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UP AI Edge

AI on the
Edge

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UP Founder, Vice President & Managing Director AAEON Europe

Date : Mar 2018

Version : 1.3

Audience : External

are you
up for **UP**?

AI Artificial Intelligence



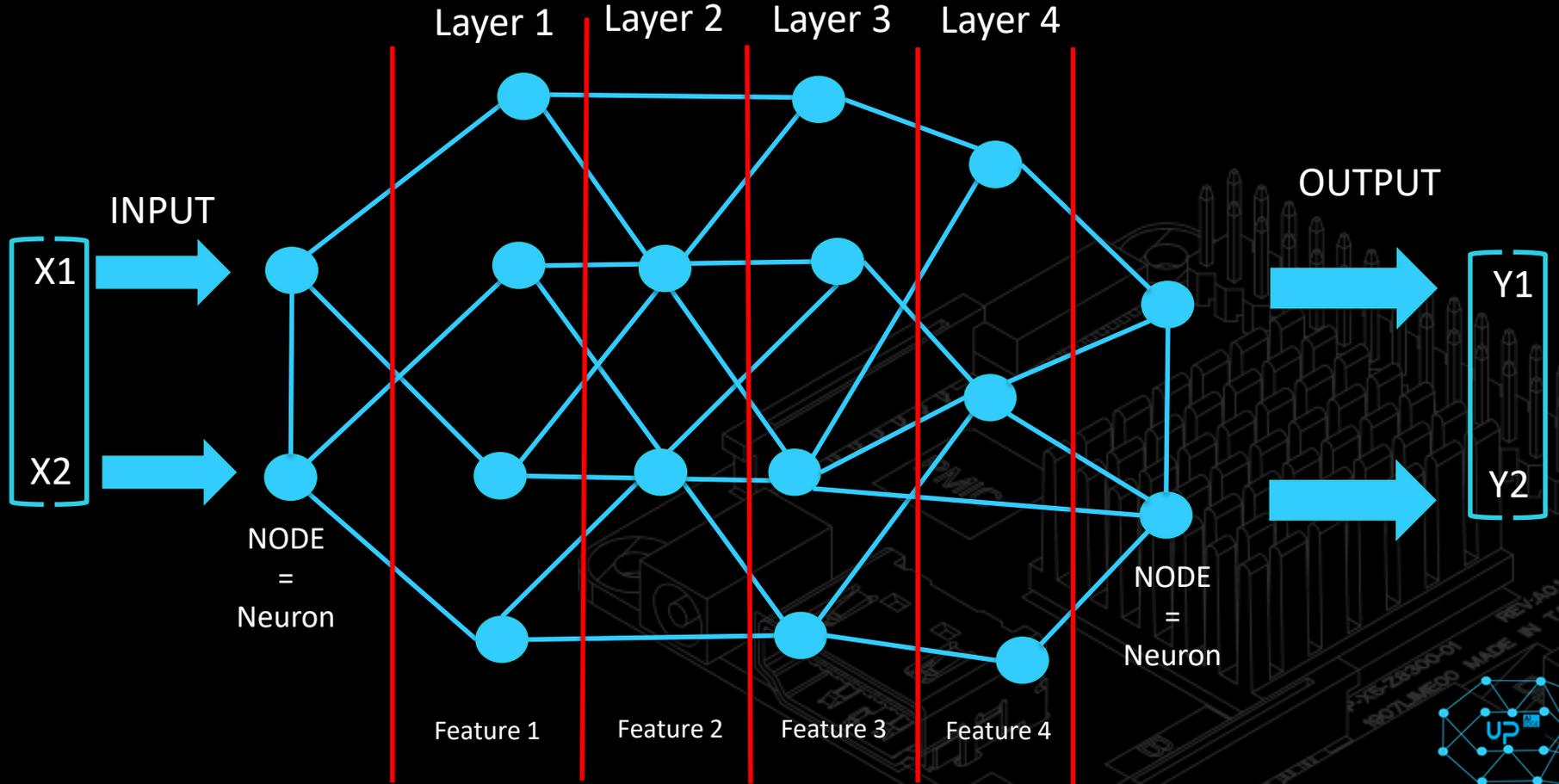
**ARTIFICIAL
INTELLIGENCE**

