JetPack

NVIDIA JetPack SDK is the most comprehensive solution for building AI applications. Use the JetPack installer to flash your Jetson Developer Kit with the latest OS image, install developer tools for both host PC and Developer Kit, and install the libraries and APIs, samples, and documentation needed to jumpstart your development environment.

JetPack 4.1.1 Developer Preview

This is a Developer Preview release of JetPack, supporting the NVIDIA Jetson AGX Xavier Developer Kit (/embedded/buy/jetson-xavier-devkit). It replaces the previous Early Access release and includes an update to TensorRT 5.0 (from TensorRT 5.0 RC), enabling concurrent use of iGPU with Deep Learning Accelerators (DLAs), and giving more than 30% performance improvement when using 2 DLAs.

See Highlights below for a summary about new features enabled with this release, and view the JetPack release notes for more details, including information about additional functionality planned for future releases.

Download JetPack 4.1.1 DP (/embedded/downloads#?search=JetPack%204.1.1)

More resources

- Jetson AGX Xavier Developer Kit User Guide (/embedded/dlc/jetson-xavier-developer-kit-user-guide)
- Step-by-step installation instructions (https://docs.nvidia.com/jetson/jetpack/index.html#jetpack/4.1.1/install.htm%3FTocPath%3D_____3)
- JetPack release notes (https://docs.nvidia.com/jetson/archives/jetpack-archived/jetpack-411/index.html#jetpack/4.1.1/release_notes.htm%3FTocPath%3D_____2)

JetPack 3.3

JetPack 3.3 remains the current production release supporting Jetson TX2 and Jetson TX1 Developer Kits.

Download JetPack 3.3 (/embedded/downloads#?search=jetpack%203.3)

More resources

- Step-by-step installation instructions (https://docs.nvidia.com/jetson/archives/jetpack-archived/jetpack-33/index.html#jetpack/3.3/install.htm%3FTocPath%3D_____3)
- JetPack release notes (https://docs.nvidia.com/jetson/archives/jetpack-archived/jetpack-33/index.html#jetpack/3.3/release_notes.htm%3FTocPath%3D_____2)

Key Features in JetPack

JetPack includes OS images, Libraries and APIs, developer tools, samples, and documentation.

OS

NVIDIA L4T provides sample filesystems derived from Ubuntu, along with Linux kernel, bootloader, NVIDIA drivers, flashing utilities, and more.

JetPack 3.3	JetPack 4.1.1 Developer Preview
L4T 28.2.1 • Production release for Jetson TX2 and Jetson TX2i L4T 28.2 • Production release for Jetson TX1	L4T 31.1 • L4T r31 for Jetson AGX Xavier

TensorRT

TensorRT is a high performance deep learning inference runtime for image classification, segmentation, and object detection neural networks. It speeds up deep learning inference as well as reducing the runtime memory footprint for convolutional and deconv neural networks.

JetPack 4.1.1 Developer Preview Highlights:

- DLA support for FP16 -- AlexNet, GoogleNet, ResNet-50, and LeNet for MNIST networks have been validated
- Support for both HMMA (FP16) and IMMA (INT8) on iGPU
- Fine grain control for scheduling layers to execute on either iGPU or DLA
- New Caffe SSD and INT8 API samples

cuDNN

CUDA Deep Neural Network library provides high-performance primitives for deep learning frameworks. It includes support for convolutions, activation functions and tensor transformations.

JetPack 4.1.1 Developer Preview Highlights:

- Supports IMMA Programmability
- Grouped convolution performance improvements for NHWC input/output and FP16 and FP32 compute
- Strided convolution now supported by FFT tiling algorithms
- Performance improvements for dilated convolutions and convolutions computed with Winograd transform

CUDA	CUDA Toolkit provides a comprehensive development environment for C and C++ developers building GPU-accelerated applications. The toolkit includes a compiler for NVIDIA GPUs, math libraries, and tools for debugging and optimizing the performance of your applications. **JetPack 4.1.1 Developer Preview highlights:** • Supports IMMA Programmability - direct use of these instructions dramatically reduces kernel execution time and kernel launch latency • Support for CUDA-Vulkan interoperability
Multimedia API	The Jetson Multimedia API package provides low level APIs for flexible application development. Camera application API: libargus offers a low-level frame-synchronous API for camera applications, with per frame camera parameter control, multiple (including synchronized) camera support, and EGL stream outputs. RAW output CSI cameras needing ISP can be used with either libargus or GStreamer plugin. In either case, the V4L2 media-controller sensor driver API is used. Sensor driver API: V4L2 API enables video decode, encode, format conversion and scaling functionality. V4L2 for encode opens up many features like bit rate control, quality presets, low latency encode, temporal tradeoff, motion vector maps, and more.
Computer Vision	VisionWorks is a software development package for Computer Vision (CV) and image processing. It Includes VPI (Vision Programming Interface), a set of optimized CV primitives for use by CUDA developers. The NVX library enables direct access to VPI, and the OVX library enables indirect access to VPI via OpenVX framework. OpenCV is the leading open source library for computer vision, image processing and machine learning, and now features GPU acceleration for real-time operation.

Developer Tools

CUDA Toolkit provides a comprehensive development environment for C and C++ developers building high-performance GPU-accelerated applications with CUDA libraries. The toolkit includes Nsight Eclipse Edition IDE, debugging and profiling tools, and a toolchain for cross-compiling applications.

NVIDIA System Profiler is a multi-core CPU PC sampling profiler that provides an interactive view of captured profiling data, helping improve overall application performance.

NVIDIA Nsight Graphics: A console-grade tool that allows developers to debug and profile OpenGL, OpenGL ES, and Vulkan, enabling developers to get the most out of the Jetson Platform.

JetPack 4.1.1 Developer Preview Highlights:

- CUDA Tools
  - Nsight Eclipse plugins edition
    - True plugins can be installed in the developer's own Eclipse environment
    - Offers an all-in-one integrated environment to edit, build, and debug CUDA applications
- NVIDIA Nsight Systems
  - Profiling on Jetson AGX Xavier
  - Ability to trace cuDNN, cuBLAS, and OS runtime library API calls
- NVIDIA Nsight Graphics
  - Users can utilize the powerful Activities system to target their workflow for debugging and profiling
  - The Resources view allows you to edit the default shader used to display textures, and change the data display or highlight useful characteristics of the data
  - Improved editor capabilities including goto line and find/replace capabilities

For a full list of samples and documentation, see the JetPack documentation (https://docs.nvidia.com/jetson/jetpack/index.html).

To access older versions of JetPack, please visit the JetPack Archive (/embedded/jetpack-archive).

DESIGNWORKS (/DESIGNWORKS)

DRIVE (HTTPS://DEVELOPER.NVIDIA.COM/DRIVE)

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