okdo™ | RS

NVIDIA WEVOLVER

GO TO THE EDGE WITH NVIDIA & OKDO

INNOVATING INDUSTRIAL AI

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Editor-in-Chief Edge AI Tech Report
Wevolver

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European Technical Director, Nvidia

ABOUT OKdo™

At OKdo we believe in ordinary people achieving extraordinary things.

As a leading global distributor, and as part of the RS Group, our mission is to empower innovators to create cutting-edge solutions.

OKdo empowers you to explore emerging technologies such as IoT, robotics, AI, and more. We offer a full ecosystem of software, hardware, development support and manufacturing services to turn ideas into reality. Expect problem-solving services at every stage of the design cycle.

Let's design the world together.

PART OF A FTSE 100 COMPANY

COMPLETE ECOSYSTEM TO DESIGN, DISTRIBUTE, MANUFACTURE

£10'S OF MILLIONS IN INVENTORY

GLOBAL FAE TEAM OF CUSTOMER CENTRIC EXPERTS

+1M CUSTOMER COMMUNITY

TRUSTED BY GLOBAL TECH MEGA-BRANDS

OKDO AND NVIDIA JOIN FORCES TO SUPERCHARGE AI SOLUTIONS

OKdo Nano C100 Developer Kit

Powered by NVIDIA® Jetson Nano Module, offers remarkable compute performance in a compact, energy-efficient design with a wide range of I/O options for diverse AI applications, all supported by NVIDIA® JetPack software.

Jetson Orin Nano Developer Kit

Enables the acceleration of entry-level edge AI applications with up to 40 TOPs of AI performance, high compatibility with accessories and software, and unmatched performance and efficiency, making it ideal for creating visionary AI applications like robots, drones, and intelligent cameras.

Jetson AGX Orin Developer Kit

Offering up to 275 TOPs of AI performance. It features next-gen deep learning and vision accelerators, high-speed IO, and fast memory bandwidth. The NVIDIA® JetPack™ SDK streamlines AI software development and customization, making it easy to re-flash and emulate different Jetson modules for various needs.

STRENGTH IN PARTNERSHIP: UNLEASHING POTENTIAL

Harness the collective wisdom of both OKdo and Nvidia's seasoned experts in Edge AI.

Access an extensive library of best practices, case studies, and resources for guidance.

Collaborate with professionals who understand the nuances of Edge AI, ensuring smoother project execution.

DESIGN **COLLABORATE** **SCALE**

WHAT IS EDGE COMPUTING?

Edge computing refers to the practice of processing data closer to its source or "edge" rather than sending it to a centralized cloud server.

EDGE COMPUTING ~~vs~~ and CLOUD COMPUTING

Lower operating costs

Location of Data Processing

On device
vs
In the cloud

Latency and Response Time

Reduced latency on the edge

Faster response time

Bandwidth Usage

Local data storage, optimization, and categorization
Less reliance on WAN bandwidth

Data Privacy and Security

Less data can be intercepted
Minimized risk of breaches
Reliance on hardware security

Nature of Processed Data

Time-sensitive scenarios (real-time processing and decision-making)
vs
Processing-intensive applications (latency is tolerated for the sake of comprehensive data processing)

Internal

AI APPLICATIONS ACROSS INDUSTRIES

Transportation and Logistics

Fleet Management

Warehouse Autonomous Mobile Robots

Cargo Receiving Inspection

Railway AI

Smart Picking and Sorting

Marine and Dock Safety

Smart Retail

Last Mile Delivery Robot

Automated Checkout

Inventory Management

Store Traffic Analytics

Shopper Analytics

Digital Signage

Social Distancing Detection

Healthcare and Life Science

Stroke Diagnostics

Medical Image Assistants

Digital Pathology

Patient Care

Surgical Robots

Digital Health Monitoring

Industrial and Manufacturing

Industrial Inspection and Quality Control

Factory Floor Video Analytics

Remote Intelligent Operation

Perceptive Robotics

Materials Handling

Drone Field Inspection

Preventive Maintenance

Smart City

Smart Traffic Poles

Roadside Sensor Fusion and Perception

Airport Management

Traffic Flow Management

Number Plate Detection

Perimeter Protection

Suspicious Activity Monitoring

Smart Parking Systems

Agriculture

Autonomous Tractors

AI Harvest

Robotic Beehives

Autonomous Mowing

AI Pollinators

Livestock Health Management

Selective Spraying Systems

ACCELERATING TECHNOLOGY

Accelerating Industrial Processes with Edge Computing:

- Real-time data processing
- Automation in industrial settings
- Optimizing production and reducing downtime

Revolutionizing Agriculture:

