



HARDWARE AND SOFTWARE REQUIREMENTS FOR THIS COURSE

LEGAL DISCLAIMER

INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH INTEL PRODUCTS. NO LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT. EXCEPT AS PROVIDED IN INTEL'S TERMS AND CONDITIONS OF SALE FOR SUCH PRODUCTS, INTEL ASSUMES NO LIABILITY WHATSOEVER AND INTEL DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY, RELATING TO SALE AND/OR USE OF INTEL PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

A "Mission Critical Application" is any application in which failure of the Intel Product could result, directly or indirectly, in personal injury or death. SHOULD YOU PURCHASE OR USE INTEL'S PRODUCTS FOR ANY SUCH MISSION CRITICAL APPLICATION, YOU SHALL INDEMNIFY AND HOLD INTEL AND ITS SUBSIDIARIES, SUBCONTRACTORS AND AFFILIATES, AND THE DIRECTORS, OFFICERS, AND EMPLOYEES OF EACH, HARMLESS AGAINST ALL CLAIMS COSTS, DAMAGES, AND EXPENSES AND REASONABLE ATTORNEYS' FEES ARISING OUT OF, DIRECTLY OR INDIRECTLY, ANY CLAIM OF PRODUCT LIABILITY, PERSONAL INJURY, OR DEATH ARISING IN ANY WAY OUT OF SUCH MISSION CRITICAL APPLICATION, WHETHER OR NOT INTEL OR ITS SUBCONTRACTOR WAS NEGLIGENT IN THE DESIGN, MANUFACTURE, OR WARNING OF THE INTEL PRODUCT OR ANY OF ITS PARTS.

Intel may make changes to specifications and product descriptions at any time, without notice. Designers must not rely on the absence or characteristics of any features or instructions marked "reserved" or "undefined". Intel reserves these for future definition and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to them. The information here is subject to change without notice. Do not finalize a design with this information.

The products described in this document may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request.

Contact your local Intel sales office or your distributor to obtain the latest specifications and before placing your product order.

Code names featured are used internally within Intel to identify products that are in development and not yet publicly announced for release. Customers, licensees and other third parties are not authorized by Intel to use code names in advertising, promotion or marketing of any product or services and any such use of Intel's internal code names is at the sole risk of the user.

Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. Check with your system manufacturer or retailer or learn more at [intel.com](https://www.intel.com).

This sample source code is released under the [Intel Sample Source Code License Agreement](#).

Intel, the Intel logo, Intel Core, Movidius, OpenVINO, and Xeon are trademarks of Intel Corporation in the U.S. and/or other countries.

Microsoft, Windows, and the Windows logo are trademarks, or registered trademarks of Microsoft Corporation in the United States and/or other countries.

*Other names and brands may be claimed as the property of others.

Copyright © 2020, Intel Corporation. All rights reserved.



REQUIREMENTS FOR THIS COURSE

- Development platform specifications
- Target platform specifications
- Where do I buy an Intel® Movidius™ Neural Compute Stick (NCS)?
- Intel® Distribution of OpenVINO™ toolkit installation instructions
- Configure Intel® Neural Compute Stick 2 (Intel® NCS2) with the OpenVINO toolkit
- Download and compile instructions for OpenVINO toolkit samples, demos and models

DEVELOPMENT PLATFORMS

Hardware:

- 6th to 10th generation Intel® Core™ and Intel® Xeon® processors

Operating System:

- Ubuntu* 18.04.3 LTS (64 bit)
- Windows® 10 (64 bit)
- CentOS* 7.4 (64 bit)
- macOS* 10.13, 10.14 (64 bit)

TARGET PLATFORMS

Vision Processing Unit:

- Intel® Movidius™ Neural Compute Stick
- Intel® Neural Compute Stick 2
- Raspberry Pi* board with ARM* ARMv7-A CPU architecture
- Operating Systems
 - Raspbian* Buster, 32-bit
 - Raspbian* Stretch, 32-bit

Intel® CPU, Processor Graphics, FPGA and Intel® Vision Accelerator Design can be used as target platforms through the OpenVINO™ Toolkit.

