seeed studio

NVIDIA Elite Partner

NVIDIA® Jetson™ - Powered Edge AI Device Collection

Your Trusted Hardware Partner for Advanced Embedded AI Systems & Robotics Development

seeedstudio.com/tag/nvidia.html

Manufacture in Shenzhen & Vietnam

Table of Contents

Support Every Stage of Development for

Next-Gen Robotics and Edge AI Solutions

NVIDIA Elite Partner

Sensor

LiDAR

Camera

Full Product Line from PoC to Production

Developer kit

Carrier board

Accessories

Full system devices

Robot Component

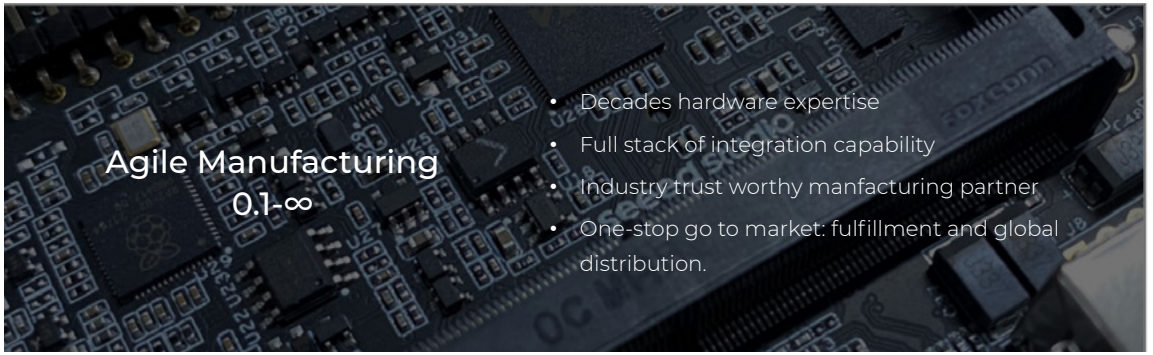
Joint actuator

IMU

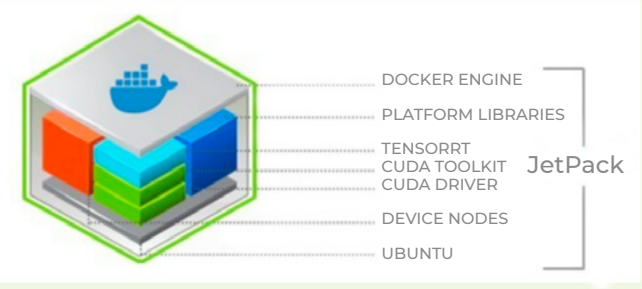
Robot kit

Develop Robot with

aws · GAZEBO · Hugging Face · LeRobot · k-scale labs · MuJoCo · NVIDIA ISAAC · phospho · roboflow · ROS · ultralytics



Jetson Software

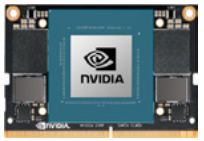


The NVIDIA Jetson Family

For AI at the Edge and Autonomous Machines

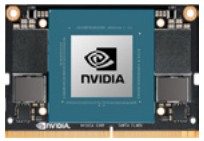
Next-Gen: Jetson Orin™

Jetson Orin Nano 4GB/8GB
up to 40 TOPS (INT8)



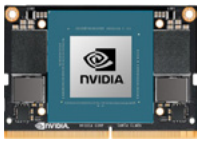
7 - 15W
69.6mm x 45mm

Jetson Orin NX 8GB/16GB
up to 100 TOPS (INT8)



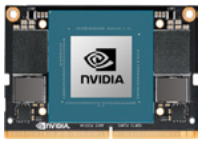
10 - 25W
69.6mm x 45mm

Jetson Orin Nano 4GB/8GB Super
up to 117 TOPS (INT8)



7 - 25W
69.6mm x 45mm

Jetson Orin NX 8GB/16GB Super
up to 157 TOPS (INT8)



10 - 40W
69.6mm x 45mm

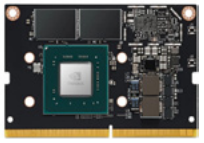
Jetson AGX Orin 32GB/64GB
200/275 TOPS (INT8)

15 - 60W
100mm x 87mm

Jetson Thor T5000
2070 TFLOPS (FP4-Sparse)

40 - 130W
100mm x 87mm

Jetson Nano
0.5 TFLOPS (FP16)

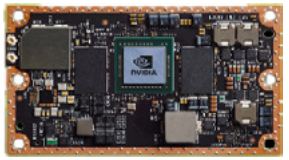


5 - 10W
69.6mm x 45mm

Jetson TX2 NX
1.33 TFLOPS (FP16)

7.5 - 15W
69.6mm x 45mm

Jetson TX2 Series
1.33 TFLOPS (FP16)

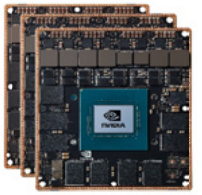


7.5 - 15W
87mm x 50mm

Jetson Xavier NX Series
21 TOPS (INT8)

10 - 20W
8GB/16GB
69.6mm x 45mm

Jetson AGX Xavier Series
32 TOPS (INT8)



10 - 30W
32GB/64GB
87mm x 100mm

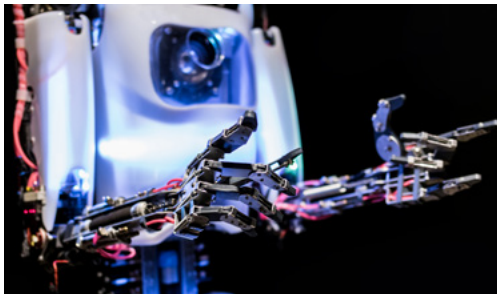
source: NVIDIA

Module Specifications

Jetson Module	Jetson Orin Nano				Jetson Orin NX				Jetson AGX Orin		Jetson Thor
	Orin Nano 4GB	Orin Nano 4GB (Super)	Orin Nano 8GB	Orin Nano 8GB (Super)	Orin NX 8GB	Orin NX 8GB (Super)	Orin NX 16GB	Orin NX 16GB (Super)	AGX Orin 32GB	AGX Orin 64GB	T5000
AI Performance	20 TOPS	34 TOPS	40 TOPS	67 TOPS	70 TOPS	117 TOPS	100 TOPS	157 TOPS	200 TOPS	275 TOPS	2070 TFLOPS
NVIDIA GPU Cores	512 CUDA Cores 16 Tensor Cores		1024 CUDA Cores 32 Tensor Cores						1792 CUDA Cores 56 Tensor Cores	2048 CUDA Cores 64 Tensor Cores	2560 CUDA Cores 96 fifth-gen Tensor Cores
GPU Max Frequency	625 MHz	1020 MHz	625 MHz	1020 MHz	765 MHz	1173 MHz	918 MHz	1173 MHz	930 MHz	1.3GHz	1.57 GHz
CPU	6x A78 1.5 GHz	6x A78 1.7 GHz	6x A78 1.5 GHz	6x A78 1.7 GHz	6x A78 1.5 GHz	8x A78 2.0 GHz	8x A78 2.0 GHz	8x A78 2.0 GHz	8x A78 2.0 GHz	12x A78 2.2 GHz	14x V3AE 2.6 GHz
Memory	4GB 64-bit LPDDR5 34 GB/s	4GB 64-bit LPDDR5 51 GB/s	8GB 128-bit LPDDR5 68 GB/s	8GB 128-bit LPDDR5 102 GB/s	8GB 128-bit LPDDR5 102.4GB/s		16GB 128-bit LPDDR5 102.4GB/s		32GB 256-bit LPDDR5 204.8GB/s	64GB 256-bit LPDDR5 204.8GB/s	128 GB 256-bit LPDDR5X 273 GB/s
Storage	(Support external NVMe)								(Support external NVMe)		Supports NVMe through PCIe Supports SSD through USB3.2
Video Encoding	1080p30 supported by 1-2 CPU cores				1x 4K60 (H.265); 3x 4K30 (H.265); 6x 1080p60 (H.265); 12x 1080p30 (H.265)					2x 4K60 (H.265); 4x 4K30 (H.265); 8x 1080p60 (H.265); 16x 1080p30 (H.265)	6x 4Kp60 (H.265); 12x 4Kp30 (H.265); 24x 1080p60 (H.265); 50x 1080p30 (H.265); 48x 1080p30 (H.264); 6x 4Kp60 (H.264)
Video Decoding	1x 4K60 (H.265); 2x 4K30 (H.265); 5x 1080p60 (H.265); 11x 1080p30 (H.265)				1x 8K30 (H.265); 2x 4K60 (H.265); 4x 4K30 (H.265); 9x 1080p60 (H.265); 18x 1080p30 (H.265)					1x 8K30 (H.265); 3x 4K60 (H.265); 7x 4K30 (H.265); 11x 1080p60 (H.265); 22x 1080p30 (H.265)	4x 8Kp30 (H.265); 10x 4Kp60 (H.265); 22x 4Kp30 (H.265); 46x 1080p60 (H.265); 92x 1080p30 (H.265); 82x 1080p30 (H.264); 4x 4Kp60 (H.264)
Camera	Up to 4 cameras (8 via virtual channels) 8 lanes MIPI CSI-2 D-PHY 2.1 (up to 20Gbps)				Up to 4 cameras (8 via virtual channels) 8 lanes MIPI CSI-2 D-PHY 2.1 (up to 20Gbps)				Up to 6 cameras (16 via virtual channels) ; 16 lanes MIPI CSI-2; D-PHY 2.1 (up to 40Gbps) | C-PHY 2.0 (up to 164Gbps)		Up to 20 cameras via HSB; Up to 6 cameras through 16x lanes MIPI CSI-2; Up to 32 cameras using Virtual Channels; C-PHY 2.1 (10.25 Gbps); D-PHY 2.1 (40 Gbps)
Mechanial	69.6mm x 45mm 260-pin SO-DIMM connector								100mm x 87mm 699-pin Molex Mirror Mezz Connector Integrated Thermal Transfer Plate		100 mm x 87 mm 699-pin B2B connector Integrated Thermal Transfer Plate (TTP) with heatpipe
Module Power	7W | 10W	7W | 10W | 25W	7W | 15W	10W | 15W | 25W	10W | 15W | 20W	10W | 15W |25W |40W	10W | 15W | 25W	10W | 15W |25W |40W	15W | 40W	15W | 60W	40 W | 130 W

Application Scenarios

AI Camera for Retail & Factory

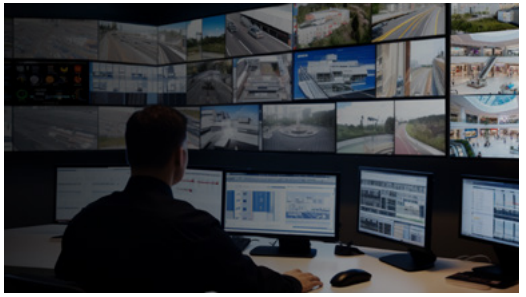


Humanoid/AGV robots

Drones

VLA in Private AI Assistant

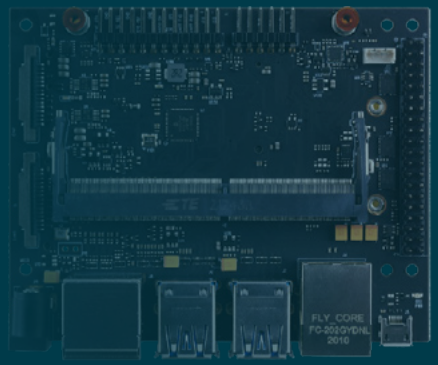
Medical & Biological Vision

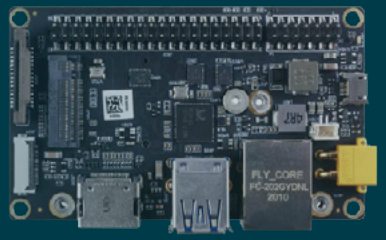


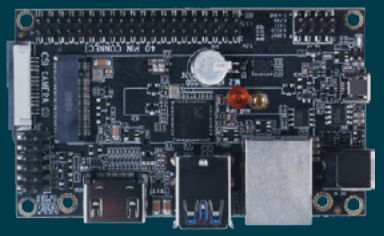
AI Security at the Edge

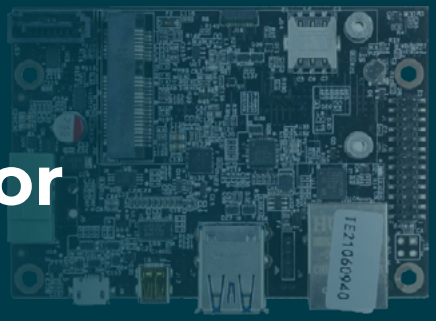
seeed studio

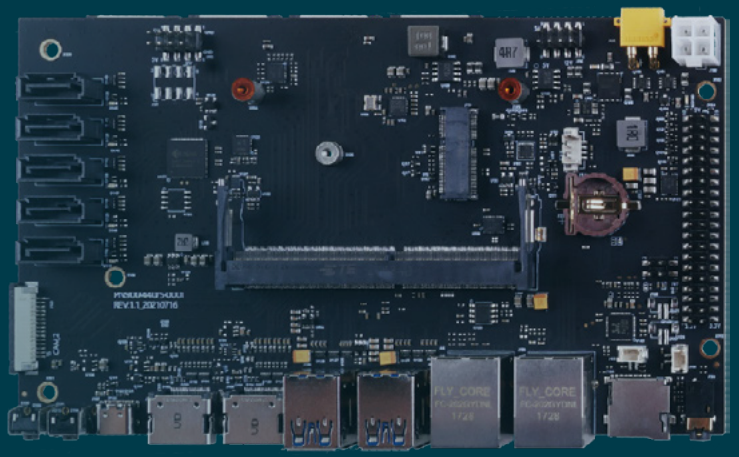
NVIDIA Elite Partner





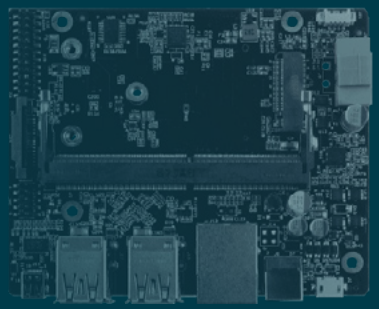


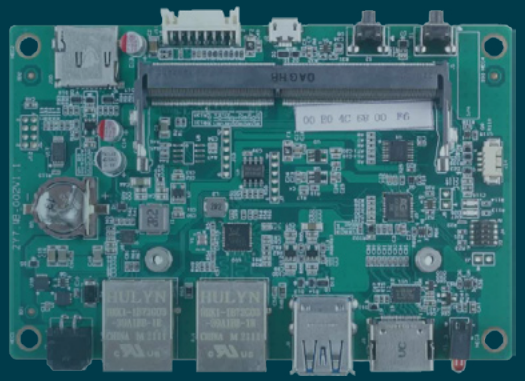




Carrier Boards for NVIDIA Jetson

Designed for Different Edge AI Deployments





Various Form Factors | Rich I/Os

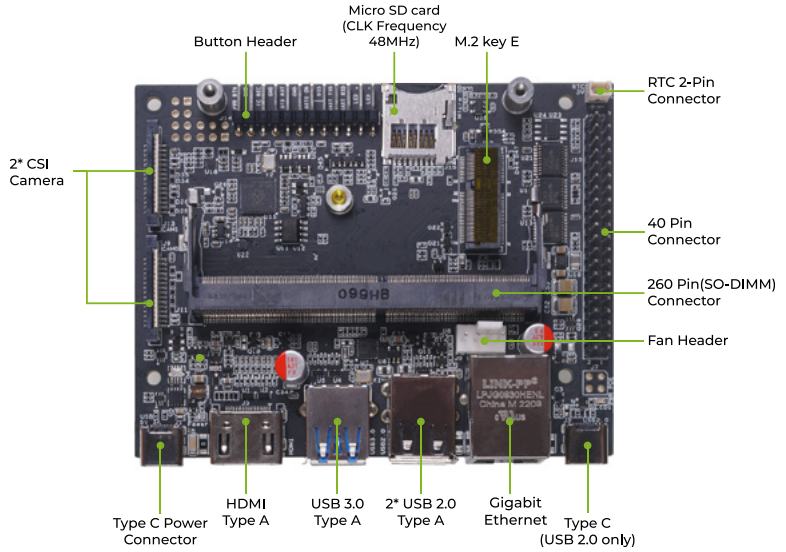
Compatible with Jetson Orin Nano/ Orin NX/ AGX Orin

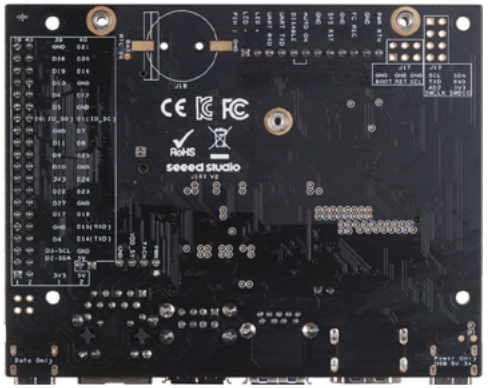
Compatible with Jetson Nano/ TX2 NX/ Xavier NX

reComputer J101 Carrier Board

Dimensions	100mm x 80mm
Module Compatibility	Jetson Orin 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.

