 Type A 2*USB 2.0 Type A 1*USB Type-C for device mode 1*USB Type-C for 5V power input	4*USB 3.0 Type-A 1*USB Type-C for device mode	4*USB 3.0 Type-A 1*USB 2.0 Micro-B for device mode
CSI Camera	2*CSI camera connectors (15 pos, 1mm pitch, MIPI CSI-2)		
Display	1*HDMI 2.0 Type A	1*HDMI 2.0 Type A 1*DP	1*HDMI 2.0 Type A 1*DP
Fan	1*Fan Connector(5V PWM)		
M.2 Key E	1*M.2 Key E connector to support WiFi/BT	1*M.2 Key E (disabled)	1*M.2 Key E connector to support WiFi/BT
Multifunctional header	1*40-Pin header (GPIO, I2C, I2S, SPI, UART)		
Power Adapter	USB Type-C 5V/3A	DC Barrel Jack 12V/2A	DC Barrel Jack 5V/4A Micro-USB 5V/2A
Power	5W | 10W		
Dimensions	130mmx120mmx58.5mm (with case)	130mmx120mmx58.5mm(with case)	100mmx80mmx29mm

Jetson Xavier NX full system comparison

Production Module	Jetson Xavier NX				
Product Name	reComputer J2021	reComputer J2022	reComputer Industrial J2011	reComputer Industrial J2012	reServer J2032
SKU	110061381	110061402	110110188	110110189	110061403
AI Performance	21 TOPS				
GPU	384-core NVIDIA Volta™ GPU with 48 Tensor Cores				
CPU	6-core NVIDIA Carmel ARM® v8.2 64-bit CPU, 6MB L2 + 4MB L3				
Memory	8 GB 128-bit LPDDR4 x 59.7GB/s	16 GB 128-bit LPDDR4x 59.7GB/s	8GB 128-bit LPDDR4 x 59.7GB/s	16GB 128-bit LPDDR4 x 59.7GB/s	16 GB 128-bit LPDDR4x 59.7GB/s
Storage	16 GB eMMC 5.1 1*M.2 Key M connector		16GB eMMC 5.1, M.2 Key M PCIe Gen4.0 SSD (M.2 NVMe 2280 SSD 128G included)		16 GB eMMC 5.1 256GB SATA III SSD 2* SATA III data connectors 2* SATA III power connectors
Video Encode	2*4K60 | 4*4K30 | 10*1080p60 | 22*1080p30 (H.265); 2*4K60 | 4*4K30 | 10*1080p60 | 20*108p30 (H.264)				
Video Decode	2*8K30 | 6*4K60 | 12*4K30 | 22*1080p60 | 44*1080p30 (H.265); 2*4K60 | 6*4K30 | 10*1080p60 | 22*1080p30 (H.264)				
Networking	1*RJ45 Gigabit Ethernet Connector (10/100/1000)		1* LAN1 RJ45 GbE PoE(PSE 802.3 af 15 W) 1* LAN2 RJ45 GbE (10/100/1000Mbps) Optional WiFi/Bluetooth module support		1*RJ45 GbE; 1*RJ45 2.5GbE 1*M.2 Key B connector to support 5G/4G 1*Mini PCIe connector to support LoRa/Series wireless; 1*Sim card slot
USB	4*USB 3.1 Type A Connector; 1*USB Type-C for device mode		3* USB3.2 Gen1, 1* USB2.0 Type C(Device mode), 1* USB2.0 Type C For Debug UART & RP2040		2*USB 3.1 Gen 2 Type A connector 1*USB Type-C for device mode 1*USB Type-C for RP2040 Coprocessor
CSI Camera	2*CSI camera connectors (15 pos, 1mm pitch, MIPI CSI-2)		2*CSI (2-lane 15pin)		-
Display	1*HDMI 2.0 Type A; 1*DP		1*HDMI 2.0 Type A		1*HDMI 2.0 Type A; 1*DP1.4
Fan	1*Fan (5V PWM)		Fanless, passive heatsink; 1*Fan connectors(5V PWM)		1*Jetson Xavier NX Fan (5V PWM) 1* Main Fan (12V)
M.2	1*M.2 Key E connector to support WiFi/BT		M.2 Key B support 4G/5G (Module optional)		-
Mini PCIe	-		1* Mini PCIe for 4G/LoRa		-
Multifunctional header/IO	1*40-Pin header (GPIO, I2C, I2S, SPI, UART)		DI/DO/CAN/RS232, RS422 and RS485/TPM 2.0 header		-
Power Adapter	DC Barrel Jack 12V/5A (5.5/2.1mm)		19V Power Adapter(without power cord)		DC Barrel Jack 12V @5A
Dimensions	130mmx120mmx58.5mm (with case)		159mm x 155mm x 57mm		132mmx124mmx233mm (with case)

Jetson AGX Xavier full system comparison

Production Module	Jetson AGX Xavier	
Product Name	Jetson AGX Xavier H01 Kit	NVIDIA® Jetson AGX Xavier Developer Kit
SKU	110991666	102110406
AI Performance	32TOPS	
GPU	NVIDIA Volta™ architecture 512 NVIDIA CUDA® and 64 Tensor cores	
CPU	8-core NVIDIA Carmel Arm®v8.2 64-bit CPU 8MB L2 + 4MB L3	
Memory	32 GB 256-bit LPDDR4x 136.5GB/s	
Storage	32 GB eMMC 5.1 SD/UFS and microSD card slot; 1*M.2 Key M connector	32 GB eMMC 5.1; microSD card slot eSATA port; 1*M.2 Key M connector
Video Encode	4*4K60 I 8*4K30 I 16*1080p60 I 32* 1080p30 (H.265) 30*1080p30 (H.264)	2*4K60 I HEVC / (2x) 4K60 I 12-Bit Support
Video Decode	2*8K30 I 6*4K60 I 12*4K30 I 26* 1080p60 I 52*1080p30 (H.265) 30*1080p30 (H.264)	2*4K60 I HEVC / (2x) 4K60 I 12-Bit Support
Networking	1*RJ45 Gigabit Ethernet Connector (10/100/1000)	
USB	2*USB 3.0 Type-A; 1*USB 2.0 Type-C for device mode	1*USB 3.1 Type-A; 1*USB Type-C for device mode/ debug; 1*USB Type-C; 1*USB 2.0 Micro-B for debug
Camera	Camera connector(Compatible with MIPI CSI and GMSL)	
Display	1x HDMI2.0 Type A	
Fan	1*12V Fan	
M.2 Key E	1*M.2 Key E connector	
PCIe	PCIe X16 (x8 PCIe Gen4 / x8 SLVS-EC)	
Multifunctional header	1*40 Pin header	
Power Adapter	DC Jack 19V 4.74A (MAX 90W)	
Power	10W I 15W I 30W	
Dimensions	130mmx105mmx77mm(with case)	105mmx105mmx65mm

Jetson Orin full system comparison

Production Module	Jetson Orin Nano				Jetson Orin NX			
Product Name	reComputer J3010	reComputer J3011	reComputer Industrial J3010	reComputer Industrial J3011	reComputer J4011	reComputer J4012	reComputer Industrial J4011	reComputer Industrial J4012
SKU	110110146	110110147	110110192	110110193	110110144	110110145	110110190	110110191
Module	Jetson Orin Nano 4GB	Jetson Orin Nano 8GB	Jetson Orin Nano 4GB	Jetson Orin Nano 8GB	Jetson Orin NX 8GB	Jetson Orin NX 16GB	Jetson Orin NX 8GB	Jetson Orin NX 16GB
AI Performance	20 TOPS	40 TOPS	20TOPS	40TOPS	70 TOPS	100 TOPS	70TOPS	100TOPS
GPU	512-core NVIDIA Ampere architecture GPU with 16 Tensor Cores	1024-core NVIDIA Ampere architecture GPU with 32 Tensor Cores	512-core NVIDIA Ampere architecture GPU with 16 Tensor Cores	1024-core NVIDIA Ampere architecture GPU with 32 Tensor Cores	NVIDIA Ampere architecture with 1024 NVIDIA® CUDA® cores and 32 tensor cores		1024-core NVIDIA Ampere architecture GPU with 32 Tensor Cores	
CPU	6-core Arm® Cortex®-A78AE v8.2 64-bit CPU 1.5MB L2 + 4MB L3; 8-core Arm® Cortex®-A78AE v8.2 64-bit CPU 2MB L2 + 4MB L3		6-core Arm® Cortex®-A78AE v8.2 64-bit CPU1.5MB L2 + 4MB L3		6-core Arm® Cortex®-A78AE v8.2 64-bit CPU 1.5MB L2 + 4MB L3	8-core Arm® Cortex®-A78AE v8.2 64-bit CPU 2MB L2 + 4MB L3	6-core Arm® Cortex®-A78AE v8.2 64-bit CPU1.5MB L2 + 4MB L3	8-core Arm® Cortex®-A78AE v8.2 64-bit CPU2MB L2 + 4MB L3
Memory	4GB 64-bit LPDDR5 34 GB/s	8GB 128-bit LPDDR5 68 GB/s	4GB 64-bit LPDDR5 34 GB/s	8GB 128-bit LPDDR5 68 GB/s	8GB 128-bit LPDDR5 102.4 GB/s	16GB 128-bit LPDDR5 102.4 GB/s	8GB 128-bit LPDDR5 102.4 GB/s	16GB 128-bit LPDDR5 102.4 GB/s
Storage	1*M.2 Key M (128GB NVMe SSD included)		M.2 Key M PCIe Gen4.0 SSD (M.2 NVMe 2280 SSD 128G included)		1*M.2 Key M (128GB NVMe SSD included)		M.2 Key M PCIe Gen4.0 SSD (M.2 NVMe 2280 SSD 128G included)	
Video Encode	1080p30 supported by 1-2 CPU cores		1080p30 supported by 1-2 CPU cores		1*4K60 | 3*4K30 | 6*1080p60 | 12*1080p30 (H.265) H.264, H.265, AV1		1*4K60 (H.265) | 3*4K30 (H.265) | 6*1080p60 (H.265) | 12*1080p30 (H.265)	
Video Decode	1x 4K60 | 2x 4K30 | 5x 1080p60 | 11x 1080p30 (H.265)		1*4K60 (H.265) | 2*4K30 (H.265) | 5*1080p60 (H.265) | 11*1080p30 (H.265)		1*8K30 | 2*4K60 | 4*4K30 | 9*1080p60 | 18*1080p30 (H.265) H.264, H.265, VP9, AV1		1*8K30 (H.265) | 2*4K60 (H.265) | 4*4K30 (H.265) | 9*1080p60 (H.265) | 18*1080p30 (H.265)	
Networking	1*RJ45 Gigabit Ethernet Connector (10/100/1000)		1* LAN1 RJ45 GbE PoE(PSE 802.3 af 15 W) 1* LAN2 RJ45 GbE (10/100/1000Mbps)Optional WiFi/Bluetooth module support		1*RJ45 Gigabit Ethernet Connector (10/100/1000)		1* LAN1 RJ45 GbE PoE(PSE 802.3 af 15 W) 1* LAN2 RJ45 GbE (10/100/1000Mbps)Optional WiFi/Bluetooth module support	
USB	4*USB 3.2 Type-A 1*USB Type C for device mode		3* USB3.2 Gen1, 1* USB2.0 Type C(Device mode), 1* USB2.0 Type C For Debug UART & RP2040		4*USB 3.2 Type-A 1*USB Type C for device mode		3* USB3.2 Gen1, 1* USB2.0 Type C(Device mode), 1* USB2.0 Type C For Debug UART & RP2040	
Camera	2*CSI Cameras (15 pos, 1mm pitch, MIPI CSI-2)		2* CSI (2-lane 15pin)		2*CSI Cameras (15 pos, 1mm pitch, MIPI CSI-2)		2* CSI (2-lane 15pin)	
Display	1*HDMI		1*HDMI 2.0 Type A		1*HDMI		1*HDMI 2.0 Type A	
Fan	1* Fan(5V PWM) (Fan included)		Fanless, passive heatsink		1* Fan(5V PWM) (Fan included)		Fanless, passive heatsink	
M.2	1*M.2 Key E (WiFi/Bluetooth included)		M.2 Key B support 4G/5G (Module optional)		1*M.2 Key E		M.2 Key B support 4G/5G (Module optional)	
Mini PCIe	/		1* Mini PCIe for 4G/LoRa		/		1* Mini PCIe for 4G/LoRa	
Multifunctional header / IO	1*40-Pin header		DI/DO/CAN/RS232, RS422 and RS485/TPM 2.0 header		1*40-Pin header		DI/DO/CAN/RS232, RS422 and RS485/TPM 2.0 header	
Power	7W - 10W	7W - 15W	7W- 10W	7W- 15W	10W - 20W	10W - 25W	10W - 20W	10W - 25W
Power Adapter	DC Jack 12V 5A		19V Power Adapter(without power cord)		DC Jack 12V 5A		19V Power Adapter(without power cord)	
Dimensions	130mmx120mmx58.5mm (with case)		159mm x 155mm x 57mm		130mmx120mmx58.5mm (with case)		159mm x 155mm x 57mm	

