



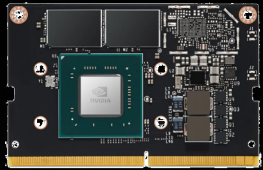
JETBOT

Powered by NVIDIA Jetson Nano

THE JETSON FAMILY

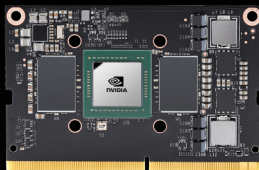
for AI at the Edge and Autonomous System designs

JETSON NANO
0.5 TFLOPS (FP16)



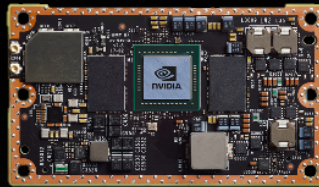
5 - 10W
45mm x 70mm

JETSON TX2 NX
1.33 TFLOPS (FP16)



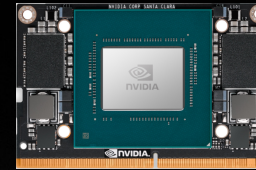
7.5 - 15W
45mm x 70mm

JETSON TX2 series
1.3 TFLOPS (FP16)



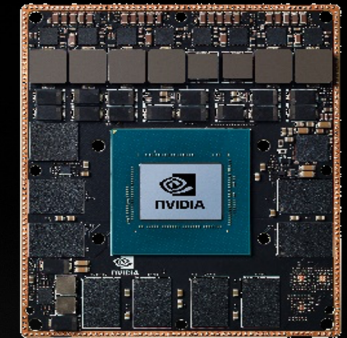
7.5 - 15W*
50mm x 87mm

JETSON Xavier NX
6 TFLOPS (FP16)
21 TOPS (INT8)



10 - 15W
45mm x 70mm

JETSON AGX XAVIER series
11 TFLOPS (FP16)
32 TOPS (INT8)



10 - 30W
100mm x 87mm

Entry

Mainstream

Autonomous machines

Same software

Full specs at developer.nvidia.com/jetson

* TX2i: 10-20W

OPEN FRAMEWORK SUPPORT

MACHINE LEARNING

 TensorFlow

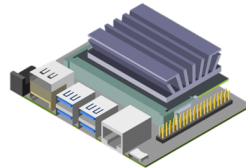
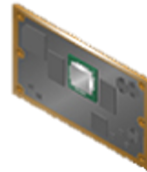
PYTORCH