Same Dimensions As Jetson Nano Dev Kit Carrier Board

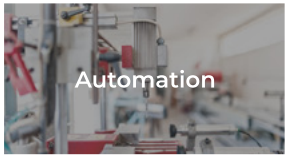


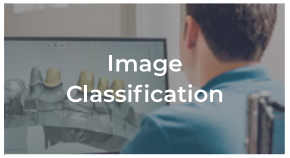


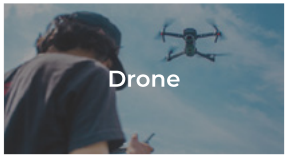
Features

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

Applications



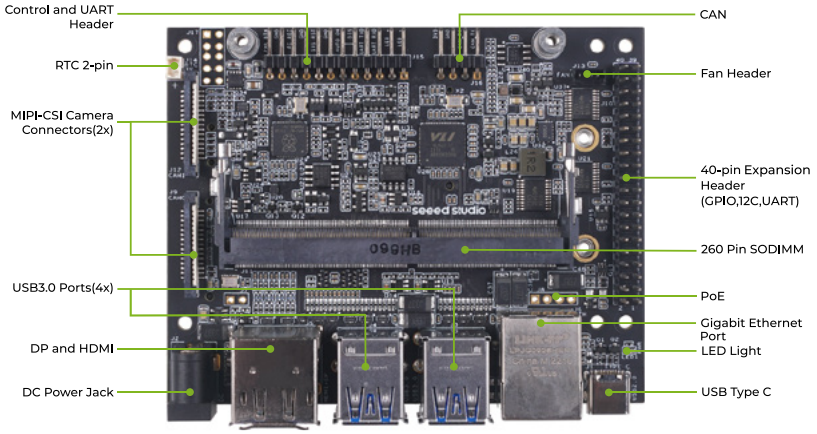


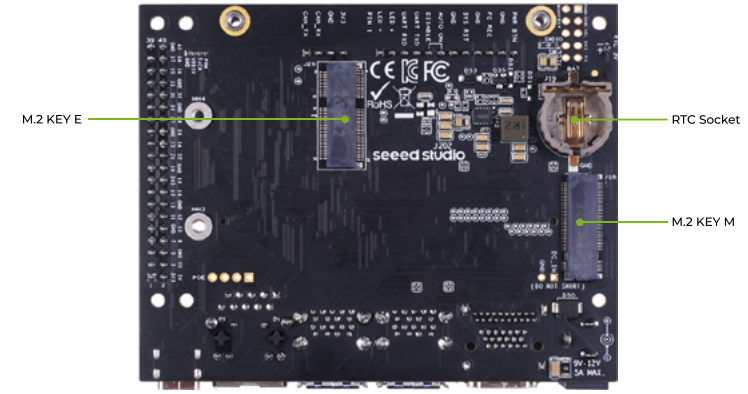


reComputer J202 Carrier Board

Dimensions	100mm x 80mm
Module Compatibility	Jetson Nano Jetson Xavier NX Jetson TX2 NX
SKU	102991695 (with power adapter) 102991714 (without power adapter)
Certification	RoHS CE FC UKCA 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

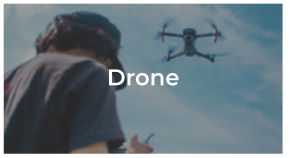




Features

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

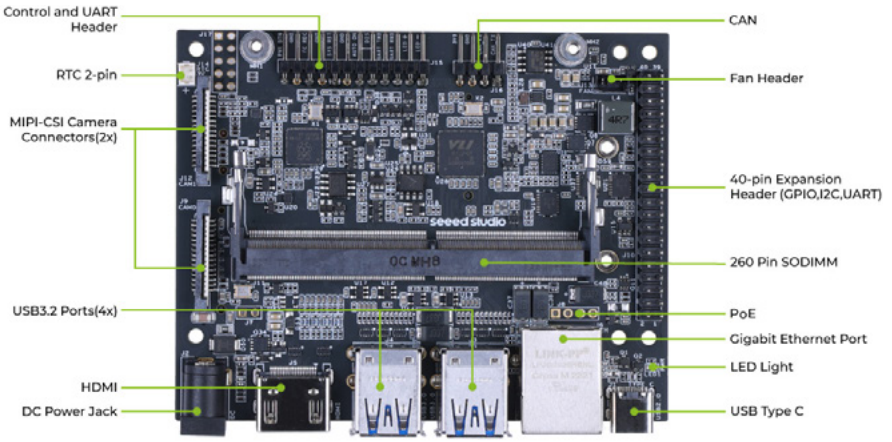
Applications

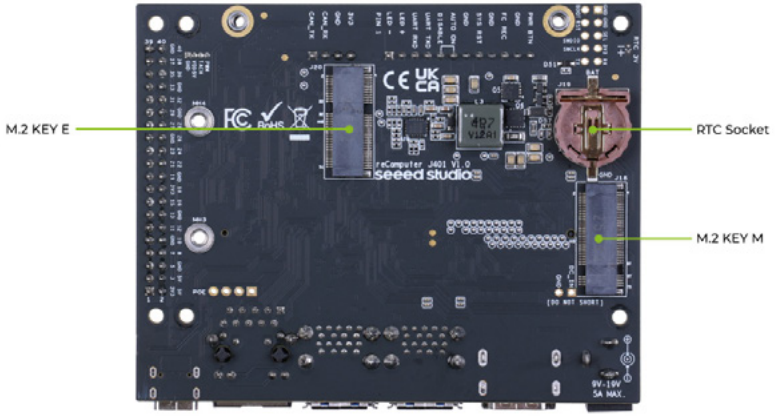


reComputer J401 Carrier Board

Orin NX/ Orin Nano

Dimensions	100mm x 80mm
Module Compatibility	Jetson Orin Nano Jetson Orin NX
SKU	102110769 (with power adapter) 102110770 (without power adapter)
Certification	RoHS CE FC UK CA 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

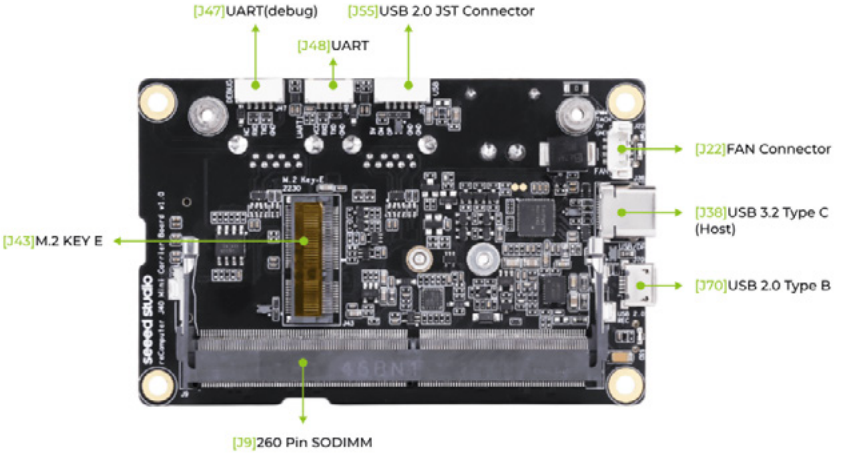
4x USB 3.2 Type A ports | 2x CSI Camera Connectors | 9V-19V | M.2 Key E | M.2 Key M | RTC | HDMI

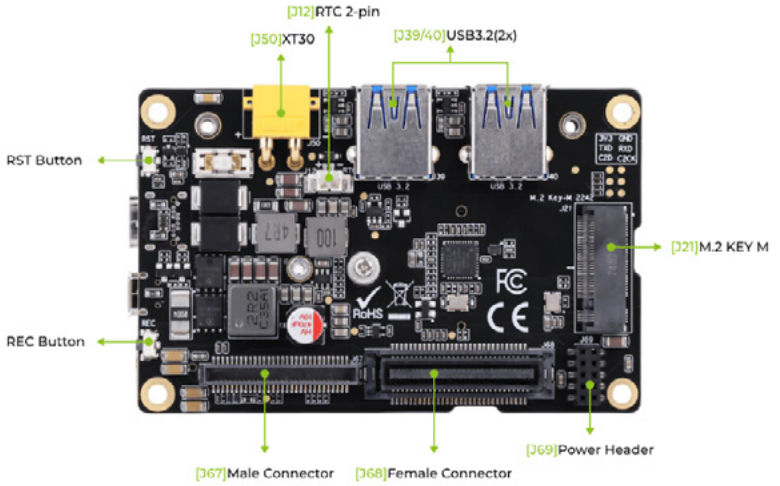
Applications

reComputer Mini Carrier Board NEW

Dedicated for drones/confined-spaces

Dimensions	56mm x 88mm
Module Compatibility	Jetson Orin Nano Jetson Orin NX
SKU	114993592
Certification	RoHS CE FC REACH
Introduction	**reComputer Mini** is a tiny carrier board compatible with NVIDIA Jetson Orin Nano/Orin NX, delivering up to 100 TOPS AI perf. With a bottom PCIe port for rich, customizable expansion and 54V DC input support, it's built for drones, robots, and other battery-powered autonomous machines.

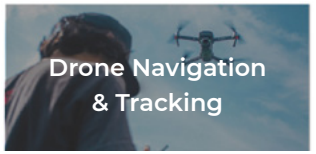


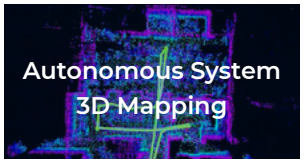


Features

Dual CAN on extension | RJ-45 Ethernet | 1x DP | M.2 Key M | up to 8x USB with extension board | M.2 Key E

Applications

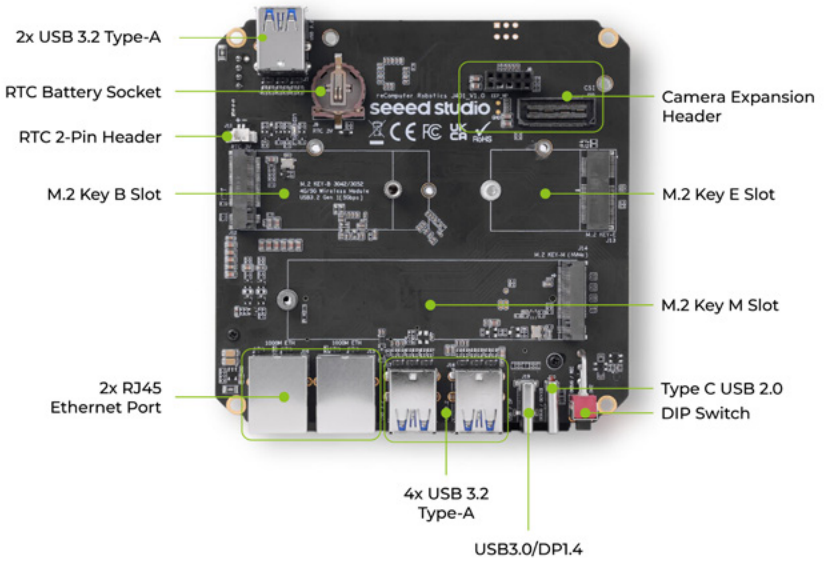


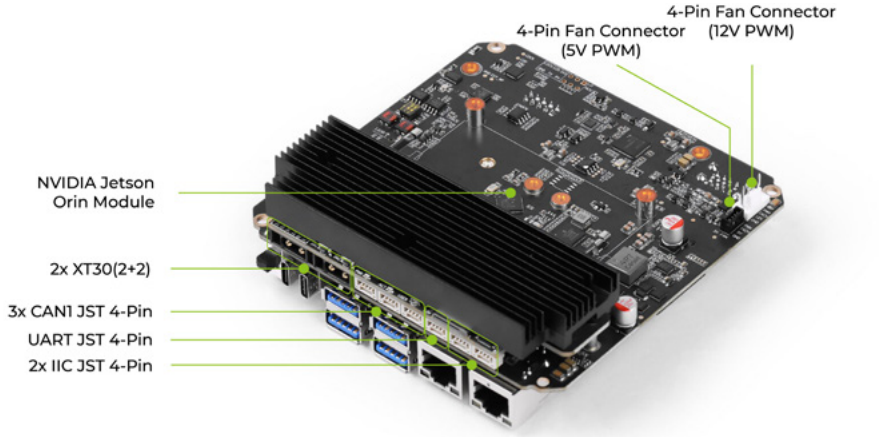


reComputer Robotics J401 Carrier Board NEW

Dimensions	115mm x 115mm
Module Compatibility	Jetson Orin Nano Jetson Orin NX
SKU	E2025052001
Introduction	**reComputer Robotics J401 Carrier Board** supports Jetson Orin in super mode, delivering up to 157 TOPS AI perf. It supports GMSL for cameras, CAN for motion, USB for sensors, and accelerates mobility, grasping, and vision tasks using CUDA-accelerated libraries and AI models. Built for AMRs, robotic arms, and humanoids—from prototyping to deployment.

