



INTERNET OF THINGS

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UP SQUARED* AI VISION X DEVELOPER KIT

Implement computer vision solutions and run deep learning inference using the CPU, GPU, or an optional VPU.



Get Started

Buy

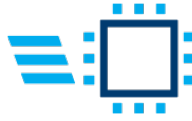
[Overview](#) | [Kit Details](#) | [Specifications](#) | [Documentation & Downloads](#) | [Customize](#)

Overview



Preinstalled Computer Vision Software

Use the Intel® Distribution of OpenVINO™ toolkit for hardware acceleration of deep learning inference for computer vision applications.



Hardware Acceleration

Harness the performance of Intel®-based accelerators for deep learning inference with the CPU and GPU included in this kit or with an optional VPU.



Reduce Time to Field Trial

The included production-ready system with mountable aluminum chassis and camera can be deployed as is and has an operating temperature range of 0°C to 40°C.

Who Needs This Product

Information and operational technologists who:

- Are new to IoT commercial platforms and need a simple path without a steep learning curve
- Need a quicker path to deployment

Use Cases

- Face detection and analysis
- Retail audience analytics
- Pedestrian detection and analysis
- Traffic monitoring and license plate recognition

[Brand Recognition and Inventory Management](#) (video)
[Personal Protective Equipment Analysis](#) (video)

Reference Implementations

[Build a Facial Recognition Access Application](#)
[Create a People Counter Application](#)
[Browse All Reference Implementations](#)

Kit Details



Hardware

- UP Squared board with Intel Atom® X7-E3950 processor (quad core) and 8 GB of RAM and 64 GB eMMC
- USB camera with a maximum resolution of 1920p x 1080p at 30 frames per second
- Power supply for the UP Squared board
- Optional AI Core X Mini PCIe* card with the Intel® Movidius™ Myriad™ X Vision Processing Unit (VPU)
- Aluminum enclosure
- CE, FCC certified with the designated Wi-Fi* and LTE module

Preinstalled Software

- Ubuntu* 16.04 desktop
- Intel® Distribution of OpenVINO™ toolkit 2018 R5 release
- Intel® System Studio 2019 Ultimate Edition (update 2)
- Intel® Media SDK
- Drivers for Intel® VTune™ Amplifier, Intel® Energy Profiler, Intel® Graphics Performance Analyzers
- MRAA and UPM I/O and sensor libraries for C++, Python*, Java*, and JavaScript*

Optional Add-ons

- [Wi-Fi Card](#)
- [LTE Module](#) (EU Only)



Intel® Vision Accelerator Design Products

The UP Squared* AI Vision X Developer Kit can be ordered with an optional preinstalled vision accelerator that enables:

- Faster inferencing at the edge
- Offload processing from the CPU and GPU to the AI Core X Mini PCIe* card with the Intel® Movidius™ Myriad™ X Vision Processing Unit (VPU)

Hardware Specifications

System Requirements

HDMI* or DisplayPort* compatible monitor

USB keyboard and mouse

Ethernet connection (for internet connectivity)

System Board

Intel Atom x7-E3950 processor (1.6 GHz quad core, burst up to 2.0 GHz)

Integrated Intel HD Graphics 505 with 18 execution units

8 GB LPDDR4 system memory

64 GB eMMC

Available I/O Interfaces

GPIO

I2C

SPI

UART

PWM

i2s

HDMI and DisplayPort

Dual gigabit Ethernet ports

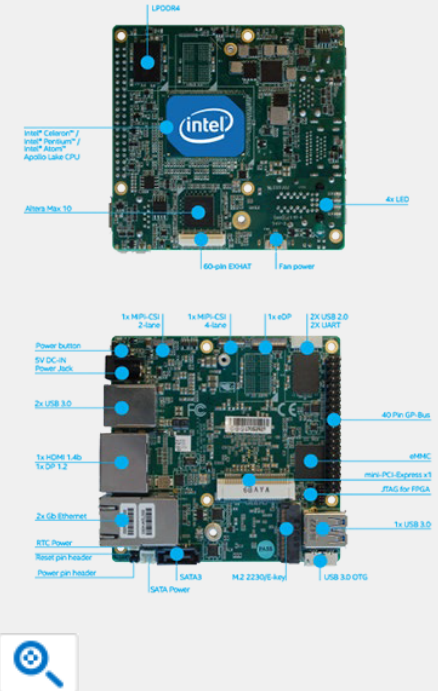
USB 3.0

Expansion Slots

1 - SATA 3

1 - Mini PCIe*

1 - M.2 2330



Documentation & Downloads

Documentation

[Intel Atom® X7-E3950 Processor Specifications](#)

[UP Squared* Board Specifications](#)

[Inference Engine Developer Guide](#)

[Intel® Movidius™ Myriad™ X VPU Product Information](#)

Support

Support is provided by the [UP community](#).

Tutorials

[Transfer Your Project from Arduino Create to Intel System Studio](#)

[Browse All Code Samples on GitHub*](#)

Tools



Arduino Create*

- A cloud-based development solution
- Integrated with Intel®-based boards and libraries
- Large community collection of guides, projects, and training for all levels



Intel® System Studio 2019

- Optimize production and performance
- Get cross-platform support
- Quickly identify and analyze performance across network, devices, and remote systems
- Reduce system power consumption by collecting and analyzing power behavior
- Access Intel® Advanced Vector Extensions 512 instructions



Intel® Distribution of OpenVINO™ Toolkit

- Enable CNN-based deep learning inference on the edge
- Support for heterogeneous execution across various accelerators—CPU, GPU, Intel® Movidius™ Myriad™ X, and FPGA—using a common API
- Speed up time to market via a library of functions and preoptimized kernels
- Preinstalled models included with the Intel Distribution of OpenVINO toolkit R5 release

[Release Notes](#) | [Documentation](#)

Customize Your Up Squared Board for Production

Advance your prototype to the next stage through custom software and hardware offered by AAEON and Canonical.

- Explore the different UP Squared board configurations to fit your specific workload.
- Find out more about [Customization Services for Hardware](#) from AAEON.
- Learn more about [Ubuntu Customization and Deployment](#) from Canonical.

Tools

Intel® Distribution of OpenVINO™ Toolkit
 Intel® Media SDK
 Intel® System Studio
 Intel® Software Development Kits

Training

IoT Training
 Tech.Decoded
 GitHub*: Intel® IoT Developer Kit
 01.org
 YouTube*: Intel® IoT

Related Programs

Intel® AI: In Production
 Intel® Internet of Things Solutions Alliance