

Intel® Neural Compute Stick 2

High performance, Low Power for Al Inference



Itel) Neural Compute Stick 2



Learn more about Intel® Neural Compute Stick 2 at http://intel.com/ncs

Introduction

Bringing computer vision and AI to your IoT and edge device prototypes are now easier than ever with enhanced capabilities of the Intel® Neural Compute Stick 2 (Intel® NCS2).

Whether you're developing a smart camera, a drone with gesture-recognition capabilities, an industrial robot, or the next, must-have smart home device, the Intel® NCS2 offers what you need to prototype smarter.

What looks like a standard USB thumb drive hides much more inside. It's built on the latest Intel® Movidius™ Myriad™ X VPU which features the neural compute engine—a dedicated hardware accelerator for deep neural network inferences. With more compute cores than the original version and access to the Intel® Distribution of OpenVINO™ toolkit, the Intel® NCS2 delivers 8X* performance boost over the previous generation.¹

Product features

- Powered by Intel® Movidius™ Myriad™ X Vision Processing Unit
- Up to 8X* the performance of Intel® Movidius™ Neural Compute Stick
- Supported by the Intel[®] Distribution of OpenVINO[™] toolkit
- Real-time, on device inference cloud connectivity not required
- Run multiple devices on the same platform to scale performance

Where to buy

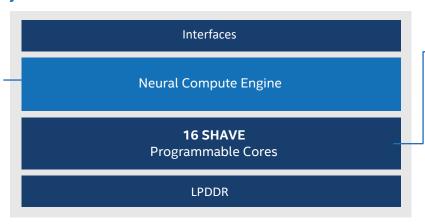
Purchase your Intel® Neural Compute Stick 2 from one of our trusted partners at: Where to Buy



Vision Processing Unit Architecture

Intel® Movidius™ Myriad™ X VPU

An entirely new deep neural network (DNN) inferencing engine that offers flexible interconnect and ease of configuration for on-device DNNs and computer vision applications



VLIW (DSP) programmable processors are optimized for complex visions and imaging workloads

Homogeneous memory design for low-power, UL latency, sustained High Performance

Intel® Distribution of OpenVINO™ toolkit

The Intel Distribution of OpenVINO[™] toolkit is the default software development kit¹ to optimize performance, integrate deep learning inference, and run deep neural networks (DNN) on Intel[®] Movidius[™] Vision Processing Units (VPU).

Download

Open Source GitHub Repo

Computer Vision OpenCV, OpenCL™, OpenVX

Deep Learning

Caffe*, Tensorflow*, mxnet*, ONNX*, PyTorch*, PaddlePaddle*

Pretrained models

The Intel® Distribution of OpenVINO™ toolkit includes two sets of optimized models that can expedite development and improve image processing pipelines for Intel® processors. Use these models for development and production deployment without the need to search for or to train your own models.

Full list of models at: Pretrained Models



Reference Implementations

Open-sourced reference implementations to quickly deploy with pre-built projects

Intruder Detector

Build an application that alerts you when someone enters a restricted area. Learn how to use models for multiclass object detection.

Restricted Zone Notifier

Secure work areas and send alerts if someone enters the restricted space.

Store Traffic Monitor

Monitor three different streams of video that count people inside and outside of a facility. This application also counts product inventory.

View all reference implementations

Shopper Gaze Monitor

Build a solution to analyze customer expressions and reactions to product advertising collateral that is positioned on retail shelves.

Parking Lot Tracker

Receive or post information on available parking spaces by tracking how many vehicles enter and exit a parking lot.

Machine Operator Monitor

Send notifications when an employee appears to be distracted when operating machinery.

Projects

Al has the power to save lives, protect the environment, and change the world. Start your Al at the edge development today.

Smart Shopping Cart

Gives off-line retailers additional opportunities to advertise products in a fashion similar to online sellers (i.e., Based on the products already placed in a shopping cart)

3D Printing Error Detection

Offline analysis is accomplished with a digital microscope connected to a laptop running Ubuntu* and the Intel® Neural Compute Stick 2. After analysis, contamination sites are marked on a map in real time.

Machine Learning and Mammography

Detecting invasive ductal carcinoma with convolutional neural networks showing how existing deep learning technologies can be utilized to train artificial intelligence (AI) to be able to detect invasive ductal carcinoma (IDC) 1 (breast cancer) in unlabeled histology images.

CORaiL: Coral Reef Restoration and Research

Prototype a fully functional modular AI-powered underwater camera unit that continuously counts the number of visible fauna, and, as possible, assign a taxonomy.

Technical Specifications

| Specifications | Intel® Neural Compute Stick 2 |
|------------------------------|--|
| Vision Processing Unit (VPU) | The Intel® Movidius™ Myriad™ X VPU |
| Software development kit | Intel® Distribution of OpenVINO™ toolkit |
| Operating Systems support | Ubuntu* 16.04.3 LTS (64 bit), Windows® 10 (64 bit), CentOS* 7.4 (64 bit), Raspbian*, and other via the open-source distribution of OpenVINO™ |
| Supported framework | TensorFlow*, Caffe*, MXNet*, ONNX*, and PyTorch* / PaddlePaddle* via ONNX* conversion |
| Connectivity | USB 3.1 Type-A, USB 2.0 Type-A |
| Dimensions | 72.5mm X 27mm X 14mm |
| Operating temperature | 0° - 40° C |
| Material Master Number | 964486 |
| MSRP | \$69 USD as of July 14, 2019 |
| Supported platforms | x86_64, ARM |

Additional Resources

- Getting Started
- Forum
- Tutorials

Testing by Intel as of October 12th, 2018

Deep Learning Workload Configuration. Comparing Intel® Movidius™ Neural Compute Stick based on Intel® Movidius™ Myriad™ 2 VPU vs. Intel® Neural Compute Stick 2 Intel® Movidius™ Myriad™ X VPU with Asynchronous Plug-in enabled for (2xNCE engines). As measured by images per second across GoogleNetV1. Base System Configuration: Intel® Core™ 17-8-700K 95W TDP (6C12T at 3.7GHz base freq and 4.7GHz max turbo freq), Graphics: Intel® UHD Graphics 630 Total Memory 65830088 kB Storage: INTEL SSDSC2BB24 (240GB), Ubuntu 16.04.5 Linux-4.15.0-36-generic-x86_64-with-Ubuntu-16.04-xenial, deeplearning_deploymenttoolkit_2018.0.14348.0, API version 1.2, Build 14348; myriadPlugin, FP16, Batch Size = 1. Software and workloads used in performance tests may have been optimized for performance only on Intel® microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more complete information visit www.intel.com/bench marks. Performance results are based on testing as of October 12th, 2018 and may not reflect all publicly available security updates. See configuration disclosure for details. No product can be absolutely secure.