Jetson Orin full system comparison

Production Module	Jetson Orin Nano		Jetson Orin NX	
Product Name	reServer Industrial J3010	reServer Industrial J3011	reServer Industrial J4011	reServer Industrial J4012
SKU	114110250	114110249	114110248	114110247
Module	Jetson Orin Nano 4GB	Jetson Orin Nano 8GB	Jetson Orin NX 8GB	Jetson Orin NX 16GB
AI Performance	20 TOPS	40 TOPS	70 TOPS	100 TOPS
GPU	512-core NVIDIA Ampere architecture GPU with 16 Tensor Cores	1024-core NVIDIA Ampere architecture GPU with 32 Tensor Cores		
CPU	6-core Arm® Cortex®-A78AE v8.2 64-bit CPU			8-core Arm® Cortex®-A78AE v8.2 64-bit CPU 2MB L2 + 4MB L3
Memory	4GB 64-bit LPDDR5 34 GB/s	8GB 128-bit LPDDR5 68 GB/s	8GB 128-bit LPDDR5 102.4GB/s	16GB 128-bit LPDDR5 102.4GB/s
Storage	M.2 Key M (2280) PCIe Gen4.0 SSD (M.2 NVMe SSD 128G included)			
Video Encode	1080p30 supported by 1-2 CPU cores		Standards supported: H.265 (HEVC), H.264, AV1 1*4K60 (H.265) | 3*4K30 (H.265) | 6*1080p60 (H.265) | 12*1080p30 (H.265)	
Video Decode	Standards supported: H.265 (HEVC), H.264, VP9, AV1 1*4K60 (H.265) | 2*4K30 (H.265) | 5*1080p60 (H.265) | 11*1080p30 (H.265)		Standards supported: H.265 (HEVC), H.264, VP9, AV1 1*8K30 (H.265) | 2*4K60 (H.265) | 4*4K30 (H.265) | 9*1080p60 (H.265) | 18*1080p30 (H.265)	
Networking	1* LAN0 RJ45 GbE (10/100/1000Mbps); 4* LAN RJ45 GbE PoE(PSE 802.3 af 15 W, 10/100/1000Mbps)			
USB	4* USB3.2, 1* USB2.0 Type C(Device mode), 1* USB2.0 Type C For Debug UART & RP2040			
Display	1*HDMI 1.4 Type A 3840x2160 at 30 Hz		1*HDMI 2.1 Type A 7680x4320 at 30 Hz	
Fan	Fanless, passive heatsink; 1*Fan connectors(5V PWM)			
M.2 Key B	M.2 Key B (3042/3052) support 4G/5G (Module optional)			
Mini PCIe	Mini PCIe for LoRaWAN®/4G/Series Wireless (Module optional)			
Multifunctional header / IO	2 Drive Bays to support 2.5" SATA HDD/SSD(SATA III 6.0Gbps); 1* Nano SIM card slot 4*DI,4*DO,3*GND_DI,2*GND_DO,1*GND_ISO,1*CAN; 1* DB9 (RS232/RS422/RS485)			
Power Adapter	19V Power Adapter(Without power cord)			
Dimensions	194.33mm x 187mm x 95.5mm			

Powerful Edge AI selection guide

AI Performance (TOPS)

Generative AI

Robotics

Vision AI

Entry-Level

| 275 |
| 100 |
| 50 |

reComputer J1010
NVIDIA Jetson Nano 4GB

reServer J2032
NVIDIA Jetson Xavier NX 16GB

reComputer J3011
NVIDIA Jetson Orin Nano 8GB

reComputer J4011
NVIDIA Jetson Orin NX 8GB

reServer Industrail J4012
NVIDIA Jetson Orin NX 16GB

reComputer Mini Jetson Orin Series
Coming soon

reServer Industrial J501 Carrier Board
NEW
NVIDIA Jetson AGX Orin 64GB

NVIDIA Jetson Compatible Accessories

Heatsink, Case, Camera, and RPLiDAR
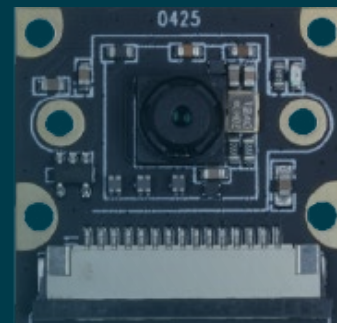
Accessory – Camera

Product Name	NVIDIA Jetson module compatible camera

Introduction	By using one of these cameras, combined with a Jetson Nano/ Xavier NX Development Kits, you can simply realize machine vision projects. Also, you can experience better quality video capture from these cameras and build more demanding projects. Some of them also has two IR LEDs to enable night vision capabilities.

High Quality Camera for Raspberry Pi CM3/ CM3 Lite/ CM3+/ CM3+ Lite & Jetson Nano with 12.3MP IMX477 Sensor
SKU 114992442

IMX219-200 8MP Camera with 200° FOV
SKU 114992265

IMX219-77IR 8MP IR Night Vision Camera with 77° FOV
SKU 114992261

IMX219-77 8MP Camera with 77° FOV
SKU 114992260

IMX219-160 8MP Camera with 160° FOV
SKU 114992263

IMX219-130 8MP Camera with 130° FOV
SKU 114992262

IMX219-83 8MP 3D Stereo Camera Module
SKU 114992270

IMX219-160IR 8MP Camera with 160° FOV
SKU 114992264

Accessory – Camera

Product Name

e-con Systems cameras compatible with Seeed Jetson carrier boards

Introduction

e-con Systems is an elite partner of NVIDIA and has been working with multiple NVIDIA solution providers to offer our customers complete vision solutions. In this pursuit, we have joined hands with Seeed Studio - an IoT hardware enabler that aims to be the most integrated platform for global creative technologists to turn ideas into products.

Some of the key features of e-con's cameras that can be evaluated with Seeed's carrier boards include high resolution (up to 13MP), global shutter & rolling shutter, low noise, excellent low light performance, and superior NIR sensitivity. By using the combination of e-con cameras and Seeed's carrier boards, product developers can reduce prototyping time and time to market by up to 40%.

e-CAM131_CUNX -
4K Camera for NVIDIA® Jetson Xavier™ NX/NVIDIA® Jetson Nano™

e-CAM81_CUNX -
4K HDR Camera for NVIDIA® Jetson Xavier™ NX / TX2 NX / Nano

e-CAM80_CUNX -
Sony 4K Camera for NVIDIA® Jetson Xavier™ NX/Nano

e-CAM50_CUNX -
5.0 MP NVIDIA® Jetson Xavier™ NX/NVIDIA® Jetson Nano™ Camera

e-CAM24_CUNX -
Color Global shutter Camera for,NVIDIA® Jetson Xavier™ NX / TX2 NX / Nano

Learn more at e-con Systems: www.e-consystems.com/seedstudio-cameras.aso

Accessory - RPLiDAR

Product Name	RPLiDAR - Laser Ranging Radar

Introduction	A low-cost two-dimensional laser ranging radar (LIDAR) can perform a 360-degree omni-directional laser ranging scan within certain radius of a two-dimensional plane, and thus can generate a ßat point cloud map of the space in which it is located. These cloud map information can be used in practical applications such as mapping, robot positioning and navigation, and object/environment modeling.

RPLiDARA 1M8-R6 360 Degree LaserS canner Kit- 12M Range

SKU 114992561

Slamtec Mapper M1M1 ToF LaserS canner Kit- 20MR ange

SKU 114991984

RPLiDARA 2M8 360 Degree LaserS canner Kit- 12M Range

SKU 110991066

RPLiDARA 2M6 360 Degree LaserS canner Kit- 18M Range

SKU 110991067

RPLiDARA 3M13 60 Degree LaserS canner Kit- 25M Range

SKU 110991068

RPLiDARS 2L ow Cost 360D egreeL aser Range Scanner- 30M Range

SKU 114992738

RPLiDARS 1 Portable ToFL aser Scanner Kit- 40MR ange

SKU 114090021

Slamtec Mapper M2M1 Pro- LiDARM apping Sensor(Industrial Grade)- 40MR ange

SKU 101990641

RPLiDAR A2M12 360 Degree Laser Scanner Kit - 12M Range

SKU 114110128

Accessory – LiDAR & Camera

Product Name	LiDAR & Camera

Introduction	These sensors adopt ToF method to measure distance. Some of them when combined with a modulated light source, are capable of measuring distance and reflectivity with VGA resolution.

TFmini S LiDAR module - Short- Range ToF LIDAR Range Finder

SKU 101990620

DepthEye S2 -H67°x V51° VGA Camera with Sony IMX556PLR DepthSense

SKU 101990866

DepthEye Wide - H100° x V75° VGA ToF Camera with Sony IMX556PLR DepthSense™

SKU 114992563

DepthEye Turbo - VGA ToF with Sony IMX556PLR DepthSense

SKU 114991967

OakSense H60Q-QVGA resolution ToF camera

SKU 114992757

OakSense H67V-VGA resolution TOF camera supported C++ and Python

SKU 114992753

Accessory - Heatsink

Product Name
NVIDIA Jetson module compatible aluminum heatsink

Introduction

If you're designing any kind of computing application with the NVIDIA Jetson modules, you seriously can't do without a heatsink if you want to avoid overheating problems.

Seeed's aluminum heatsinks for NVIDIA Jetson Modules are an essential piece of equipment for keeping modules cool, improving both computing performance and reliability under heavy workloads to realize their true potential. Some of them consist of a fan to ensure cooling effect.