 mxnet

Caffe  Caffe2

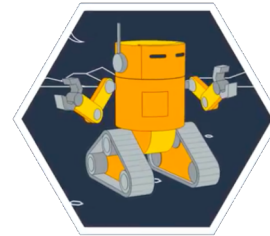
 Keras

JETSON



ROBOTICS / IoT

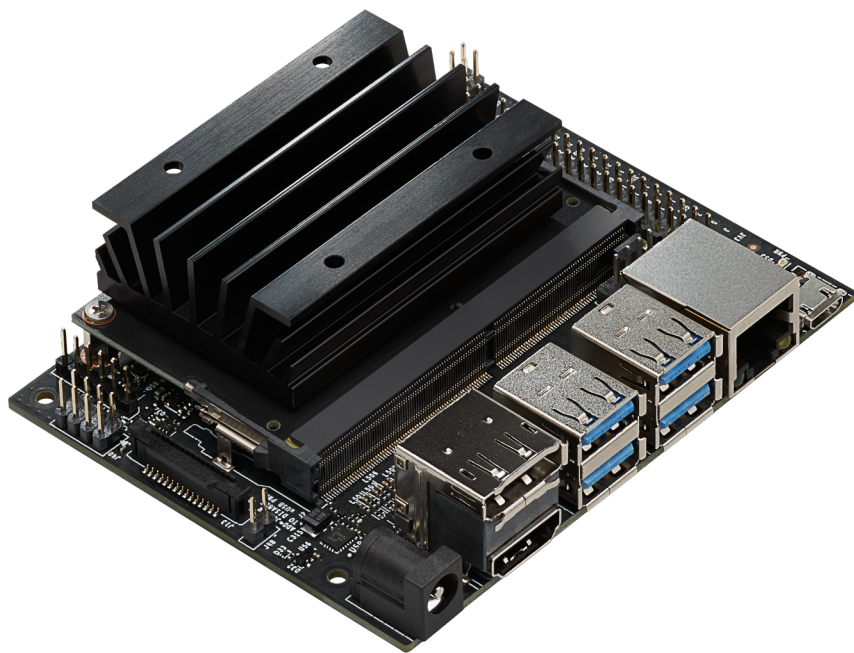
 ROS



docker

 MPI

JETSON NANO DEVKIT SPECS



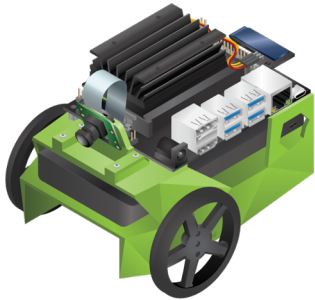
Distributors
Include:



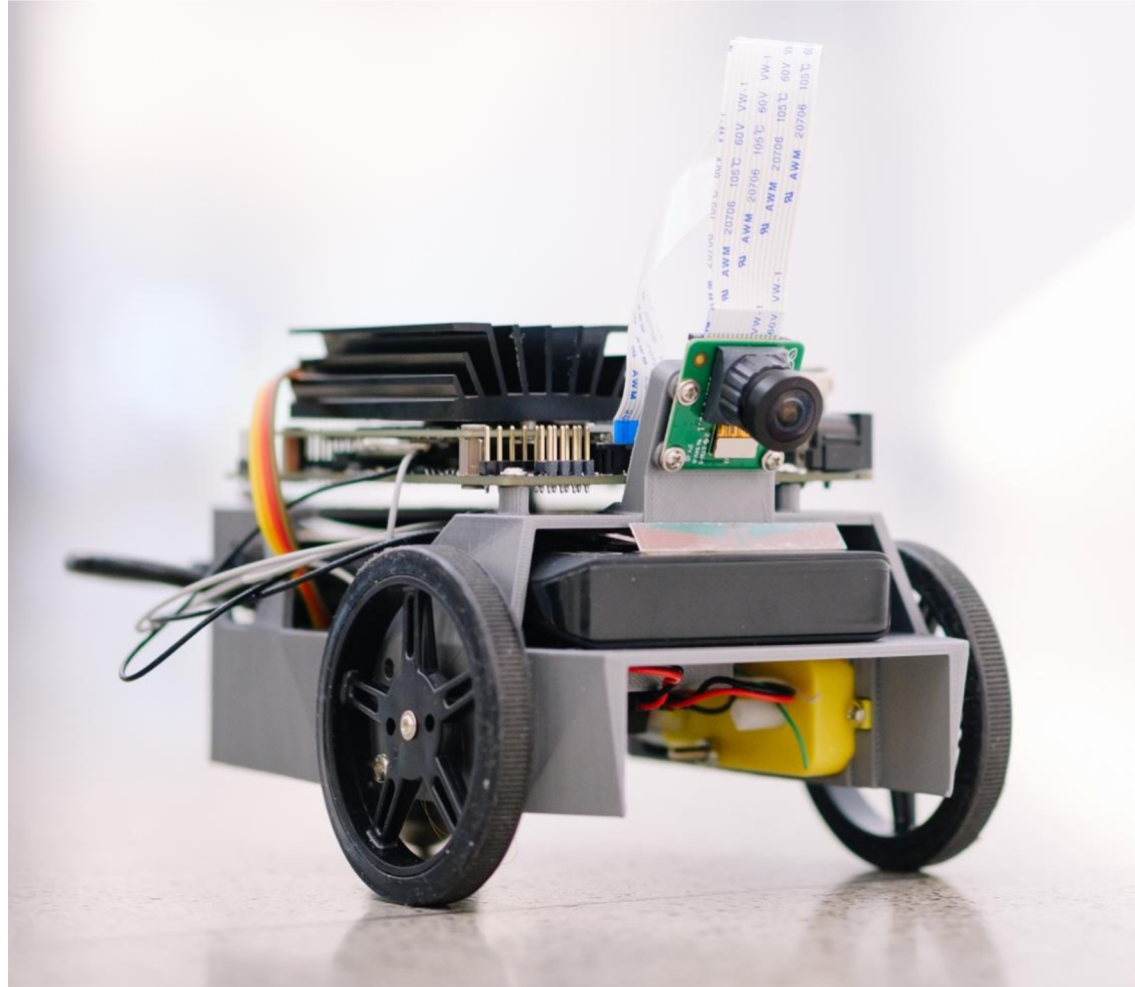
PROCESSOR	
CPU	64-bit Quad-core ARM A57 @ 1.43GHz
GPU	128-core NVIDIA Maxwell @ 921MHz
Memory	4GB 64-bit LPDDR4 @ 1600MHz 25.6GB/s
Video Encoder	4Kp30 (4x) 1080p30 (2x) 1080p60
Video Decoder	4Kp60 (2x) 4Kp30 (8x) 1080p30 (4x) 1080p60
INTERFACES	
USB	(4x) USB 3.0 A (Host) USB 2.0 Micro B (Device)
Camera	MIPI CSI-2 x2 (15-position Flex Connector)
Display	HDMI DisplayPort
Networking	Gigabit Ethernet (RJ45, PoE)
Wireless	M.2 Key-E with PCIe x1
Storage	MicroSD card (16GB UHS-1 recommended minimum)
Other I/O	(3x) I2C (2x) SPI UART I2S GPIO
Power	5V DC (µUSB, Barrel Jack, PoE) - 5W 10W
Size	80x100mm