- Precision farming
- Monitoring crop health
- Managing resources efficiently

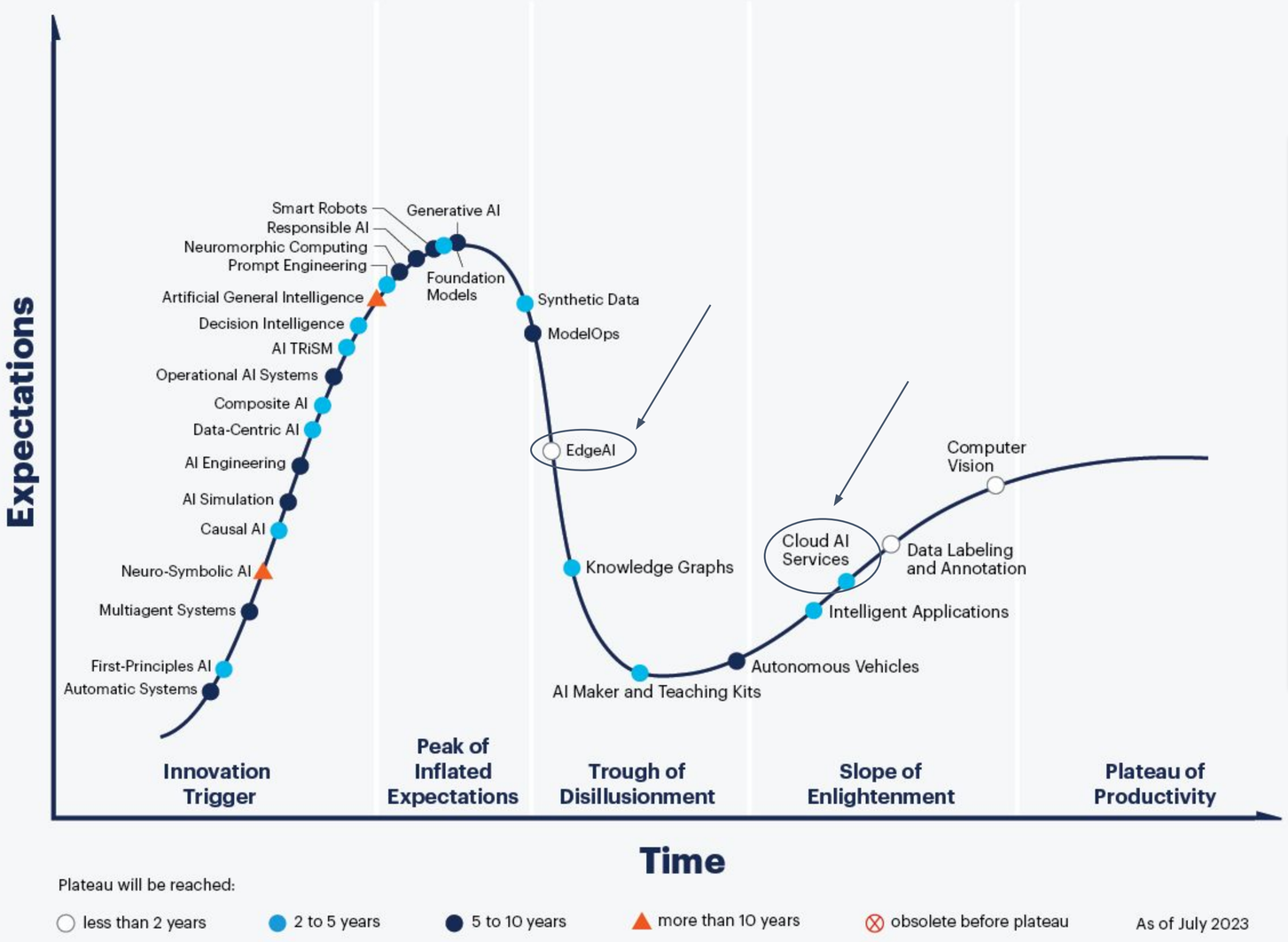
Transforming Manufacturing with Smart Factories:

- Quality control
- Supply chain optimization
- Seamless production processes

Enhancing Medical Technology:

- Remote patient monitoring
- Telemedicine
- Data-driven diagnostics

Hype Cycle for Artificial Intelligence, 2023



gartner.com

Source: Gartner
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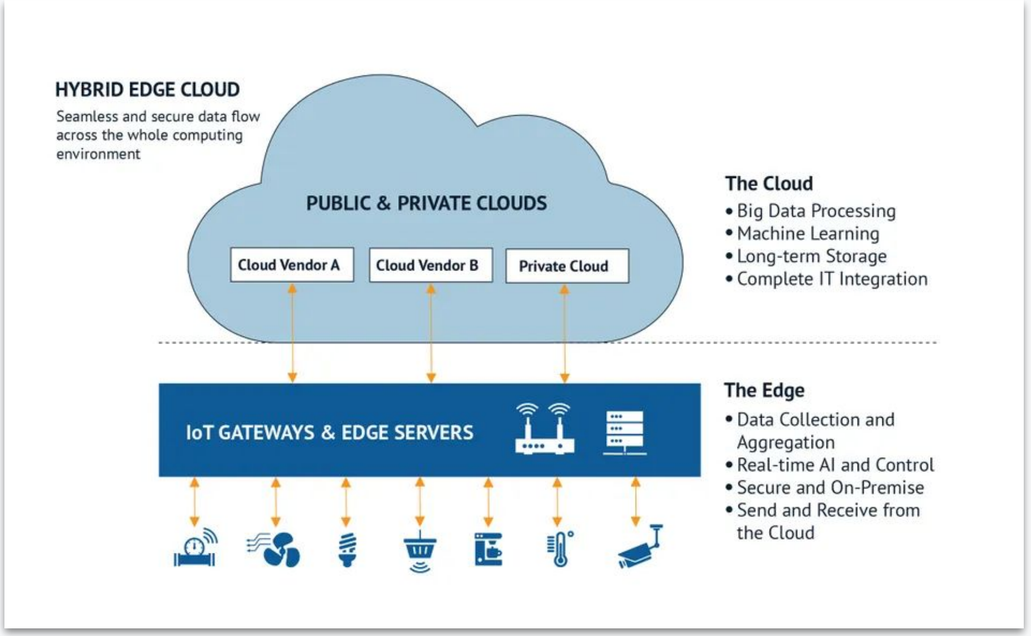
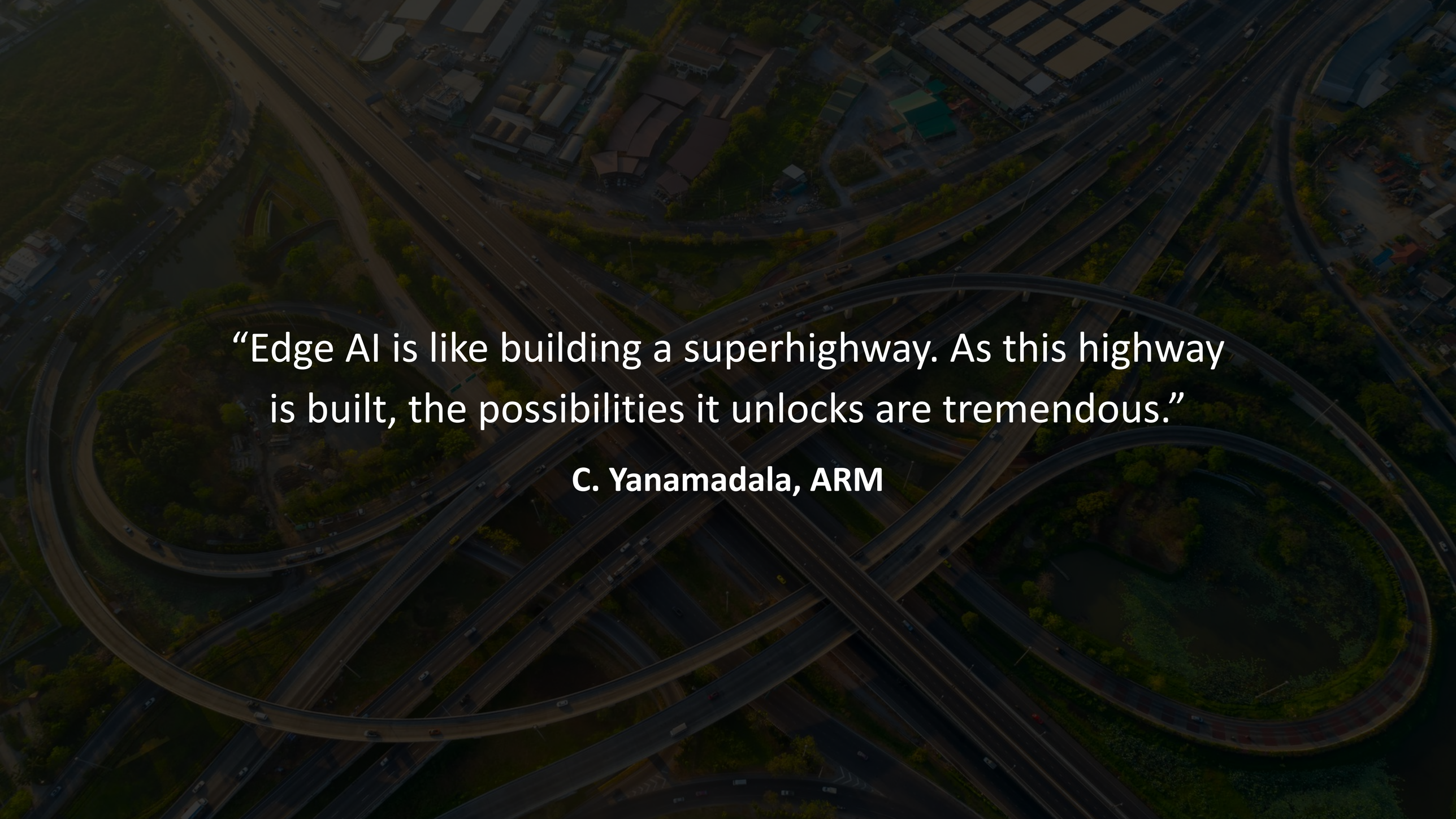
Gartner

