

Seeed Studio Edge AI Success Stories

NVIDIA® Jetson™ Series



Retail



QSR



Security



Advertisement



Robot/ROV



Agriculture



Transportation



Waste recycling

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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

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





BAUTA

Deployed in: Germany, Austria, Switzerland

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

Find whole solution >> [Bauta](#)

Industry

Smart City

Application

Visitor Analysis & Pedestrian Count in Privacy

Edge Device Used

reComputer J2021, powered by NVIDIA Jetson Xavier NX

Sustainable Data for Business Environment Perception in Smart City

Challenge

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

Solution

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

Result

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





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

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 continuous 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 intervention
- Facial recognition, people counting
- Fire and smoke alarm

Benefits

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



Dogugonggan

Deployed in: Japan

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

Find whole solution >> [Dogugonggan](#)

Industry

Robotics

Application

AMR Autonomous Mobile Robot
Outdoor and Indoor Security Robot

Edge Device Used

AGX H01 Dev Kit /reComputer J2021 /A205 carrier board

Software Support

TensorRT

Robot Iroi and Patrover 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 Patrover will also help with air quality monitoring by integrating with CO2, NO2, SO2, VOC, PM2.5, PM10, temperature, and humidity multiple environmental sensors.



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

Towards Under-ice Sensing Using a Portable ROV

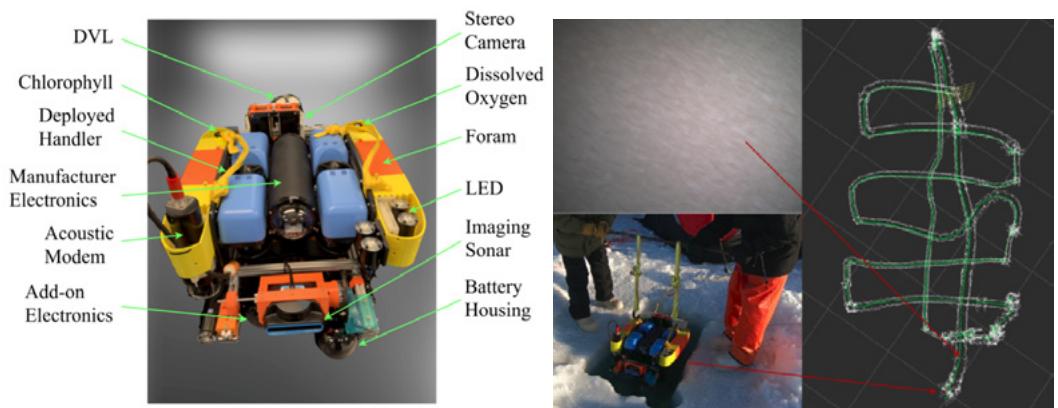
Challenge

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 results 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





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

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

Challenge

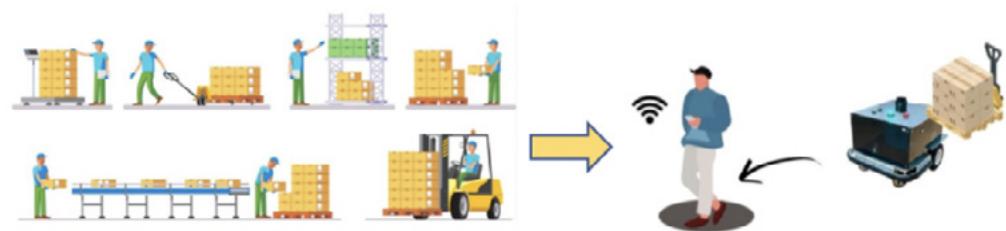
Moving businesses online becomes new mainstream trends, making delivery services the new normal. In line with the growth of the online business, the demand for courier services that help deliver the ordered packages has risen significantly. Accordingly, the burden it has on the workers also increased.

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 visibility of traffic.





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 Management

Edge Device Used

reComputer J1010, powered by NVIDIA Jetson Nano

Software Support

Intflow EdgeFarm, TensorRT

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.