JetBot

- ~\$250 DIY Autonomous Deep Learning Robotics Kit
- Programmable through Jupyter notebooks
- Workflow for creating dataset for and training image classification, image regression deep learning network
- ROS support and Gazebo simulator available



jetbot.org



JetBot Examples

Collision Avoidance



<http://youtu.be/6cLk9TSgFSw>

JetBot Examples

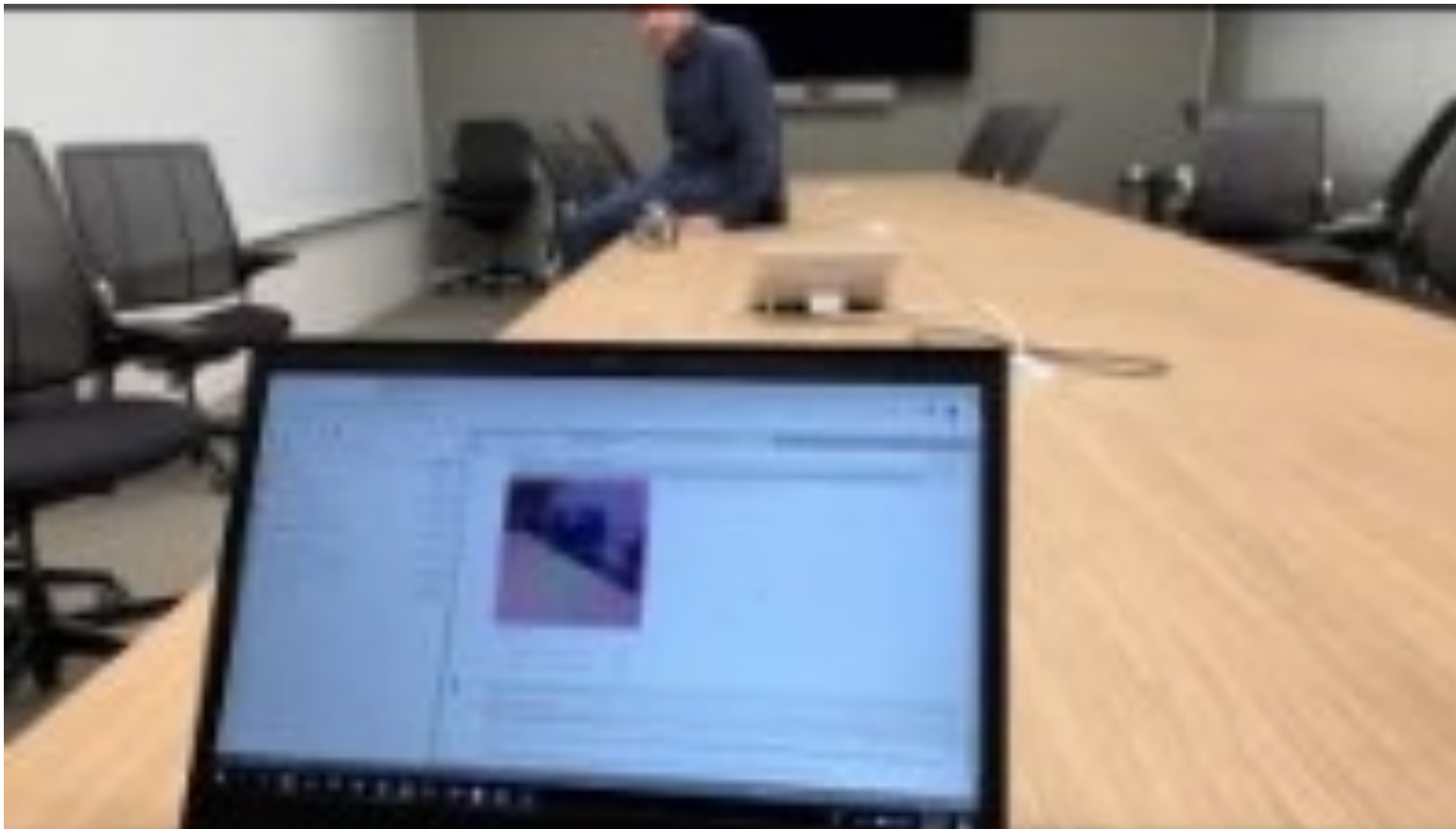
Road Following



<http://youtu.be/N7FvjKV1Rt0>

JetBot Examples

Object Following



<http://youtu.be/MBUEbU9Q6wg>

First JetBot in the Wild



<http://youtu.be/UWxozSueHAK>

Community Adopts JetBot

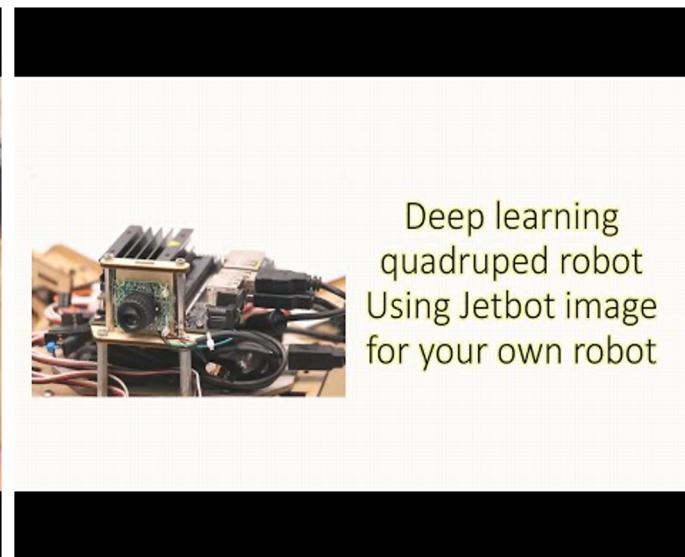
JetSpider, JetRoomba, Jet... Younameit!