Aluminum Heatsink for Jetson Nano Module

SKU 114992686

Jetson Nano Module Active Heat Sink

SKU 101110061

Aluminum Heatsink with Fan for Jetson Xavier NX Module

SKU 114992687

Aluminum Heatsink with bigger Fan for Jetson Xavier NX Module with Long Cable

SKU 114992746

Aluminum Heatsink with Fan for Jetson TX2 NX Module

SKU 114992731

Aluminum Heatsink with Fan for Jetson Orin NX/Xavier NX Module

SKU 110991904

Accessory - Case

Product Name	Case for NVIDIA Jetson modules

Introduction	Case/enclosure can provide ultimate protection to your Jetson modules.
	For those listed on the LEFT, they all have an internal cooling fan to ensure better heat dissipation when your Jetson modules are working on multiple demanding tasks.
	For those listed on the RIGHT,they are compatible with all popular SBCs (including ODYSSEY - X86J4105, Raspberry Pi, BeagleBone and Jetson Nano/Xavier NX), and they are with a removable acrylic cover on the top and with a stackable structure to extend endless possibilities.

Case with Fan

Jetson Nano Metal Case/Enclosure - with Cooling Fan and Camera Holder

SKU 110991384

Jetson Nano Metal Armour - Case with PWM Adjustment Fan

SKU 110061132

Aluminum Case for NVIDIA Jetson Nano

SKU 114992052

Case without Fan

re_computer case

SKU 114992152

re_computer case silver version

SKU 110991405

re_computer case(Silver Metal Edition)

SKU 110991484

Customization services for NVIDIA Jetson Series

For Jetson hardware specifically, Seeed Studio offers customization services based on our existing carrier boards including J101, J202, and J401 services ranging from interfaces modification to certification.

In addition, we are open to hearing your new Jetson-based product development idea. If you can't find the off-the -shelf Jetson hardware solution for your needs, Seeed Studio's in-house R&D engineering team with over a decade of experience in SBCs and industrial computing can design for your specific application demands.

Check out our customization services at https://www.seeedstudio.com/odm, and submit a new product inquiry to us at produce@seeed.cc for evaluation.

J101

J101 is a cost-effective, high-performance, interface rich **NVIDIA Jetson Nano** compatible carrier board. It has nearly the same functional design and exact the same size as the carrier board of NVIDIA® Jetson Nano™ 2GB DEVELOPER KIT.

J202

J202 is a high-performance, interface rich **NVIDIA Jetson Nano / Xavier NX/ TX2 NX** compatible carrier board. It has the same functional design and size as the carrier board of NVIDIA® Jetson Xavier™ NX DEVELOPER KIT.

J401

J401 carrier board works with **NVIDIA Jetson Orin NX and Orin Nano**. It brings a rich set of I/Os to extend functionality: 2x CSI, 1x M.2 Key M, 1x M.2 Key E, 4x USB 3.2, 1x USB 2, HDMI, CAN, RTC and 40-pin GPIO.

EdgeAI Ecosystem

Transform Your Business Delivering Real-World AI Together

Integrate your unique AI technique into our current hardwares: Build your next-gen AI product powered by the NVIDIA Jetson module and bring your product concept to the market with Seeed Studio's **Agile Manufacturing 0-∞.**

Work with Amazing Ecosystem

Seeed Studio is an Elite Partner of NVIDIA Partner Network(NPN), by consolidating our best-in-class hardware, over 14 years' expertise, NVIDIA's advanced system, cutting-edge technology from our software partners and the community, we aim at emerging all kinds of AI scenarios in our open-source platform to accelerate industry digital transformation.

We are calling for more ISV and solutions Integrator partners to deliver real-world edge AI solutions together.

- Integrating your unique technology, delivering to global embedded AI developers and enterprises.
- Building next AI products powered by the NVIDIA Jetson module, one-stop bringing your product to the market with Seeed's manufacturing, fulfillment, and distribution.
- Working with Seeed Studio amazing Ecosystem Partners together, unlocking more AI possibilities.

We are working with:

Buy seeed Jetson products from NVIDIA partner and distributors

Edge AI Partner Program

Seeed Edge AI Partner Program is free to apply anytime. We are aiming at becoming the most reliable hardware platform and empowering everyone to achieve their digital transformation goals. Seeed's Edge AI platform provides devices, carrier boards, peripherals, software tools and ML solutions. If you are working on AI products based on NVIDIA Jetson Platform, including Jetson Nano/ Xavier NX/ Orin NX/ Orin Nano. AGX Xavier/ AGX Orin, we are looking for global AI partners to join us as:

- Enterprise AI software partner
- AI solution integrator
- Community co-inventor
- Check out more practical Edge AI Solutions at Seeed case study collection.
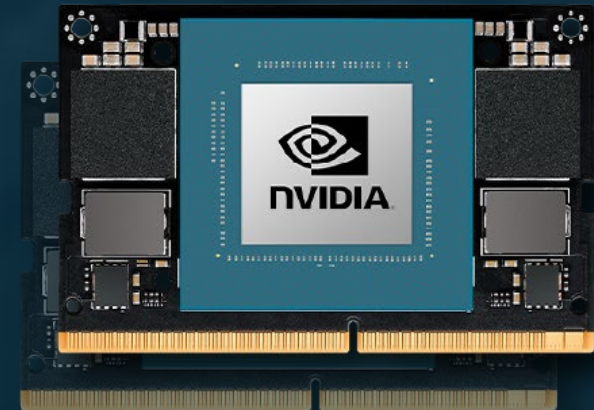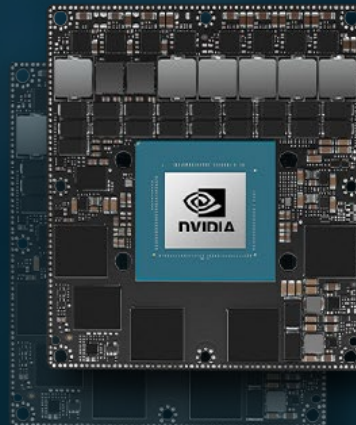
seeed studio

EDGE IMPULSE

Edge Impulse

Edge Impulse is the leading development platform for machine learning on edge devices, free for developers and trusted by enterprises. Edge Impulse made ML development easier, accelerate ML solution development using low-code to advanced integrations with the support from an expert.

Find our partner >>   edgeimpulse.com

Application

Embedded Machine Learning
Computer Vision

Industry

Industry 4.0, Manufacturing, Retail

Industry

All Seeed's NVIDIA compatible carrier boards and devices, Official NVIDIA dev kit

Build ML pipeline for deploying audio, image classification, and object detection applications at the edge

Users of Edge Impulse can leverage the power of the Jetson Nano for their embedded machine learning applications that demand higher performance, alongside the industry's leading embedded ML platform that offers:

- The easiest-to-use embedded machine learning pipeline for deploying audio, image classification, and object detection applications at the edge with zero dependencies on the cloud
- Streamlined acquisition of critical environmental sensor data, previously discarded or only sent to the cloud, for empowering sensor fusion at the edge.
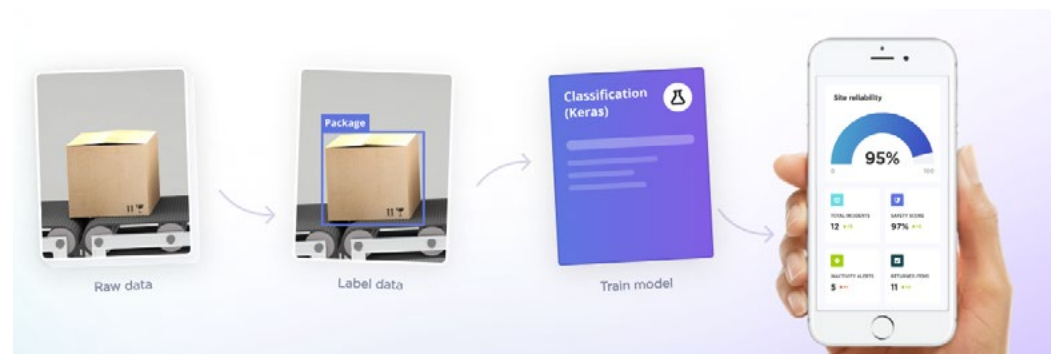
Deploy hard hat detection for enforcing workplace safety

Use Edge Impulse for end to end machine learning workflow: upload dataset, acquire custom data, visualize the data, train the machine learning model and validate the inference results. With Edge Impulse, you can easily deploy an automated real-time detection for hardhat-wearing compliance, along with the alert at the workspace. PPE compliance also includes gloves, masks, goggles, etc.

You can also build custom model training for the full PPE detection pipeline.

Allxon

Allxon is the market's first to provide powerful remote edge AI device management and disaster recovery solutions with Out-Of-Band (OOB) technology. As a partner of NVIDIA Jetson Ecosystem, Allxon delivers highly compatible solutions onto any branded Jetson platform.

Find our partner >> allxon.com

Application

OTA
Device Management

Device Support

All Seeed's NVIDIA compatible carrier boards and devices, Official NVIDIA dev kit

Efficient Remote AI system based on NVIDIA Jetson Platform

Edge AI Transforming Agricultural Landscapes

Farmers installed AI-driven cameras all around the farmstead to record, detect,and monitor livestock health and their lifecycle in real-time. These cameras are connected to and powered by edge devices, enabling the farmer to make informed data-driven decisions, be alerted to, and stay ahead of crisis situations, ultimately leading to the improvement of cattle management and economic growth.

Allxon Out-Of-Band (OOB) technology provides rapid disaster preventive measures. Seeed's Jetson powered edge devices that enable data-driven smart farming are highly safeguarded in an electrical enclosure, forming the nucleuswhere "ALL" data is perpetually collected and processed 24/7, 365 days a year.

It is imperative that the systems work seamlessly and uninterruptedly for a highfunctioning farmstead.

Ultralytics

Ultralytics is on a mission to empower people and companies to unleash the positive potential of AI. They make model development accessible, efficient to train, and easy to deploy.

Find our partner >> ultralytics.com

Application

Object Detection

Device Support

All Seeed's NVIDIA compatible carrier boards and devices, Official NVIDIA dev kit

Turn Images into AI Get Useful Insights in Easy Access

YOLOv8, developed by Ultralytics, is a cutting-edge, state-of-the-art (SOTA) model that builds upon the success of previous YOLO versions and introduces new features and improvements to further boost performance and flexibility. YOLOv8 is designed to be fast, accurate, and easy to use, making it an excellent choice for a wide range of object detection, image segmentation, and image classification tasks.
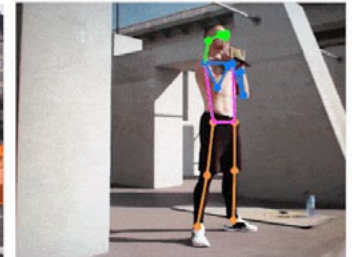
Ultralytics makes model development accessible, efficient to train, and easy to deploy. Start YOLOv8 models easily on Jetson Orin devices!
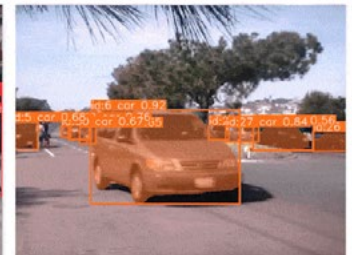
Cogniteam

Cogniteam is a technology start-up, it brings standout software solutions for autonomous robots.
Nimbus by Cogniteam is cloud-based ecosystem for robot fleet configuration, testing, deployment, and operations management. Nimbus makes your ROS journey intuitive using drag and drop tools and a rich set of ready-made AI algorithms that are ROS1/2 compatible.