Robotic Brain Reference Design





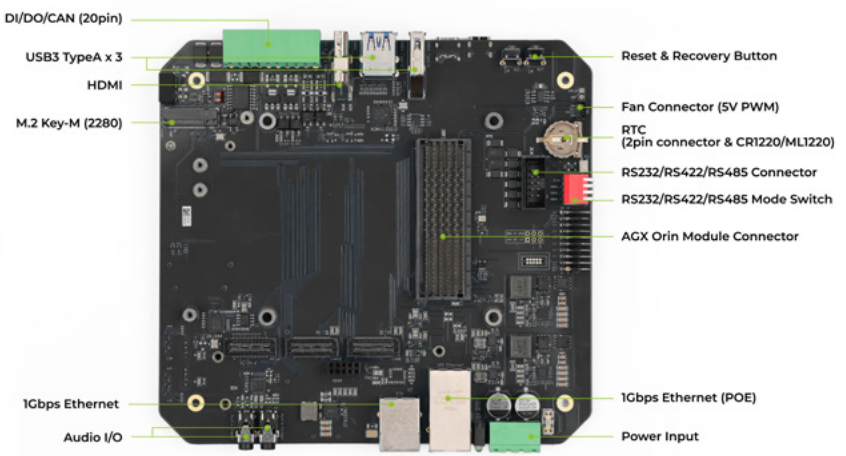
Features

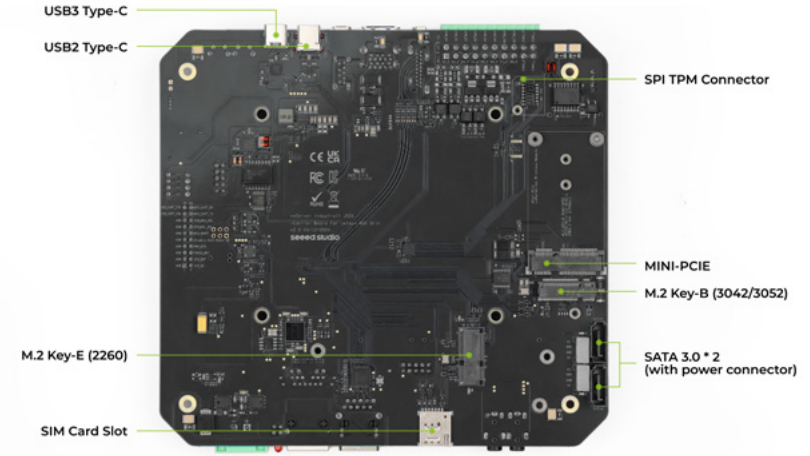
Dual CAN (XT30(2+2)/JST) | 2x RJ-45 Ethernet | 6x USB (5Gbps) | GMSL2 by mini fakra | 2x I2C | Support JetPack 6.2

Applications

reServer Industrial J501 Carrier Board NEW

Dimensions	176mm x 163mm
Module Compatibility	Jetson AGX Orin
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 8x GMSL cameras.

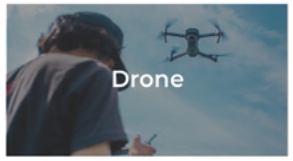




Features

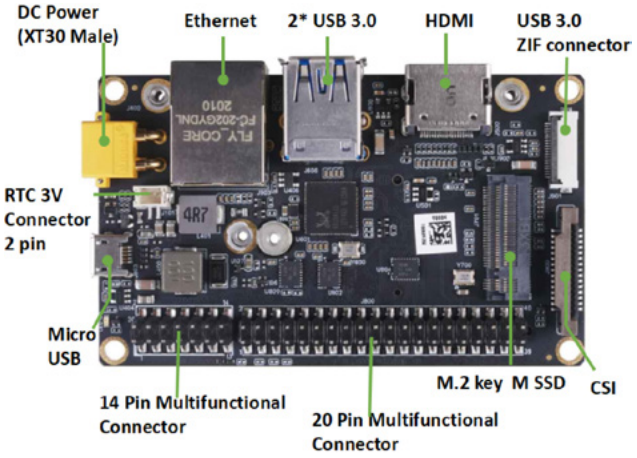
10G Ethernet | Hybrid Connectivity (Wi-Fi, 4G/5G, LoRaWAN) | Video Decoding in 8K60 and 3x4K60 | up to 8x GMSL Connections

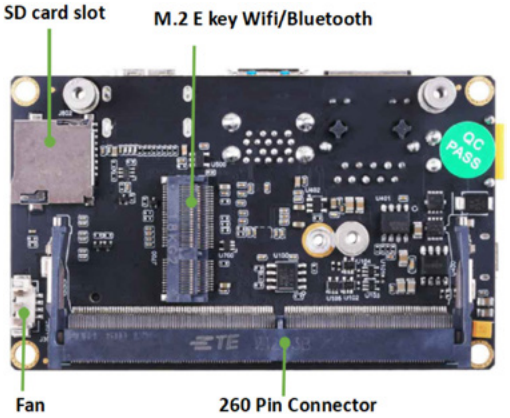
Applications



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.

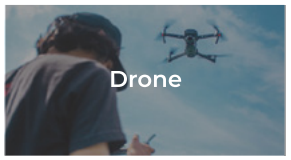


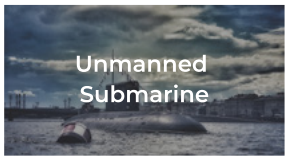


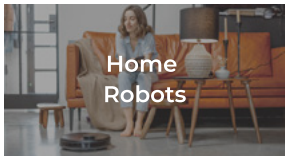
Features

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

Applications

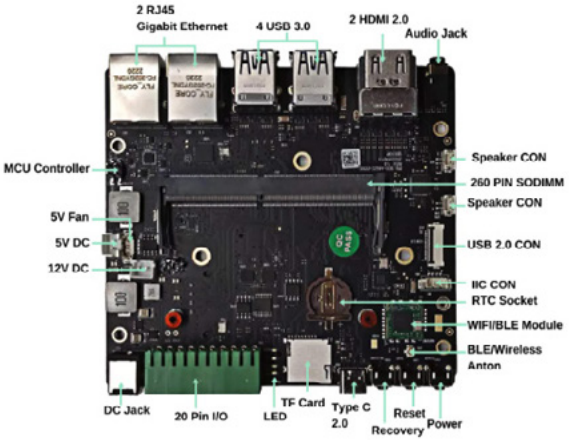


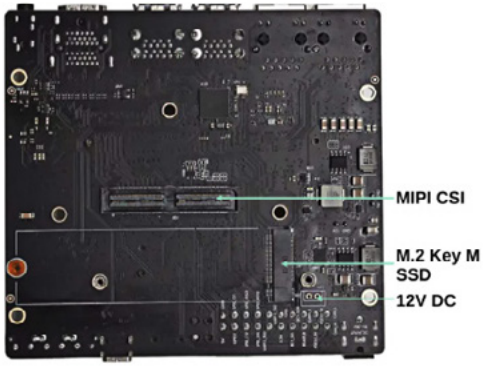




A205E Carrier Board

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

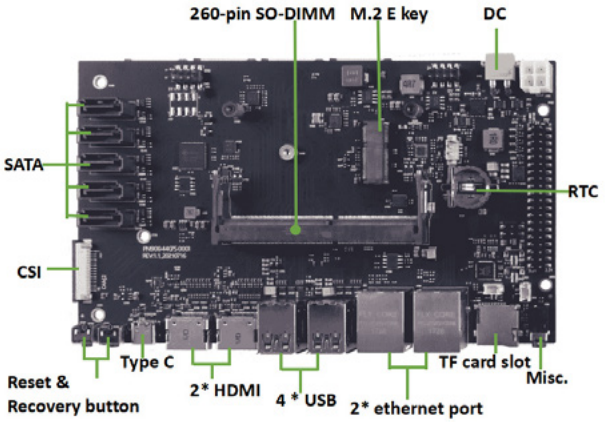
4x USB 3.0 Type A ports | USB2.0 Type C | CAN | Dual Gigabit Ethernet | M.2 Key E | M.2 Key M | RS485 | RS232

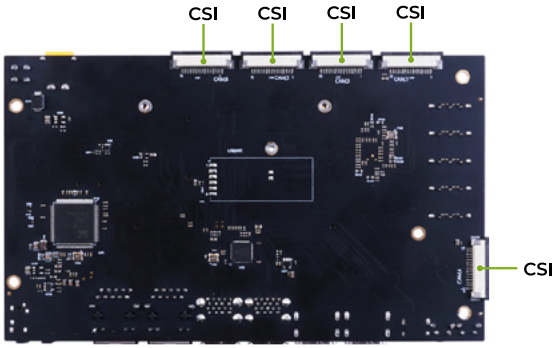
Applications

*Some of certification is on going

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.

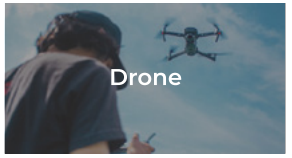




Features

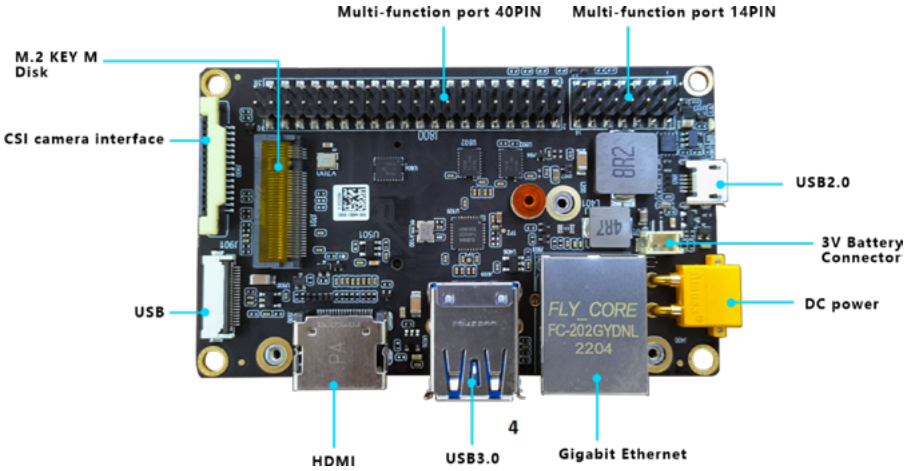
Dual Gigabit Ethernet | 6x CSI | 5x SATA | SD card slot | 2x Ethernet Ports | 4x USB 3.0 Type A

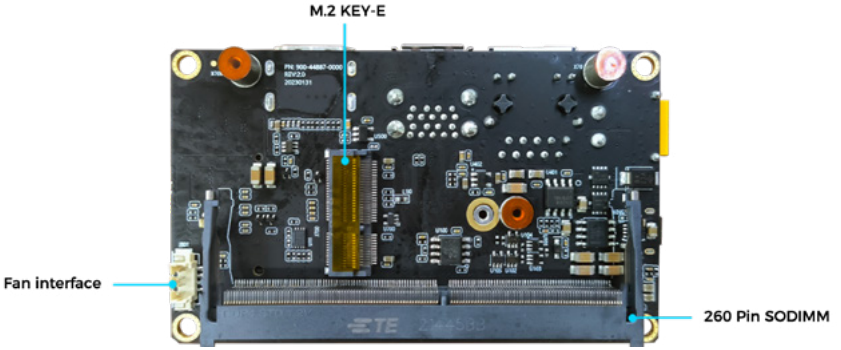
Applications



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 1x 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.

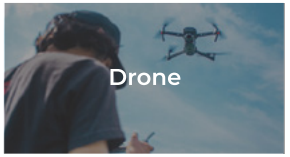


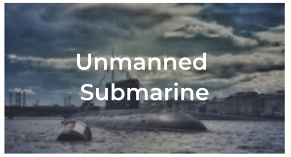


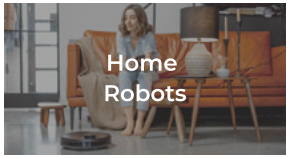
Features

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

Applications

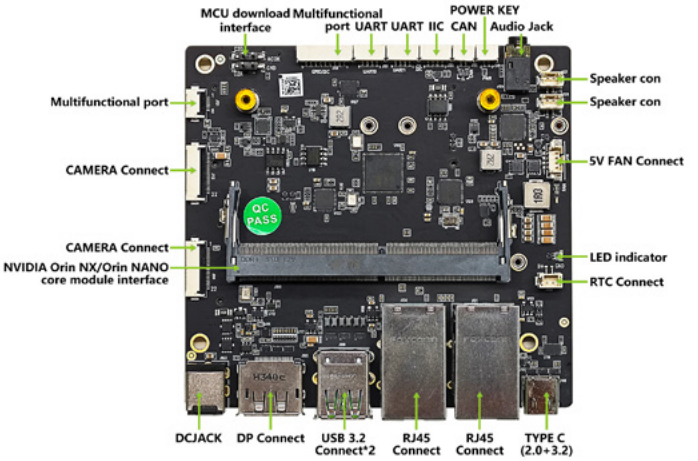




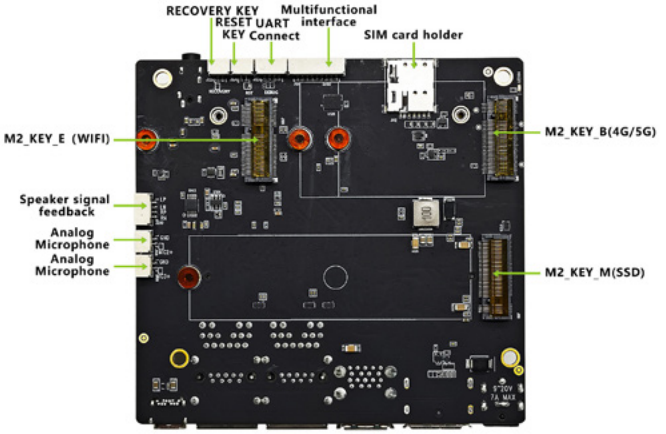


A608 Carrier Board

Dimensions	101.5mm x 95mm
Module Compatibility	Jetson Orin NX Jetson Orin Nano
SKU	105110001
Certification	RoHS CE FC
Introduction	**A608 Jetson Carrier Board** supports Jetson Orin NX/Orin Nano module, featuring 2x Gigabit Ethernet ports, 4x USB 3.2 Type-A, 1 USB 2.0+3.2 Type-C, and a CAN connector for versatile I/O. It also includes M.2 Key M/E/B slots for flexible expansion of storage and wireless connectivity. Designed for computer vision, robotics, drones, and edge AI applications, it delivers reliable performance across industries. With JST-GH-compatible Function CON interfaces, it ensures stable connections in dynamic or collision-prone environments like drones and mobile robots.