<http://youtu.be/ok1KjCzyoro>



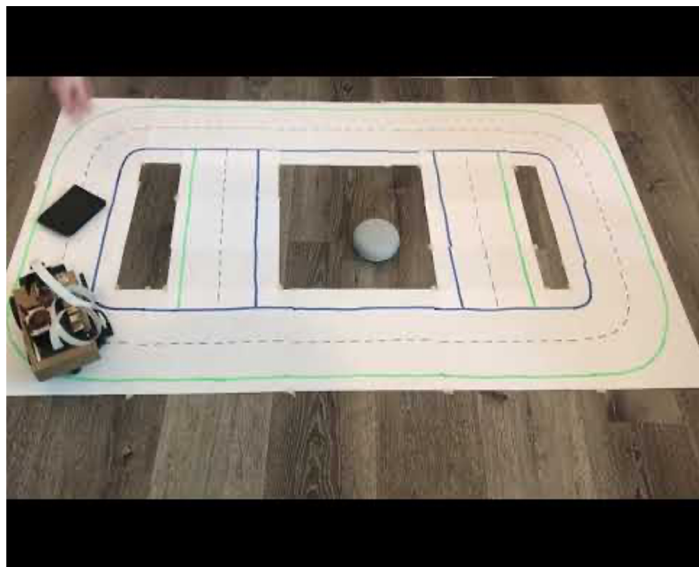
<http://youtu.be/uKebuv8r398>



<http://youtu.be/FHrrIlWasWg>

Community Adopts JetBot

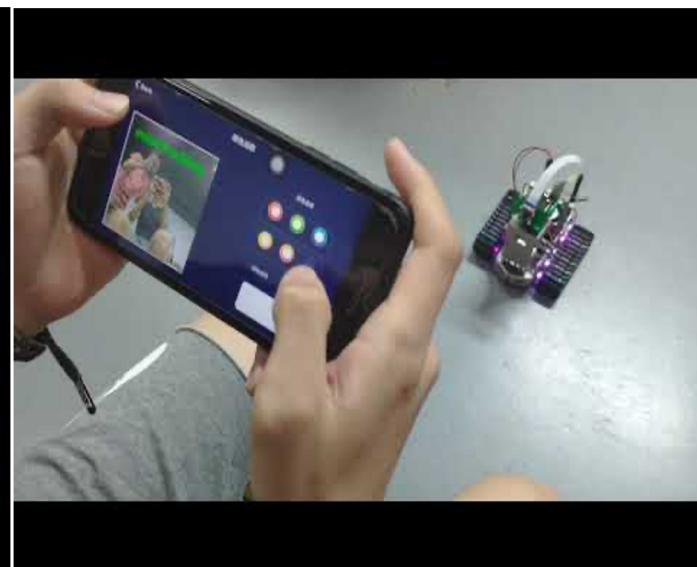
JetSpider, JetRoomba, Jet... Younameit!



<http://youtu.be/Qe36NKmYy2Q>



<http://youtu.be/YwxSwXEjd4c>



<http://youtu.be/A9QvAUc0ZXQ>

Go beyond JetBot

 **NVIDIA DEVELOPER**

HOME BLOG FORUMS DOCS DOWNLOADS TRAINING  ACCOUNT

JETSON ▾ DEVELOPER KITS ▾ MODULES ▾ SOFTWARE ▾ PARTNERS ▾

Home > Autonomous Machines > Community > Jetson Community Projects

Jetson Community Projects

Explore and learn from Jetson projects created by us and our community. These have been created for **Jetson developer kits**. Scroll down to see projects with code, videos and more.