**MACHINE
LEARNING**

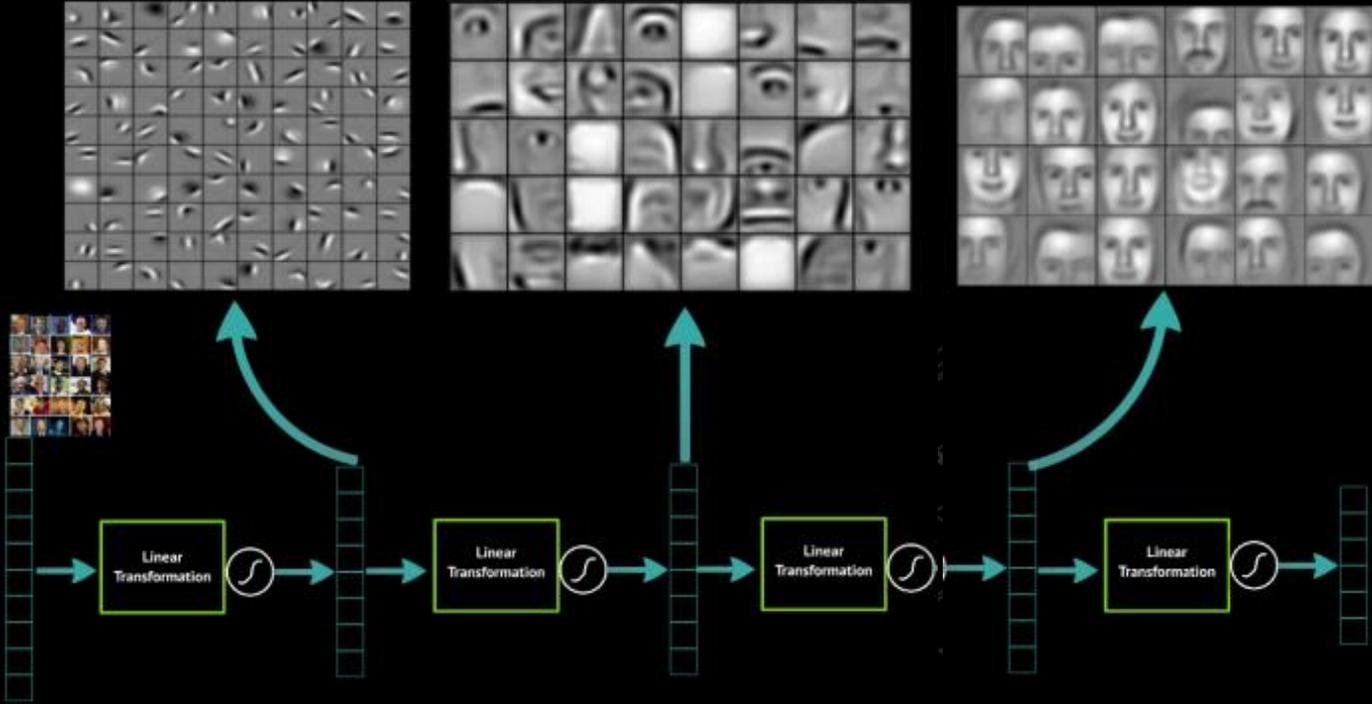
**DEEP
LEARNING**

DNN (CNN)
RNN

Deep Neural Network



In Deep Learning Each Layer learns specific features





**Current
Approach :
Centralized AI**

=

**(CPU + GPU +
FPGA + TPU) ***

Thousand

=

**Almost Unlimited
Resources**

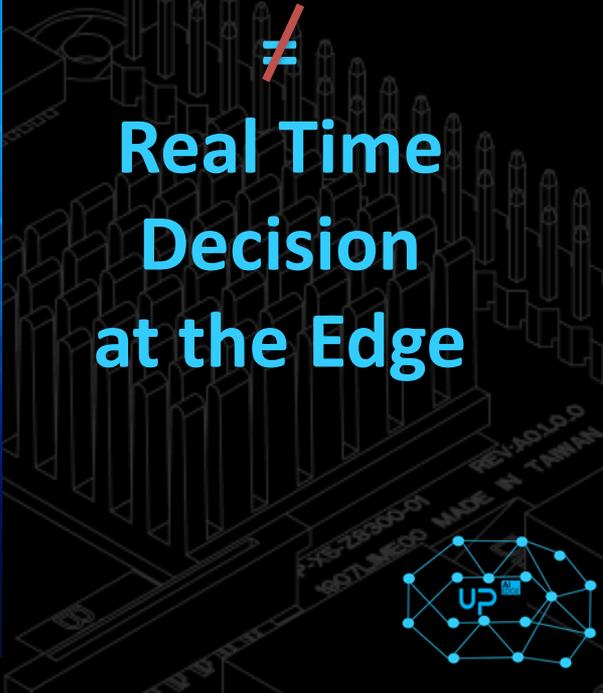




Centralized AI

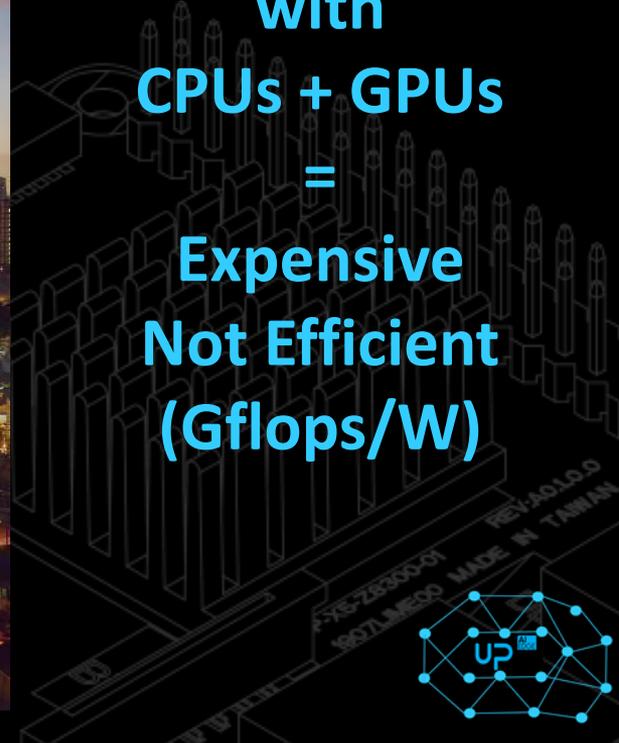