Hybrid Edge-Cloud Solution



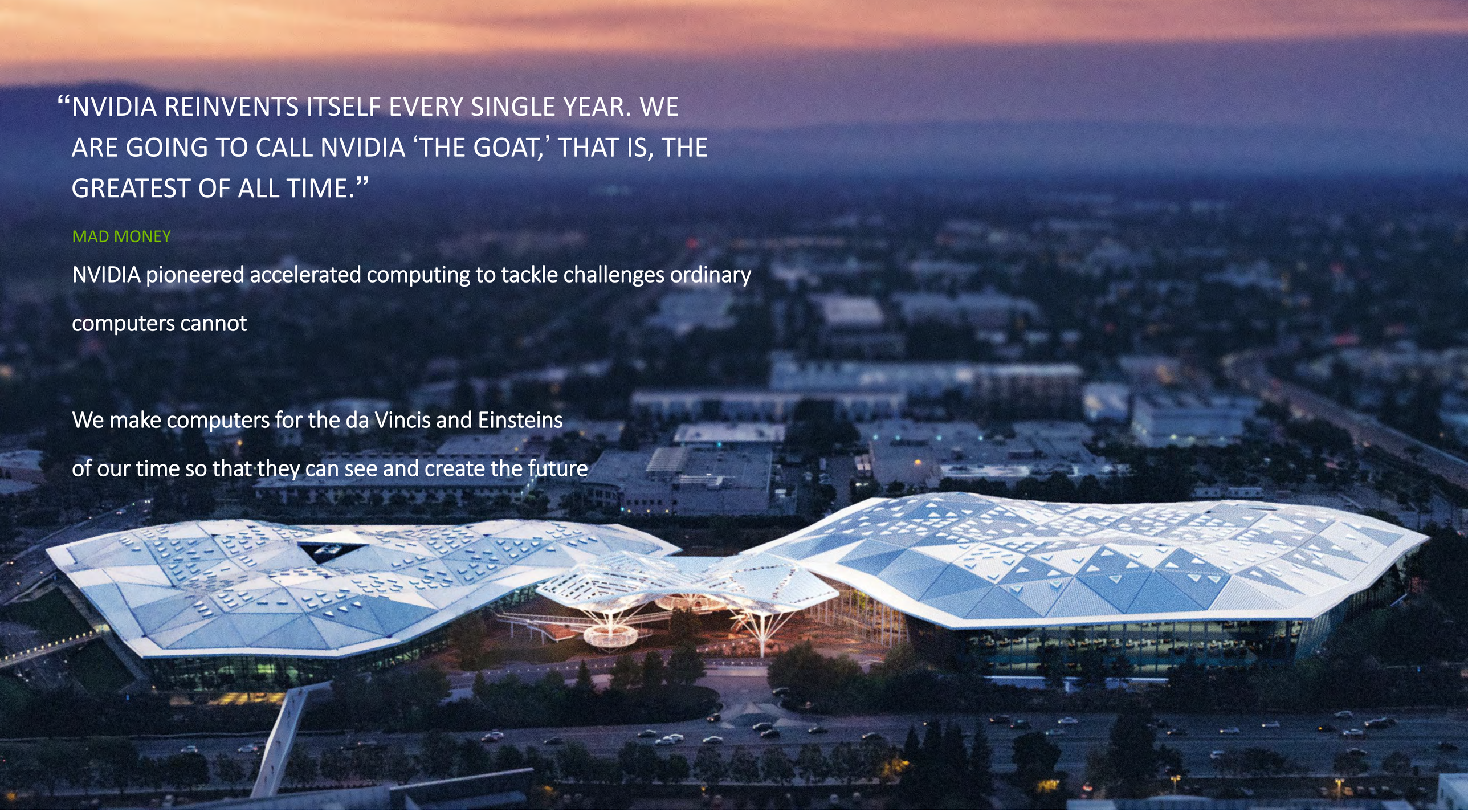


“Edge AI is like building a superhighway. As this highway is built, the possibilities it unlocks are tremendous.”

C. Yanamadala, ARM

OKDO WEBINAR

EDDIE SEYMOUR



“NVIDIA REINVENTS ITSELF EVERY SINGLE YEAR. WE ARE GOING TO CALL NVIDIA ‘THE GOAT,’ THAT IS, THE GREATEST OF ALL TIME.”