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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

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



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GOPIZZA

Deployed in: South Korea, India, Singapore

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

Find whole solution >> [GOPIZZA](#)

Industry

Quick Service Restaurant (QSR)

Application

Food Production Line Automation
High-quality Food Production Control

Edge Device Used

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

Software Support

GOPIZZA cloud-based management platform GOVIS

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

Challenge

The traditional QSR meets a significant 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 recipe step, in order to keep the same standard of the final food quality delivery

Business impact

Typically, one 5-6 m² quick service restaurant 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





Aivero

Deployed in: Norway

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

Find whole solution >> [Aivero](#)

Industry

Robotics & Logistics & Manufacturing

Application

Depth Video Data Capturing & Management
Environmental Perception

Edge Device Used

reServer J2032, powered by NVIDIA Jetson
Xavier NX

Software Support

Aivero management platform

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

Challenge

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

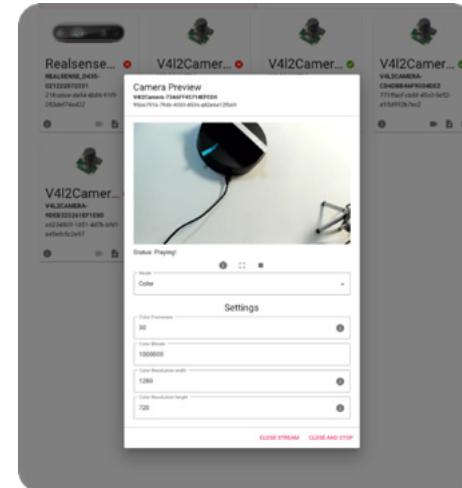
Solution

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

- Camera setting management
- 2D/3D visual data compression, storage, and preview
- connections 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.



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CuboRex

Deployed in: Japan

CuboRex is a hardware company developing robots for the outdoor industry. They are developing robots that can work on rough terrain with large slopes and uneven ground, such as in agriculture and civil engineering construction sites.

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

Rough Terrain Robot for Farm & Construction Site Deployment

Challenge

Challenges occur while dealing with heavy lifting tasks in uneven terrain environments. Traditional human labor is expensive and time-consuming. People also get stuck 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.



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AUTILENT

AUTILENT

Deployed in: Middle East

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

Find whole solution >> [Autilent](#)

Industry

Transportation & Fleet Management

Application

Abnormal Behavior Detection

Edge Device Used

reComputer J101 carrier board compatible with NVIDIA Jetson Nano

Software Support

Autilent management platform

Smart Transportation for Driver Behavior Detection and Fleet Management

Challenge

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

Solution

With deep learning algorithms combining 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 information, status, and their history data.





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

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 continuously by human labor is time-consuming and expensive; in the meanwhile, it is crucial to prevent large crowds and chaotic situations for customer experience enhancing.

Solution

Infrastructure optimization:

- Create shorter routes for time saving
- Analyze occupancy statistic to optimize queue experience
- Baggage carousel analysis to avoid misplaced

Airport perimeter protection:

- Identify and detect objects
- Measure volume and density
- Analyze airplane KPIs such as speed, trajectory, and dwell time



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

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.

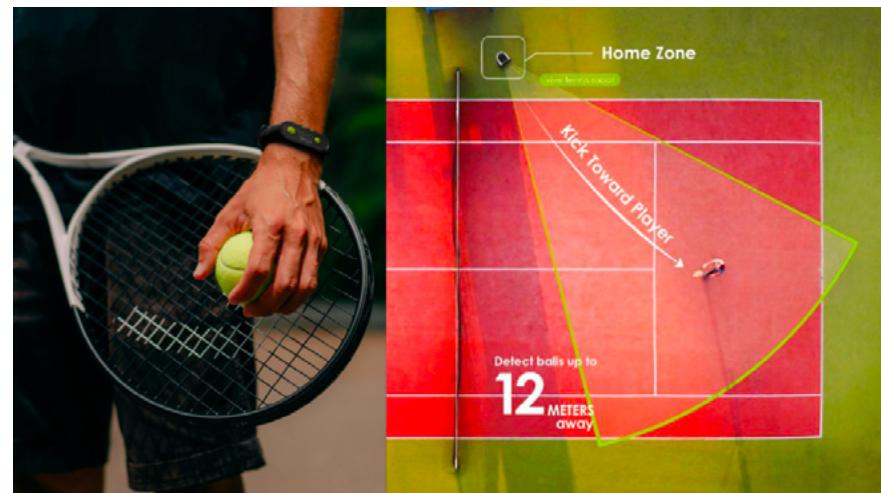
Solution

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)