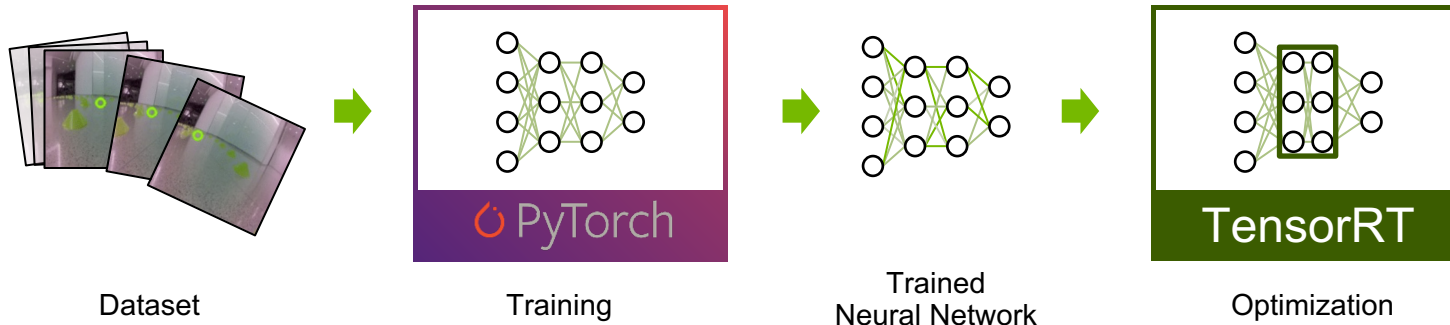
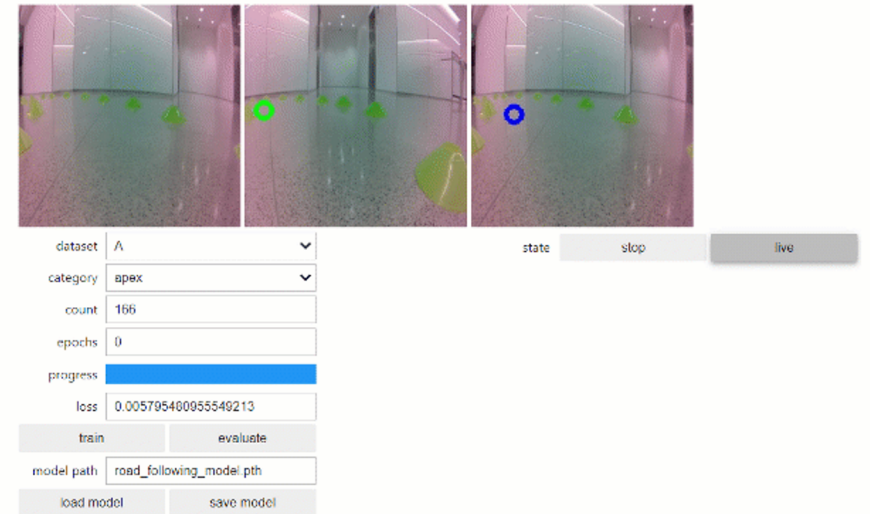
JetsonTV

This is a collection of cool projects, applications, and demos that use NVIDIA Jetson platform. For more inspiration, code and instructions, scroll below.

<https://developer.nvidia.com/embedded/community/jetson-projects>

JetRacer

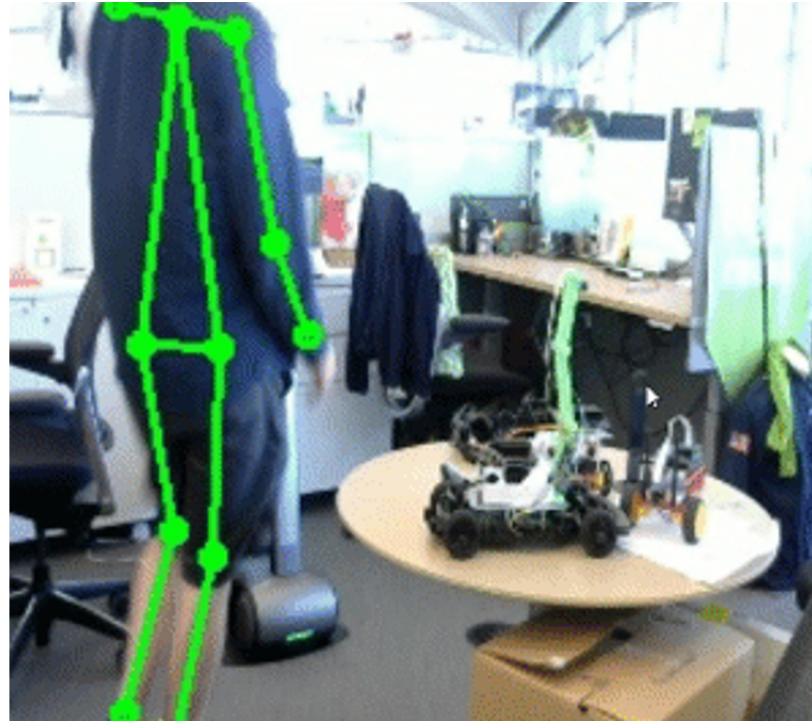
Optimize and Go Faster.