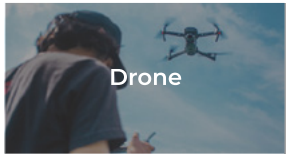
4

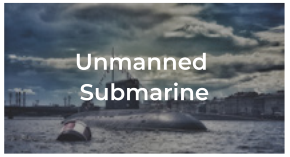


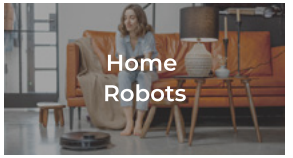
Features

2x GbE network ports | 5x USB | 2x 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







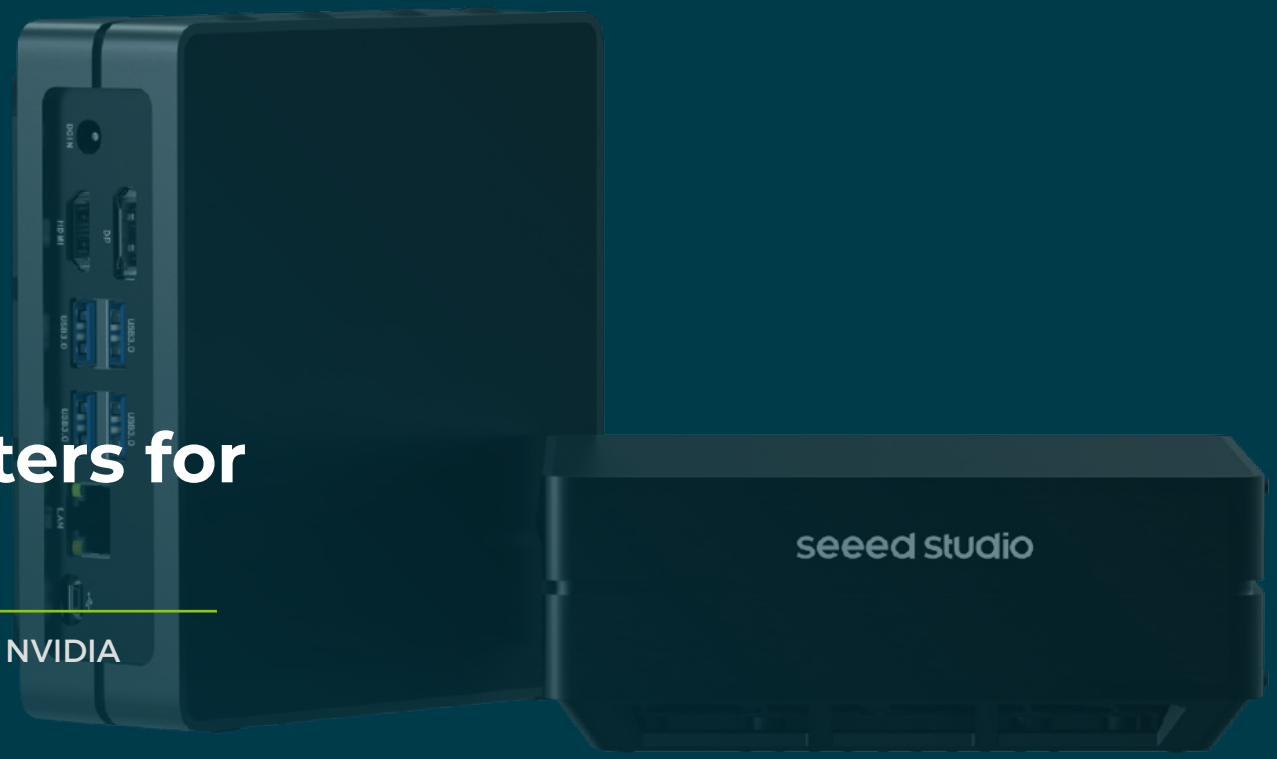
NVIDIA Jetson Module Compatible Carrier Board Comparison

					
Carrier Board	**reComputer J101**	**reComputer J202**	**A203 V2**	**A205E**	**A205**
Module Compatibility	NVIDIA Jetson Nano	NVIDIA Jetson Xavier NX/Nano/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	100mm x 80mm	100mm x 80mm	87mm x 52mm	115mm x 105mm	170mm x 100mm
Display	1x HDMI	1x HDMI 2.1 1x DP	1x HDMI	2x HDMI	2x HDMI
CSI Camera	2x CSI		1x CSI		6x CSI
Networking	1x GbE 1x M.2 Key E for Wi-Fi/BT			2x GbE Wi-Fi/BT Module	2x GbE 1x M.2 Key E for Wi-Fi/BT
GMSL Camera	-				
USB	1x 3.2 Type-A (5Gbps) 2x 2.0 Type-A 1x Type-C (Device Mode)	4x 3.2 Type-A (10Gbps for Xavier NX, 5Gbps for Nano) 1x 2.0 Type-C (Device Mode)	2x 3.2 Type-A 1x 2.0 Micro-B Connector 1x 3.2 0.5mm pitch 20-pin ZIF	4x 3.2 Type-A 1x 2.0 Type-C 1x 2.0 0.5mm pitch 20-pin ZIF	4x USB 3.0 Type A (integrated USB 2.0) 1x USB 2.0 Type C(support OTG)
Storage	1x Micro SD card slot	1x M.2 Key M for NVMe 2280 SSD	1x M.2 Key M for NVMe 2242 SSD 1x Micro SD card slot	1x M.2 Key M 1x Micro SD card slot	5x SATA 1x TF_Card slot
CAN	-	1x CAN	-	1x CAN	-
Multifunctional Ports	1x 40-Pin Expansion header 1x 12-Pin Control and UART header	1x 40-Pin Expansion header 1x 12-Pin Control and UART header	1x 2.0 PITCH 40 Pin (such as UART, GPIO, SPI, etc.) 1x 2.0 PITCH 14 Pin (Reset, CAN, Recovery, etc.)	1 x RS485, 1 x RS232 1x UART 1x SPI Bus(+3.3V Level) 2x I2C Link(+3.3V I/O)	1x System Control, 1x Power Control, 2x I2C Link(+3.3V I/O), 1x UART(+3.3V Level), 2x GPIO(+3.3V Level), 2x SPI Bus(+3.3V Level), 1x LED State
Fan Connector	1x Fan Connector (5V PWM)		1x Fan Picoblade Header	1x Fan Connector (5V PWM)	2 x Fan(12V/5V), 1 x FAN(5V PWM)
RTC	1x RTC 2-pin 1x RTC socket(reserved)	1x RTC 2-pin 1x RTC socket	1 x RTC 2- pin	1x RTC 2-pin 1x RTC socket	1x RTC Back-up Coin Cell Socket
Power Supply	5V/3A (USB Type C)	12V/5A DC	19V/4.74A DC	9-36V DC	13-19V/8A DC
Operating Temperature	-25℃ ~65℃	0℃ ~ 60℃	-25℃ ~65℃	-25℃ ~80℃	–25℃ ~80℃

						
Carrier Board	reServer J501	reComputer J401	reComputer Robotics J401	reComputer Mini	A603	A608
Module Compatibility	NVIDIA Jetson AGX Orin	NVIDIA Jetson Orin Nano/Orin NX	NVIDIA Jetson Orin Nano/Orin NX (Super)	NVIDIA Jetson Orin Nano/Orin NX	NVIDIA Jetson Orin Nano/Orin NX	NVIDIA Jetson Orin Nano/Orin NX
PCB Size	176mm x 163mm	100mm x 80mm	115mm x 115mm	56mm x 88mm	87mm x 52mm	101.5mm x 95mm
Display	1x HDMI 2.1	1x HDMI	1x DP1.4(Type C Host)	1x DP 1.4 (Type C Host)	1 x HDMI	1 x HDMI
CSI Camera	-	2x CSI	-		1x CSI	2x CSI
Networking	1 x LAN0 RJ45 GbE (10/100/1000Mbps); 1 x LAN1 RJ45 10GbE (10000Mbps); 1x M.2 Key B (3042/3052) support 4G/5G (Module not included); 1x M.2 Key E for Wi-Fi/BT; 1x Mini PCIe for LoRaWAN®/4G/Series Wireless	1x GbE 1x M.2 Key E for Wi-Fi/BT	2x RJ45 GbE 1x M.2 Key E for WiFi/BT 1x M.2 Key B for 5G	1x M.2 Key E for WiFi/BT 1x GbE (on Extension Board)	2x GbE 1x M.2 Key E for WiFi/BT	2x GbE 1x M.2 Key E for WiFi/BT 1x M.2 KEY B for 4G/5G
GMSL Camera	2x GMSL Expansion connector (4 lanes for each connector)	-	1x 4 in 1 GMSL2 (mini fakra) (optional board)	-		
USB	3x USB3.2; 1x USB3.2 Type C (Host mode); 1x USB2.0 Type C (Device mode),	4x 3.2 Type-A (10Gbps) 1x 2.0 Type-C (Device Mode)	6x 3.2 Type-A (5Gbps) 1x 3.2 Type-C (Host/DP 1.4) 1x 2.0 Type-C (Device Mode/ Debug)	2x 3.2 Type-A (10Gbps) 1x 2.0 Micro-B (Device Mode) 1x 3.2 Type-C (Host Mode) 1x 2.0 JST-5pin (Host Mode) 4x USB 3.2 Type-A (5Gbps) (on Extension Board)	2x USB 3.0 Type A (Integrated USB 2.0); 1x USB 3.0 0.5mm pitch 20P ZIF; 1x USB 2.0 Micro-AB	4x USB 3.2 Type A (Integrated USB 2.0); 1x USB 2.0+3.2 Type C
Storage	2x SATA III 6.0Gbps) at 30 Hz 1x M.2 Key M (PCIE 4.0)	1x M.2 Key M for NVMe 2280 SSD	1x M.2 KEY M PCIe for NVMe 2280 SSD	1x M.2 Key M PCIe for NVMe 2242 SSD	1x M.2 Key M PCIe for NVMe 2242 SSD	1x M.2 Key M PCIe for NVMe 2242 SSD
CAN	1x CAN	1x CAN	2x CAN0(XT30(2+2)) 3x CAN1(4-Pin GH-1.25 Header)	1x CAN XT30 Connector (2+2) (on Extension Board); 1x CAN JST Connector (on Extension Board)	1x CAN included in 1x 14-Pin header	1x CAN (FD) in multifunctional Ports
Multifunctional Ports	4x DI; 4x DO; 3x GND_DI; 2x GND_DO; 1x GND_ISO; 1x RS232/RS422/RS485; 1x PCIe; 1x TPM 2.0 connector	1x 40-Pin Expansion header; 1x 12-Pin Control and UART header	1 x UART 4-Pin GH-1.25 Header; 2x I2C 4-Pin GH-1.25 Header; 1x PWR; 1x RESET; 1x REC (DIP Switch)	2x 60 pin High Speed Connector (For extension board); 1x 10 pin Power Connector (For extension board); 1x UART; 1x Debug Uart; 2x I2C; 1 x SPI	1x 40-Pin Expansion header (2x I2C, 1x UART, 1x I2S, 2x SPI); 1x 14-Pin header (1x UART, 1x CAN)	2x IIC; 1x CAN (FD); 1x SPI; 7x IO 3.3V; 2x UART; 1x DEBUG; 1x POWER; 1x RESET; 1x RECOVERY
Fan Connector	1x Fan connectors (5V PWM)	1x 4-pin Fan Connector (5V PWM)	1x 4-Pin Fan Connector (5V PWM); 1x 4-Pin Fan Connector (12V PWM)	1x 4-pin Fan Connector (5V PWM)	1x Fan Connector (5V PWM)	1x Fan Connector (5V PWM)
RTC	1x RTC 2-pin; 1x RTC socket (CR1220 included)	1x RTC 2-pin 1x RTC socket	1x RTC 2-pin 1x RTC Socket	1x RTC 2-pin 1x RTC socket	1 x RTC socket (rechargeable 3V Lithium Battery Connector)	1x 3.0V RTC
Power Supply	12V-36V DC	9-19V DC	19-54V XT30(2+2)	1 x XT30 Connector (12-54V DC)	9-20V/7A DC	9-20V(MAX 60W) DC
Operating Temperature	-20℃ ~60℃	-10℃ ~60℃	-20℃ ~60℃ (25W Mode) -20℃ ~55℃ (MAXN Mode)	-10℃ ~50℃	–25℃ ~65℃	–25℃ ~65℃

seeed studio

NVIDIA Elite Partner



Edge AI Computers for NVIDIA Jetson

Hand-size Edge AI Device Built with NVIDIA Advanced AI Embedded Systems

Jetson Nano/ Xavier NX/ Orin Nano/ Orin NX

Pre-installed JetPack | Production Module

Flexible Customization | Thermal Dissipation Reference Design

Module Embedded

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

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 (mm)

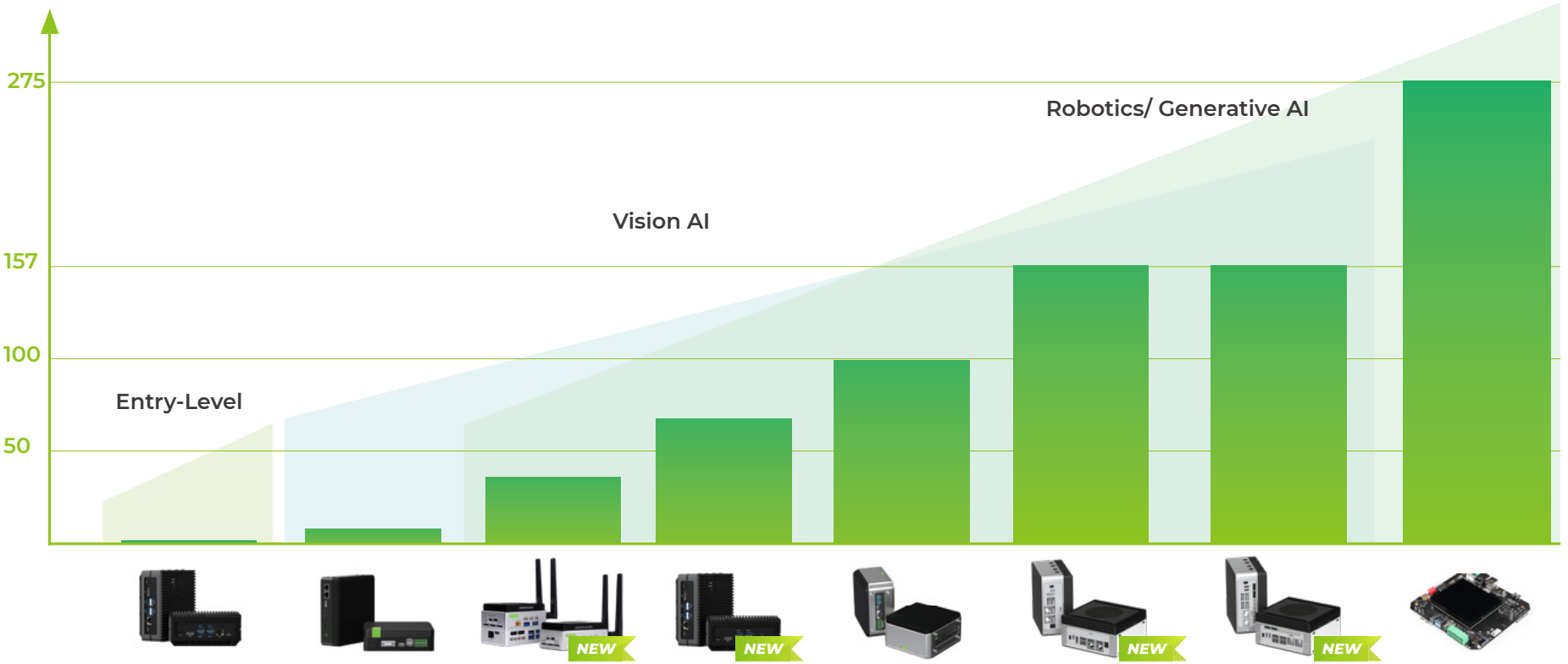
Multiple choices of form factors fitting to be perfectly embedded in your system:
63 x 95 x 42-66.7 / 130 x 120 x 50-60 /
159 x 155 x 57 / 194.33 x 187 x 95.5

Features

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

reComputer & reServer Jetson Series Selection Guide

AI Performance (TOPS)



reComputer Classic J1010	reComputer Industrial J2012	reComputer Mini J3011	reComputer J4011B	reServer Industrial J4012	reComputer Jetson Super Series	reComputer Jetson Robotics Series	reServer AGX Orin J501 Board
NVIDIA Jetson Nano 4GB	NVIDIA Jetson Xavier NX 16GB	NVIDIA Jetson Orin Nano 8GB	NVIDIA Jetson Orin NX 8GB	NVIDIA Jetson Orin NX 16GB	NVIDIA Jetson Orin Nano/Orin NX	NVIDIA Jetson Orin Nano/Orin NX	NVIDIA Jetson AGX Orin 32/64GB

Products Overview - Based on Scenario

NVIDIA Elite Partner

Multimodal Perception

Video Analytics

General AI Application

Inventory Tracking/ Mobility/ Infrastructure Analysis

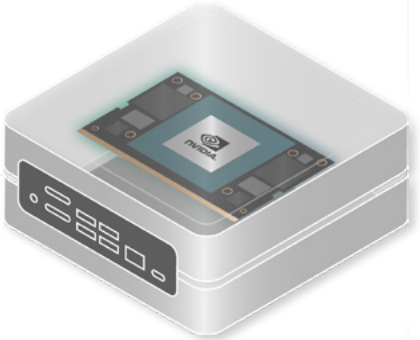
Complex Transportation Interpretation

Factory Quality Control/ AI Security

Local AI Center/ AI NAS

Generative AI

Large Model Deployment:
LLM/ VLM/ VLA/ Llama/ Ollama/ Anything LLM/ Whisper/ DeepSeek...