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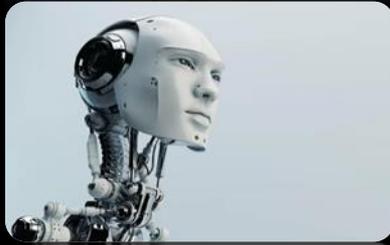
**Real Time
Decision
at the Edge**





**AI at the Edge
with
CPUs + GPUs
=
Expensive
Not Efficient
(Gflops/W)**





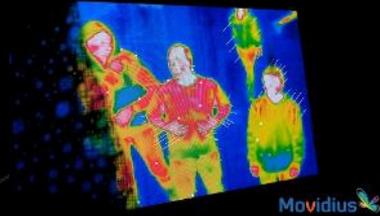
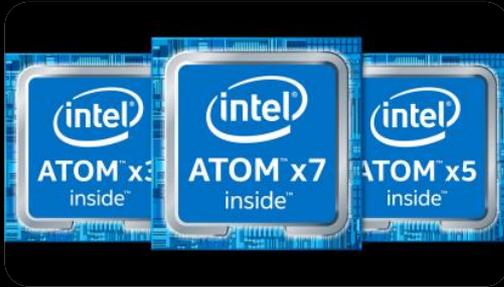
**AI On The Edge for
Robots, Drones,
Portable/Mobile Devices
Outdoor Devices**