GitHub: <https://github.com/NVIDIA-AI-IOT/jetracer/>

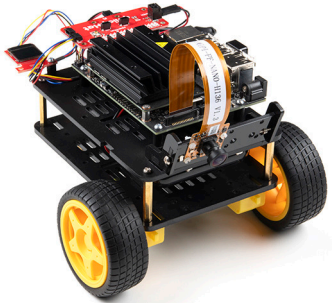
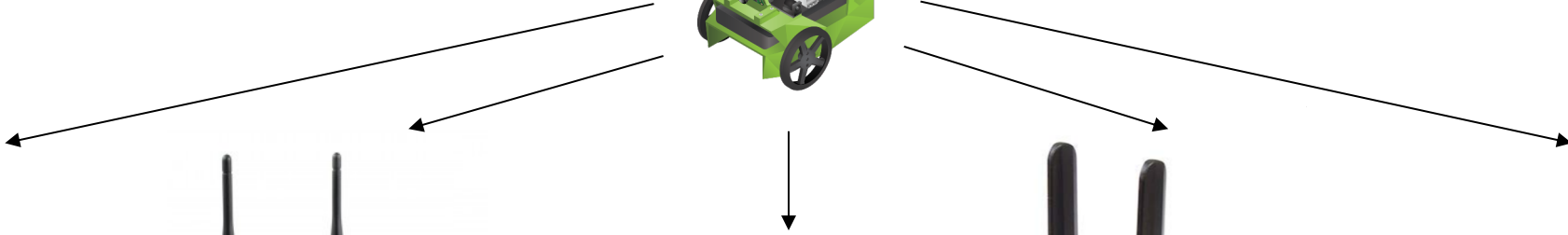
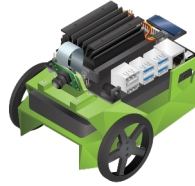
Real-time Human Pose