Reasoning Logic & Motion Control

Robotics

Drone/ Space-Limited Integration

Humanoid/ AGV

Optional Accessories

- Camera
- LiDAR
- Joint Actuator
- IMU
- Mic Array
- NVMe SSD
- LTE/4G Module
- WiFi/BlueTooth Module
- Antenna Kit

reComputer Classic Series

Product Name	reComputer J3010 / J3011 reComputer J4011 / J4012
Module Compatibility	Jetson Orin Nano 4GB / 8GB Jetson Orin NX 8GB / 16GB
Dimensions	130mm x 120mm x 58.5mm
SKU	110110146 / 110110147 / 110110144 / 110110145
Certification	RoHS CE FC KC UKCA REACH
Introduction	**reComputer Classic Series** is a hand-size edge AI computer, built with: Jetson Orin Nano/Orin NX module which delivers up to 100 TOPS AI performance, an open-source carrier board reComputer J401 with rich set of IOs - including USB 3.2 ports(4x), HDMI 2.1, Ethernet, M.2 Key E, M.2 Key M, RTC, CAN, GPIO 40-pin and more. Equipped with an aluminum case, cooling fan with a heatsink and a pre-installed JetPack system, ready for Go-To-Market and getting started to build your next AI application.

NVIDIA Elite Partner

*Note: reComputer Classic J30 can be upgraded to Super Mode by manually flashing JetPack 6.2

reComputer J30 Orin Nano 4GB / 8GB

20 | 40 TOPS

reComputer J40 Orin NX 8GB / 16GB

70 | 100 TOPS

Price from: **$499**

Features

Cooling Fan | M.2 Key E for WiFi | M.2 Key M for SSD | Wi-Fi/Bluetooth | Pre-installed JetPack 5.1 | 128GB NVMe SSD | 1x RJ-45 for GbE | 4x USB3.2

Applications

*Refer to the complete specification comparison table below for detailed parameters.

reComputer J401B Series

Product Name	reComputer J3010B / J3011B reComputer J4011B / J4012B
Module Compatibility	Jetson Orin Nano 4GB / 8GB Jetson Orin NX 8GB / 16GB
Dimensions	130mm x 120mm x 58.5mm
SKU	114993486 / 114993487 / 114993488 / 114993489
Certification	RoHS CE FC
Introduction	**reComputer J401B Series** is an enhanced edge AI computer based on the reComputer Classic Series, featuring a mini PCIe slot for LTE module integration—enabling remote deployment without wired or Wi-Fi connectivity. Powered by NVIDIA Jetson Orin Nano / Orin NX, it delivers up to 100 TOPS of AI performance. With a rich I/O set including 2x USB 3.2, HDMI 2.1, Ethernet, M.2 Key E, M.2 Key M, mini PCIe, and 40-pin GPIO, it reduces dependence on on-site network infrastructure and enhances system reliability for edge AI applications.

Features

Cooling Fan | mini PCIe for LTE | M.2 Key E for WiFi | M.2 Key M for SSD | Pre-installed JetPack 5.1 | 128GB NVMe SSD | 1x RJ45 for GbE | 2x USB 3.2

NVIDIA Elite Partner

*Note: reComputer J30B can be upgraded to Super Mode by manually flashing JetPack 6.2

reComputer J30B Orin Nano 4GB / 8GB

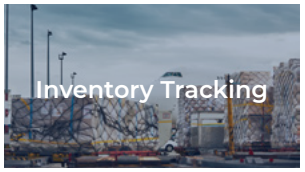
20 | 40 TOPS

reComputer J40B Orin NX 8GB / 16GB

70 | 100 TOPS

Price from: **$505**

Applications



*Refer to the complete specification comparison table below for detailed parameters.

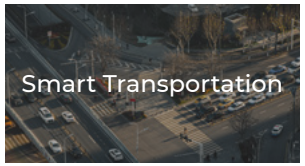
reComputer Super NEW

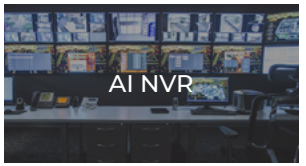
Product Name	reComputer Super J3010 / J3011 reComputer Super J4011 / J4012
Module Compatibility	Jetson Orin Nano (Super) 4GB / 8GB Jetson Orin NX (Super) 8GB / 16GB
Dimensions	130mm x 120mm x 66mm
SKU	114110311 / 114110312 / 114110313 / 114110314
Certification	RoHS CE FC REACH
Introduction	**reComputer Super Series** is a compact, high-performance edge AI system powered by NVIDIA Jetson Orin Nano/ Orin NX in MAXN mode, delivering up to 157 TOPS — 1.7x performance boost over the original Jetson Orin. Designed for fast development and deployment, it features a rich I/O set including 4x USB 3.2, HDMI 2.1, dual RJ-45 GbE, CAN, SIM card slot, M.2 Key E, M.2 Key M, mini PCIe, 4x CSI, and more. With a wide operating temperature range of -20°C to 65°C, it's ideal for multimodal perception, robotics, and demanding edge AI applications in diverse environments.

Features

2x RJ45 GbE | 4x USB 3.2 | 4x MIPI CSI | Hybrid Cooling | mini PCIe for LTE 4G | M.2 Key E & M | Pre-installed JetPack 6.2 | 128GB NVMe SSDa

Applications





NVIDIA Elite Partner

reComputer Super J30 Orin Nano 4GB / 8GB **34 | 67 TOPS**

reComputer Super J40 Orin NX 8GB / 16GB **117 | 157 TOPS**

Price from: **$499**

*Refer to the complete specification comparison table below for detailed parameters.

reComputer Robotics Series

NEW

NVIDIA Elite Partner

Product Name	reComputer Robotics J3010 / J3011 reComputer Robotics J4011 / J4012
Module Compatibility	Jetson Orin Nano (Super) 4GB / 8GB Jetson Orin NX (Super) 8GB / 16GB
Dimensions	130mm x 120mm x 66mm
SKU	114110308 / 114110309 / 114110310
Introduction	**reComputer Robotics Series** is a compact, high-performance edge AI computer purpose-built for robotics development and Physical AI applications. Powered by NVIDIA Jetson Orin Nano/Orin NX in MAXN mode, it delivers up to 157 TOPS of AI performance. Designed with rich I/O for seamless integration with sensors and robotic components, it includes USB 3.2 (6x), HDMI 2.1, Ethernet, M.2 Key E (Wi-Fi), M.2 Key M (SSD), M.2 Key B, CAN, 40-pin GPIO, GMSL extension option and more. As a powerful robotic brain reference design, it enables real-time inferencing of complex environmental data, driving decision-making and motion control for AI-powered robots.

reComputer Robotics J30 Orin Nano 4GB / 8GB

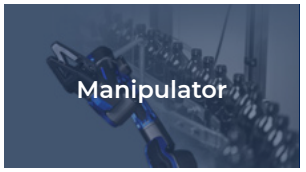
34 | 67 TOPS

reComputer Robotics J40 Orin NX 8GB / 16GB **117 | 157 TOPS**

Features

2x RJ-45 GbE | 6x USB 3.2 | GMSL2 Extension | 2x CAN XT30(2+2) | M.2 Key E/M/B | Pre-installed JetPack 6.2 | 128GB NVMe SSDa | DP 1.4 | 19-54V Power Range

Applications



*Refer to the complete specification comparison table below for detailed parameters.

reComputer Mini Series

Product Name	reComputer Mini J3011 / J3011 with Extension Board reComputer Mini J4012 / J4012 with Extension Board
Module Compatibility	Jetson Orin Nano 8GB Jetson Orin NX 16GB
Dimensions	63mm x 95mm x 42mm (w/o extension) 63mm x 95mm x 66.7mm (with extension)
SKU	102110999 / 114993551 / 102111001 / 114993553
Certification	RoHS CE FC REACH
Introduction	**reComputer Mini Series** is an ultra-compact edge AI computer, ideal for space-constrained integrations such as drones and AGV. Powered by NVIDIA Jetson Orin Nano / Orin NX, it delivers up to 100 TOPS of AI performance. With a rich set of I/Os—including up to 8x USB, DP 1.4, RJ-45 GbE, dual CAN, M.2 Key E (Wi-Fi), M.2 Key M (SSD), 40-pin GPIO, and more—it ensures seamless sensor and peripheral connectivity. The customizable bottom extension board makes it easy to build a tiny, embedded inferencing computer that integrates directly with flight controllers or compact robotic platforms.

NVIDIA Elite Partner

*Note: reComputer Mini J30 can be upgraded to Super Mode by manually flashing JetPack 6.2

reComputer Mini J30 Orin Nano 8GB

40 TOPS

reComputer Mini J40 Orin NX 16GB

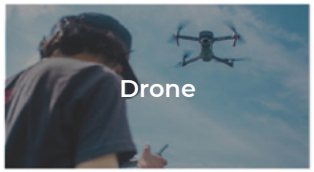
100 TOPS

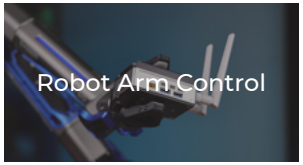
Price from: **$599**

Features

RJ-45 GbE | 8x USB | 2x CAN (XT30(2+2) | JST 4pin) | M.2 Key E & M | SPI JST 6pin | 2x I2C | DP 1.4(Type-C) | 12-54V Power Range

Applications





*Refer to the complete specification comparison table below for detailed parameters.

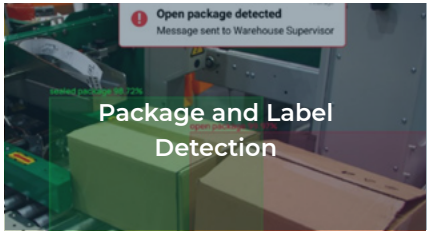
reComputer Industrial Series

Product Name	reComputer Industrial J2011/J2012 reComputer Industrial J3010/J3011 reComputer Industrial J4011/J4012
Module Compatibility	Jetson Xavier NX 8GB / 16GB Jetson Orin Nano 4GB / 8GB Jetson Orin NX 8GB / 16GB
Dimensions	170mm x 100mm
SKU	110110188 / 110110189 / 110110192 / 110110193 / 110110190 / 110110191
Certification	RoHS CE FC
Introduction	**reComputer Industrial series** is industrial Grade embedded AI computer, designed for NVIDIA Jetson Xavier NX/Orin Nano/Orin NX. Combined with 2x RJ-45 GbE (1x PoE), RS232/422/485, fanless design, and flexible mounting options, it's ideal for industrial automation, which excels in demanding environments such as warehouses, smart agriculture, security, in-vehicle computing, and autonomous mobile robots.

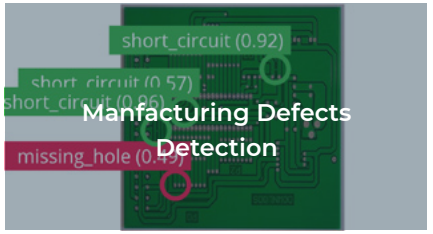
Features

Pre-installed JetPack 5.1 | Fanless Design | 3x USB3.2 | PoE | RS232/422/485 | 1x CAN | NVMe M.2 | Dual GbE

Applications



alwaysAI



EDGE IMPULSE

NVIDIA Elite Partner

*Note: reComputer Industrial J30 can be upgraded to Super Mode by manually flashing JetPack 6.2

J20 Xavier NX — **21TOPS**

J30 Orin Nano — **20 | 40 TOPS**

J40 Orin NX — **70 | 100 TOPS**

Price from: **$799**

*Refer to the complete specification comparison table below for detailed parameters.

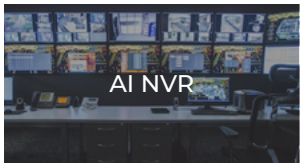
reServer Industrial Series

Product Name	reServer Industrial J3010 / J3011 reServer Industrial J4011 / J4012
Module Compatibility	Jetson Orin Nano 4GB / 8GB Jetson Orin NX 8GB / 16GB
Dimensions	194.33mm x 187mm x 95.5mm
SKU	114110250 / 114110249 / 114110248 / 114110247
Certification	RoHS CE FC UKCA
Introduction	**reServer Industrial series** is high performance AI inference center, powered by the latest NVIDIA Jetson Orin Nano/ Orin NX module, delivers up to 100 TOPS AI performance. Equipped with multi-stream processing by 5x GbE (4x PoE), and local storage expansion by 2x 2.5'' SATA SSD/HDD, it's capable of being a great powerhouse for video analysis and combining large language model (LLM) for multimodal perception, ideal for warehouse management, assisted driving, robot, personalized AI assistants, and RAG-based local knowledge retrieval.

Features

5x RJ-45 GbE | 4x PoE | 2x Drive bays for 2.5'' HDD/SSD | 1x RS232/422/485 | SPI JST 6pin | 4x DI/DO | 1x CAN

Applications



NVIDIA Elite Partner

Note: reServer Industrial J30 can be upgraded to Super Mode by manually flashing JetPack 6.2

reServer Industrial J30 Orin Nano 4GB / 8GB

20 | 40 TOPS

reServer Industrial J40 Orin NX 8GB / 16GB

70 | 100 TOPS

Price from: **$899**

*Refer to the complete specification comparison table below for detailed parameters.