Find our partner >> cogniteam.com

Seeed Partner with Cogniteam to Bring the Drag and Drop Robotics Development and Deployable Solutions for NVIDIA Jetson Platform

Robotics is a field of integrations, not merely development. You need to choose the correct computing power; you need to choose the right sensors, not develop them. It comes down to software integrations. With Nimbus, Cogniteam's cloud-based solution for robot developers and operations, all the above becomes simpler.

We are glad to partner with Cogniteam, aiming at delivering the easiest ever robot development process, from prototyping to production, including configuration, testing, deployment, and operations management.

Nimbus supports Seeed made Jetson powered platform carrier boards and min PCs, attach sensors such as RPLidar and cameras to build your robotic application from scratch.

You can also seamlessly connect your existing ROS projects to Nimbus. Based on the open-source Robot Operating System (ROS), Nimbus is truly a 'plug and play' solution.

Application

Robotics Development

Device Support

All Seeed's NVIDIA compatible carrier boards and devices, Official NVIDIA dev kit

alwaysAI

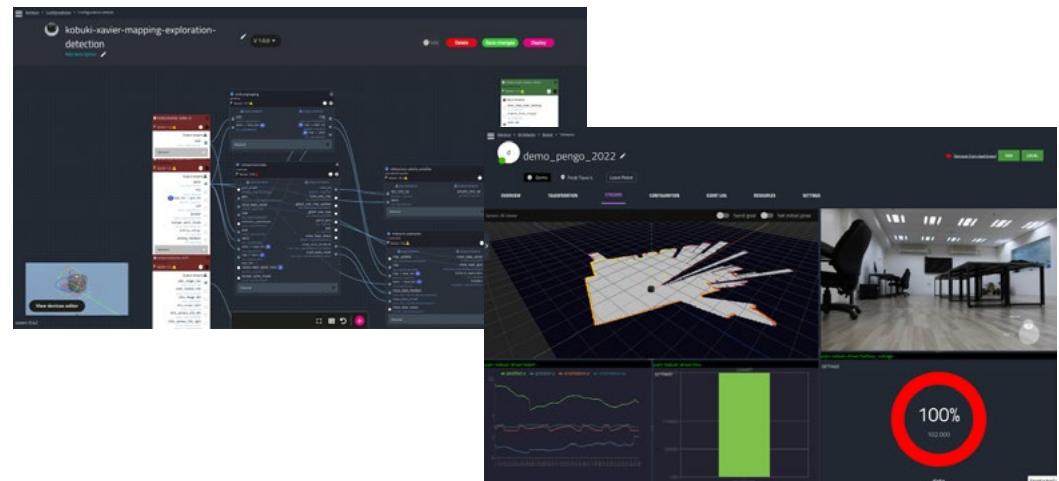alwaysAI is a leading computer vision development platform that provides innovative enterprises real-time data to see into their operations with more depth and clarity than ever before. alwaysAI's enterprise grade computer vision models and applications are best in class, scalable and built to run on the edge or the cloud.

Find our partner >> alwaysAi.co

Industry

Retail, Construction, Manufacturing

Application

Computer Vision

Device Support

All Seeed's NVIDIA compatible carrier boards and devices, Official NVIDIA dev kit

Seeed and alwaysAI Partner to Accelerate Deploying Computer Vision at The Edge

Seeed and alwaysAI began their cooperation with NVIDIA® Jetson™ powered devices. The partnership makes computer vision come alive on the edge - where work and life happen:

Retail

Using data from existing cameras (such as IP or surveillance cameras) retailers are leveraging alwaysAI to get immediate data about back end operations to improve efficiencies and drive more revenue. Retailers are also using alwaysAI to count customers in real-time, track where they go, which products they walk-by and engage with, and monitor wait times at checkouts.

Construction

alwaysAI is deploying applications in construction to help assess real-time progress of construction projects as well as track safety through personal protective equipment monitoring such as hardhats, safety glasses, and reflective vests. General contractors can get real-time visual data to improve operating margins, reduce liability, and manage direct labor and material costs more efficiently.

Transportation

Computer vision in manufacturing provides comprehensive oversight of manufacturing processes to enhance productivity and safety across the entire value-chain, from materials tracking to production and delivery. Computer vision enables manufacturers to automate processes with real-time data tailored to meet their specific needs.

Tryolabs

Expert team of engineers and advisors focused on making an impact with AI-powered solutions.
Machine Learning consulting services: Predictive Analytics, Computer Vision, and Natural Language Processing.

Find our partner >> tryolabs.com

Software

YOLOV5, DeepStream SDK, NVIDIA Metropolis

Industry

Industry 4.0

Application

Machine Learning

Device Support

reComputer J2011/J2022 Powered by NVIDIA Jetson Xavier NX

Detecting Safety Helmets in Realtime

Personal Protective Equipment (PPE) has made its way into mandatory requirements of construction sites due to its importance to workers' safety.

Tryolabs leverages Seeed's reComputer edge devices built with Jetson Xavier NX 8GB module to develop a computer vision analytics solution that tackles a c hallenging task in today's industry 4.0 eld - detecting safety helmets in real-time.

YOLOv5 vastly out performed Faster R-CNN, obtaining better metrics in a much shorter time. In terms of inference time, both models performed similarly, taking around 0.08 seconds for each image on the edge device (12.5 FPS).

By leveraging DeepStream SDK, the inference time was boosted to a staggering 0.012 seconds for each image (82.8FPS) on the same NVIDIA Jetson Xavier NX.

seeed studio

roboflow

Roboflow empowers developers to build their own computer vision applications, no matter their skillset or experience. You can host a trained model with a single click or build your own custom models. Roboflow Annotate detects objects in your images and places bounding boxes around them. If an annotation is misaligned, it's easy to adjust its size and position.

Find our partner >> roboflow.com

Industry

Retail; Traffic Management; Manufacturing

Application

Computer Vision

Device Support

All Seeed's NVIDIA compatible carrier boards and devices, Official NVIDIA dev kit

Train a Working Computer Vision Model with Fewer Images

We work with Roboflow to annotate images, directly import images or videos.

Roboflow help distribute the dataset into "training, validation, and testing", as well as add further processing to these images after labeling them. Furthermore, it can easily export the labeled dataset into YOLOV5 PyTorch format which is what we exactly need for fewer dataset needed!

You can download a number of publically available datasets such as the **COCO dataset, Pascal VOC dataset** and much more. Roboflow Universe is a recommended platform which provides a wide-range of datasets and it has **90,000+ datasets with 66+ million images** available for building computer vision models.
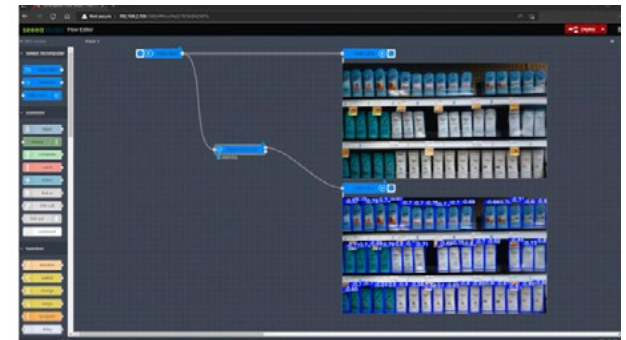
seeed studio

Lumeo

Lumeo is an open and flexible video analytics platform which bridges the latest AI models and techniques with a growing audience attempting to bring intelligence and automation to market. They let customers harness AI with their existing cameras and infrastructure to make sense of video data for alarm monitoring, customer experience, marketing, compliance, physical security, and many more use cases.

Find our partner >>   Lumeo

Industry

Industry 4.0

Application

Video Analytics AI Gateway

Device Support

All Seeed's NVIDIA compatible carrier boards and devices, Official NVIDIA dev kit

Bring No-code Video Analytics Platform to the Market through Vision AI

Seeed and Lumeo collaborate their partnership to deliver ready-to-use video analytics solutions at the edge to customers. Simply plug in the reComputer Industrial Edge device and set up the Lumeo engine browser-based configuration which is pre-installed in the device. The whole pipeline of deploying advanced video analytics has never been easier.

Together with Lumeo, from training, no/low code platform, and scale deployment, we speeds time to market for customers and bridges the gap between developers and real-world AI deployment. There are several ready-to-go applications you can deploy directly in the field. In retail space, you can count the number of people/vehicle.other objectds, gauge dwell time by tracking the customers currently being served in queues, and calculate conversion rates for each sites. For transportation scenario, you can track the traffic flow, capture vehicle's detailed information, and identify the illegal driving behaviors. While specificly in the parking lot, you can detect the vehicle, count numbers coming in and out, detect license plates, and identify the parking spaces' occupancy with parking duration accumulation.

Cochl

Cochl is a technology company based in Silicon Valley, USA and Seoul, Korea, developing products to apply machine listening technology to various industries. Besides applying computer vision technology in facial recognition and object recognition, it can also be deployed for acoustic recognition, allowing the computer to hear through speakers and analyze the events in real-time based on the sounds. For example, after identifying the sound of a gun or glass breaking, we help resolve the issue.

Find our partner >> Cochl.ai

Industry

Security

Application

Machine listening

Device Support

All Seeed's NVIDIA compatible carrier boards and devices, Official NVIDIA dev kit

Machine Listening on the Edge, Delivering Valuable Information from Sound for Safety

Machine listening covers a wider range and recognizes all sounds in the world, allowing you to extract various insights and information from audio data, and apply them to multiple industries, such as smart city, manufacturing, defense business, and smart home, in order to make effective decisions.

That's where we get started with Cochl to bring the sound event detection and speaker identification applications to our customers. With Cochl's 100+ sound model types, you can simply install the machine listening tech on the reComputer edge device with Cochl SDK, and also check the analysis results through the dashboard weither on mobile APP or web-based, achieving around 93% accuracy performance while deploying in the real-world environment.

To distinguish different speakers for recognition and detect anomaly situation, you may choose Jetson AGX Xavier or higher module for better performance. The whole system keeps your privacy and stability at the first as always.The sound recognition can be covered in wide range up to several hundreds meters away. Moreover, microphone doesn't need to send audio data continuously to the cloud as long as it's running at the edge, keeping people's psychological resistance to them as relatively low.

CVEDIA

CVEDIA accelerates the development of autonomous applications. Pushing the boundaries of computer vision, they are committed to solving the clients' most challenging issues with simulation and sensor modelling, big data management, system integration, and neural network training. With the great support of CVEDIA-RT software stack, customers can easily configure and customize the video analytics solutions based on the dozens of pre-installed computer vision applications.

