XDF XILINX DEVELOPER FORUM

Avnet Embedded Solution Platform and Design Support

Presented By

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高级技术市场经理
北京　　2018年10月16日

XILINX

This is the new Avnet – Global Technology Solutions

We design, make, supply and deliver technology solutions.
We work with customers of every size, in every corner of the world.

15,000+
Employees worldwide

2,500+
Engineers around the world

1M+
Engineering community members

2.1M
Customers in 140+ countries

1,400+
Technology suppliers WW

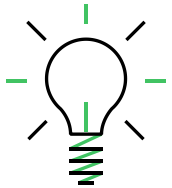
122B
Units shipped annually

125
Locations across the world

We guide today's ideas into tomorrow's technology.

AVNET

Avnet milestones



1921
Avnet founded

1930's
Shift from retailing to wholesaling

1940
Avnet Electronic Supply Co. established

1950's
Begins distributing capacitors, fasteners and switches

1959
Goes public on the American Stock Exchange

1960's
Among the top three electronics distributors

1960
Acquisition of British Industries Corp

1970's
Merger with Hamilton Electro forms Hamilton/Avnet

First nationwide electronic components distributor

First at distributing semiconductors, integrated circuits, and microprocessors

1979
Surpasses $1B in sales

1980's
First to market in overnight shipping

1985
Opens first 340,000 sq. ft. distribution mega-warehouse

1990's
Shifts focus to global data warehousing, supply chain solutions, and global logistics management

1993
Acquisition of Hall-Mark Electronics Corporation

1995
Acquisition of WKK semi-conductor

1997
Avnet Design Services launched

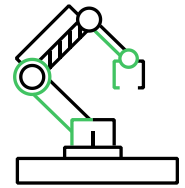
2000
28,000 sq. ft. global solutions center opens

2000
Acquisition of EBV

2005
Acquisition of Memec

2016
Acquisition of Hackster.io and Premier Farnell

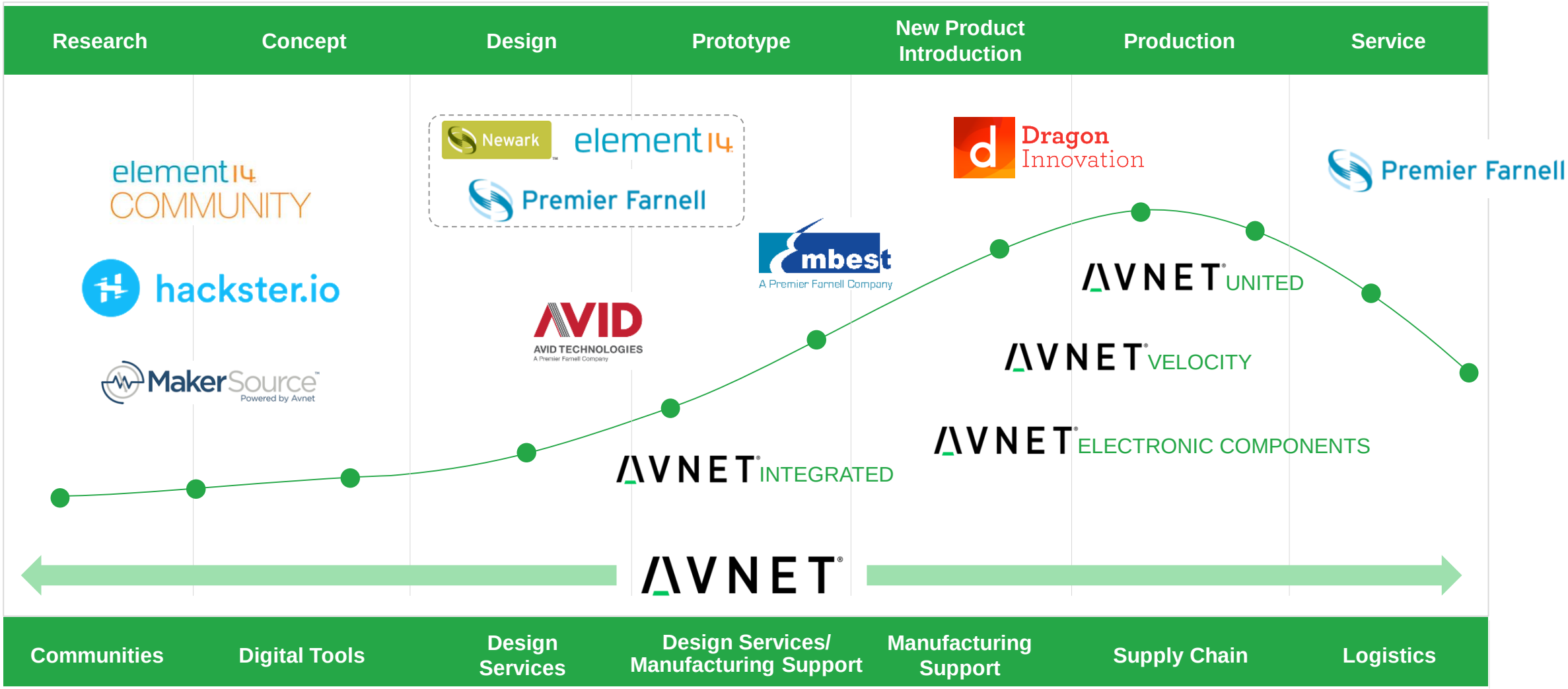
2016
Avnet drives targeted investments in embedded solutions, IoT and critical digital platforms