22FPS on Jetson Nano



https://github.com/NVIDIA-AI-IOT/trt_pose

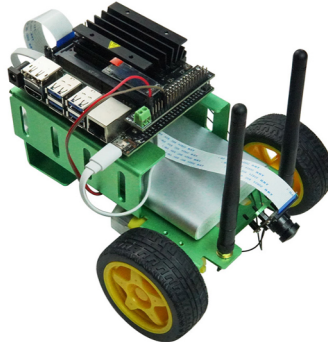
Third Party Kits



SparkFun
JetBot AI Kit



Waveshare
JetBot AI Kit



Seedstudio
JetBot Smart Car



FaBo
JetBot kit

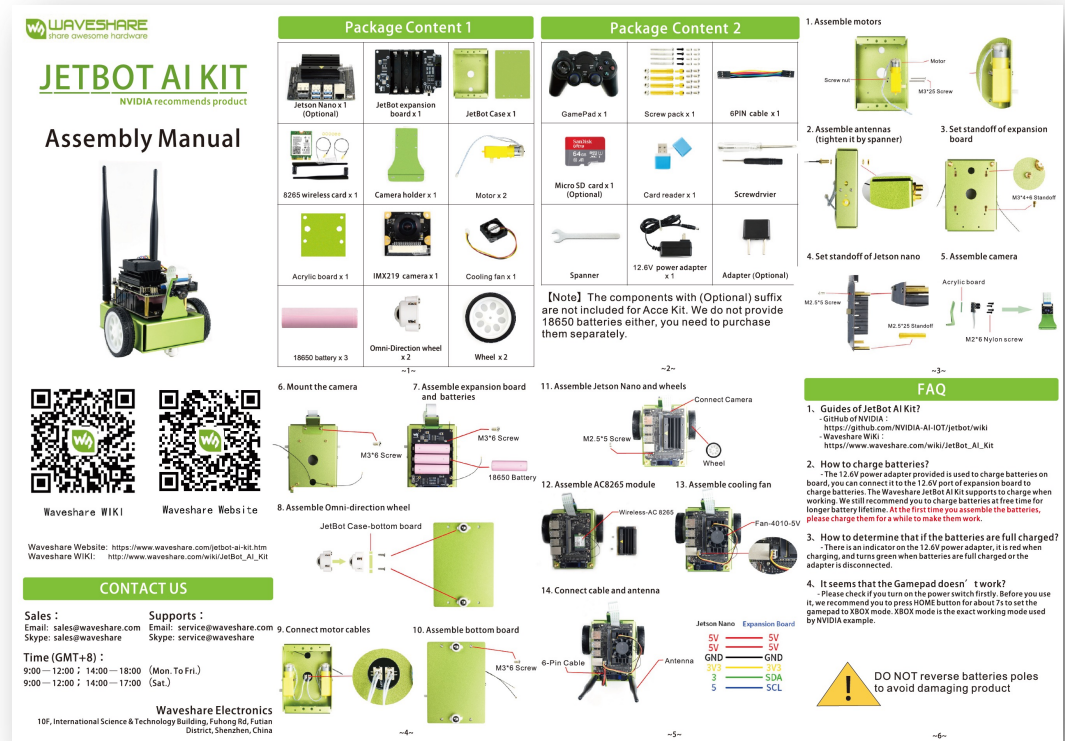


Yahboom
JetBot AI Car

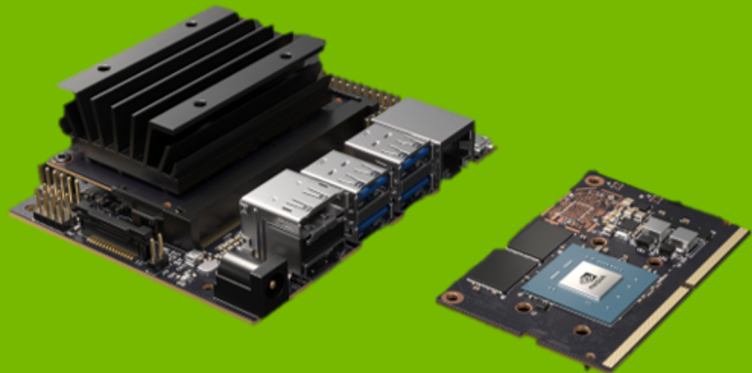
Waveshare JetBot Assembly Guide

Make it. Build it. Assemble it. DIY!

- Assemble manual
 - Paper manual included in the box
 - https://www.waveshare.com/wiki/JetBot_AI_Kit_Assemble_Manual
- Software Setup
 - https://www.waveshare.com/wiki/JetBot_AI_Kit
 - http://jetbot.org/v0.4.3/software_setup/sd_card.html



Thank you!



Developer Site	developer.nvidia.com/jetson
Getting Started	nvidia.com/JetsonNano-Start
Jetbot GitHub	Github.com/NVIDIA-AI-IOT/jetbot
Jetbot Docs	jetbot.org
DevTalk Forums	devtalk.nvidia.com
eLinux Wiki	eLinux.org/Jetson

JetBot questions

Adding things on JetBot:

It is certainly possible to add your own sensors or actuators.

You can look for those hardware that comes with Python library.

<https://learn.adafruit.com/16-channel-pwm-servo-driver/python-circuitpython>

Does JetBot need Jetpack 4.5.1 or earlier as the OS?

The latest JetBot image is based on JetPack 4.5. If you need to use earlier version of JetPack we keep the previous version card image as well.

http://jetbot.org/v0.4.3/software_setup/sd_card.html

By saying "Build on top of" are you saying there are already existing trained models on it?

Yes. http://jetbot.org/v0.4.3/examples/collision_avoidance.html#step-1-collect-data-on-jetbot

Jetson questions

Is this processor going to be used in cars for self driving?:

Jetson is built around NVIDIA's Tegra SoC, which is also used in NVIDIA's Drive platform.

<https://www.nvidia.com/en-us/self-driving-cars/>

Raspberry Pi?

Both Jetson Nano and Raspberry Pi are considered a SBC (Single Board Computer) that runs Linux OS.

It would make sense for one to use Jetson in place of Raspberry Pi, especially if it requires AI processing.

Arduino?

Arduino is good for controlling hardware at lower level.

A lot of people uses Jetson Nano with Arduino or other microcontroller based system, but Jetson can still directly interfaced to many hardware using I2C, UART, SPI and GPIO interface.

Have you had someone who uses the Nano for mobile face recognition. Is it fast enough?

Check this out!

<https://medium.com/@ageitgey/build-a-face-recognition-system-for-60-with-the-new-nvidia-jetson-nano-2gb-and-python-46edbdd7264>