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Lixo

Deployed in: Global

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

Find whole solution >> [Lixo](#)

Industry

Waste Management

Application

Waste Sorting & Collection

Edge Device Used

NVIDIA Jetson Xavier NX

Software Support

Lixo management platform

AI-powered Waste Recycling for Traceability and Management

Challenge

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

Solution

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





University of Waterloo

Deployed in: Canada

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

Find whole solution >> [UoW Autonomous Shuttle](#)

Industry

Autonomous Driving & Transportation

Application

Environmental Perception & Path Planning

Edge Device Used

reComputer J4012, powered by NVIDIA Jetson Orin NX

Software Support

Allxon OOB & OTA Service

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

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



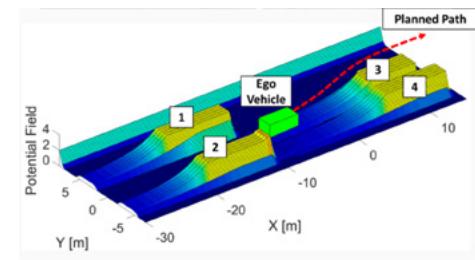
Challenge

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

Solution

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

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





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

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.



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TECHRAIL

Deployed in: Italy

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

Find whole solution >> [TECHRAIL](#)

Industry

Smart Transportation

Application

People Distance Identification
People Counting

Edge Device Used

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

Utilizing 3D Scene Reconstruction for Individual Distance Identification 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.

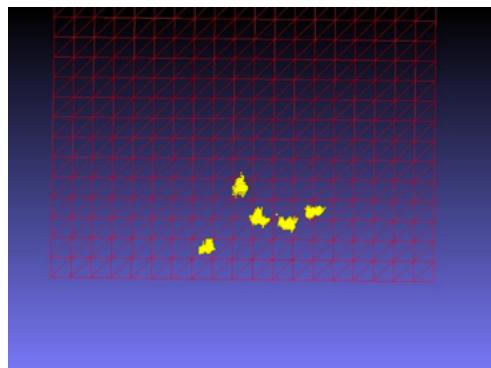
Solution

Techrail introduces this innovative solution based on passive stereographic technology:

- Accomplish 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 calculation less than 1m

Business impact

- Typically, one 16m bus can be thoroughly covered by 3 Right Metro boxes
- The margin of identifying accuracy error can be tightly controlled within a mere 1%
- Control staff can manage information on each individual carriage and transfer it to information panels when the train arrives at each station



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AZIMORPH

Azimorph

Founded in 2021, Azimorph is a group of passionate engineers based in Singapore who aim to make robotics' delivery the new normal.

Find whole solution >> [Azimorph](#)

Industry

Smart Logistics

Application

Delivery Robot

Edge Device Used

reComputer J2012, powered by NVIDIA Jetson Xavier NX

Meet Techie:

On-demand Autonomous Delivery Robot

Challenge

Many businesses have started to rectify their last-mile delivery operations. Their current operational process is to hire third-party courier companies, and it is very inefficient as it requires an astonishing amount of effort and time. Furthermore, as e-commerce continues to thrive, it will cause an upsurge in parcel deliveries and other issues, especially in densely populated cities.

Solution

Techie is a smart navigation delivery robot built by Azimorph, seeking to eliminate the need for door-to-door deliveries. The robot would navigate its way toward the consumer's house according to the time selected by the consumer beforehand. After which, Techie will return to the centralized bay to charge or load up more parcels. Techie comes with a safety feature that stops it when danger or unforeseen circumstances are detected, for example, a human in its path, construction zones, or roadblocks.