MAD MONEY

NVIDIA pioneered accelerated computing to tackle challenges ordinary computers cannot

We make computers for the da Vincis and Einsteins of our time so that they can see and create the future

THE ERA OF AI

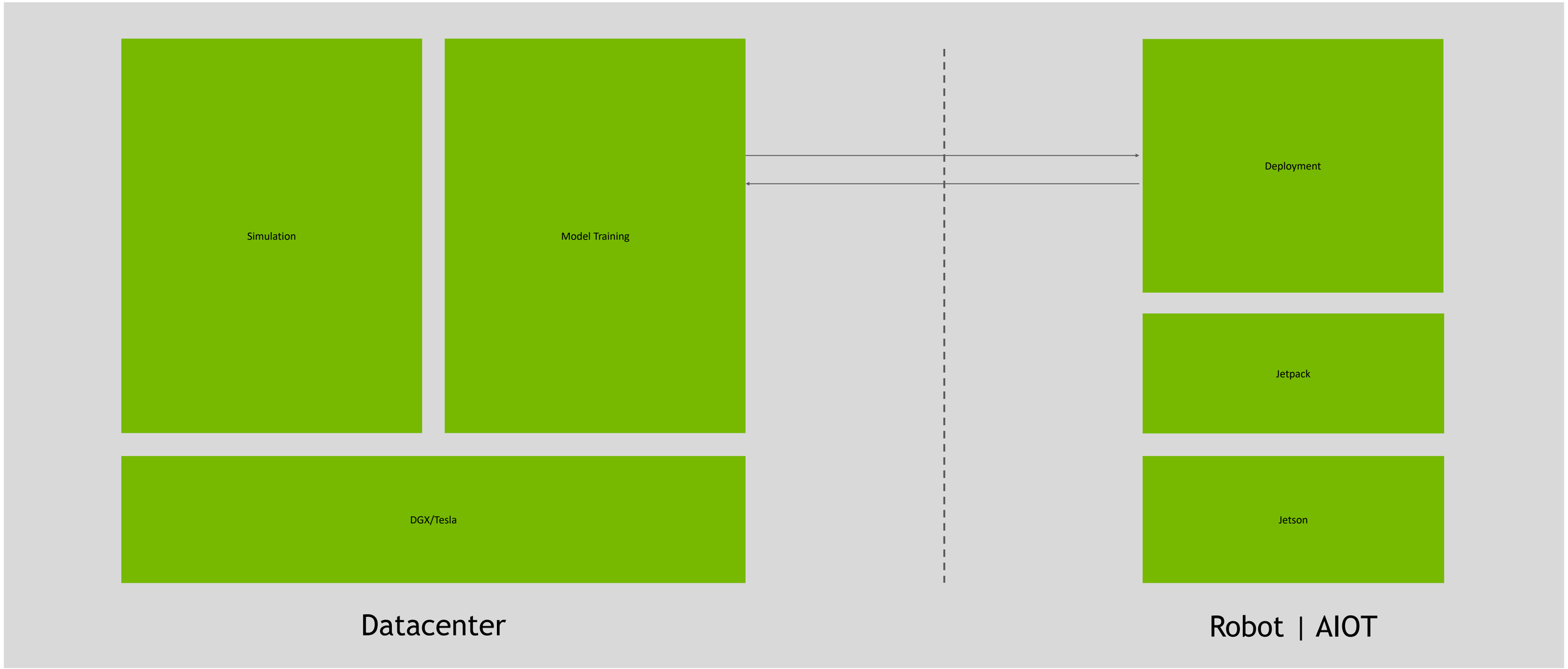
The PC revolution put a computer in every home. The mobile era put a computer in every pocket, and then the cloud turned every mobile device into a supercomputer. The AI era will infuse intelligence into trillions of computing devices and be the single largest opportunity the industry has ever known. AI will spur a wave of social progress unmatched since the industrial revolution.

NVIDIA IS THE WORLD'S LEADING AI PLATFORM

ONE ARCHITECTURE — CUDA

NVIDIA AI PLATFORM

From data center to machines



“NVIDIA PROVIDES THE CORE TECHNOLOGY RESHAPING INDUSTRY AND SOCIETY”

DIGINOMICA

GAMING

HPC

HEALTHCARE

SMART CITY

ROBOTICS

AUTOMOTIVE

vGPU

BASE COMMAND

FLEET COMMAND

NVIDIA AI

OMNIVERSE

Incredible speed-ups take more than just powerful chips

Full-stack invention: chips, systems, algorithms, apps

EDGE AI USE CASES ACCELERATES DIGITAL TRANSFORMATION

1 **Transportation and Logistics**

- Digital Signage
- Suspicious Activity Monitoring
- Warehouse Autonomous Mobile Robot
- Traffic flow management

2 **Industrial and Manufacturing**

- Industrial Inspection
- Perceptive Robotics
- Materials Handling
- Factory Floor Video Analytics
- Digital Twin and Sensor Fusion
- Preventive Maintenance
- Additive Manufacturing

3 **Smart Retail**

- Automated Checkout
- Store Traffic Analytics
- Inventory Management
- Shopper Analytics
- Digital Signage
- Social Distancing Detection

4 **Smart City**

- Traffic Analytics
- Vehicle Counting
- Number Plate Detection
- Surveillance and Public Safety
- Smart Parking System

5 **Healthcare and Life Science**

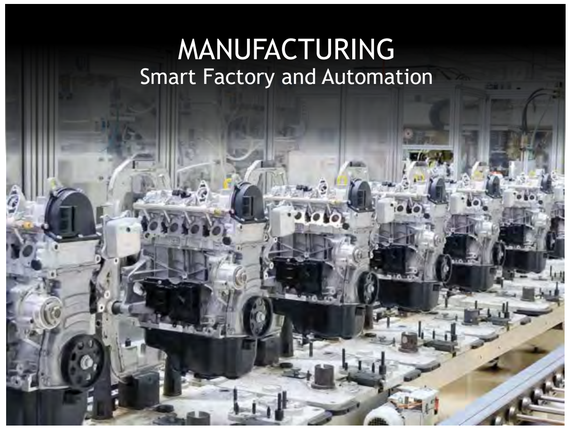
- Surgical Robot
- Medical Image Assistant
- Telepathology
- Patient Health Monitoring
- Digital Health System