NVIDIA Jetson Edge AI Computer Comparison

					
Product Series	**reComputer Classic**	**reComputer J401B**	**NVIDIA Jetson Orin Nano Super Developer Kit**	**reComputer Industrial**	**reServer Industrial**
Module	Nano/Xavier NX/Orin Nano/ Orin NX	Orin Nano/Orin NX	Orin Nano 8GB	Xavier NX/Orin Nano/Orin NX	Orin Nano/Orin NX
AI Performance	0.5 TFLOPS-100 TOPS (Orin Nano can be upgraded by user)	20-100 TOPS (Orin Nano can be upgraded by user)	67 TOPS	20-100 TOPS (Orin Nano can be upgraded by user)	20-100 TOPS (Orin Nano can be upgraded by user)
Cooling System	Fan	Fan	Fan	Fanless	Fanless
Camera	2x CSI (2-lane 15pin)	2x CSI (2-lane 15pin)	2x CSI	2x CSI (2-lane 15pin)	-
GMSL Camera	-				
Ports	5x USB 1X RJ-45 Ethernet	3x USB 1x RJ-45 Ethernet	5x USB 1x GbE	5x USB 2X RJ-45 Ethernet (1x POE)	6x USB 5X RJ-45 Ethernet (4x POE)
Other Key Features	CAN, HDMI, M.2 KEY M for storage, M.2 KEY E for Wi-Fi/BT	CAN, HDMI, M.2 KEY M for storage, M.2 KEY E for Wi-Fi/BT, Mini PCIe for LTE	M.2 Key M (4x PCIe GEN3, 2x PCIe GEN3), M.2 Key E for Wi-Fi/BT, 1x DP 1.2 (+MST), 1x CAN, 1x 40-Pin Expansion header, 1x 12-Pin Control and UART header	DI/DO(1x CAN included), 1x DB9(RS232/422/485), HDMI, DP, M.2 KEY M for storage, Support SMD Wi-Fi/BT, M.2 KEY B for 4G/5G, Mini PCIe for 4G/LoRaWAN	DI/DO(1x CAN included), 1x DB9(RS232/422/485), 2x SATA, Nano SIM card slot, HDMI, Mini PCIe for 4G/ LoRaWAN, M.2 KEY M for storage, M.2 KEY B for 4G/5G
Power Supply	9-19V DC	9-19V DC	9V-19V DC	12-24V DC	12-36V DC
Power Consumption (Module)	7-25W	7-25W	7-25W	7-25W	7-25W
Dimension	130mm x 120mm x 58.5mm	130mm x120mm x 58.5mm	100mm x 79mm x 21mm	159mm x 155mm x 57mm	194.33mm x 187mm x 95.5mm
Operating Temperature	-10℃ ~60℃	-10℃ ~60℃	-	-20℃ ~60℃	-20℃ ~60℃

					
Product Series	**reComputer Super**	**reComputer Mini**	**reComputer Robotics**	**NVIDIA Jetson AGX Orin Developer Kit**	**NVIDIA Jetson AGX Thor Developer Kit**
Module	Orin Nano/Orin NX	Orin Nano/Orin NX	Orin Nano/Orin NX	AGX Orin 64GB	T5000 128GB
AI Performance	34-157 TOPS	20-100 TOPS (Orin Nano can be upgraded by user)	34-157 TOPS	275 TOPS	2070 TFLOPS
Cooling System	Hybrid	Fan	Hybrid	Fan	Fan
Camera	4x CSI (2-lane 15pin)	-		16 lane CSI	HSB camera via QSFP slot USB camera
GMSL Camera	-		Mini fakra 4-in-1 for 4x GMSL2 (extension)	-	
Ports	5x USB 2X RJ-45 Ethernet	8x USB 1X RJ-45 Ethernet	8x USB 2X RJ-45 Ethernet	6x USB 1x RJ45 - Up to 10GbE	4x USB 1x 5GBe RJ45 connector 1x QSFP28 (4x 25 GbE)
Other Key Features	CAN, HDMI, M.2 KEY M for storage, M.2 KEY E for Wi-Fi/BT, Mini PCIe for LTE	2x I2C, 2x CAN, DP, M.2 KEY E for Wi-Fi/BT, (extension inc 2x 60pin high speed connector for extension board)	2x I2C, 2x CAN, DP, M.2 KEY M for storage, M.2 Key B for 5G, 1x Camera Expansion Header (for GMSL2 board)	M.2 Key E: 1x PCIe Gen 4, DP 1.4a (+MST), 16x PCIe slot supporting: 8x PCIe Gen4, 10-pin audio panel header, 40-pin header (I2C, GPIO, SPI, CAN, I2S, UART, DMIC)	M.2 Key M slot with x4 PCIe Gen5, M.2 Key E slot with x1 PCIe Gen5, 1x HDMI 2.0b, 1x DP 1.4a, I2C, 2x 13-pin CAN heade, 2x 5-pin audio panel header
Power Supply	12-19V DC	12-54V DC (2x XT30 2+2 connector)	19-54V DC XT30 (2+2)	12-36V DC	9-28V DC
Power Consumption (Module)	25-40W	7-25W	25-40W	15-60W	40-130W
Dimension	130mm x 120mm x 66mm	63mm x 95mm x 42mm (Without Extension) 63mm x 95mm x 66.7mm (With Extension)	130mm x 120mm x 66mm	110mm x 110mm x 71.65mm	243.19 mm x 112.40 mm x 56.88 mm
Operating Temperature	–20℃ ~65℃ (25W mode) –20℃ ~60℃ (MAXN mode)	–10℃ ~50℃	-20℃ ~60℃ (25W mode) -20℃ ~55℃ (MAXN mode)	–	

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 odm@seeed.cc for evaluation.

reComputer J401

The compact reComputer J401 carrier board delivers up to 100 TOPS with **NVIDIA Jetson Orin Nano/Orin NX**, making it ideal for GPU-accelerated edge AI. With 4× USB 3.2, GbE, HDMI, M.2 slots, GPIO, and JetPack 5.1.3 pre-installed (JP6-ready), it's production-ready for long-term deployment, handling well in smart retail, V2X, security, in-vehicle computing, and autonomous mobile robots.

reComputer Mini

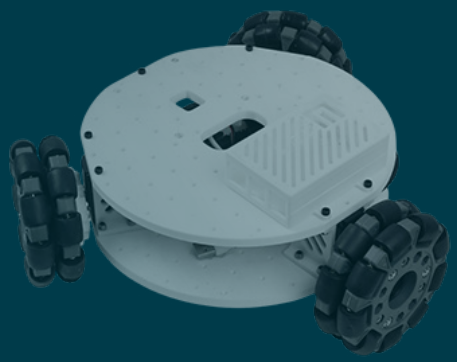
reComputer Mini is an 80g carrier board for **NVIDIA Jetson Orin Nano/NX**, designed for UAV and UGV applications. It delivers up to 100 TOPS for tasks like autonomous navigation, obstacle avoidance, and object detection. With support for RGB, IR, LiDAR, 3D sensors, flight controller interfaces (UART, CAN, Ethernet), 4S–14S battery input, and 5G/4G connection, it's ready for real-time deployment in the field.

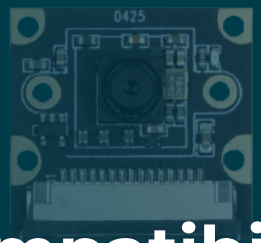
reComputer Robotics

The reComputer Robotics J401 is a compact, high-performance carrier board for advanced robotics, supporting **NVIDIA Jetson Orin Nano/NX** in Super mode with up to 157 TOPS of AI performance. Pre-installed with JetPack 6.2 and Linux BSP, it enables seamless deployment as a powerful robotic brain for processing complex sensor data in real time.

seeed studio

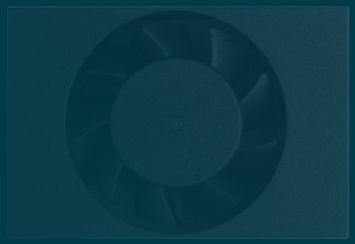
NVIDIA Elite Partner





NVIDIA Jetson Compatibility

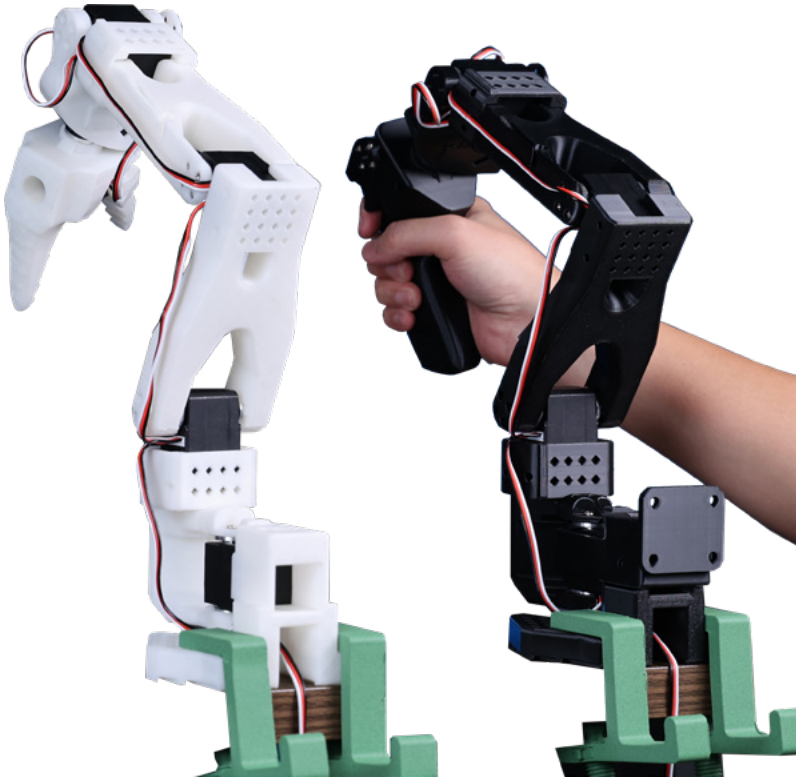
Robot Kit, Joint Actuator, IMU, Camera, LiDAR, Heatsink, and Other Accessories



Build Open-Source Robot - SO-ARM101

Low Cost AI Arm Servo Motor Kit with Hugging Face LeRobot

SKU	**SO-ARM 100:** Motor Kit - 114993608 | Motor Kit Pro - 114993609 | 3D Printed Parts - 114993637 **SO-ARM 101:** Motor Kit - 114993666 | Motor Kit Pro - 114993667 | 3D Printed Parts - 114993668 (one SO-ARM full set should includes: one motor kit + one 3D-printed parts)
Introduction	Start imitation learning robotics project! We provide 2 unassembled robot arms as one set, which is one leader arm and one follower arm composed by motors, adapter boards, and cables in the package.

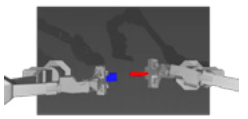


3 STEPS to get hands on LeRobot Imitation Learning!

- Data Collection
  Collect dedicated behaviors as data from the follower arm, which is taught by the leader arm by manually / Collect data in simulation through NVIDIA Issac Lab
- Model Training
  Train ACT / Diffusion Policy / Pi0 / GR00T N / HIL-SERL models, choose the best performance
- Edge Deployment
  Deploy validated model on NVIDIA Jetson Orin edge device, complete a pick & place task at the edge, and discover more in Reinforcement Learning!

Teleoperation

Diffusion Policy



Simulation

Build Open-Source Robot - LeKiwi

Mobile Manipulator Kit to DIY Your AI Assistant

SKU	Mobile Base Full Kit - 114090065
Introduction	Take a further step from SO-ARM, now you can build you can build up the robot arm with the low-cost 3D-printed mobile base! LeKiwi is a low-cost, 3D printed mobile manipulator powered by Raspberry Pi 5/NVIDIA Jetson Orin/ Laptop system.

It's never been easier to automate daily tasks at home/Lab:

- All in Python
- Omnidirectional movement, dual RGB camera input supported
- Full integration with Hugging Face's LeRobot framework
- Able to achieve full end-to-end control with VLA (Vision-Language-Action) models

Add to bundle

USB Camera x2

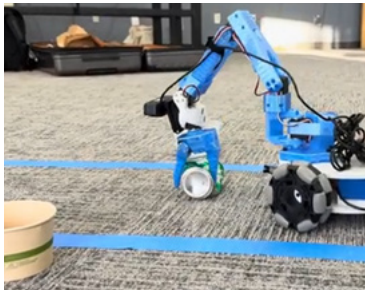
12V Battery x1

Raspberry Pi 5 x1

SD card x1

LeRobot SO-ARM101

Demo Check out more inspiring projects in community



Joint Actuator

Product Name	Joint actuator collection of motors and servos
Introduction	Compatible with NVIDIA Jetson Orin, you can easily control multiple joint motor modules via CAN or serial bus, enabling flexible, scalable robot designs—from robotic arms to full humanoids—with precise, real-time responsiveness for rapid prototyping.

MyActuator Planetary Actuator

X4-10 1:12.6 gear ratio, 10 N.m peak torque, controlled through CAN

SKU 114090069

X4-36 1:36 gear ratio, 34 N.m peak torque, controlled through CAN

SKU 114090068

FeeTech ST3215 Serial Bus Servo

ST3215 C001 servo 7.4V 19.5Kg.cm stall torque, 1:345 gear ratio

SKU 108090023

ST3215 C044 servo 7.4V 27.4Kg.cm stall torque, 1:191 gear ratio

SKU 101090141

ST3215 C046 servo 7.4V 14.4Kg.cm stall torque, 1:147 gear ratio

SKU 101090142

ST3215 C047 servo 12V 30Kg.cm stall torque, 1:345 gear ratio

SKU 108090003

FashionStar Dual-Shaft Serial Bus Servo

RP6-U15H-M Servo 12V, 257:1 reduction ratio, stall torque 15 kg. cm

SKU 114090073

HX8-U50H-M Servo 12V, 387:1 reduction ratio, stall torque 50 kg.cm

SKU 114090078

Camera - Sony IMX Sensor

Product Name	Sony IMX sensor camera module compatible with NVIDIA Jetson platforms
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

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

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

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

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

Sensing SG3S-ISX031C-GMSL2F 3MP GMSL2 Camera
SKU 101090101

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

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

Camera - e-con Systems

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.asp

Camera - ToF / GMSL2

Product Name	ToF camera & GMSL2 camera
Introduction	The collection of ToF and GMSL2 cameras are designed for high-performance depth sensing and wide-angle vision in edge AI and robotic applications. Time-of-Flight (ToF) technology enables precise distance measurement, ideal for 3D mapping and object detection. While GMSL2 enables high-speed, long-distance image transmission with minimal latency, ideal for real-time perception in autonomous systems and harsh environments.

Sensing SG3S-ISX031C 3MP GMSL2 serializer MAX96717F

SKU 101090101

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

SKU 114992563

OakSense H60Q-QVGA resolution ToF camera

SKU 114992757

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

SKU 101990866

DepthEye Turbo - VGA ToF with Sony IMX556PLR DepthSense

SKU 114991967

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

SKU 114992753

RPLiDAR

Product Name	RPLiDAR - Laser ranging LiDAR
Introduction	RPLiDAR provides scan frequency, range distance, angular resolution, and measurement accuracy, enabling 360° laser scanning with high accuracy and stability, ideal for indoor mapping, obstacle avoidance, and SLAM applications.

RPLiDAR A1M8-R6 360° Laser Scanner Kit - 12M Range

SKU 114992561

RPLiDAR S1 Portable ToF Laser Scanner Kit - 40M Range

SKU 114090021

RPLiDAR A2M12 360 Degree Laser Scanner Kit - 12M Range

SKU 114110128

TF-Luna LiDAR Module - Short-Range Distance Sensor

SKU 101990656

TF03-100 LiDAR – Industrial-Grade Long Range Distance Sensor (100m)

SKU 101060004

RPLiDAR A3M1 360° Laser Scanner Kit - 25M Range

SKU 110991068

RPLiDAR S2 Low Cost 360 Degree Laser Range Scanner - 30M Range

SKU 114992738

Slamtec Mapper M2M2 - LiDAR Mapping Sensor(Industrial Grade) - 40M Range

SKU 101990641

TF02-i LiDAR - Distance Sensor (40m) with CAN Interface

SKU 101090021

ToF LiDAR

Product Name	Time-of-Flight LiDAR
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

RPLiDAR S3 ToF Laser Scanner - 40m range, 2D point cloud map

SKU 101090041

HPS-3D160-U Solid-State LiDAR

SKU 101990386

Benewake Solid State TOF LiDAR Single Channel - CE30-A

SKU 109990325

RPLiDAR C1M1-R2 Portable ToF Laser Scanner Kit - 12M Range

SKU 101090061

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 with Fan for Jetson TX2 NX Module

SKU 114992731

Aluminum Heatsink for Jetson Nano Module

SKU 114992686

Jetson Nano Module Active Heat Sink

SKU 101110061

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

SKU 110991904

Aluminum heatsink with Fan for Jetson AGX Orin

SKU 114993389

Accessory

Product Name	Accessory series for NVIDIA Jetson Orin platforms
Introduction	A curated set of accessories fully tested for compatibility with Seeed's Jetson Orin carrier boards/full systems. Choose the components you need to jumpstart your edge AI applications—pre-verified, plug-and-play, and available as a one-stop bundle for fast and easy deployment.