2017
Acquisition of Dragon Innovation

AVNET

The Avnet ecosystem



Avnet Confidential

Ultimate 96Boards Expandability with MikroElektronika Click Modules

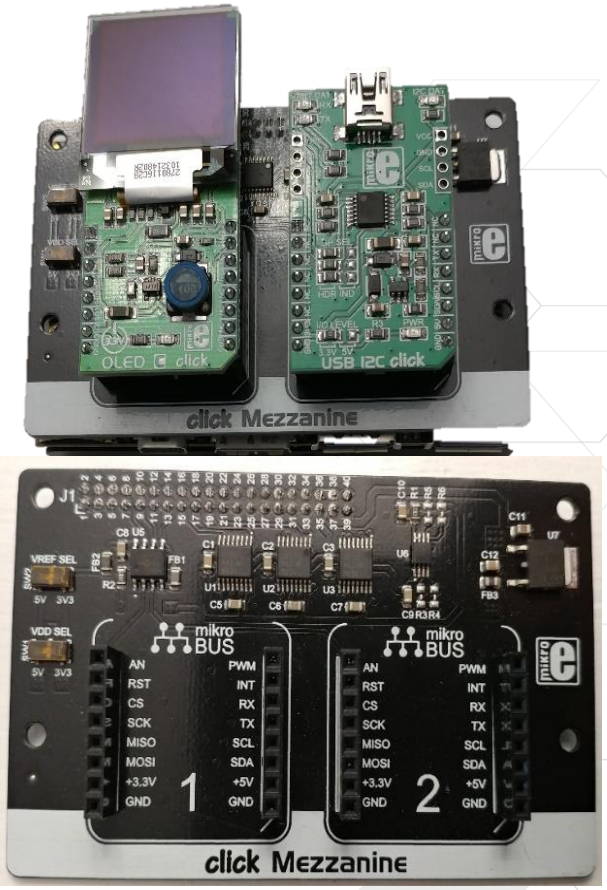
A new MikroElektronika Click Mezzanine for 96Boards allows you to connect 500+ Click modules to Ultra96. Choose from a wide variety of sensors, connectivity, and I/O to expand the capability of your Ultra96.