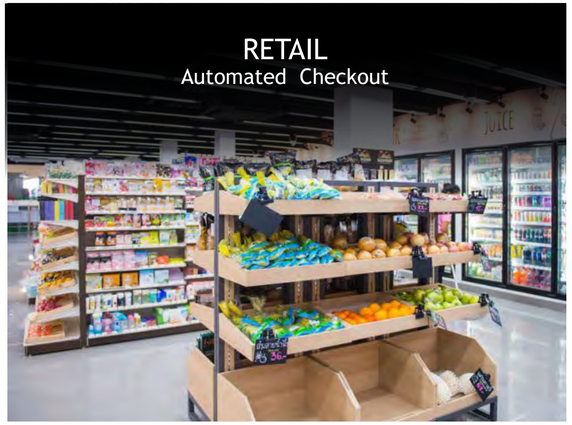
6 **Agriculture**

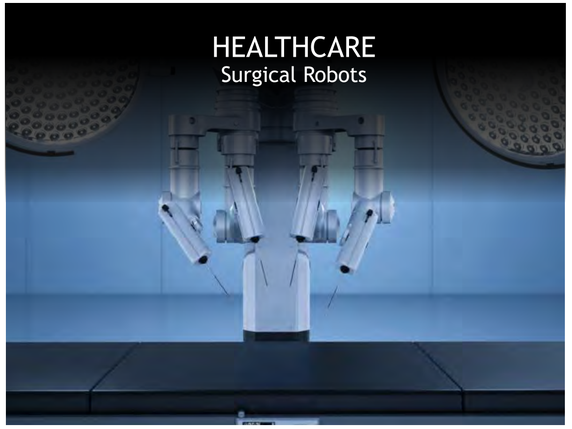
- Intelligent Robot Assistant for Harvesting
- AI Pollinator
- BeeHome with Robots and AI
- Livestock Health Management
- Selective Spraying system
- Smart Farm Machines

EDGE AI TRANSFORMS NEARLY ALL INDUSTRIES

AI could potentially deliver an additional economic output of around US $13 trillion by 2030







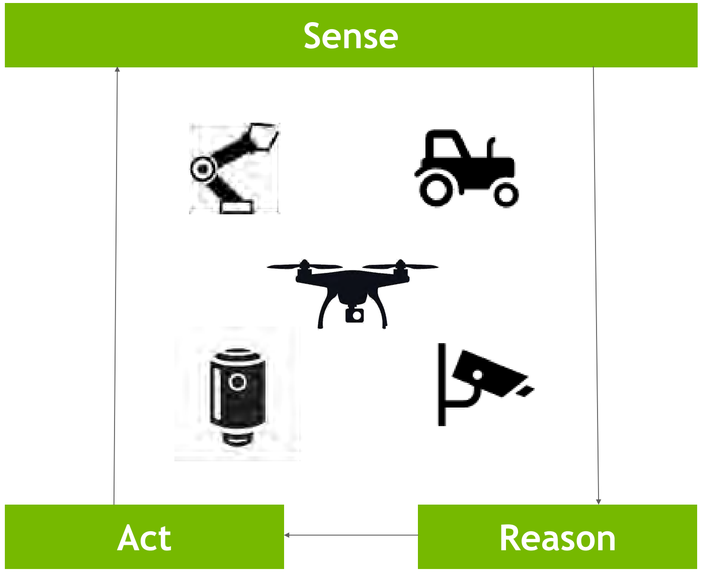
NVIDIA.

NVIDIA JETSON

Software-Defined AI Platform

AI at the Edge

Sensor Fusion & Compute Performance

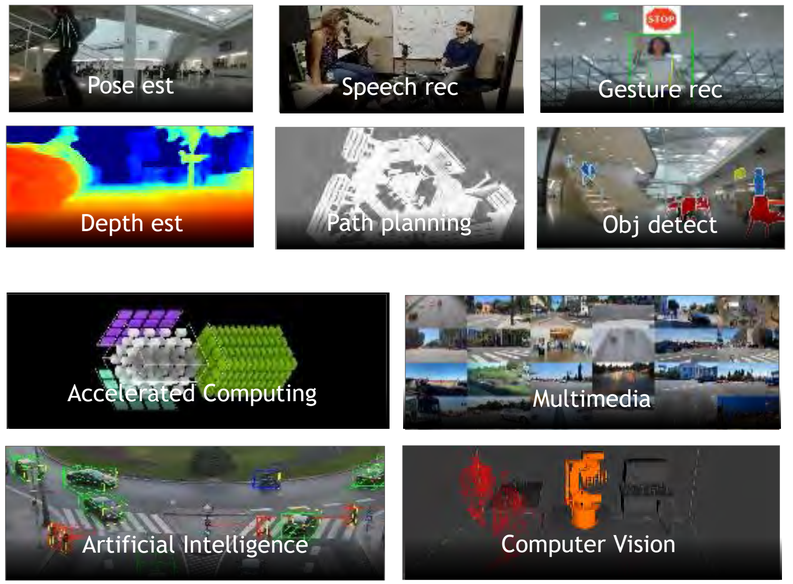


JETSON COMPUTER

Autonomous Machines: The Future of AI | NVIDIA

SOFTWARE DEFINED

SDK, Design Tools, Libs, GEMs



Jetpack SDK · CUDA · TensorRT · Triton · ONNX · ROS

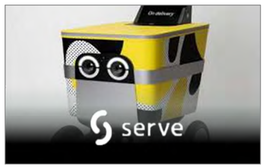
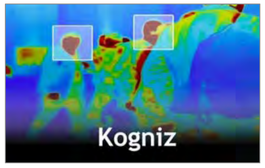
Jetson Software | NVIDIA Developer