Find our partner >>   cvedia.com

Industry

Smart City

Application

Video Analytics in Public Space

Device Support

All Seeed's NVIDIA compatible carrier boards and devices, Official NVIDIA dev kit

Deploying Ready-to-Use Video Analytics Solutions for Object Detection and Classification in Public Space

Seeed Studio collaborates with CVEDIA on intelligent security solutions running on Seeed's Jetson-based edge AI devices with ready-to-use models for perimeter security, intrusion detection, crowd control, vehicle and people counting, vehicle and people classification, tripwire, zone analytics, etc.
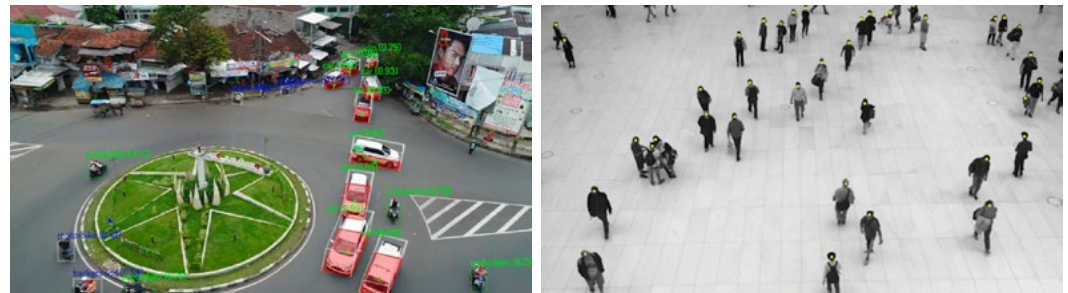
All features are delivered to detect active changes among people crowds or huge traffic flows, in order to identify the potential issues or risks. The system utilizes high-resolution cameras and sensors to provide precise counts of individuals, groups, and vehicles, store data for analysis and comparison, allowing for identification of trends and patterns over time. It's flexible to use since the CVEDIA-RT platform supports various input and output data formats, and even low-code scripting capability to seamlessly debug your own AI model.
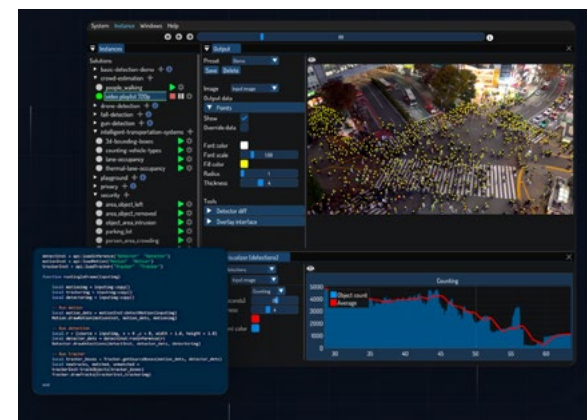
Teknoir

Teknoir was founded in 2019 to reshape the industry's future democratizing artificial intelligence with its MLOps platform not only for data scientists but also for those that aren't data scientists or programmers via an intuitive, no-code dev environment in a hybrid cloud approach that enables inferencing of AI data on lightweight embedded devices at the far edge to drastically improve performance, security, and scalability.

Find our partner >> teknoir.ai

Application

MLOPs Platform
Computer Vision

Device Support

reTerminal powered by Raspberry Pi CM4
reComputer J2011, J2012, J2021

MLOPs Enables Easy Sustainable Recycling at the Edge

"Seeed continues to serve as an instrumental resource for Teknoir with their offering of innovative edge AI hardware solutions. Seeed's devices provide Teknoir with unique opportunities to develop AI solutions for its customers that address a variety of important use cases at the edge." -- Jonathan Klein, Founder & CEO at Teknoir.

Teknoir, offering MLOps platform and AI solution company, has been working with Seeed's reComputer J2011 and reTerminal, with their no-code Dev Studio for industry 4.0 applications such as workers' safety, manufacturing of workforce optimization, and preventative maintenance and smart city of recycling materials detection. Coupled with cameras, LTE and running Teknoir's Orchestration Engine, these edge devices have secure connectivity to the Teknoir Cloud. Teknoir's client-partner is able to use the Dev Studio for pushing their trained machine learning model, as well as managing the fleet of hardware and software.

PRASSEL
INNOVATION MADE IN ITALY
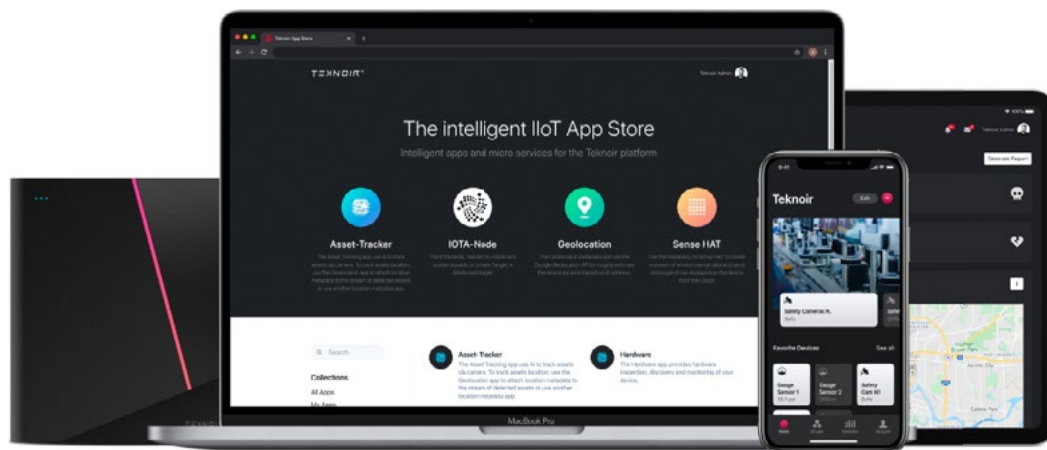
Prassel

Deployed in: Italy

Prassel is an Italian company with decades of experience in developing software solutions for security and safety. They design video analytics solutions, transfer expertise, and support partners and customers, ensuring cost containment and security investment enhancement.

Find whole solution >> Prassel

Industry

Automotive/ Warehouse

Application

Loss Prevention & Security Management

Edge Device Used

reComputer J2021, powered by NVIDIA Jetson Xavier NX

Software Support

Prassel's proprietary software interface

Use Case

AI-Driven Video Analytics for Automotive Dealer Warehouse

Challenge

Deploying an intruder detection system across multiple geographically dispersed sites usually meets these challenges for large organizations: customers want to avoid additional installations to minimize changes to the pre-existing security network, the existing camera system should also be utilized for intrusion detection both in the external perimeter and internal areas across 20 sites, and it's quite important to ensure that the system only triggers analysis of intrusion events caused by people, excluding false alarms caused by wild animals, particularly at night.

Solution

Magicbox integrates reComputer J2021 powered by NVIDIA Jetson Xavier NX module, Prassel's proprietary software, object detection, line crossing, privacy mask, smoke and fire detection algorithms. It also speeds up emergency responses and provides valuable business insights by recognizing specific conditions using email notifications with a snapshot or output over Modbus protocol to connected devices such as sirens, intrusion control units, and alarm systems.

Result

• 90% reduction in intrusion attempts
• Timely alerts to prevent tampering and intrusion attempts
• Easier to identify critical areas for video analytics across 20 sites

seeed studio

BAUTA

Deployed in: **Germany, Austria, Switzerland**

BAUTA is a young German startup, funded by the German Federal Ministry of Economics and the state of Baden-Württemberg. With its Privacy-by-Design Concept, it technically solves the conflict of interest between "innovation vs. data protection" and enables computer vision access to the European Union. Bauta dedicates to promoting effective solutions which give innovation a unique data platform to support young start-ups and companies with sustainably successful smart city concepts, and also help strengthen the local economy by analyzing regular visitor data.

Find whole solution >> Bauta

Industry

Smart City

Application

Visitor Analysis & Pedestrian Count in Privacy

Edge Device Used

reComputer J2021, powered by NVIDIA Jetson Xavier NX

Sustainable Data for Business Environment Perception in Smart City

Challenge

The potential for unlimited data capture and analysis by smart cameras is undeniable, but the privacy implications of such technology cannot be ignored. Moreover, retail, out-of-home advertisers, and public city departments need to get intelligent insights by analyzing visitor frequency and customer behavior data to help improve local economic growth.

Solution

BAUTA's blind sensors offer a compromise between data potential and privacy by recording anonymous information that can be analyzed with specially trained neural networks. The system integrates the reComputer J2021 of NVIDIA Jetson Xavier NX module and BAUTA sensors to process and analyze data on gender, age distribution, visitor frequency, dwell time, moving direction, and traffic analysis/count & vehicle categories.

Result

Based on the sensor data, Out of home-marketers can accurately evaluate and price the reach of the advertising spaces (analogous to online advertising) transparently, helping to find the desired target customer group. All of the data is anonymous and are ethical considerations surrounding privacy to create a sustainable future.

seeed studio

Armitage

Deployed in: China

Established since 1972, Armitage is one of the leading IT services providers in HK and PRC. Over 150 IT professionals, they have 50 years experience and proven track records in delivering quality solutions to various sectors public /private sectors.

Find whole solution >> Armitage

Industry

Smart City

Application

Patrol Robot

Device Support

A206 carrier board compatible with NVIDIA Jetson Xavier NX
reComputer J2021, powered by NVIDIA Jetson Xavier NX

Software

DeepStream, PaddleOCR

Use Case

Robot Security Guard Patrols in Hong Kong Parking Lot

Challenge

Compared with security guards with human power, collaborative robots are more and more important to provide the highest level of public security in an effective way, dealing with continous security tasks and adapting to blind ends that humans can't reach.

Solution

Armitage provides Patrol Robot solution bringing 24/7 peace of mind to Hong Kong's underground parking lot with fully automatic robotic security guards without operator supervision.

• License Plate Recognition System (LPRS)
• Operate 24/7 without human intercention
• Facial recognition, people counting
• Fire and smoke alarm

Benefits

• Reliable 24/7 security monitoring, day or night, in any weather
• Capable of identifying various types of objects/situations
• Real-time video and transmission
• Significant savings in manpower and filling the loophole after staff's patrol each time
• Reduced driving, walking, idling, and unnecessary effort in finding a space

Dogugonggan

Deployed in: Japan

Dogugonggan was founded in March 2017 in Seoul, South Korea, mainly focusing on AI and autonomous robots in the security service industry. Currently has two robots, Iroi and Patrover, in its product line and was selected as a research lab for the Technology Creative Seed Project. They have 10 autonomous patrol robots used in different parts of South Korea with plans to scale up production in the next two years.

Find whole solution >> Dogugonggan

Industry

Robotics

Application

AMR Autonomous Mobile Robot
Outdoor and Indoor Security Robot

Edge Device Used

AGX H01 Dev Kit /reComputer J2021 /A205 carrier board

Software Support

TensorRT

Robot Iroi and Patrovor Integrated with 1:N Simultaneous Monitoring for Security

Challenge

Security patrols includes repetitive work in most of time, but the job can also bring risk of danger in the blink of an eye, such as a fire that can escalate and potentially injure people, especially security personnel. This is an area well suited for robots to perform repetitive tasks autonomously and still allow humans to interact remotely with the environment.

Solution

Dogugonggan develops both indoor/outdoor full stack autonomous robots: Iroi and Patrover are powered by different NVIDIA Jetson solution and integrate with computer vision AI, thermal AI, sound AI, gas detection, and video streaming. Dogugonggan provides a stable operation of security services by deploying self-driving robots equipped with patrol-specific AI and synchronous monitoring solutions (**1:N control)**. Besides security, Iroi and Patrovor will also help with air quality monitoring by integrating with CO_2, NO_2, SO_2, VOC, PM2.5, PM10, temperature, and humidity multiple environmental sensors.

SMART OCEAN SYSTEMS
Laboratory

Smart Ocean Systems Laboratory

Deployed in: U.S.

The SOS lab is founded in October 2018 by the Principle Investigator, Mingxi Zhou. The lab is located at beautiful Narragansett Bay Campus, University of Rhode Island. The lab has various types of marine robotic platforms and a full suite of sensors for conducting research.