Features/benefits

- 96Boards LS Mezzanine compatibility
- 2 Click Module sites for adding on 500+ Click Modules

Buy a la carte or bundled in a kit

Available exclusively through Avnet
January 2019



MikroElektronika
DEVELOPMENT TOOLS | COMPILERS | BOOKS

Avnet Multi-Camera FMC with Avnet UltraZed-EV

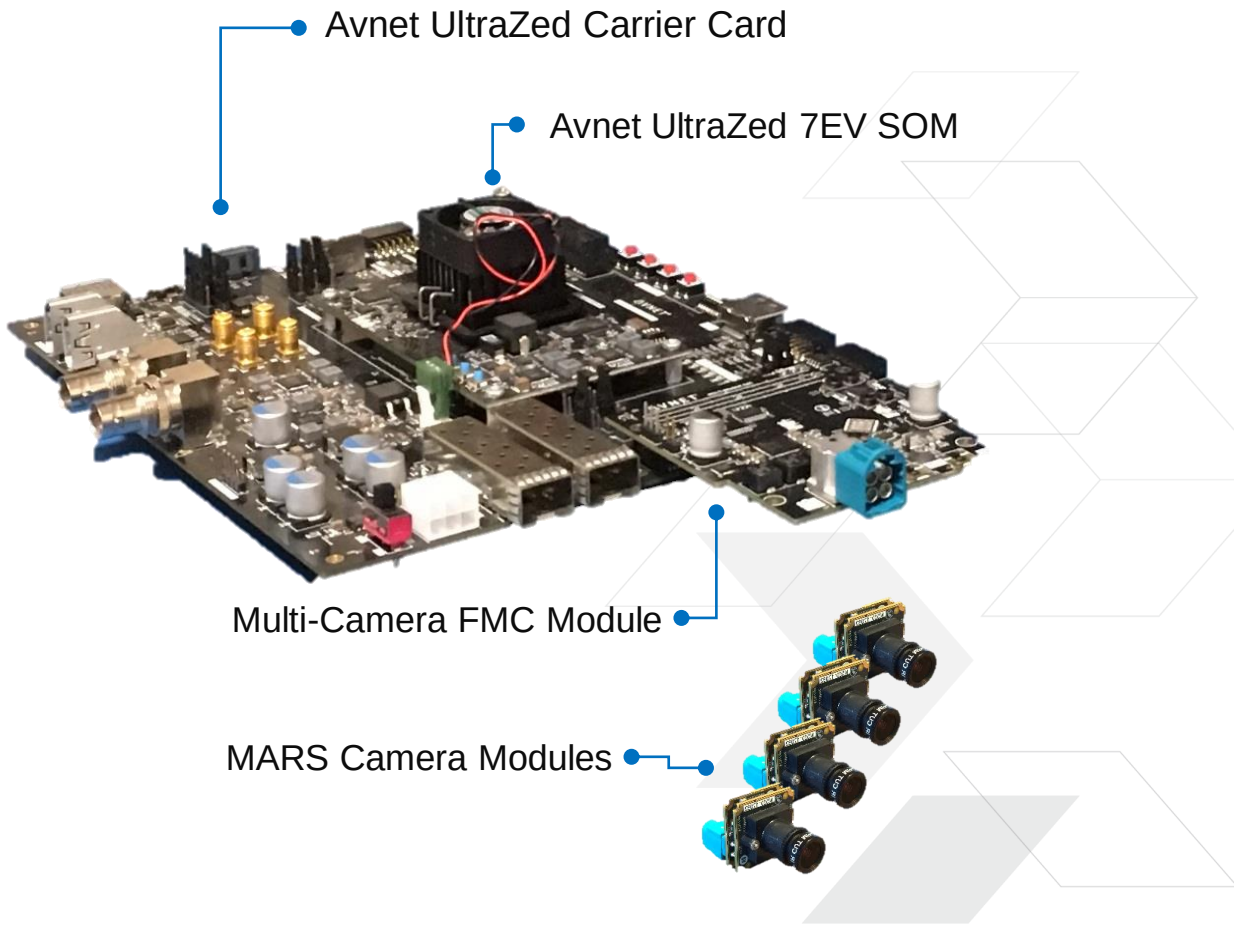
The Avnet Multi-Camera FMC is designed for Xilinx Zynq-UltraScale+ FMC carriers, including the Avnet UltraZed EV SOM + Carrier, as well as the ZCU102 and ZCU104. The Quad Camera FMC Bundle is fully integrated to the Xilinx reVISION stack, including SDSoC platforms and design examples..

