Image Acquisition
Solutions for the
NVIDIA Jetson

Active Silicon
COMPUTER IMAGING PRODUCTS

- ■ **Image acquisition using Active Silicon's FireBird frame grabbers**
- ■ **Jetson – AI computing platform**
- ■ **Accelerated GPU image processing**
- ■ **Out-of-the-box compatibility and easy integration**

BENEFITS

- ■ Use Camera Link and CoaXPress cameras.
- ■ Easy integration of image acquisition - Jetson offers accelerated processing for imaging systems.
- ■ Deep learning capabilities for vision applications.
- ■ Processing of complex data on-board.
- ■ Compatible with Active Silicon Camera Link and CoaXPress frame grabbers.
- ■ Demos available with ActiveSDK.
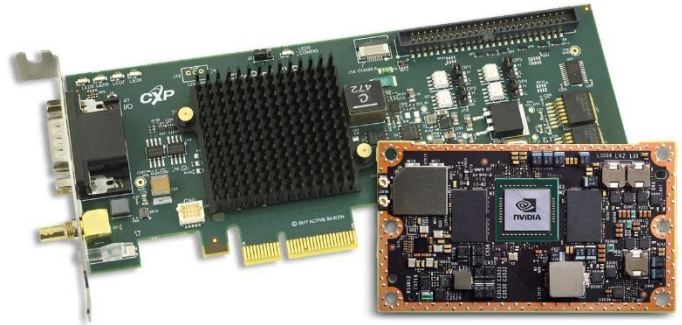
OVERVIEW

What is Jetson?

Jetson, from NVIDIA, is an AI computing platform created for accelerated GPU processing. It has been designed specifically for high-performance parallel processing, enabling deep learning to be integrated into compact embedded systems. Jetson can be purchased as a stand-alone module, ready to be installed into an end-user's system with their own software, or as a developer kit including all the required power supply, cables and software for quick and easy set-up.

Active Silicon and Jetson

Active Silicon's CoaXPress and Camera Link frame grabbers offer out-of-the-box compatibility with Jetson and relevant demos can be supplied on request. Once NVIDIA's SDK is downloaded, our ActiveSDK can be installed and our frame grabbers can be operational within minutes.

SYSTEM REQUIREMENTS

- NVIDIA Jetson module.
- NVIDIA JetPack SDK.
- FireBird or Phoenix CoaXPress or Camera Link frame grabber.
- ActiveSDK and FireBird runtime installer.
- 4-lane PCI Express connector.

Following installation, Active Silicon offers unsurpassed after-sales support for all our products and can assist in getting the best performance for your vision system.

JETSON OPTIONS

TX1 is the original module, offering 4 GB of memory and 25.6 GB/s of memory bandwidth on a credit card sized board. It's built on an NVIDIA Maxwell GPU with 256 NVIDIA CUDA Cores – NVIDIA's bespoke GPU API toolkit. TX1 can support up to six cameras and offers 1 Gigabit Ethernet, WLAN and Bluetooth connectivity, as well as support for USB 2.0 and 3.0, requiring only 10W of power. TX1 utilizes a Quad ARM Cortex-A57 CPU.

TX2, released in March 2017, is twice as fast as TX1 and less power-hungry, offering 8 GB of memory and 58.4 GB/s of memory bandwidth via only 7.5W. Featuring the Pascal GPU, 2.5 Gbps/lane can be achieved using six 2-lane cameras. TX2 utilizes both the Quad ARM Cortex-A57 CPU and an additional HMP Dual Denver CPU. Connectivity options are the same as the TX1.

TX2i has been developed with industry in mind and provides a more rugged offering. Vibration, temperature range, humidity and operating life are all extended in this option.

JetPack is the SDK which supports Jetson installation and features:

- Deep Learning tools: TensorRT, cuDNN, NVIDIA DIGITS™ Workflow
- Computer Vision tools: NVIDIA VisionWorks, OpenCV
- GPU Compute tools: NVIDIA CUDA, CUDA Libraries
- Multimedia tools: ISP Support, Camera imaging, Video CODEC
- ROS compatibility, OpenGL and further advanced developer tools
- Full specs for the modules can be found on the NVIDIA website here.

APPLICATIONS

Jetson is bringing deep learning to a wide range of computer vision applications, both industrial and commercial. Its proficiency in allowing super-fast processing and AI deployment is accelerating the pace of change in many sectors. Some examples include:

Drones
Industrial inspection drones are using the Jetson technology to make better decisions in the air. Able to process information about their environment, flight paths can be better programmed to avoid obstacles, and defects can be detected, recorded and communicated faster than ever.

Robotics

The introduction of Jetson to factories and warehouses is aiding the spread of Industry 4.0 and smart work practices. Massive amounts of data can be processed and analyzed in little more than the blink of an eye, meaning that in-line inspection and predictive maintenance are increasingly accessible. NVIDIA's Isaac SDK has been developed specifically to support industrial robotics.

Intelligent Video Analytics

NVIDIA Jetson is combined with cloud-based high-performance Tesla to create the NVIDIA Metropolis platform, enabling advanced traffic management, surveillance and smart city implementation. This urban application is already helping Californians to park, retailers to increase their customer footfall and traffic lights to anticipate the needs of both vehicles and pedestrians.

COMPATIBLE FRAME GRABBERS

All Active Silicon FireBird and Phoenix frame grabbers support NVIDIA's Jetson. These include the following products:

- High performance CoaXPress frame grabbers in single, dual and quad configurations, including full-height and low-profile PC form-factors.
- Camera Link frame grabbers: Base, Medium, Full, 80-bit (Deca), Dual 80-bit in standard PC (full-height and low profile) and cPCI Serial form-factors.

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