Find whole solution >> SOS Lab

Industry

Ocean Research

Application

Robotics, ROV

Edge Device Used

BlueROV2
Add-on sensors
Jetson Sub Blue mini PC, powered by NVIDIA Jetson Xavier NX

Use Case

# Towards Under-ice Sensing Using a Portable ROV

Challenge

Due to the lack of robust under-ice sensing techniques, the research of biogeochemical processes such as gas bubbles, basal ice melting, and drivers of sea ice algal blooms remains limited in the ice-covered area. It is also difficult to perform localization reuslt only based on the basic BlueROV model.

Solution

From 2020, SOS Laboratory from the University of Rhode Island is working on the project of Navigating Unmanned Underwater Vehicles (UUVs) at the Ice-water Boundary. The project team reported their progress in using a portable ROV for under-ice sensing, and demonstrate the feasibility of using small ROVs (0.7m long and 0.5m wide) to sample the under-ice environment near the coast.

- Capable of running on the flat landfast ice several hundreds meters off the coast stably
- Easy to show visual sensing and navigation results that can depict the ROV trajectory clearly

seeed studio
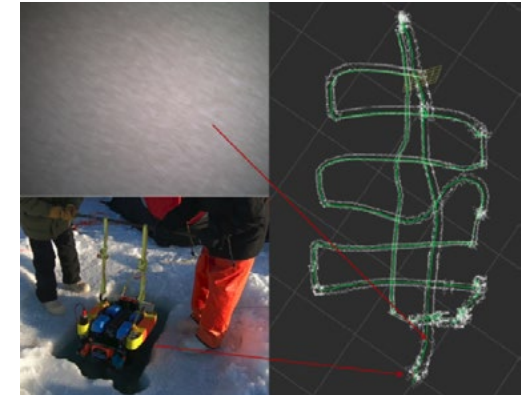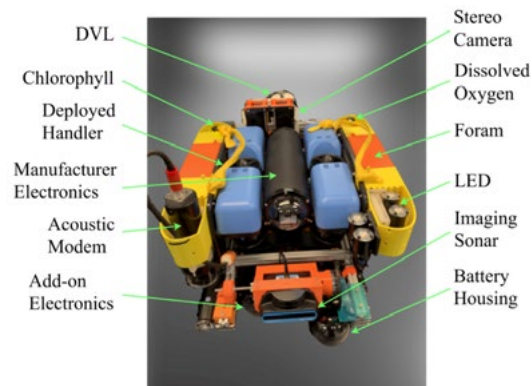
KEISUUGIKEN

KEISUUGIKEN is a research and development location where advanced technology specialists from various countries gather together. They are working to expand products and services such as robots, artificial intelligence, and VR in collaboration with overseas companies and researchers.

Find whole solution >> Keisuugiken

Industry

Industry 4.0

Application

Warehouse Towing Robot

Edge Device Used

Jetson Sub Mini PC, powered by NVIDIA Jetson Xavier NX

Use Case

Meet PITAKURU, an Autonomous Towing Robot Capable of Towing Loads in the Warehouse

Challenge

Moving businesses online becomes new mainstream trends, making delivery services the new normal. In line with the growth of the online business, the demand for courier services that help deliver the ordered packages has risen significantly. Accordingly, the burden it has on the workers also increased.

Solution

In face of this new challenge, KEISUUGIKEN and Seeed came together to provide an autonomous towing robot called "PITAKURU". "PITAKURU" has the ability to track humans while towing heavy objects and can be operated indoors and outdoors. It uses laser tracking, enabling to follow individuals without being affected by external light, and there is no need to install accessories such as tracking beacons. These features enable "PITAKURU" to be used anywhere with easy access, even if the users are unfamiliar with the use of towing technologies.

Business Impact

By introducing "PITAKURU", the amount of cargo that can be handled by one worker will increase up to two to three times more, and the time needed to move packages around the warehouse, enhancing visability of traffic.

seeed studio

Intflow

Deployed in: South Korea, Spain, Japan, Austria, Poland

Intflow is a deep-tech startup founded in 2019 with the goal of eliminating industrial inefficiencies by developing the world's best non-contact biometric information analysis technology.

Find whole solution >> Intflow

Industry

Agriculture

Application

Livestock Managment

## Edge Device Used

reComputer J1010, powered by NVIDIA Jetson Nano

Software Support

Intflow EdgeFarm, TensorRT

Use Case

Precise Livestock Management Helps Farmers Optimize Livestock Productivity

"With Seeed's reComputer J1010, we can reduce the management cost per animal by 98% compared to the competing solution that relies on GPU-cloud because the Edge AI solution with Jetson could provide the lowest inference cost per a camera channel." Kwang Myung Jeon, CEO at Intflow Inc.
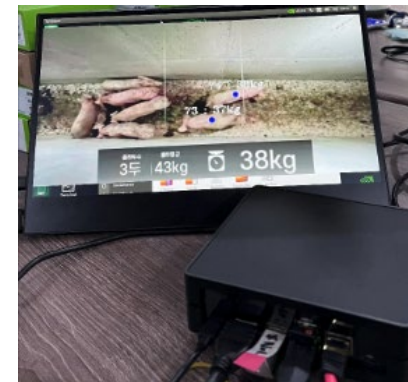
Challenge

The livestock industry is huge, however, several issues impede its productivity, such as the soaring feed prices due to extreme weather conditions, disease risk, environmental and pollution regulations.

Solution

Intflow provides EdgeFarm, an AI solution that perceives livestock injuries and diseases to help farmers manage and optimize livestock productivity. EdgeFarm obtains the biometric data of each 40 piglets for each ceiling-mounted camera.

It measures real-time data of the pigs for example, its eating and exercising habits.

Business impact

The whole solution helps detect and track normal daily animal activities 24/7, recognize special behavior to alert fast, and increase gross revenue by 15% ~ 40% because of the increasing production. Typically 10 EdgeFarm systems can own 4000 animals in the farm. The cost might be around $5,000 - $10,000 based on the farm's location and condition.

seeed studio

zenus

Zenus

Deployed in: U.S.

Zenus is an Austin, Texas, startup that offers a fully-integrated solution for safe data capture of consumer behavior. Zenus has packaged powerful AI models into a smart device powered by NVIDIA SoMs, to drive the ethical use of facial analysis for the in-store retail market. Their proprietary technology produces reports about consumer behavior and engagement without the risk of data theft or personal identification.

Find whole solution >> Zenus

Industry

Retail

Edge Device Used

A206 carrier board compatible with NVIDIA Jetson Nano/Xavier NX/TX2 NX

Use Case

Sentiment Analysis in the Retail Industry Becomes More Accessible

Challenge

Brands need to understand their customers on a deeper level. Passive solutions such as facial analysis sit on the cutting edge of AI and provide rich information. But they comprise many bits and pieces, making them hard to deploy in stores. In addition, brands operate under continuous changes in merchandise display, floor plan layout, audience demographics, and regional trends.

Solution

Zenus and Seeed came together to provide an all-in-one solution powered by NVIDIA Jetson to simplify the process and fulfill your needs. Picture a smart device that connects to any camera and processes the video feed locally. All you need to do is power up the unit and it instantly works. The device sends the meta-data to the cloud to generate actionable reports. You have access to real-time metrics such as impressions, demographics, positive sentiment levels, and more. All the information is ethically sourced and displayed on a live dashboard.

Result

- Improve conversion rates and increase sales by up to 382%
- Assess consumer satisfaction and demographics with over 95% accuracy

seeed studio
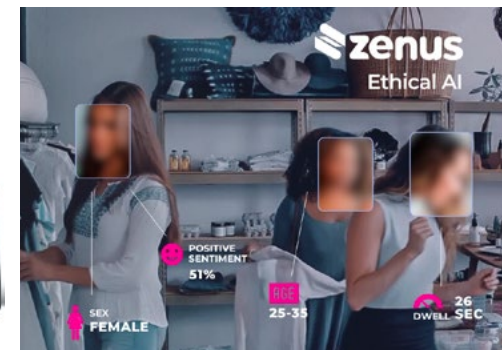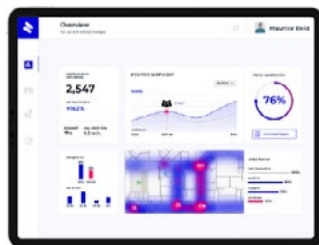
GOPIZZA

Deployed in: **South Koear, India, Singapore**

GOPIZZA is a global food tech company revolutionizing the pizza industry with cost-effective, one-person pizzas through ICT-based smart kitchens. With the special parbaking dough and patented automatic oven, they produce pizza quickly and evenly within minimum staffs.

Find whole solution >> GOPIZZA

Industry

Quick Service Restaurant (QSR)

Application

Food Production Line Automation
High-quality Food Production Control

Edge Device Used

NVIDIA Jetson Nano Developer Kit-B01
NVIDIA Jetson Orin Nano Developer Kit

Software Support

GOPIZZA cloud-based management platform GOVIS

Automated Pizza Making System with Consistent High-Quality Food Processing and Intelligient

Challenge

The traditional QSR meets a significat hurdle of labor cost reduction and final product delivery standard maintaining. It is usually time-consuming to train employees with flavor combination and ingredient operation. Moreover, the food quality could be various under human check

Solution

GOPIZZA provides full automated system with three core functions:

- GOVIS - Store operation guidance and control cloud-based platform
- Ingredient combination station - Using object detection model to determine topping and flavor combination based on specific menu
- Gobot - a collaborative robot powered by visual data

It also shows food quality score during each grouped recipy step, in order to keep the same standard of the final food quality delivery

Business impact

Typically, one 5-6 m² quick service restuarant needs one GOPIZZA system, including:

- 1 automated topping selection table
- 1 final product inspection station
- 2 ovens to monitor pizza baking progress

Reduce human power from 3-5 employees to 1 for smooth restaurant operating management

seeed studio

Aivero

Deployed in: Norway

Aivero is a leading software company based in Norway and Denmark. It simplifies the use of 2D and 3D visual information in computer vision and AI applications, enabling high-performance applications that require precise depth perception, delivering its product as a SaaS or an on-premise hosted system that can be used in a variety of applications such as manufacturing, security, and robotics.

Find whole solution >> Aivero

Industry

Robotics & Logistics & Manufacturing

Application

Depth Video Data Capturing & Management
Environmental Perception

Edge Device Used

reServer J2032, powered by NVIDIA Jetson Xavier NX

Software Support

Aivero management platform

High Frame Rate Video Streaming Analytics with 2D&3D Depth Camera

Challenge

One key issue is the bandwidth bottleneck associated with 3D depth image compression. it is usually difficult to accurately capture real-world geometry because of the data rate with RGB-D video streams of ever-increasing resolution and frame rate, which means it could not handle abrupt depth discontinuities based on the traditional methods.
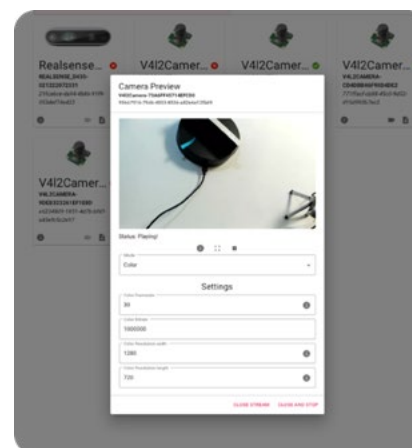
Solution

Aivero simplifies the steps of producing a colorful depth map and converting the 2D/3D visual data to a point cloud with various type of camera SDK/data formats. The cloud-based management platform is capable of:

• Camera setting management

• 2D/3D visual data compression, storage, and preview

• conections to ML training frameworks and AI inferencing tools

Business impact

The real-time, low latency streaming solution achieves high image quality level but less computationally expensive, supporting up to 3.072 meters when using a 1 mm/step resolution.

seeed studio

![CuboRex logo — CRAWL YOUR FIELD]

CuboRex

Deployed in: Japan

CuboRex is a global food tech company revolutionizing the pizza industry with cost-effective, one-person pizzas through ICT-based smart kitchens. With the special parbaking dough and patented automatic oven, they produce pizza quickly and evenly within minimum staffs.

