

AI at the Edge with NVIDIA Jetson

Challenge

- > Create a high-performance, cost-efficient, scalable solution
- > Enable real-time processing of LIDAR, odometry, 3D, and RGB camera data
- > Ensure the security of deployed code needed for autonomous, self-driving capabilities

NVIDIA Solution

- > A powerful, expandable system that easily processes and stores high-density sensor data
- > High-speed buses for simultaneous integration of 3D cameras, LIDARs, odometry, and RGB data
- > A high-performance GPU for processing sensor data and running machine learning algorithms
- > The ability to support secure boot and full disk encryption

Results

- > A new robotic form factor to quickly move from concept to product
- > Reduced barriers to scale with a secure, high-performance, cost-efficient solution
- > Rapid scalability of the Whiz vacuum
- > A platform for OEM customization of differentiated products

BRAIN CORP CREATES NEW BrainOS TO SCALE ROBOTICS ACROSS INDUSTRIES

“Jetson TX2 allowed us to quickly get our BrainOS autonomy solution and sensor processing pipelines up and running on a new SoftBank Robotics robot to give it enhanced perception capabilities.”

- Jean-Baptiste Passot, VP of Platform & AI, Brain Corp

Autonomous Commercial Vacuum

Brain Corp—along with partner SoftBank Robotics—recently announced its work on the Whiz autonomous, commercial vacuum cleaner, currently available in Japan. This device is powered by BrainOS running on the NVIDIA® Jetson™ platform for AI at the edge, which was selected based on it being the fastest, most power-efficient embedded AI computing device. The Jetson TX2's exceptional performance has helped to evolve the product from a prototype platform to commercial production starting in 2019.

NVIDIA Platform

Each BrainOS-powered robot comes fully integrated with driverless technology. Because safety and security are of paramount importance, Jetson TX2's design enables secure boot and full disk encryption. To support the highest level of performance, multiple high-density data streams from a variety of sensor inputs need to be processed simultaneously and in real time. NVIDIA Jetson TX2 provides robots with a powerful system for processing data streams, high-speed buses for data communications, and a high-performance GPU to process that data and run on-board machine learning algorithms.

Products Used

- > NVIDIA Jetson TX2
- > NVIDIA JetPack™ SDK

Processing Engines Used

- > 256 NVIDIA CUDA® cores to process a 3D camera, giving the robot enhanced perception capabilities
- > High-speed buses for integration with 3D cameras, LIDARs, and more to enable real-time responses.
- > Support for secure boot and full disk encryption to ensure safety

Software Used

- > CUDA software modules
- > SDK for generating and signing bootloaders/software images, flashing them to the device, and installing them for GPU and deep learning accelerators



Brain Corp Results

NVIDIA Jetson TX2 helps Brain Corp reduce barriers to scale and customize for OEM differentiation where it matters—supporting BrainOS as an innovative and scalable platform for robotics. Jetson TX2 and its ecosystem have allowed robots such as SoftBank Robotics' Whiz to quickly move from concept to reality, helping Brain Corp realize their vision of a world where robots make our lives safer, easier, and more productive.



About Brain Corp

Brain Corp is a San Diego-based AI company creating transformative core technology for the robotics industry. The company's comprehensive solutions support the builders of today's autonomous machines in successfully producing, deploying, and supporting commercial robots across industries and applications. Brain Corp is funded by the SoftBank Vision Fund and Qualcomm Ventures.

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