These are not covered in the scope of this course. For more information on using any of these hardware platforms for inference, refer to the [Intel® OpenVINO™ documentation](#)

WHERE TO BUY INTEL® MOVIDIUS™ NEURAL COMPUTE STICK



MOUSER



RS COMPONENTS



AKIZUKI DENSHI



AMAZON



JD



SWITCH SCIENCE

OPENVINO™ TOOLKIT—INSTALLATION GUIDES

The Intel® Distribution of OpenVINO™ toolkit supports:

- Linux* [Installation Guide](#)
- Windows* [Installation Guide](#)
- macOS* [Installation Guide](#)

This course focuses on the workflow for Linux. For Windows, refer to the [AI on the PC course](#).

OPENVINO™ TOOLKIT—LINUX* INSTALLATION STEPS (REQUIRED)

Go to:

https://docs.openvino toolkit.org/latest/_docs_install_guides_installing_openvino_linux.html

- Complete the following steps:
 - Install core components
 - Install external software dependencies
 - Set environment variables
 - Configure the Model Optimizer
 - Run the verification steps to verify installation

ADDITIONAL STEPS TO CONFIGURE INTEL® NEURAL COMPUTE STICK 2 (REQUIRED)

- Add current Linux* user to the usergroups
 - `sudo usermod -a -G users "$(whoami)"`
- Install USB rules—required to infer a deep learning model on the Intel® Neural Compute Stick 2
 - (1) `sudo cp /opt/intel/opencvino/inference_engine/external/97-myriad-usbboot.rules /etc/udev/rules.d/`
 - (2) `sudo udevadm control --reload-rules`
 - (3) `sudo udevadm trigger`
 - (4) `sudo ldconfig`
- Check if device is visible
 - `lsusb`
 - You may have to reboot for changes to take effect

PRETRAINED MODELS OPTIMIZED FOR INTEL® ARCHITECTURE

OpenVINO™ toolkit includes optimized pretrained models that can expedite development and improve deep learning inference on Intel® processors. Use these models for development and production deployment without the need to search for or to train your own models.

PRETRAINED MODELS

- Age & Gender
- Face Detection—standard & enhanced
- Head Position
- Human Detection—eye-level & high-angle detection
- Detect People, Vehicles & Bikes
- License Plate Detection: small & front facing
- Vehicle Metadata
- Vehicle Detection
- Retail Environment
- Pedestrian Detection
- Pedestrian & Vehicle Detection
- Person Attributes Recognition Crossroad
- Emotion Recognition
- Identify Someone from Different Videos—standard & enhanced
- Identify Roadside Objects
- Advanced Roadside Identification
- Person Detection & Action Recognition
- Person Re-identification—ultra small/ultra fast
- Face Re-identification
- Landmarks Regression

SAVE TIME WITH DEEP LEARNING SAMPLES & COMPUTER VISION ALGORITHMS

SAMPLES

Use Model Optimizer & Inference Engine for both public models as well as Intel pretrained models with these samples.

- Object Detection
- Standard & Pipelined Image Classification
- Security Barrier
- Object Detection for Single Shot Multibox Detector (SSD) using Asynch API
- Object Detection SSD
- Neural Style Transfer
- Hello Infer Classification
- Interactive Face Detection
- Image Segmentation
- Validation Application
- Multichannel Face Detection

COMPUTER VISION ALGORITHMS

Get started quickly on your vision applications with highly optimized, ready-to-deploy, custom built algorithms using the pretrained models.

- Face Detector
- Age & Gender Recognizer
- Camera Tampering Detector
- Emotions Recognizer
- Person Re-identification
- Crossroad Object Detector

DOWNLOAD AND BUILD INSTRUCTIONS FOR SAMPLE APPLICATIONS AND DEMOS (REQUIRED)

- The course will use some of the image classification and object detection sample applications and pretrained models as examples
- Before we begin:
 - [Download pretrained models](#)
 - Provides Intermediate Representation files for pretrained models.
 - [Download and build sample applications](#)
 - [Download and build demos](#)