Find whole solution >> CuboRex

Industry

Agriculture & Robotics Development

Application

Rough Terrain Robot

Edge Device Used

reComputer J4012, powered by NVIDIA Jetson Orin NX

Software Support

OpenCV, TensorFlow, Pytorch, NVIDIA TAO Toolkit

Use Case

Rough Terrain Robot for Farm & Construction Site Deployment

Challenge

Challenges occure while dealing with heavy lifting tasks in uneven terrain environments. Tradiotional human labor is expensive and time-consuming. People also get stucked at the beginning of robot automation development because of lacking hardware technology.

Solution

CuboRex delivers CuGo V3 crawlers as the out-of-box robot developer kit.

- Jetson-powered AI/CV processing with object detection, semantic segmentation, and PoseEstimation models
- Customize the NavigationStack-autonomous driving application that comes with ROS/ROS2
- Gather environmental information with a 2D LIDAR (RPLIDAR) and a GNSS (CLAS)

Business impact

The robot can handle heavy loads up to 70 kg even in a 20° slope hazardous environment, leading to increased output and potentially reducing labor costs.

seeed studio

AUTILENT

AUTILENT
Deployed in: Middle East

Autilent is a cutting-edge startup that aims to revolutionize the fleet management and driver monitoring industry. Based in KSA, Autilent offers customized hardware and software solutions to its clients and combines driver monitoring, ADAS, and fleet management into a single offering.

Find whole solution >> Autilent

Industry
Transportation & Fleet Management

Application
Abnormal Behavior Detection

Edge Device Used
reComputer J101 carrier board compatible with NVIDIA Jetson Nano

Software Support
Autilent management platform

Smart Transportation for Driver Behavior Detection and Fleet Management

Challenge
Road transportation safety is always the top one issue we need to concern about. Accidents are usually caused by driver fatigue, drowsiness, and distractions. It is crucial to keep tracking drivers'status for safety and enhance the fleet management for more efficient business operations.

Solution
With deep learning algorithms combing with detection models such as face detection and object detection, Autilent successfully leads to faster and more accurate analysis of driving behavior, road conditions, and potential hazards .

The system will count all times that the authorized drivers' abnormal behavior is detected. You can easily check the report of driver/vehicle inofrmation, status, and their history data.

ISARSOFT

Isarsoft

Deployed in: Germany, U.S.

Isarsoft specializes in the development of advanced video analytics solutions, renowned for their reliability, user-friendly interface, and extensive range of integrations. With Isarsoft, you can transform any camera into an intelligent sensor, capable of performing various tasks such as passenger counting, monitoring conversion rates, and measuring city traffic.

Find whole solution >> Isarsoft

Industry

Infrastructure Management
Smart Transportation

Application

Video Analytics

Edge Device Used

reComputer J4012, powered by NVIDIA Jetson Orin NX

Software Support

Isarsoft management platform

Use Case

AI-powered Video Analytics Solution for Airport Operation Management

"The combination of Isarsoft's real time video analytics software Isarsoft Perception with the Seeed Studio reComputer Edge AI Device opens the possibility to gain business intelligence from existing security cameras"

   - Oskar Haller, CEO of Isarsoft

Challenge

For smooth travel, high safety, and optimal management, airport operating management always meets these challenges such as: monitoring enormous live video data continously by human labor istime-consuming and expensive; in the meanwhile, it is crucial to prevent large crowds and chaotic situations for customer experience enhancing.

Solution

Infrustructure optimization:

• Create shorter routes for time saving

• Analyze occupancy statistic to optimizequeue experience

• Baggage carousel analysis to avoid misplaced

Airport perimeter protection:

• Identify and detect object

• Measure vomume and density

• Analyze airplane KPIs such as speed, trajectory, and dwell time

seeed studio

Vive Robotics

Deployed in: Global

Vive Robotics is a robot-developing company that is diving into tennis sports and providing game-changing ball retrieving solutions to improve the tennis experience with autonomous robots.

Find whole solution >> Vive Robotics

Industry

Robotics (Outdoor Activity)

Application

Tennis Ball Retriever Robot

Edge Device Used

NVIDIA Jetson Nano Developer Kit-B01

Software Support

NVIDIA DeepStream Toolkit, TensorRT, ROS

Use Case

Edge AI-Enabled Ball Retriever Robot for Tennis Game

Challenge

One of the hundle could be finding a proper object detection algorithm to spot small tennis ball from distance, and also localizing the robot within the tennis court. In the meanwhile, it is important to make the robot portable and lightweight as a consumer product.
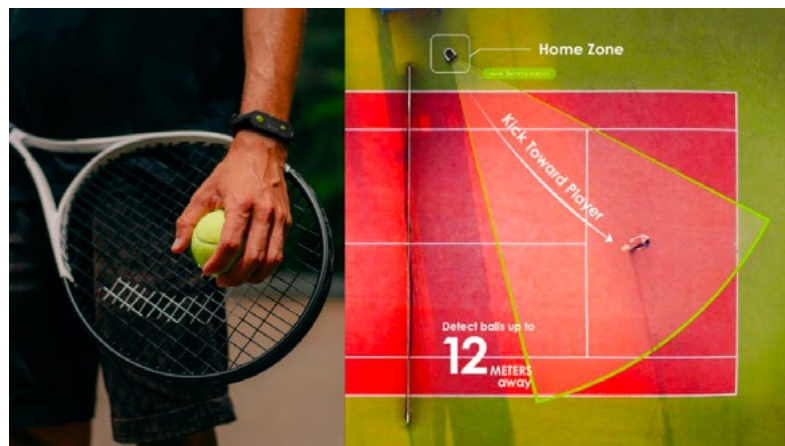
Solution

Vive Robotics delivers this tennis ball retriever robot solution to improve tennis game experience:

• Recognize tennis ball at the beginning, followed by the detection and tracking of players
• Robot kicks the ball back to the player

Business impact

• For players: Reduce 15%-20% chasing down ball time
• For club: Generate a monthly recurring revenue of up to $300/court, operating at only 25% of capacity (60 hours/month)

seeed studio

Lixo

Deployed in: Global

Lixo delivers cutting-edge, high-tech solutions to the waste management and recycling industry. By focusing on waste polarity and leveraging the principles of the circular economy, they strive to make a meaningful impact by effectively closing the loop and creating a sustainable future.

Find whole solution >> Lixo

Industry

Waste Management

Application

Waste Sorting & Collection

Edge Device Used

NVIDIA Jetson Xavier NX

### Software Support

Lixo management platform

AI-powered Waste Recycling for Traceability and Management

Challenge

Since waste resources might be highly deformed, jagged, and superimposed after collecting and processing through machine, the identification accuracy could be extremely difficult to maintain. The lighting conditions also influence the recognition capability. Meanwhile, waste recycling needs refined classification of pollutant components, in order to better understand waste quality and its recycling potential.

Solution

- Support more extensive waste materials classification (including PET - color and type of objects, HDPE, PP, LDPE, newspaper, magazine, print, greyboard, cardboard, dangerous or unwanted items, steel, aluminum, and green waste)
- Equipped with a camera near the garbage truck door, capturing three images per second once the dorr is lifted
- Check geographical analysis report for recycling performance and type of collection
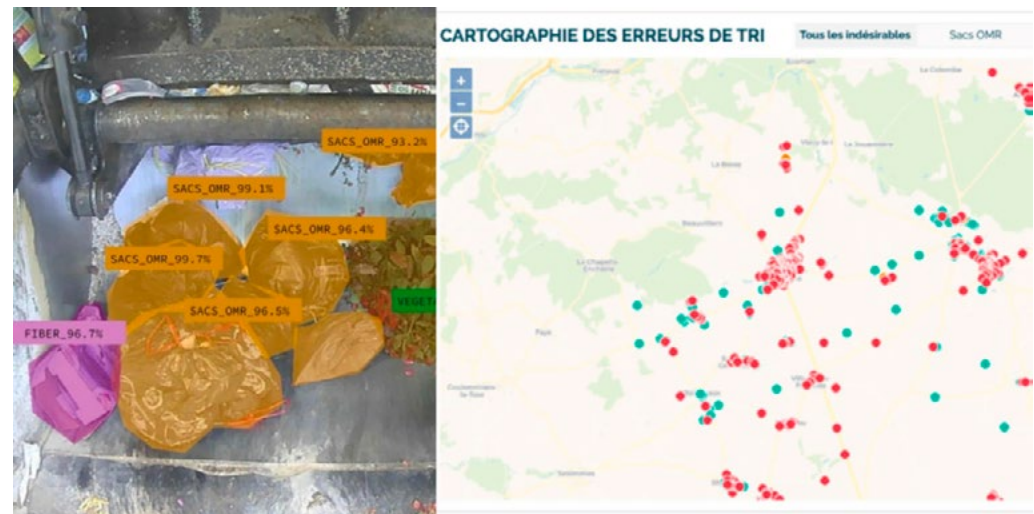
University of Waterloo

Deployed in: Canada

A research team led by Amir Khajepour, a professor of mechanical and mechatronics engineering in UoW, has spent four years and well over $1 million on the autonomous bus project, dubbed WATonoBus. It's aiming to do the research for making autonomous vehicles safe and reliable for urban driving in any weather condition, continuously testing and collecting data for optimizing this cross-disciplinary research to enable Level 4-5 autonomated driving.

Find whole solution >> UoW Autonomous Shuttle

Industry

Autonomous Driving & Transportation

Application

Environmental Perception & Path Planning

Edge Device Used

reComputer J4012, powered by NVIDIA Jetson Orin NX

Software Support

Allxon OOB & OTA Service

Autonomous Shuttle Bus at University of Waterloo: AI-powered Driving Environmental and Traffic Perception

To address complex road challenges and enhance campus safety, aiding autonomous driving and predicting object trajectories in a bustling and uncontrolled area, the University of Waterloo initiated a research project deploying the autonomous shuttle bus WATonoBus.


Challenge

One challenge occurs on how to collect the interactive information effective and accurate, which comes from an array of sensors such as cameras, lidar, and radar. Besides, it's also crucial to deal with the precision to enable local mapping capability and enhance the estimation of pedestrian and vehicle intents on the road.

Solution

The Autonomous Bus integrates a sophisticated sensor suite, including three front-facing cameras with a 32-line Lidar, two side cameras, a rear-facing camera, and a 32-line dome Lidar for comprehensive local coverage via an Ethernet port. Two Radars on the front and rear, along with high-precision GPS, IMUs, and wheel encoders, ensure precise vehicle positioning. Allxon OOB technology facilitates remote system rebooting, and the OTA service enables seamless software and system configuration updates, ensuring continuous operation on the latest versions.