ECOSYSTEM

Expertise, Time to Market

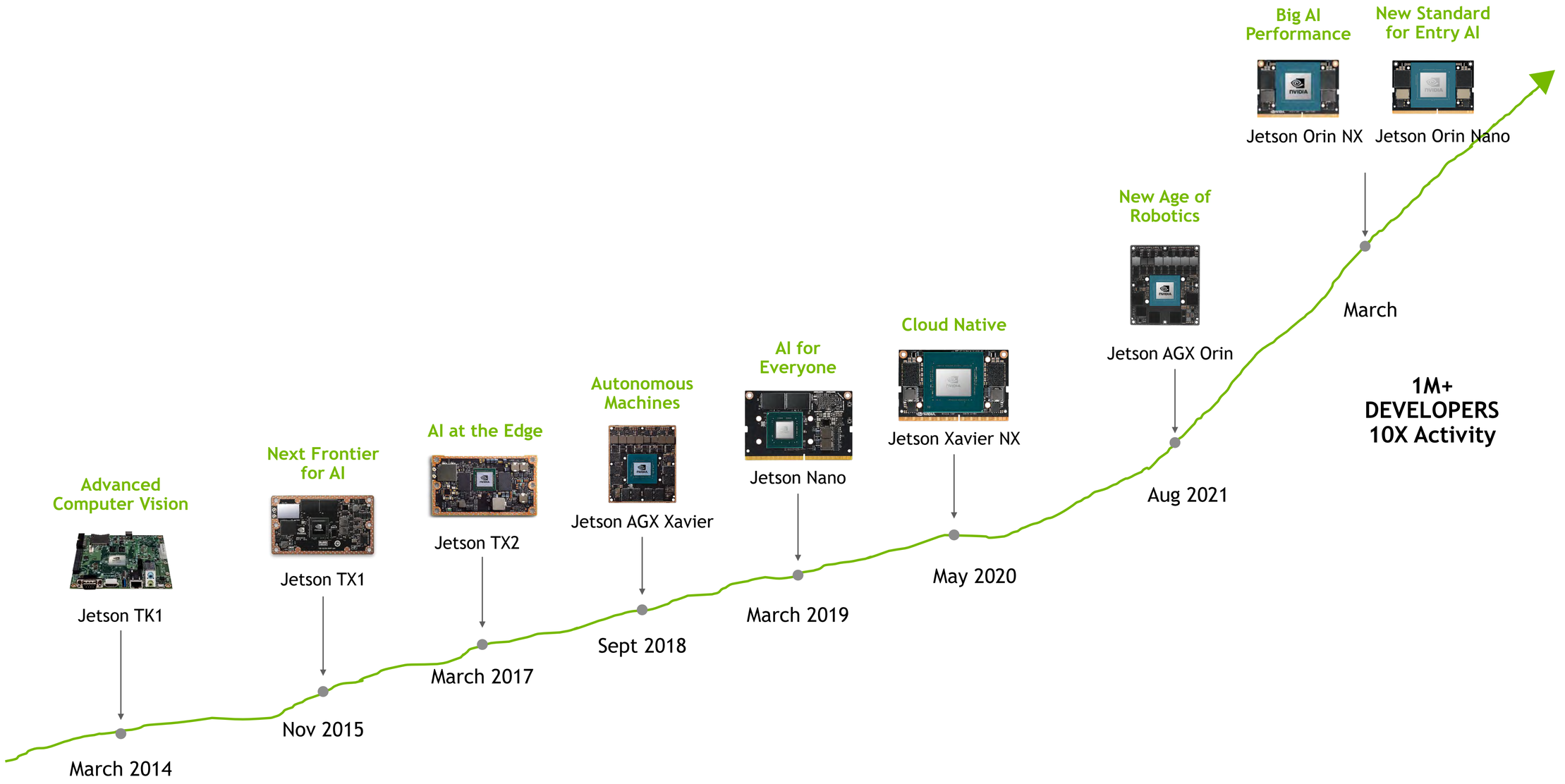
Jetson Ecosystem | NVIDIA Developer

EDGE AI MOMENTUM BUILDING ON NVIDIA JETSON

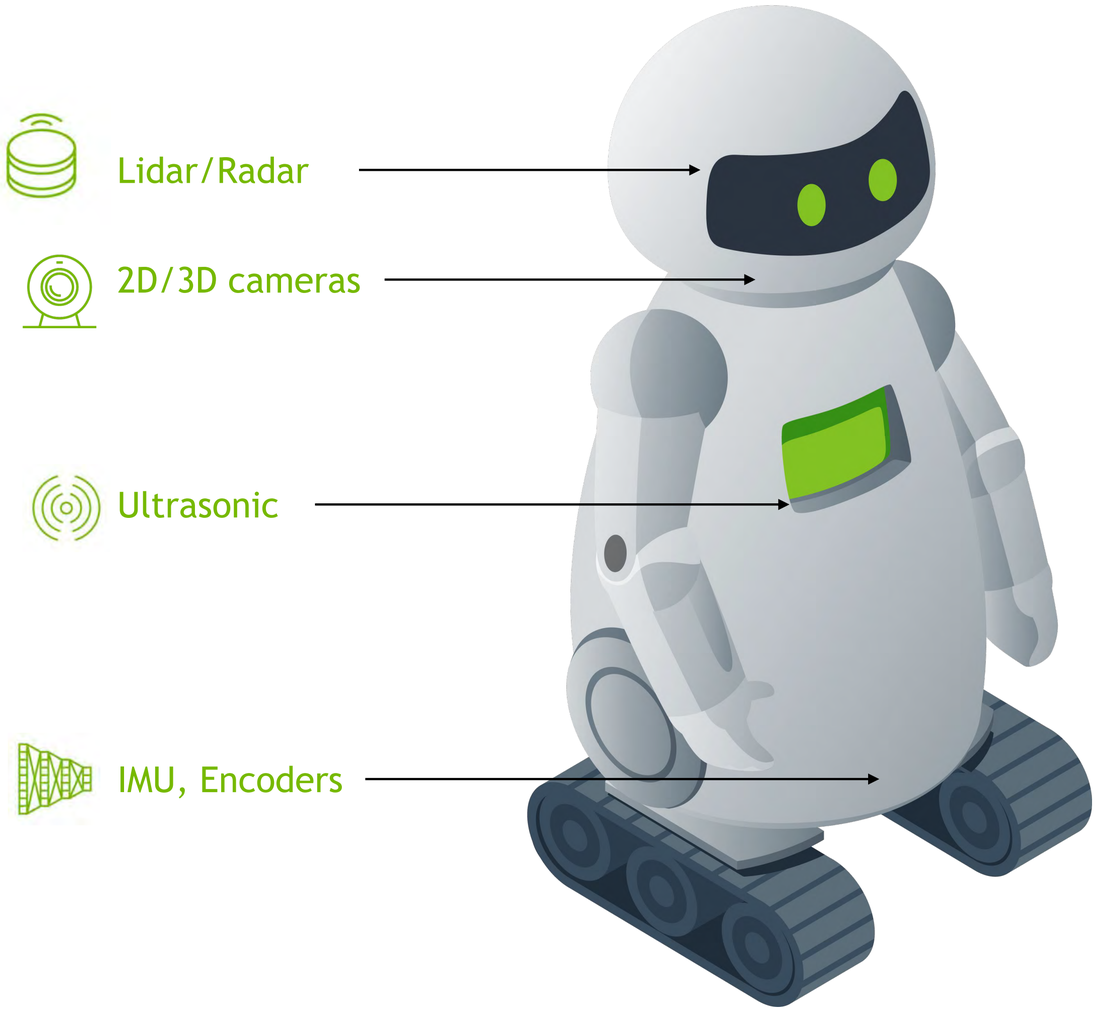
AMR	RETAIL	SMART CITY	AGRICULTURE/ CONSTRUCTION	SERVICES	LOGISTICS	MANUFACTURING	HEALTHCARE
							
							

1,000,000 Developers	6,000+ Customers

NVIDIA JETSON POWERING THE NEXT AIOT & ROBOTICS REVOLUTION



NEW AGE OF ROBOTS NEED ORDERS OF MAGNITUDE HIGHER COMPUTE



Multi-modal Sensor Perception
10's of DL TOPS

Mapping & Localization
10's of DL TOPs

Path Planning & Control
1's of DL TOPS
+ CV + CPU

Human Robot Interaction
10's of DL TOPs
+ Adv. Graphics

Situational Awareness
10's of DL TOPS

Safety & Redundancy

NVIDIA.