SSD

NVMe M.2PCIe Gen3x4 2280 Internal SSD

SKU 128GB 112990226 | 256GB 112990246 | 512GB 112990247 | 1TB 112990267 | 2TB 114993467

LTE/4G Module

TE Cat 4 EC25-AFXGA-mini-PCIe

SKU North American operators 113991134 | EMEA and Thai operators 113991135 | AUX 113991174 | Japan operators 113991296

Wireless Module

RTL8822CE Wireless NIC, 2.4G/5GHz Dual-Band WiFi 5, Bluetooth 5.0

SKU 114993556

2.4G/5G External Antenna with RP-SMA Male Connector and 1.13 Coaxial Cable 130mm Set

SKU 114993587

Analyzer/Adapter

CH340G USB to Serial (TTL) Module&Adapter

SKU 317990026

USB to CAN Analyzer Adapter with USB Cable

SKU 114991193

Power Adapter

Power Adapter 3P-Black-12V-5A/7.4*5mm (without Power Cord)

SKU 101090142

Power Adapter 3P-Black-19V-4.74A/7.4*5mm (without Power Cord)

SKU 108090003

AC Cloverleaf Power Cord

SKU US 313990332 | UK 313990328 | JP 106990469 | EU 106990468 | CN 106990470

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 17 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 Physical AI possibilities.

We are working with

aiixon · alwaysAI · aws · balena · CLIKA. · cochl. · cogniteam · CVEDIA · DATADOIT · e-con Systems · EDGE IMPULSE · ISARSOFT · JIGSAW · lumeo · Nota AI · PRASSEL · REMARK · roboflow · Scailable. · TEKNOIR · tryo·labs · ultralytics · zenus

Build together in Physical AI

DAMIAO | 达妙科技 · Fashion Star Technology Limited · FEETECH · GAZEBO · Hugging Face · LeRobot · k-scale labs · 脑塔智能 MYACTUATOR · MuJoCo · NVIDIA ISAAC · ROBSTRIDE · phospho · ROS

Buy Seeed Jetson products from NVIDIA partner and distributors

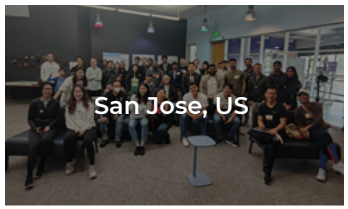
ARROW · Co.Tomorrowing MACNICA · C.R.G. ELECTRONICS · OPEN ZEKA · MDSTECH · RYOYO

Seeed Global Embodied AI Hackathon

Join us on an exciting journey into embodied AI with our hackathon, kicking off in Shenzhen, China in Dec. 2024.

We explored Hugging Face's LeRobot platform using the SO-ARM100/101 kits—6-axis robotic arms—for hands-on assembly, calibration, and teleoperation in imitation learning setups with leader-follower arms.

We're diving deeper into open-source robotics, combining hardware with traditional kinematics, object detection, data collection, and training workflows. Looking ahead, we'll continue developing practical tutorials on imitation learning, reinforcement learning with Isaac Gym, and goal-driven robotic manipulation to make embodied AI more accessible for developers.



Discover more at https://seeedstudio.com/embodied-ai-hackathon

Get Ready for Next Workshop!

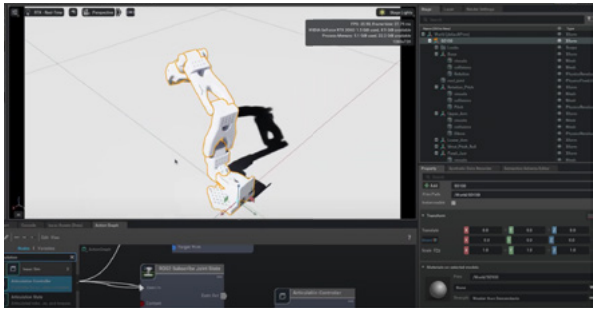
Seeed Embodied AI Hackathon is calling for every robotics developers and enthusiasts globally! Open for all project topics.

- Join as a contestant to build up your idea
- Join as a ranger supporting to host our hackathons at your local community

Feel free to contact us at edgeai@seeed.cc, or just pick a session that fits your schedule and register now!

Worldwide LeRobot Hackathon hosted by Hugging Face. Learn more about 30 winners' project ideas here.

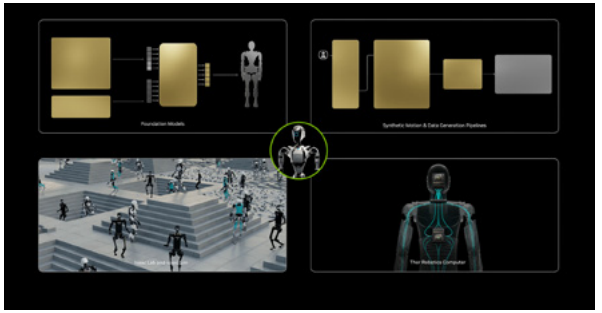
Full of Tutorials
Make Technology Accessible to Everyone



NVIDIA Isaac™ Sim

Import the SO100 Arm Kit robotic arm into NVIDIA's Isaac Sim simulation platform and control it using ROS2 and Python scripts.

Check out tutorial >



NVIDIA Isaac™ GR00T

Post-Training Isaac GR00T N1.5 for LeRobot SO-101 Arm

Check out tutorial >

VR Teleoperation via Phospho

Operate the SO-ARM via a Meta Quest 3 VR headset(or through keyboard/the leader arm

Check out tutorial >

Flash JetPack

Select the appropriate Jetson Linux version that support for your device, get the compatible JetPack SDK, and install it by following our step-by-step guide.

Install JetPack SDK >

Hardware Interface Usage

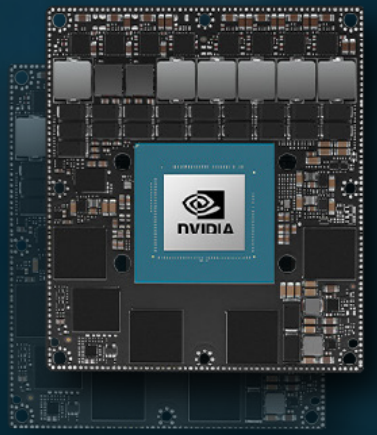
Explore the available I/O interfaces on your Jetson device—understand their functions, identify compatible peripherals, and learn how to properly configure and utilize them in your projects.

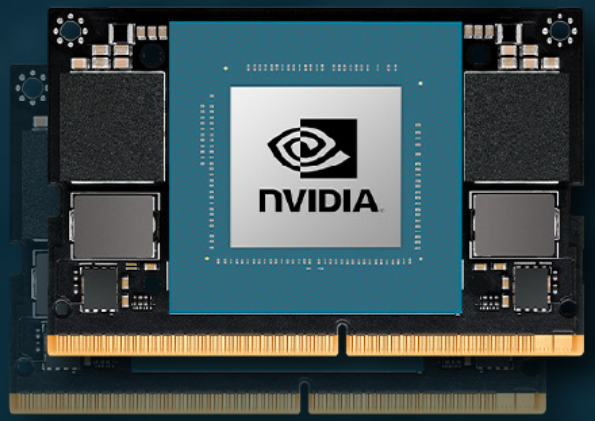
I/O configuration >

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

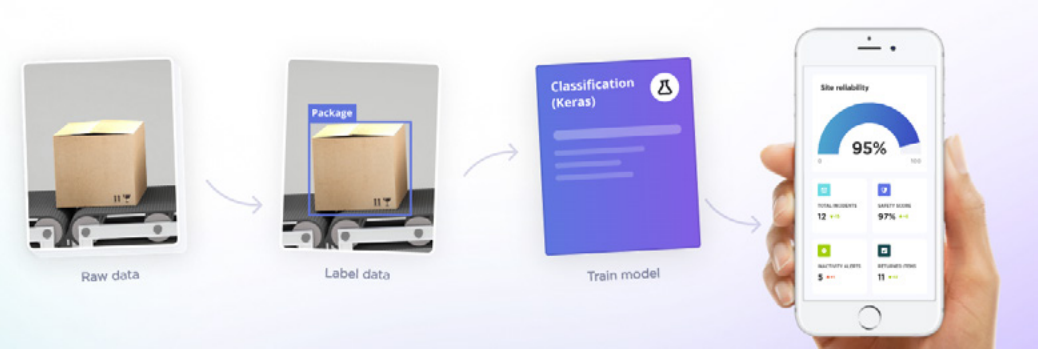
Industry

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.

seeed studio

ultralytics

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!

seeed studio

cogniteam

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

Application

Robotics Development

Device Support

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

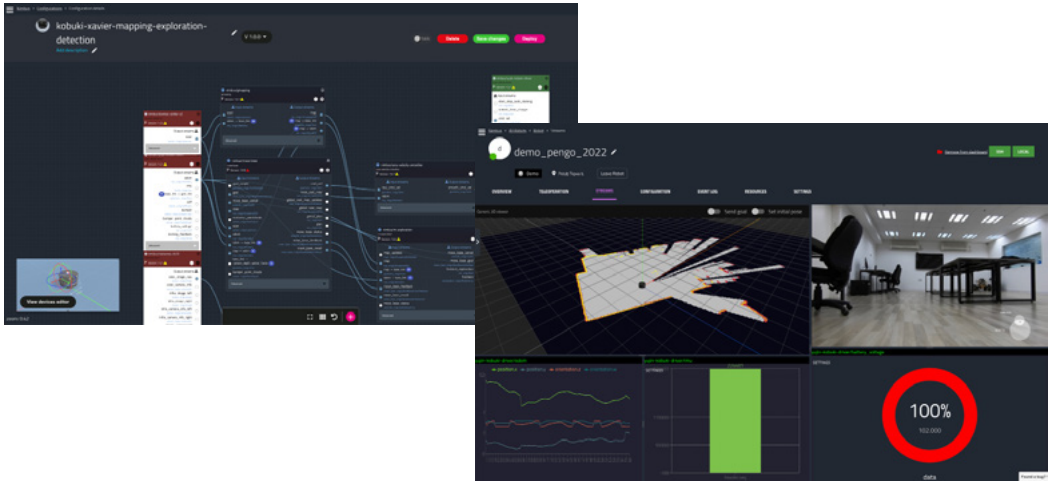
Seeed Partner with Cogniteam to Bring the Drag and Drop Robotics Development and Deployable Solutions for NVIDIA Jetson Platform

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.



seeed studio

alwaysAI

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.

seeed studio

tryo·labs

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

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

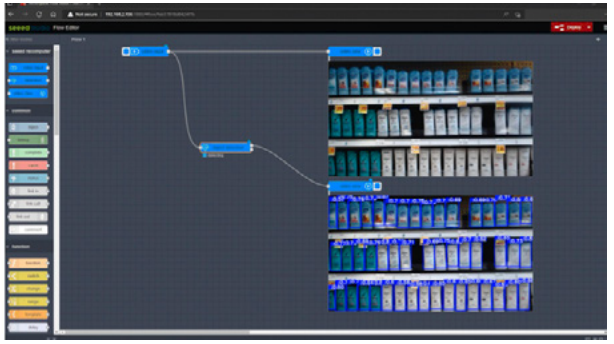
All Seeed's NVIDIA compatible carrier boards and devices, Official NVIDIA dev kit

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.



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

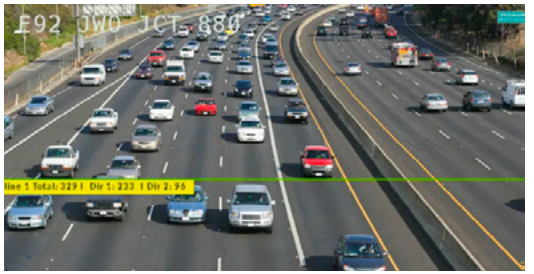
Device Support

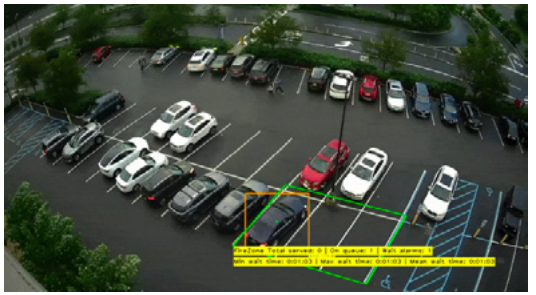
All Seeed's NVIDIA compatible carrier boards and devices, Official NVIDIA dev kit

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, microsphone 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.

seeed studio

CVEDIA

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

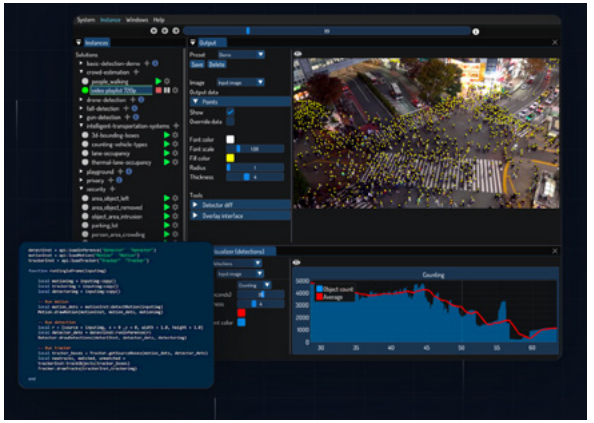
Device Support

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.



seeed studio

TEKNOIR™

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

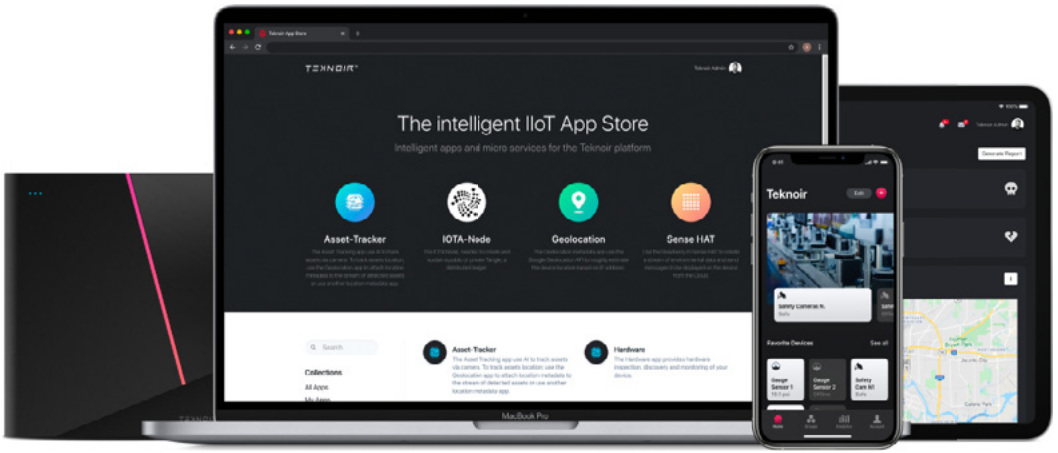
Device Support

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.



seeed studio

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

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

Use Case

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 | turning Data into Insights
Your Solutions Partner Since 1972

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.