=

**Efficient (Gflops/W)
Reasonable Cost
Industrial Grade Archit.**



UP AI Edge



Intel®
Atom x5/x7
Celeron/Pentium

Low Power Consumption
Quad Core 64 bit x86
Architecture

OS agnostic

GPU integrated

Rich I/O

+ Intel® Cyclone® +
10 GX

Programmable
Versatile
Architecture

Super Rich I/O

Good for CPU Offload,
Real Time High Speed Signal
Analysis

Intel®
MOVIDIUS™
Myriad 2

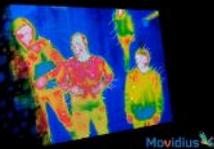
Video Processing Unit
(Hardware Neural Network)

Optimized for Machine
Learning and Real Time
Pattern Recognition



UP AI Edge

CREDIT SIZED STACKABLE ARTIFICIAL INTELLIGENCE PLATFORM
FULLY POWERED by Intel® TECHNOLOGY



UP core PLUS
bridge the gap

UP AI PLUS
bridge the gap

UP AI CORE
bridge the gap



UP CORE PLUS

+

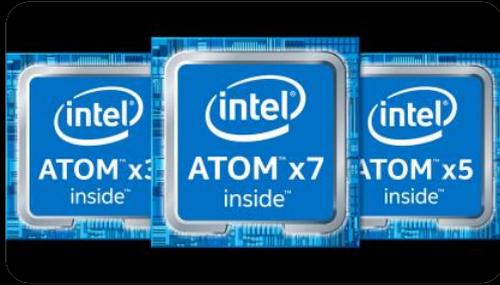
AI PLUS

+

AI CORE



UP AI Edge



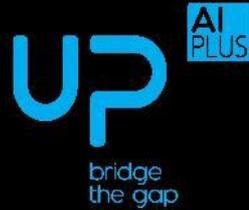
UP core PLUS
bridge the gap

UP CORE PLUS

Intel® Atom™ x5 / x7 / Celeron® / Pentium®
2/4/8 GB DDR4 Dual Channel 2.400 MHz
32/64/128 GB eMMC
DP 4K@60 Hz
eDP
CSI 2 Lane + CSI 4 Lane
USB 3.0 Type A
USB 3.0 Type B
WiFi 802.11 AC 2T2R
2 x 100 pin expansion connector
Compatible with UP Core expansion board
12V DC In



UP AI Edge



AI PLUS

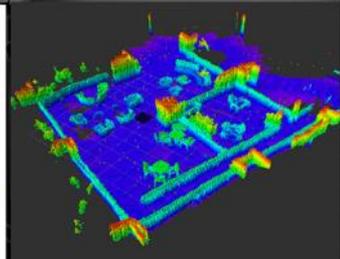
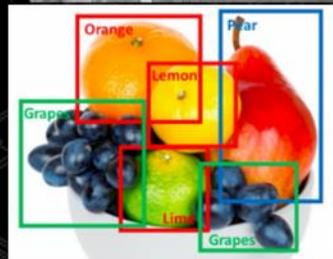
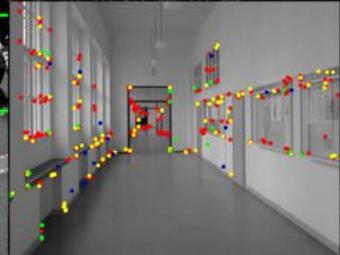
Intel® Cyclone® 10gx 105 / 150 / 220 K1e
Display Port IN connected to Cyclone
LVDS IN connected to Cyclone
USB 3.1 Type C connected to Cyclone
GPIO connected to Cyclone

USB 3.0 Type A connected to mainboard UP Core Plus
mPCI-Express connected to UP Core Plus
Gbit Ethernet connected to UP Core Plus



UP AI Edge

GIVE INTELLIGENT VISION TO YOUR GATEWAY !



