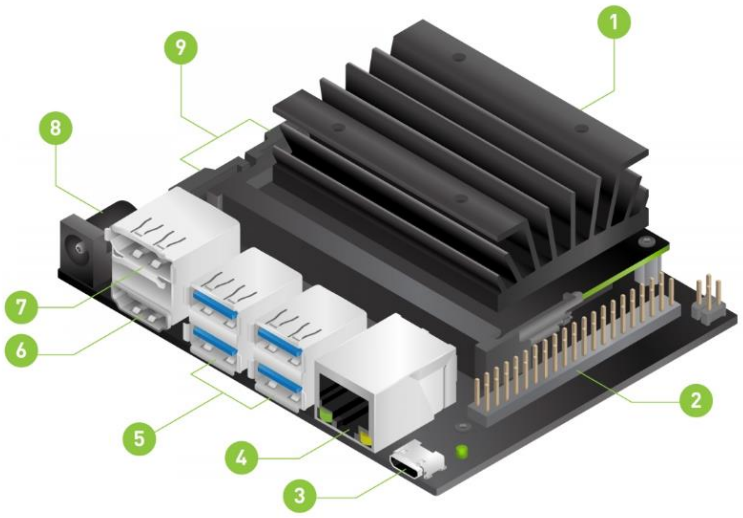
Getting Started With Jetson Nano Developer Kit

Introduction

The NVIDIA® Jetson Nano™ Developer Kit is a small AI computer for makers, learners, and developers. After following along with this brief guide, you'll be ready to start building practical AI applications, cool AI robots, and more.



1. microSD card slot for main storage
2. 40-pin expansion header
3. Micro-USB port for 5V power input or for data
4. Gigabit Ethernet port
5. USB 3.0 ports (x4)
6. HDMI output port
7. DisplayPort connector
8. DC Barrel jack for 5V power input
9. MIPI CSI camera connectors

Included in the Box

Your Jetson Nano Developer Kit box includes:

- Jetson Nano Developer Kit
- Small paper card with quick start and support information
- Folded paper stand

Items not included

You'll also need:

- microSD card (16GB UHS-1 minimum)
- USB keyboard and mouse
- Computer display (either HDMI or DP)
- Micro-USB power supply (5V⎓2A)

Prepare for Setup

Items for Getting Started

microSD Card

The Jetson Nano Developer Kit uses a microSD card as a boot device and for main storage. It's important to have a card that's fast and large enough for your projects; the minimum recommended is a 16GB UHS-1 card.

See the instructions below to flash your microSD card with operating system and software.

Micro-USB Power Supply

You'll need to power the developer kit with a good quality power supply that can deliver 5V⎓2A at the developer kit's Micro-USB port. Not every power supply rated at "5V⎓2A" will actually do this.

As an example of a good power supply, NVIDIA has validated Adafruit's 5V 2.5A Switching Power Supply with 20AWG MicroUSB Cable (GEO151UB-6025). It was specifically designed to overcome common problems with USB power supplies; see the linked product page for details.

Note

The stated power output capability of a USB power supply can be seen on its label.

Actual power delivery capabilities of USB power supplies do vary.

Please see the Jetson Nano Developer Kit User Guide for additional information.

Optional Items

Wireless Networking Adapter

Jetson Nano Developer Kit includes a gigabit Ethernet port, but also supports many common USB wireless networking adapters, e.g., Edimax EW-7811Un.

Write Image to the microSD Card

To prepare your microSD card, you'll need a computer with Internet connection and the ability to read and write SD cards, either via a built-in SD card slot or adapter.

1. Download the Jetson Nano Developer Kit SD Card Image, and note where it was saved on the computer.
2. Write the image to your microSD card by following the instructions below according to the type of computer you are using: Windows, Mac, or Linux.

