NVIDIA Announces Jetson Xavier NX, World's Smallest Supercomputer for AI at the Edge

Latest Addition to Jetson Product Family Brings Xavier Performance to Nano Form Factor for $399

NVIDIA today introduced Jetson Xavier™ NX, the world's smallest, most powerful AI supercomputer for robotic and embedded computing devices at the edge.

With a compact form factor smaller than the size of a credit card, the energy-efficient Jetson Xavier NX module delivers server-class performance up to 21 TOPS for running modern AI workloads, and consumes as little as 10 watts of power.

Jetson Xavier NX opens the door for embedded edge computing devices that demand increased performance but are constrained by size, weight, power budgets or cost. These include small commercial robots, drones, intelligent high-resolution sensors for factory logistics and production lines, optical inspection, network video recorders, portable medical devices and other industrial IoT systems.

“AI has become the enabling technology for modern robotics and embedded devices that will transform industries," said Deepu Talla, vice president and general manager of Edge Computing at NVIDIA. “Many of these devices, based on small form factors and lower power, were constrained from adding more AI features. Jetson Xavier NX lets our customers and partners dramatically increase AI capabilities without increasing the size or power consumption of the device."

Jetson Xavier NX delivers up to 14 TOPS (at 10W) or 21 TOPS (at 15W), running multiple neural networks in parallel and processing data from multiple high-resolution sensors simultaneously in a Nano form factor (70x45mm). For companies already building embedded machines, Jetson Xavier NX runs on the same CUDA-X AI™ software architecture as all Jetson offerings, ensuring rapid time to market and low development costs.

As part of NVIDIA's one software architecture approach, Jetson Xavier NX is supported by NVIDIA JetPack™ software development kit, which is a complete AI software stack that can run modern and complex AI networks, accelerated libraries for deep learning as well as computer vision, computer graphics, multimedia and more.

Ecosystem Support
Jetson Xavier NX is receiving strong support from the robotics and embedded devices ecosystem.

“NVIDIA's embedded Jetson products have been accelerating the research, development and deployment of embedded AI solutions on Lockheed Martin's platforms," said Lee Ritholtz, director and chief architect of Applied Artificial Intelligence at Lockheed Martin. “With Jetson Xavier NX's exceptional performance, small form factor and low power, we will be able to do more processing in real time at the edge than ever before."

“Our goal is to dramatically increase the quality and accuracy of our optical inspection system and accelerate our move towards industry 4.0," said Otsuka Hiroshi, CEO of Musashi Seimitsu. “NVIDIA Jetson Xavier NX gives us the compute capabilities to improve our visual inspection capabilities without increasing the size and power of our optical inspection system."

NVIDIA also announced today that it topped all five benchmarks measuring the performance of AI inference workloads in data centers and at the edge -- building on the company's equally strong position in recent benchmarks measuring AI training. The results of MLPerf Inference 0.5, the industry's first independent AI benchmark for inference, demonstrate the inference capabilities of NVIDIA Turing™ GPUs for data centers and the NVIDIA Xavier™ system-on-a-chip for edge. The Jetson Xavier NX module is built around a new low-power version of the Xavier SoC used in these benchmarks.

“In a world where AI chips are announced on what seems like a daily basis, I believe NVIDIA raised the bar with its Jetson Xavier NX -- showing that exceptional performance at small size and low power, together with a consistent and powerful software architecture, is what matters in embedded edge computing," said Patrick Moorhead, president and principal analyst of Moor Insights & Strategy.

Jetson Xavier NX module specifications:

- GPU: NVIDIA Volta with 384 NVIDIA CUDA cores and 48 Tensor Cores, plus 2x NVDLA
- CPU: 6-core Carmel Arm 64-bit CPU, 6MB L2 + 4MB L3
- Video: 2x 4K30 Encode and 2x 4K60 Decode
- Camera: Up to six CSI cameras (36 via virtual channels); 12 lanes (3x4 or 6x2) MIPI CSI-2
- Memory: 8GB 128-bit LPDDR4x; 51.2GB/second
- Connectivity: Gigabit Ethernet
- OS Support: Ubuntu-based Linux
- Module Size: 70x45mm

Jetson Xavier NX is the latest addition to the Jetson family, which includes Jetson Nano™, the Jetson AGX Xavier™ series and the Jetson TX2 series. Jetson Xavier NX offers a rich set of IOs, from high-speed CSI and PCIe to low-speed I2Cs and GPIOs. Compatibility with many peripherals and sensors, together with its small form factor and big performance, will bring new capabilities to embedded AI and industrial IoT systems.

Jetson Xavier NX is also pin-compatible with Jetson Nano, allowing shared hardware designs and those with Jetson Nano carrier boards and systems to upgrade to Jetson Xavier NX. It also supports all major AI frameworks, including TensorFlow, PyTorch, MxNet, Caffe and others.

Priced at $399, the Jetson Xavier NX module will be available in March from NVIDIA's distribution channels for companies looking to create high-volume production edge systems. Developers can begin application development today using the Jetson AGX Xavier Developer Kit with a software patch to emulate Jetson Xavier NX.

About NVIDIA

NVIDIA's (NASDAQ: NVDA) invention of the GPU in 1999 sparked the growth of the PC gaming market, redefined modern computer graphics and revolutionized parallel computing. More recently, GPU deep learning ignited modern AI — the next era of computing — with the GPU acting as the brain of computers, robots and self-driving cars that can perceive and understand the world. More information at http://nvidianews.nvidia.com/.

Certain statements in this press release including, but not limited to, statements as to: the benefits, impact, performance and availability of Jetson Xavier NX; and AI as the enabling technology for modern robotics and embedded devices that will transform industries are forward-looking statements that are subject to risks and uncertainties that could cause results to be materially different than expectations. Important factors that could cause actual results to differ materially include: global economic conditions; our reliance on third parties to manufacture, assemble, package and test our products; the impact of technological development and competition; development of new products and technologies or enhancements to our existing product and technologies; market acceptance of our products or our partners' products; design, manufacturing or software defects; changes in consumer preferences or demands; changes in industry standards and interfaces; unexpected loss of performance of our products or technologies when integrated into systems; as well as other factors detailed from time to time in the most recent reports NVIDIA files with the Securities and Exchange Commission, or SEC, including, but not limited to, its annual report on Form 10-K and quarterly reports on Form 10-Q. Copies of reports filed with the SEC are posted on the company's website and are available from NVIDIA without charge. These forward-looking statements are not guarantees of future performance and speak only as of the date hereof, and, except as required by law, NVIDIA disclaims any obligation to update these forward-looking statements to reflect future events or circumstances.

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