UP AI Edge



Hardware Neural Network

Optimized for Machine Learning and Real Time
Pattern Recognition

Support of Tensor Flow & Caffe frameworks

Compatible with all x86 computers with
mPCI-Express slot



AI CORE

mPCIe expansion board

MOVIDIUS™ Myriad 2
Vision Processing Unit

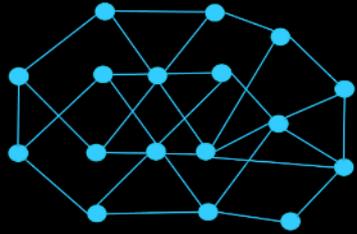
Deep Learning Edge Accelerator

Ultra Low Power

Fully compatible with Intel Neural Compute Stick SDK



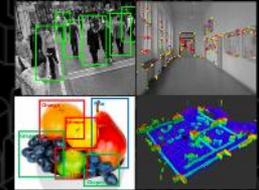
UP AI Edge



Create your model with Caffe or TensorFlow



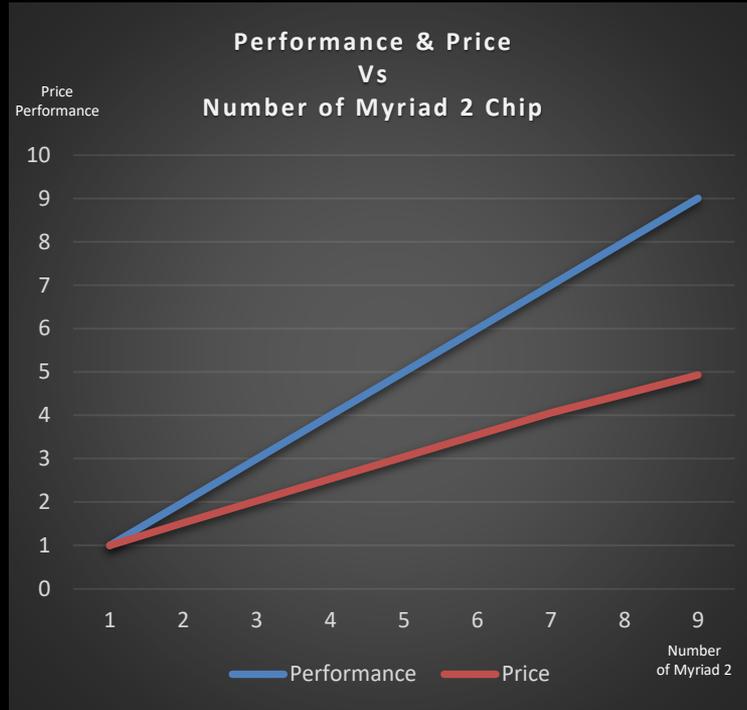
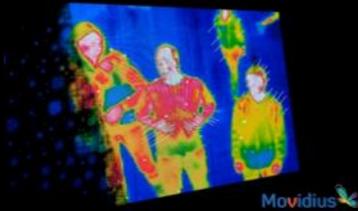
Train Your Model in the Cloud



Deploy it in the Field on AI Core



UP AI Edge



Example :