Result

- Reduced manpower cost, no need for last mile delivery drivers
- Reduced cars on the road, decreasing traffic congestion
- Reduced vehicle pollution
- Faster than traditional couriers, would not be stuck in the traffic or subjected to any delivery drivers' schedule
- Do not require rest like delivery drivers, able to work 24/7





DexForce

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

Find whole solution >> [DexForce](#)

Edge Device Used

Jetson Nano module

Application

Industrial 3D camera

Seeed Service

Seeed Fusion PCBA Service

Software

DexForce developed graphical vision algorithm platform

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

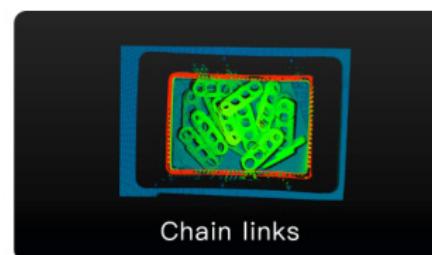
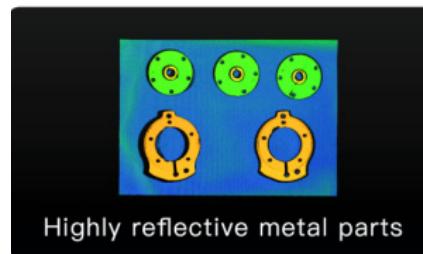
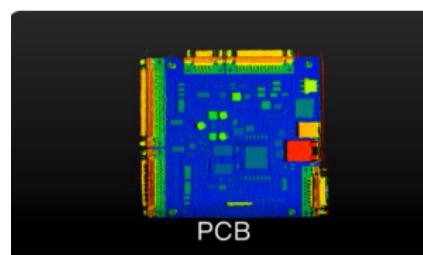
Challenge

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

Solution

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

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





Peer Robotics

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

Find whole solution >> [Peer Robotics](#)

Application

Collaborative Mobile Robot

Edge Device Used

NVIDIA Jetson AGX Xavier

Software

ROS

Bringing Humans in the Loop to Help SMEs Automate

Challenge

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

Solution

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

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





Theia Scientific, LLC

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

Find whole solution >> [Theis Scientific](#)

Application

Object Detection

Edge Devices Used

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

Software Support

Theiascope™ platform
PyTorch, Anyscale Grafana
Volkov Labs:open-source custom plugin for Grafana
Balena: manage IoT fleets

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

Challenge

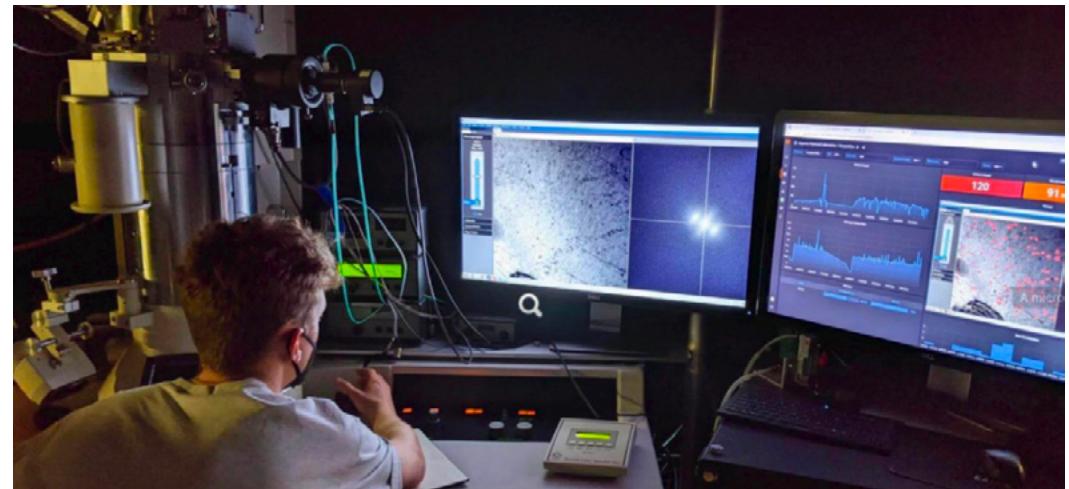
Microscopes are generally deployed in “network-constrained” environments and do not have dedicated GPUs for computation. Thus, it is essential to bring Cloud-like computational resources to the microscope instead of bringing microscopes to the Cloud.

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

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

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your insights!