NVIDIA AI PLATFORM

End-to-end open platform for production AI

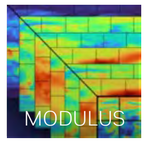
Application Workflows

Medical Imaging

Speech AI

Customer Service

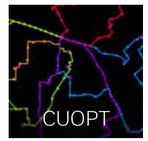
Recommenders



Physics ML

Video

Video Analytics

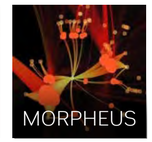


Logistics

Conversational AI

Robotics

Autonomous Vehicles



Cybersecurity

NVIDIA AI Enterprise

AI and Data Science Development and Deployment Tools

Cloud Native Management and Orchestration

Infrastructure Optimization

Accelerated Infrastructure

Cloud

Data Center

Edge

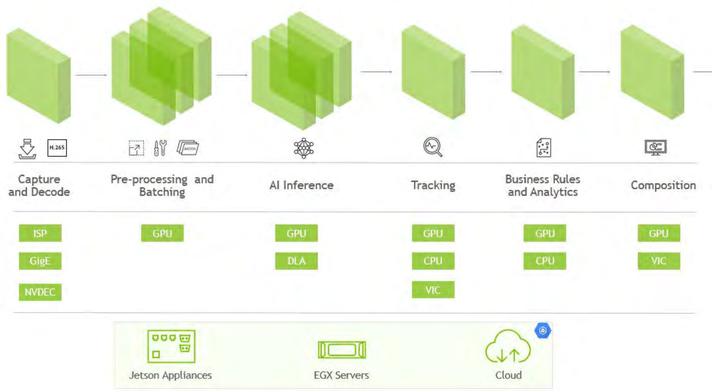
Embedded

NVIDIA LaunchPad

Hands-on Labs

DOMAIN SPECIFIC ACCELERATED APPLICATION FRAMEWORKS

DEEPSTREAM



ISAAC ROS

APRITAGS DETECTION | IMAGE SEGMENTATION DNN | VISUAL ODOMETRY | STEREO DEPTH | 6D POSE DNN

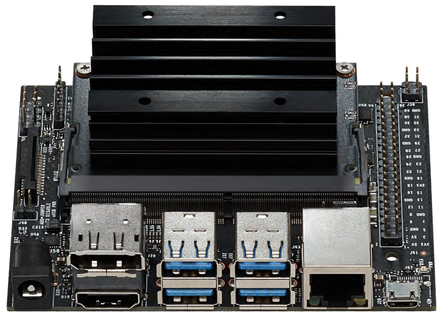
CUSTOM ROS PACKAGES

RIVA

NVIDIA
GETTING ENGAGED

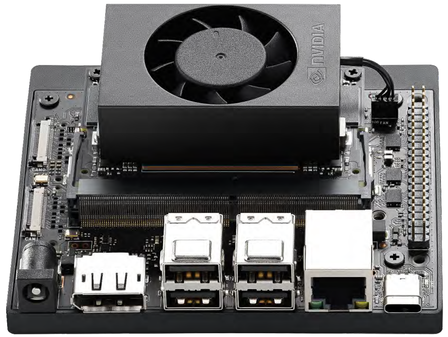
NVIDIA JETSON DEVELOPER KITS

Easy to Develop, Faster to Market



Jetson Nano Developer Kit

0.472 TFLOPS



Jetson Orin Nano Developer Kit

40 TOPS (INT8)

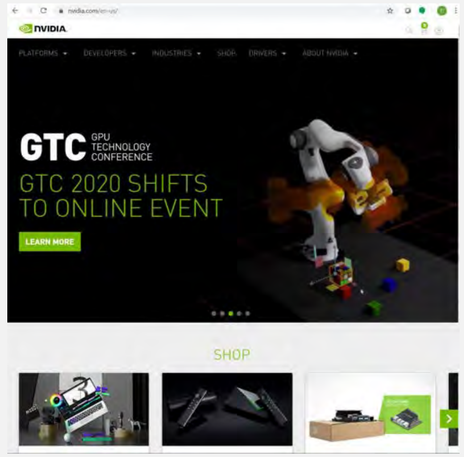
Jetson AGX Orin Developer Kit

275 TOPS (INT8)

LEARNER | INTERMEDIATE | ADVANCED

JETSON INFORMATION RESOURCES

Most Critical Nvidia Resources For Jetson Information

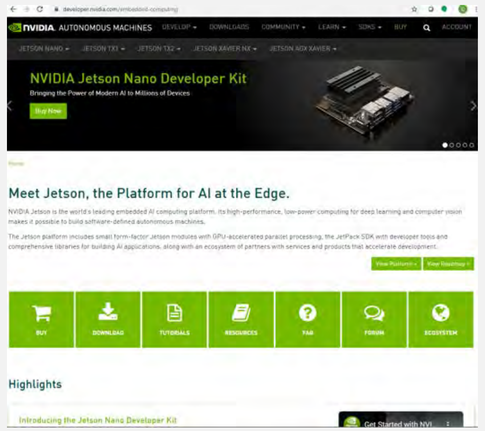


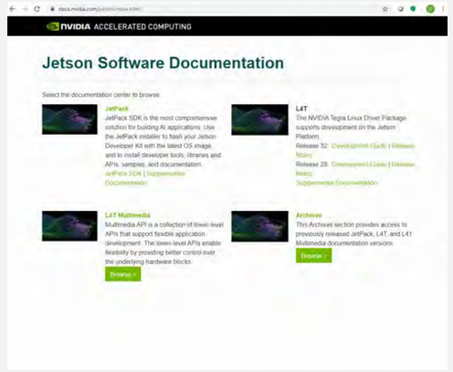
Nvidia.com - Platforms Autonomous Machines