Custom Solution with 5 Myriad 2 onboard

Performance = 5 x AI Core
= 5 x Myriad 2

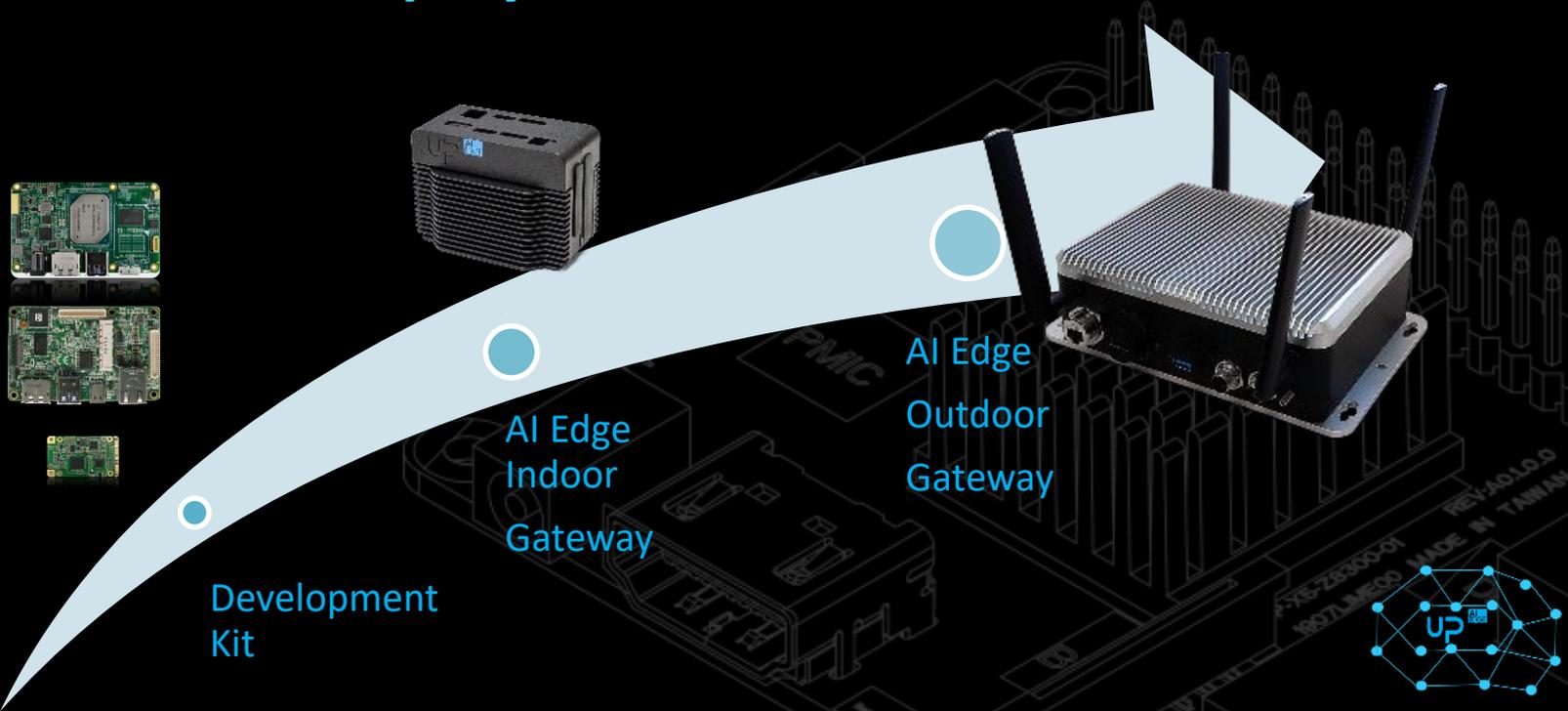
Price = 3 x Price of AI Core

$N \times \text{Myriad 2} = N \times \text{Performance} < N \times \text{AI Core price}$



UP AI Edge

Development and deployment on the same hardware



UP AI Edge

UP AI Edge Vision Gateways

Intel® Atom™ x5 / x7 / Celeron® / Pentium®
(Formerly known as Apollo Lake)