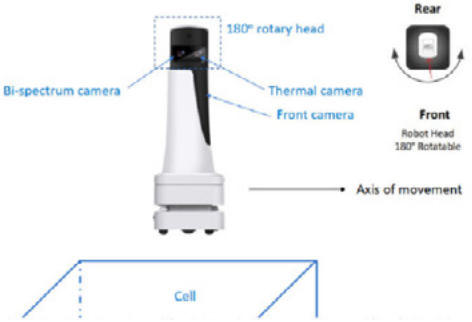
Solution

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



seeed studio

DOGU 도구공간

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

Use Case

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 CO2, NO2, SO2, VOC, PM2.5, PM10, temperature, and humidity multiple environmental sensors.

seeed studio

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

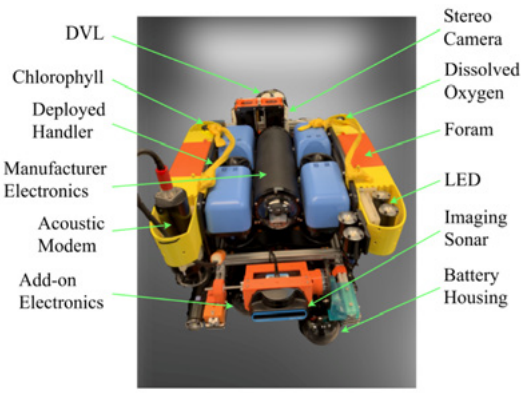
Challenge

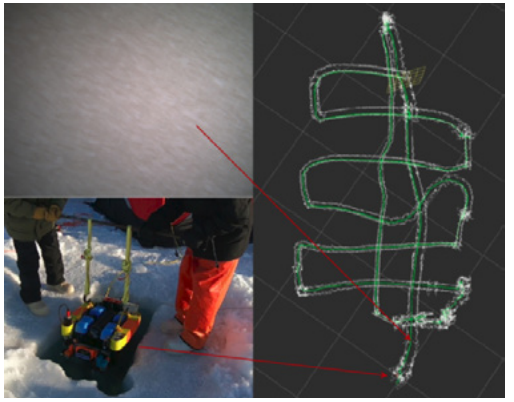
Due to the lack of robust under-ice sensing techniques, the research of biogeochemical processes such as gas bubbles, basal ice melting, and drivers of sea ice algal blooms remains limited in the ice-covered area. It is also difficult to perform localization reuslt only based on the basic BlueROV model.

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

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

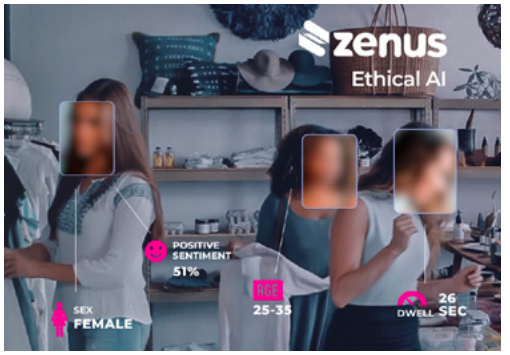
Brands need to understand their customers on a deeper level. Passive solutions such as facial analysis sit on the cutting edge of AI and provide rich information. But they comprise many bits and pieces, making them hard to deploy in stores. In addition, brands operate under continuous changes in merchandise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

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

Use Case

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

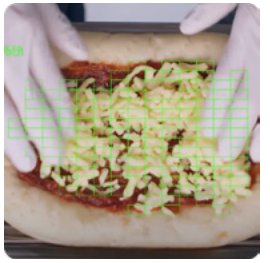
It also shows food quality score during each grouped recipy step, in order to keep the same standard of the final food quality delivery

Business impact

Typically, one 5-6 m^2 quick service restuarant needs one GOPIZZA system, including:

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

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



seeed studio

aivero

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

Use Case

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.

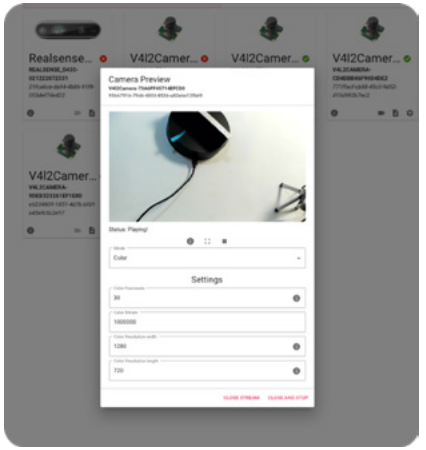
Solution

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
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

Use Case

Smart Transportation for Driver Behavior Detection and Fleet Management

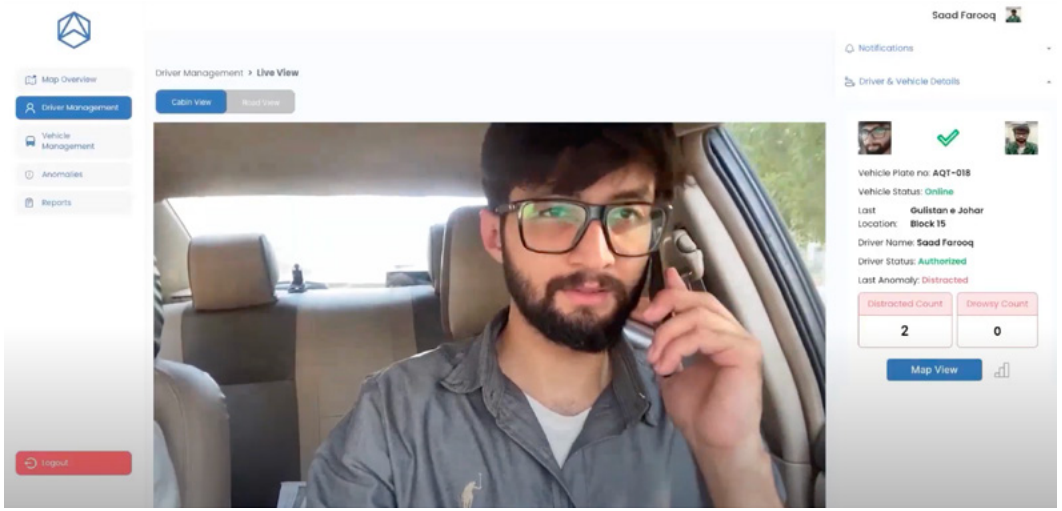
Challenge

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.



seeed studio

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

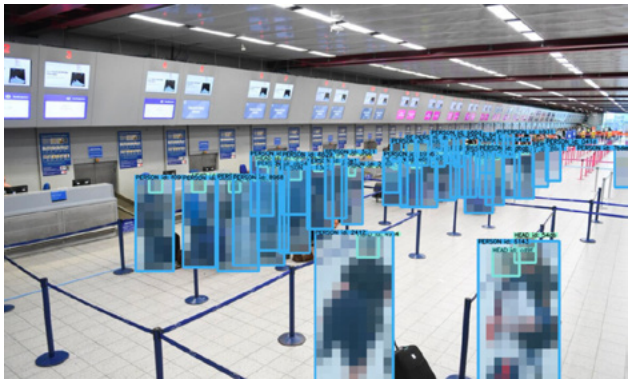
Isarsoft management platform

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 tennis

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.

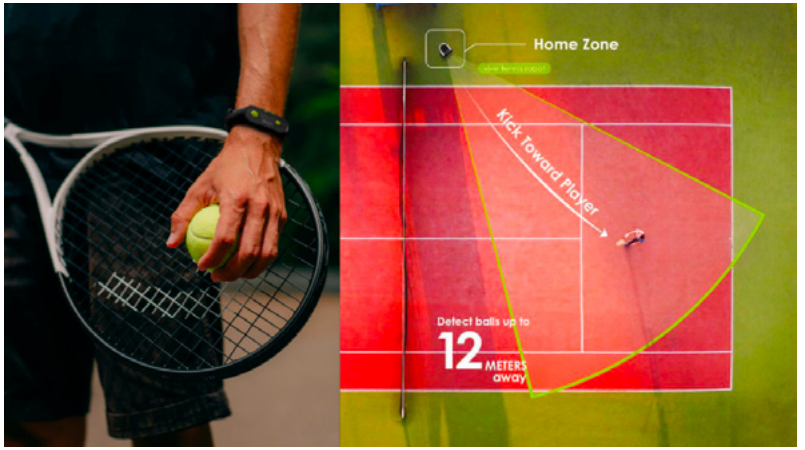
Solution

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

Use Case

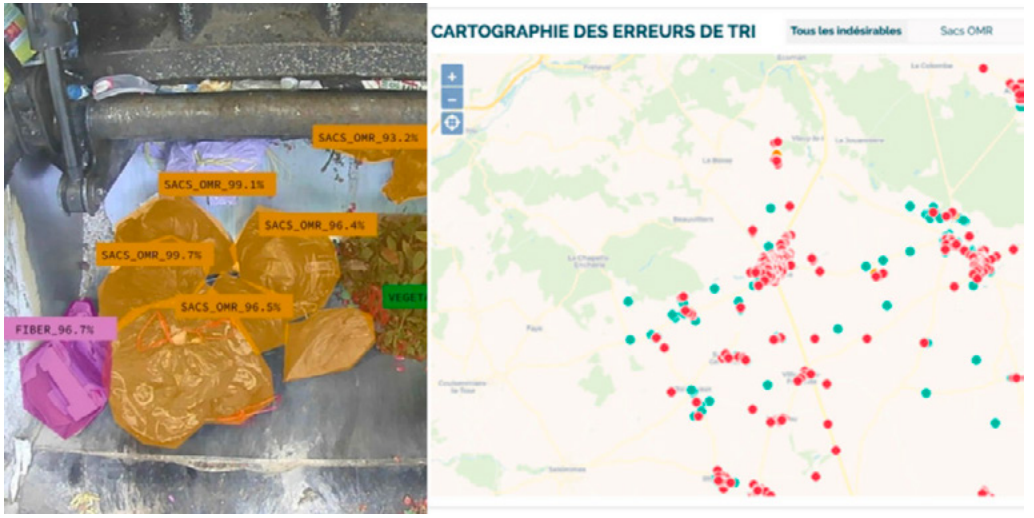
AI-powered Waste Recycling for Traceability and Management

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



seeed studio

UNIVERSITY OF WATERLOO

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

Use Case

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.

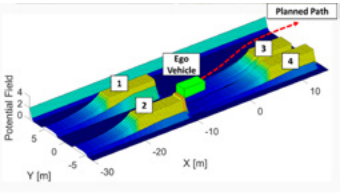
Challenge

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.



seeed studio

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

Use Case

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.

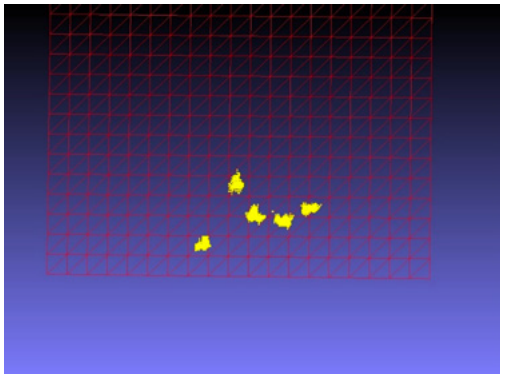
Solution

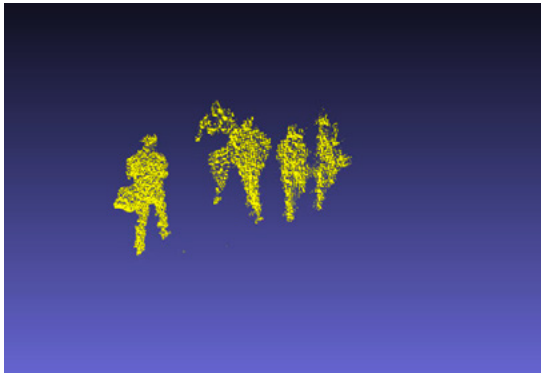
Techrail introduces this innovative solution based on passive stereographic technology:

- 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





seeed studio

跨维智能 DEXFORCE

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

Use Case

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

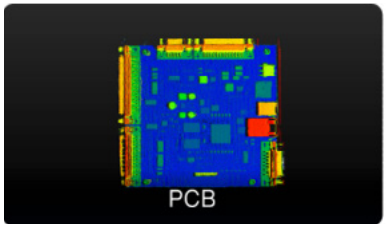
Challenge

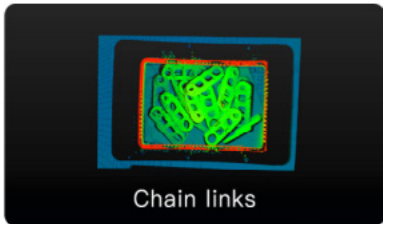
With an increasing number of industrial robots in factories all over the world, 3D vision has received more attention due to the lack of depth information of 2D vision.

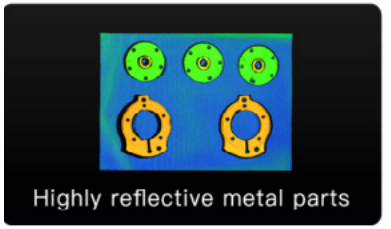
Solution

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.







seeed studio

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

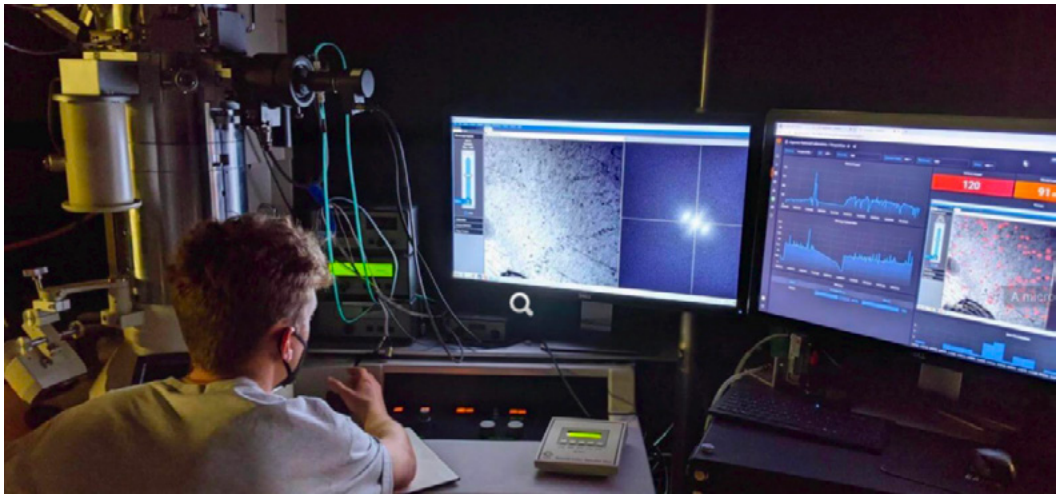
Microscopes are generally deployed in “network-constrained” environments and do not have dedicated GPUs for computation. Thus, it is essential to bring Cloud-like computational resources to the microscope instead of bringing microscopes to the Cloud.

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!

Discover more we deliver in AI robotics

Explore more about Seeed's NVIDIA Jetson ecosystem

Check out hightlights during Seeed Embodied AI hackathon

Our office: Shenzhen, China | Nagoya, Japan | Seeed Europe(for Europe, Middle East, and Africa) | Seeed U.S.

LinkedIn
@Seeed Studio

X
@seeedstudio

YouTube
@SeeedStudioSZ

Discord
Discord.seeed.cc

Instagram
@Seeed Studio

GitHub
@Seeed Studio

Bilibili
矽递科技 SeeedStudio

RedNote
柴火创客空间

We take actions from your insights!