- Jetson Product Overview
- Industries – Application Examples
- Autonomous Machines Blog

developer.nvidia.com Autonomous Machines

- Support Resources page
- Download Center
  - Module Datasheet
  - Product Design Guide
  - Adaptation and Bring-up Guide
- Jetson FAQ





docs.nvidia.com

Jetson SW Documentation

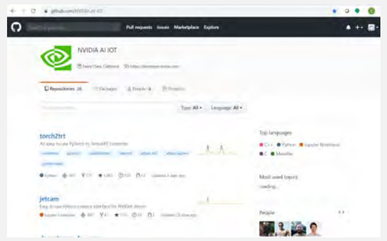
- JetPack Overview
- L4T Development Guide
- L4T Multimedia

Forums

- Search
- Answer questions

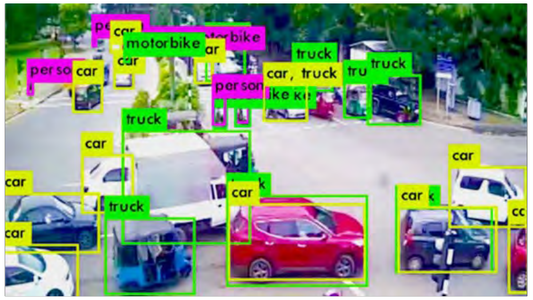
AIOT GitHub

- Examples
- Tutorials

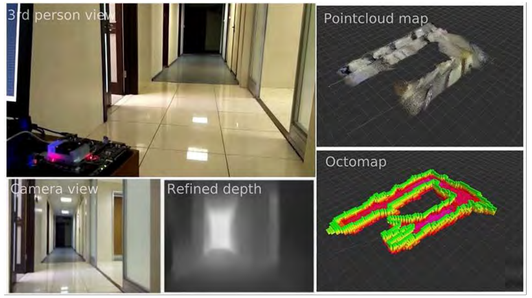


JETSON COMMUNITY AI PROJECTS

Weed Removal Robot



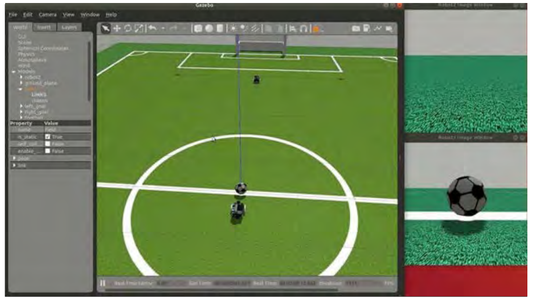
Adaptive Traffic Control



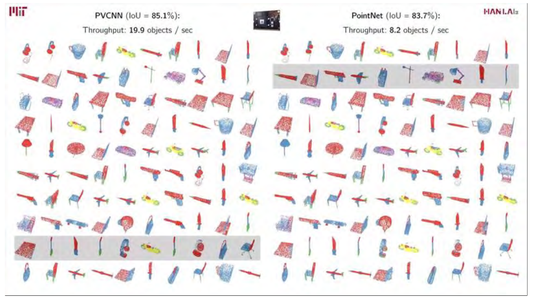
Real-Time Depth Reconstruction

Sim-to-Real Navigation

Operate Devices with Gesture



JetBot Gazebo Football



Efficient Object Segmentation

Reading Eye for the Blind

https://developer.nvidia.com/embedded/community/jetson-projects

NVIDIA

GROWING JETSON ECOSYSTEM

160+ Partners

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ISV

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Tools/System SW

AIXON · balena · concurrent REAL-TIME · FOUNDRIES.IO · MathWorks · MENDER.io · Qt · RidgeRun · WINDRVR

CSP-IOT

AWS Greengrass · Azure

Software Services

antmicro · Codethink · DeepEdge · eInfochips · FUJISOFT · Infosys · 美林数据 MERITDATA · NEXOPTIC · NotaAI · OPTEMIZER · PATHPARTNER · quantiphi · QUEST · softserve · SPINGENCE · timesys · Witekio

HARDWARE & SENSORS

Cameras and Sensors

Allied Vision · ANDREA · APPRO.PHO · ArduCam · BASLER · BoulderAI · Canon · CEPTON · D3 Engineering · DMP · e-con Systems · FRAMOS · ITD Lab · Leopard Imaging · LIPS · LIVOX · LMI TECHNOLOGIES · MYNTAI · Photoneo · robosense · SENSING 森云智能 · SICK · SLAMTEC · SONY · STEREOLABS · TECHNO HORIZON · TELEDYNE FLIR · IMAGINGSOURCE · ThunderSoft · unicorecomm 和芯星通 · Velodyne LiDAR · VC vision components · ximea · ZVISION · 3D VISIONLABS

Hardware and Design Services

AAEON · ADLINK · ADVANTECH · aetina · AGILE-X · AI BLOX · AIMobile · airvolute · Ailech · AUVIDEA · AVerMedia · AXIOMTEK · BitFlow · CEI · CHIPMARK · Connect Tech Inc. · convergint · CREW SYSTEMS · CURTISS-WRIGHT · DIAMOND SYSTEMS · ECTRON · EIZO · elix · ELMA · EUROTECH · EverFocus · forecr · Geniatech · HIVECELL · MAKERDBD 创乐博 · HZHYTECH 合众恒跃 · ikerlan · Infineon · inspur 浪潮 · Lanner · LSD 旭阳科技 · LCFC · LEETOPTECH 沥拓科技 · Lenovo · maxim integrated · MICROCHIP · 米文动力 · MISTRAL · NEOUSYS TECHNOLOGY · OMNISKY 睿天 · onyx · ORION · PCP SOLUTIONS · Plink-AI · Pleora Technologies · PowerLeader 宝德 · QUECTEL · 瑞泰新时代 · REBOTNIX · SC3 · seeed studio · SERCOM · silex technology · SmartCow · syslogic · TANNA TECHBIZ · Telit · TOSHIBA · 图为科技 · TZTEK 天准 · Vecow · VIDTEK · VVDN · WIBASE · Wisdom Starry · WOLF

https://developer.nvidia.com/embedded/ecosystem

NVIDIA

NVIDIA

Nicki Young
President, OKdo | President & Group Chief Digital & Innovation Officer, RS Group

Samir Jaber
Chief Editor Edge AI Wevolver

Eddie Seymour
European Technical Director, Nvidia

THANK YOU