Intel® Cyclone® 10 GX

Movidius™ Myriad 2

4G, WiFi, Bluetooth

Rich I/O

IP40, 68

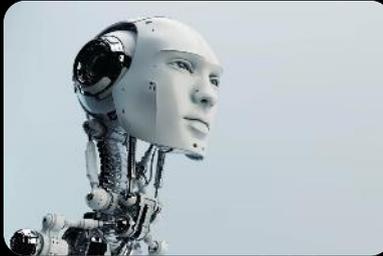


UP AI Edge

Where AI Edge makes the difference



**Predictive Maintenance
Machine Vision**



**Commercial
Robot**



**Video Surveillance /
Traffic Control**



**Industrial
Augmented Reality**



**Intelligent
Retail**

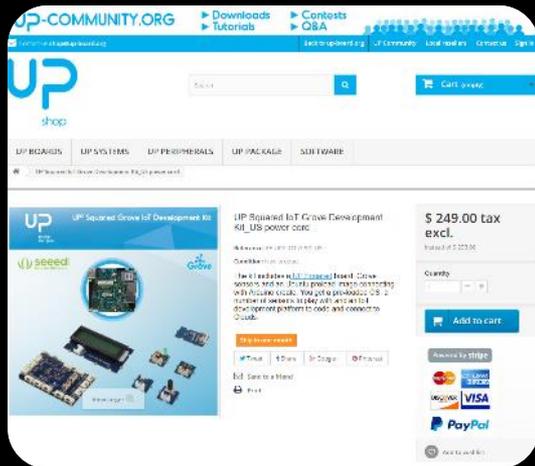


**Professional Air
Drone**

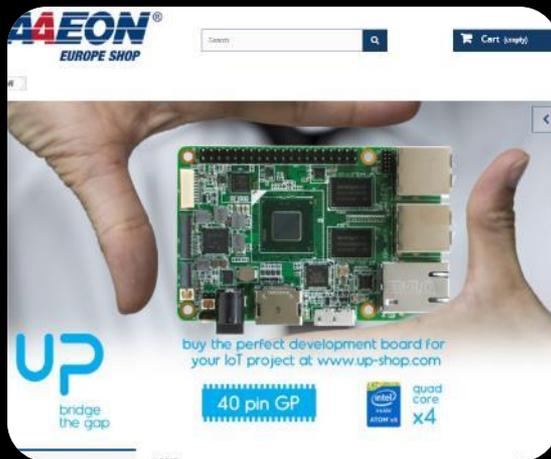


UP AI Edge

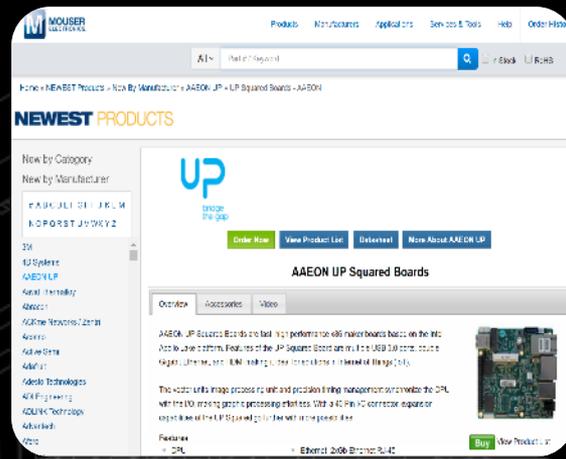
Get the board from your favorite distributor



UP Web Shop
UP Distributors



AAEON Web Shop
AAEON Distributors



Intel Distributors



UP AI Edge

End User Prices:



UP CORE PLUS

→ Starting at **139 USD** X5-3930, 2GB RAM, 32GB eMMC

- Samples for test* from April
- Available in pre-order from May
- Delivery in June/July



AI PLUS

→ Starting at **199 USD** with Cyclone 10Gx 105Kle, 1GB RAM

- Samples for test* from April
- Available in pre-order from May
- Delivery in July/August



AI CORE

→ **69 USD**

- Available in pre-order NOW on UP Shop and Mouser
- Samples for test available
- Delivery in April 2018

*Please contact Aling Wu for sample allocation



UP AI Edge

NET PLUS, the 4 LAN (Intel 211/210) expansion for UP CORE Plus

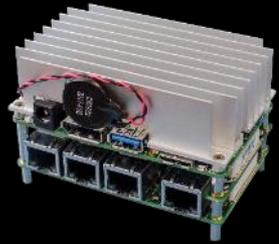


NET PLUS

- 4 LAN Intel 211AT (option for Intel 210 with TSS support)
 - mPCI-Epress/mSATA w/Sim card reader
 - SATA
 - 100 pin I/O expansion
 - USB 3.0
- Starting at **69 USD** with 4 x Intel 211AT
- Available in pre-order from May
 - Available for test* from April



UP AI Edge



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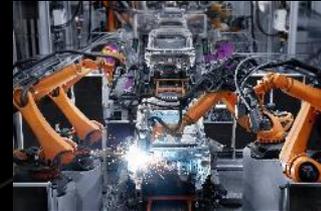