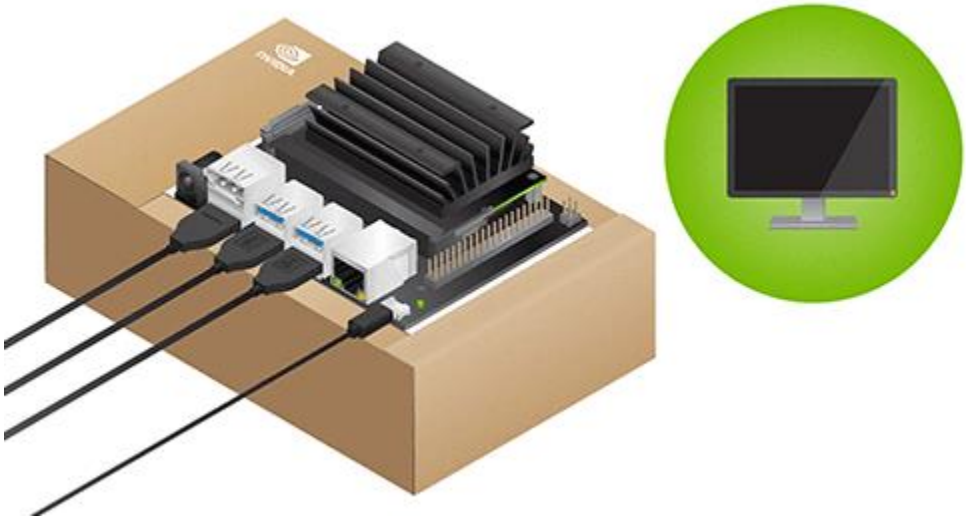
Instructions For Windows: https://developer.nvidia.com/embedded/learn/get-started-jetson-nano-devkit#collapseZero

Instructions For Mac: https://developer.nvidia.com/embedded/learn/get-started-jetson-nano-devkit#collapseOne

Instructions For Linux: https://developer.nvidia.com/embedded/learn/get-started-jetson-nano-devkit#collapseTwo

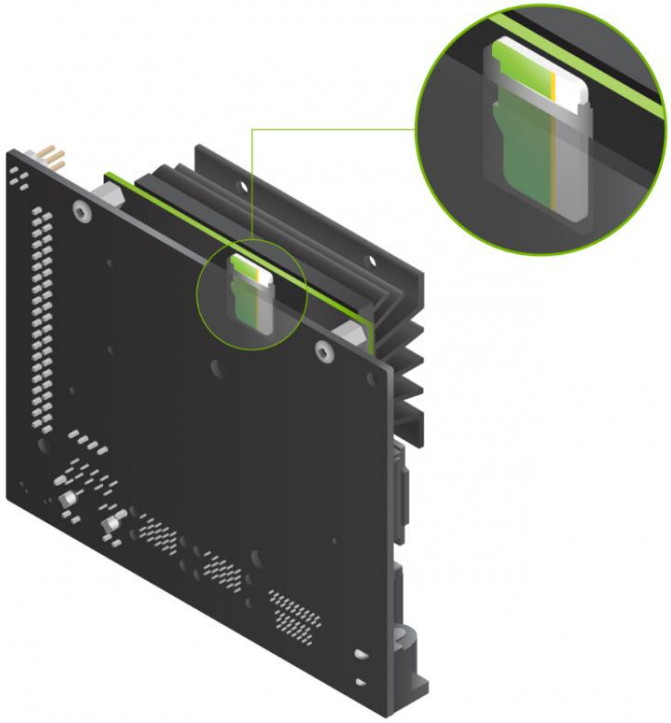
After your microSD card is ready, proceed to set up your developer kit.

Setup and First Boot



Setup Steps

1. Unfold the paper stand and place inside the developer kit box.
2. Set the developer kit on top of the paper stand.
3. Insert the microSD card (with system image already written to it) into the slot on the underside of the Jetson Nano module.



4. Power on your computer display and connect it.
5. Connect the USB keyboard and mouse.
6. Connect your Micro-USB power supply (5V⎓2A). The Jetson Nano Developer Kit will power on and boot automatically.