The reComputer Jetson Orin NX Edge device efficiently processes data from these sensors, accommodating two Baslet dart board-level cameras at up to 160 fps with 1080p resolution each via USB 3 ports (20 fps in the campus scenario). The system employs a decision module to estimate surrounding entities' intent from rich perception data, enabling effective path planning for safe navigation and obstacle avoidance in various situations.

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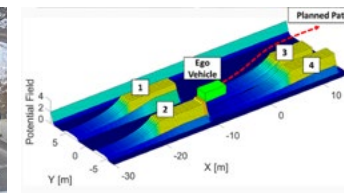
Spectur

Deployed in: Australia, New Zealand

Spectur provides security, safety, environmental monitoring, and visual AI solutions that contribute to making communities safer, smarter, and more sustainable. They develop, manufacture, and sell solar-powered and remotely connected hardware, and also write firmware, software, cloud, and web apps that enable solutions to be delivered reliably and securely to customers.

Find whole solution >> Spectur

Industry

Smart City

Application

Security Management

Edge Device Used

reComputer J1020v2, powered by NVIDIA Jetson Nano

Use Case

Smart Security Sites for Community Safety Maintaining and Early Warning

Challenge

Transitioning from traditional monitoring systems to advanced technologies like autonomous monitoring systems with active deterrence is crucial in enhancing crime prevention. Unlike traditional systems that merely record incidents, autonomous monitoring systems proactively deter potential criminals and respond effectively to threats, preventing criminal activities. This shift is particularly urgent in regions experiencing increases in unlawful entries and property damage.

Solution

Spectur introduces the HD6 solar-powered site safety system, powered by NVIDIA Jetson Nano, featuring an integrated custom interface board with Modbus communications and watchdog functionality. This AI vision system, inclusive of an IP camera, LED floodlight, PA speaker, and 4G modem, offers 24-7 monitoring services in unwired environments. With a 45 to 110-degree field of view and passive infrared detection, the HD6 cameras provide continuous vigilance, covering 120-150m for effective detection. It easily distinguishes human and vehicle movement, filtering out over 95% of false alarms from animals, clouds, or other objects. Upon detecting a person or vehicle, the cameras promptly generate audible and visual alarms on-site and dispatch events to Spectur users, ensuring swift responses to potential security incidents.

seeed studio

TECHRAIL

Deployed in: Italy

TECHRAIL is an innovative company with more than two decades of experience in the innovation, design, and development of transport technology systems, Defense, telecommunications, and industry.

Find whole solution >> TECHRAIL

Industry

Smart Transportation

Application

People Distance Identification
People Counting

Edge Device Used

reComputer J202 carrier board compatible with NVIDIA Jetson Nano/Xavier NX/TX2 NX

Utilizing 3D Scene Reconstruction for Individual Distance Idenfication on Subway

Challenge

The initial idea was born from the pandemic, when government around the world required social distance measures to manage crowds and mitigate the virus's impact. There is limitation for traditional method to assess people distance accurately in real-time.

Solution

Techrail introduces this innovative solution based on passive stereographic technology:

• Acomplish data processing and inferencing tasks for real-time 3D scene reconstruction

• Detect both people distance in 3D-mapping and the number of people in the subway carriage every 2 seconds, with object detection models

• Provide grids as visible result to show exact people position for distance caculation less than 1m

Business impact

• Typically, one 16m bus can be thoroughly covered by 3 Right Metro boxes

• The margin of identifying accuracy error can be tightly controlled within a mere 1%

• Control staff can manage information on each individual carriage and transfer it to information panels when the train arrives at each station

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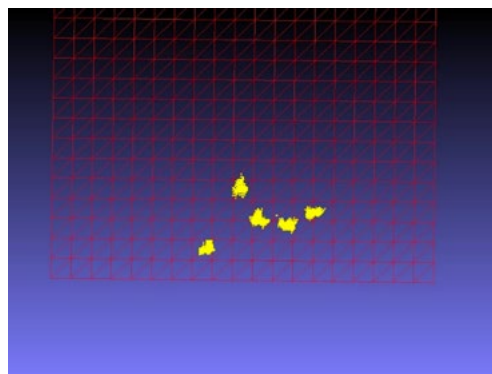
DexForce

DexForce is a start-up AI company focusing on 3D machine vision. The company develops a physics engine named Mixed AI, which can generate synthetic data to train AI models by applying cutting-edge 3D geometric deep learning technology. The company supplies 3D smart cameras and 3D vision solutions to manufacturing customers on the basis of the AI platform. DexSense 3D industrial smart camera adopts advanced active stripe structured light technology.

Find whole solution >> DexForce

Edge Device Used

Jetson Nano module

Application

Industrial 3D camera

Seeed Service

Seeed Fusion PCBA Service

Software

DexForce developed graphical vision algorithm platform

Open Source 3D Camera Breaks the Cost Barrier to Industrial 3D Machine Vision with Seeed Fusion PCBA

Challenge

With an increasing number of industrial robots in factories all over the world, 3D vision has received more attention due to the lack of depth information of 2D vision.

Solution

3D industrial cameras can be eyes of robots, which provide the three-dimensional spatial coordinates of an object. Powered by NVIDIA Jetson Nano, Xema is able to run 3D point cloud recognition algorithms and robotic arm control programs. Xema is also equipped with a DLP projector and a CMOS sensor, which enable the camera to perform fast imaging speed and strong anti-ambient light capability. It can generate high-resolution and precision point clouds of various objects such as reflective metal, black carbon fiber, thin cardboard, etc.

Seeed Fusion provides Dexforce team with delicate manufacturing advice from 0.1 to 1. Power-efficient with a compact form factor, Jetson Modules brings accelerated AI performance to the edge.

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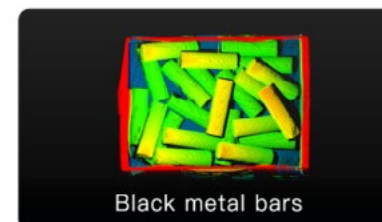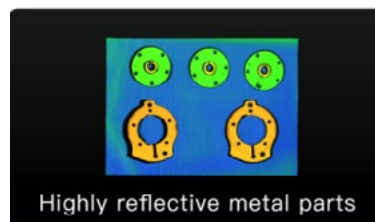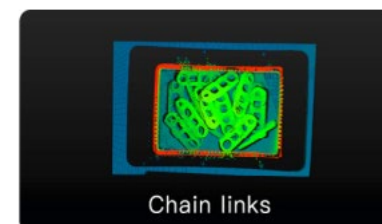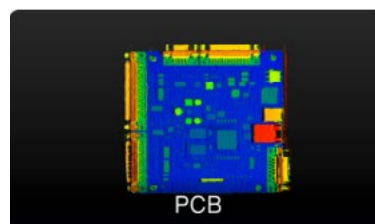
Peer Robotics

Peer Robotics is a collaborative mobile robotics company building material handling solutions for manufacturing industries. Peer Robotics mobile robots can learn from humans in real-time, allowing people on the shop floor to integrate and deploy the solutions easily.

Find whole solution >> Peer Robotics

Application

Collaborative Mobile Robot

Edge Device Used

NVIDIA Jetson AGX Xavier

Software

ROS

Bringing Humans in the Loop to Help SMEs Automate

Challenge

Global manufacturing industries have rapidly evolved facing automation need, no matter small and medium-sized enterprises (SME) or large corparates. However, when SMEs are facing labor shortages or increased operating costs, the high cost and complexity of automation solutions make it difficult to adopt these technologies and transform quickly.

Solution

Peer Robotics believes that the future lies in collaboration between humans and robots rather than fixed automation. They are building material handling solutions that can learn from humans in real-time, allowing people on the shop floor to interact with these robots just like they would interact with a trolley. Humans can simply grab the robot, move it from point A to B, and in this process, teach the robot how to perform the tasks autonomously the next time onwards. This reduces the need for specialized engineers or training, further reducing fixed costs.

Peer Robotics utilizes Jetson Xavier and Intel NUC for the onboard computation of mapping, path planning, obstacle avoidance, and natural navigation. Along with intel real sense cameras as a key visual navigation component. Peer Robotics also develops its own custom PCB boards like charging modules, IMU boards, central control units, etc.

Theia Scientific, LLC

Theia Scientific is a technology company that provides unclouded machine vision to microscopy instrumentation and quantitative image analysis workflows. The team is built with experts in edge computing architectures for scientific instrumentation, data analytics, and AI model development.

Find whole solution >> Theis Scientific

Application

Object Detection

Edge Devices Used

NVIDIA Jetson AGX Orin
NVIDIA Jetson AGX Xavier
NVIDIA Jetson Xavier NX
Jetson Mate

Software Support

Theiascope™ platform

PyTorch, Anyscale Grafana

Volkov Labs:open-source custom plugin for Grafana

Balena: manage IoT fleets

Use Case

Real-time AI-powered Microscopy Image Analysis at the Edge

Challenge

Microscopes are generally deployed in "network-constrained" environments and do not have dedicated GPUs for computation. Thus, it is essential to bring Cloud-like computational resources to the microscope instead of bringing microscopes to the Cloud.

Solution

Theiascope™ platform created by Theia Scientific provides real-time image and data analysis automation technology for scientists and engineers who conduct research utilizing optical, electron, and X-ray-based microscopy with instrumentation in network- and time-constrained environments.

Business Impact

This technology can cut labor costs by 80%, reduce training time and operational expertise, and accelerate the delivery of unbiased results from years, months, days, to seconds in the energy, health, manufacturing, and transportation sectors.
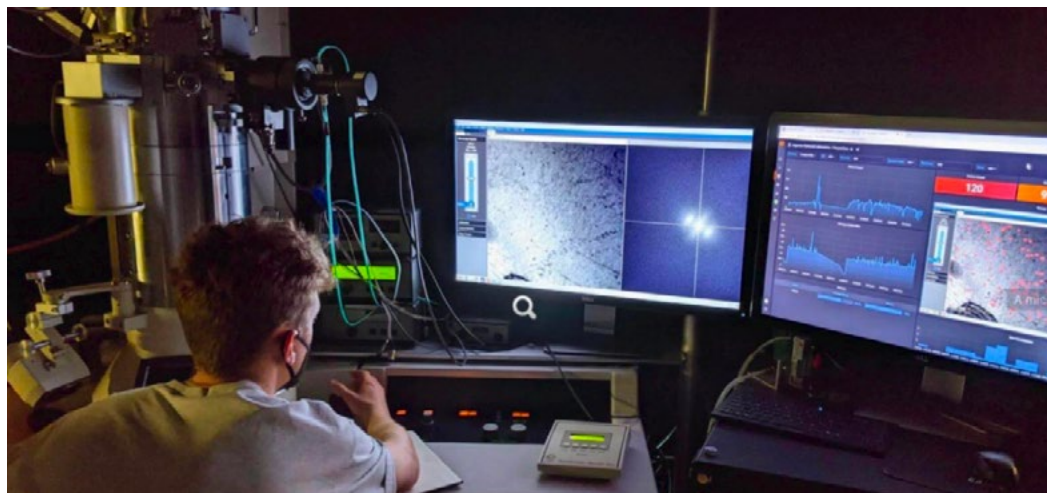
Seeed Studio

CONTACT US

Take the first step to send us an email at edgeai@seeed.cc to become a part of the amazing ecosystem!

Check out our Latest NVIDIA Jetson Catalog

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