AI Core

+



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Industrial Automation



Machine Vision

UP CORE Plus
+ NET Plus

+



3G/4G
Modem

+



=



Industrial
Network Security



Smart City



UP AI Edge

Get Support via Community

The image displays three overlapping web pages. On the left is the Movidius NCS forum, featuring a search bar, category filters, and a list of discussion topics. In the center is the UP Community website, which has a navigation bar with links to Home, Forum, Downloads, Help, Blog, and Logh/Join. The main content area includes logos for Intel, Ubuntu, and Seeed, along with a 'powered by Arduino Create' badge. Below this, there's a call to action to 'Order your UP Squared Grove IoT Development Kit on UP-shop!' and six service tiles: Forum, Downloads, Projects, Blog, Wiki, and Professional Services. On the right is a screenshot of the Altera Forum, showing a list of threads with columns for Thread/Posts and Last Post.

UP Community will support the solution but users can access to all the material Of Altera Forum and Movidius NCS forum



UP AI Edge

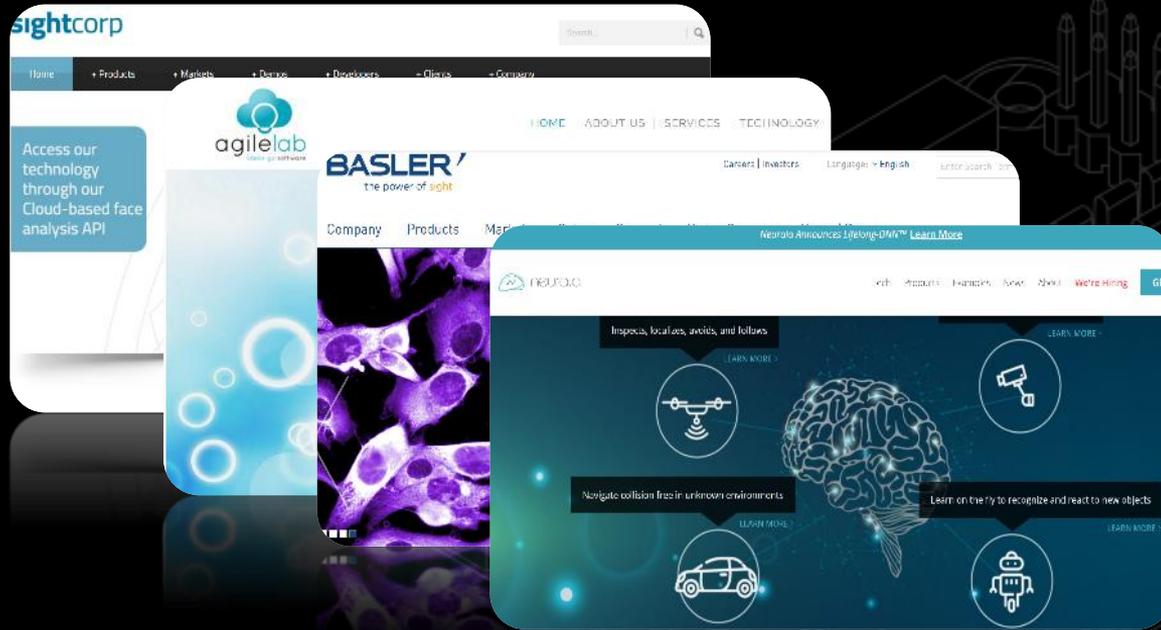
Join UP – Intel Ecosystem

The screenshot shows the Intel Developer Zone website. At the top left is the Intel Software logo and 'Developer Zone'. At the top right is a search bar with the text 'Search our content library...', a magnifying glass icon, and links for 'Support' and 'Sign in'. On the left side, there is a navigation menu with 'IOT' and 'Hardware' below it. The main content area features the title 'UP SQUARED* GROVE* IOT DEVELOPMENT KIT' in large, bold, black letters. Below the title is a sub-headline: 'Reduce development time for your intensive computing applications with a kit that includes integrated software and end-to-end tools.' At the bottom of this section are two blue buttons: 'Get Started' and 'Buy'. To the right of the text is a photograph of the development kit, which is a green PCB populated with various components like a microcontroller, memory, and connectors, mounted on a silver metal heat sink.



UP AI Edge

Join our A.I. Ecosystem





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