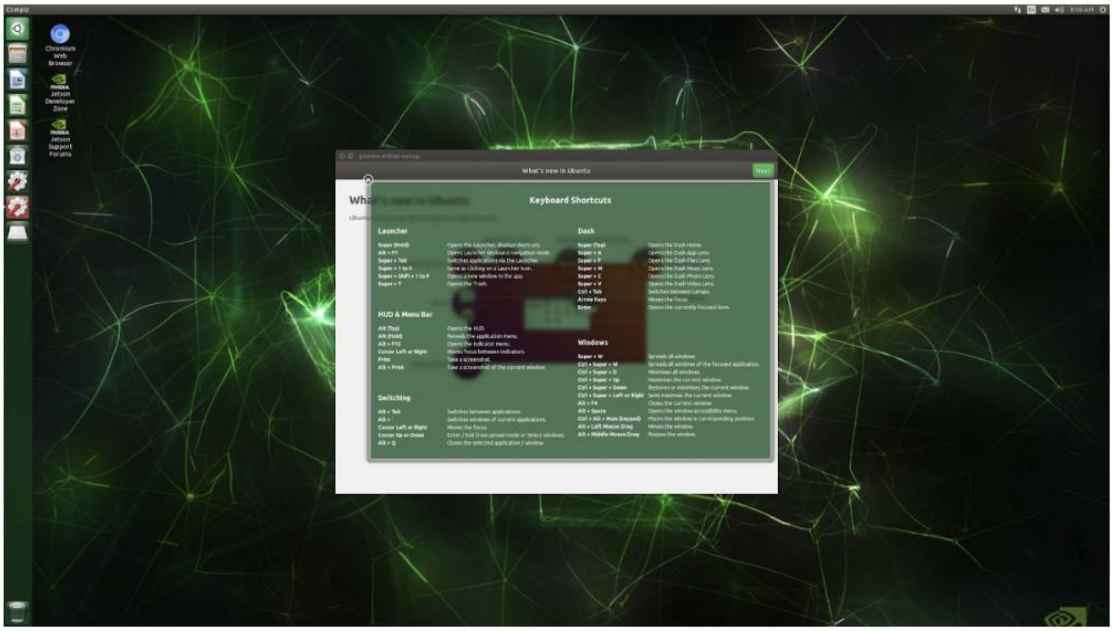
First Boot

A green LED next to the Micro-USB connector will light as soon as the developer kit powers on. When you boot the first time, the Jetson Nano Developer Kit will take you through some initial setup, including:

- Review and accept NVIDIA Jetson software EULA
- Select system language, keyboard layout, and time zone
- Create username, password, and computer name
- Log in

After Logging In

You will see this screen. Congratulations!



Next Steps

Find Your Way Around

Read the Jetson Nano Developer Kit User Guide, which includes:

https://developer.nvidia.com/embedded/dlc/jetson-nano-dev-kit-user-guide

- Many more details about the developer kit hardware.
- Explanations of all the components of NVIDIA JetPack, including developer tools with support for cross-compilation.
- Lists of all included samples and sample documentation.

Head to the NVIDIA Jetson Developer Zone for access to all Jetson platform information.

https://developer.nvidia.com/jetson

Ask questions or share a project on the NVIDIA Jetson Forums.

https://devtalk.nvidia.com/default/board/372/jetson-projects/

Projects and Learning

The Jetson Nano Developer Kit is an AI computer for learning and for making.

Take the free NVIDIA Deep Learning Course

In the Getting Started with AI on Jetson Nano self-paced online course for beginners, you'll learn to collect image data and use it to train, optimize, and deploy AI models for custom tasks like recognizing hand gestures, and image regression for locating a key point in an image.

https://courses.nvidia.com/courses/course-v1:DLI+C-RX-02+V1/about

NVIDIA Deep Learning Institute

Check out the Jetson Projects Page

Hello AI World

- Get started with deep learning inference for computer vision using pretrained models for image classification and object detection.
- Realtime acceleration with TensorRT and live camera streaming.
- Code your own recognition program in C++.
- For those interested in training their own networks, take the full Two Days to a Demo which includes both training and inference.

JetBot is an open-source AI project for makers, students and enthusiasts who are interested in learning AI and building fun applications.

- It's easy to set up and use and is compatible with many popular accessories.
- Several interactive tutorials show you how to harness the power of AI to teach JetBot to follow objects, avoid collisions and more.
- JetBot is a great launchpad for creating entirely new AI projects.

Create your own projects

- Jetson Nano Developer Kit offers useful tools like the Jetson GPIO Python library, and is compatible with common sensors and peripherals, including many from Adafruit and Raspberry Pi.
- Many popular AI frameworks like TensorFlow, PyTorch, Caffe, and MXNet are supported, and Jetson Nano is capable of running multiple neural networks in parallel to process data and drive action.

Troubleshooting

Power

If you cannot boot your Jetson Nano Developer Kit, the problem may be with your USB power supply.Please use a good quality power supply like this one.

It's also important to have a good quality cord connecting your power supply to the developer kit:

- It's good to use a power supply with permanently attached cord.
- Shorter cables will drop less voltage.

Display

HDMI to DVI adaptors are not supported. Please use a display that accepts HDMI or DP input.