Enables vision guided application design with:

- Ready to use, petalinux based, Multi-Camera Infrastructure
- Integration to the Xilinx reVISION stack
- Computer Vision examples (2D filter, optical flow)
- Machine Learning examples based on DeePhi DPU

Quad AR0231AT Camera FMC Bundle includes:

- Multi-Camera FMC module (AES-FMC-MULTICAM4-G)
- Quad-HFM to 4x FAKRA Cable Assembly
- 4 x MARS Camera Modules. Each composed of:
  - MAX96705 Serializer Kit (MARS1-MAX96705-GEVK)
  - AR0231AT Image Sensor Board (MARS1-AR0231AT7-GEVB)



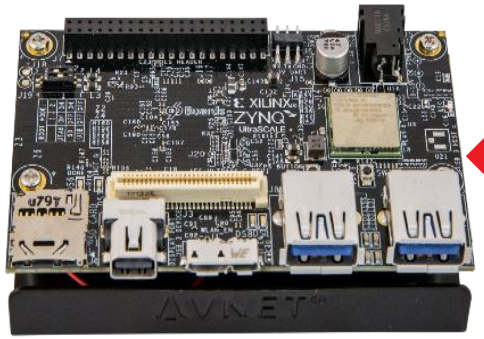
www.ultrazed.org/fmc-multi-cam4

PYNQ Framework and Connecting Ultra96 to Microsoft Azure

Using the newly released Ultra96-PYNQ framework, Ultra96 can easily be connected to Microsoft Azure cloud services for even more advanced IoT capability

Features/benefits

- Xilinx Zynq UltraScale+ MPSoC ZU3EG A484
- Micron 2 GB (512M x32) LPDDR4 Memory
- Delkin 16 GB MicroSD card + adapter
- Wi-Fi / Bluetooth
- Mini DisplayPort (MiniDP or mDP)
- 1x USB 3.0 Type Micro-B upstream port
- 2x USB 3.0, 1x USB 2.0 Type A downstream ports
- 40-pin 96Boards Low-speed expansion header
- 60-pin 96Boards High speed expansion header
- 85mm x 54mm form factor
- Linaro 96Boards Consumer Edition compatible



PYNQ

Microsoft Azure IoT Hub

Kit includes

- Ultra96 development board
- 16 GB pre-loaded microSD card + adapter
- Voucher for SDSoC license from Xilinx
- Quick-start instruction card

http://avnet.me/buy-ultra96

XILINX Microsoft

Industrial Networking with Avnet UltraZed-EG

Network interaction between two systems over dedicated network ports is demonstrated with this development platform which is supported by several reference designs using traditional Ethernet protocols and Xilinx TSN IP.

Features/benefits

- Industrial Networking
- Real-time capable
- Scalable

Kit includes

- UltraZed-3EG SOM
- UltraZed PCIe Carrier Card
- Network FMC

Kit or board image

Link to purchase kit or board

- http://avnet.me/buy-fmc-netw1
- http://avnet.me/buy-ultrazed-pcie
- http://avnet.me/buy-ultrazed

XILINX MICROCHIP

Avnet Zynq UltraScale+ RFSoC Development Kit

Avnet extends the functionality of the groundbreaking Zynq® UltraScale+™ RFSoC ZCU111 Evaluation Kit with a Qorvo 2x2 LTE Band-3 RF front-end card, plus native connection to MATLAB & Simulink from MathWorks with support for 5G NR radio Release 15.

Enables system-level design with:

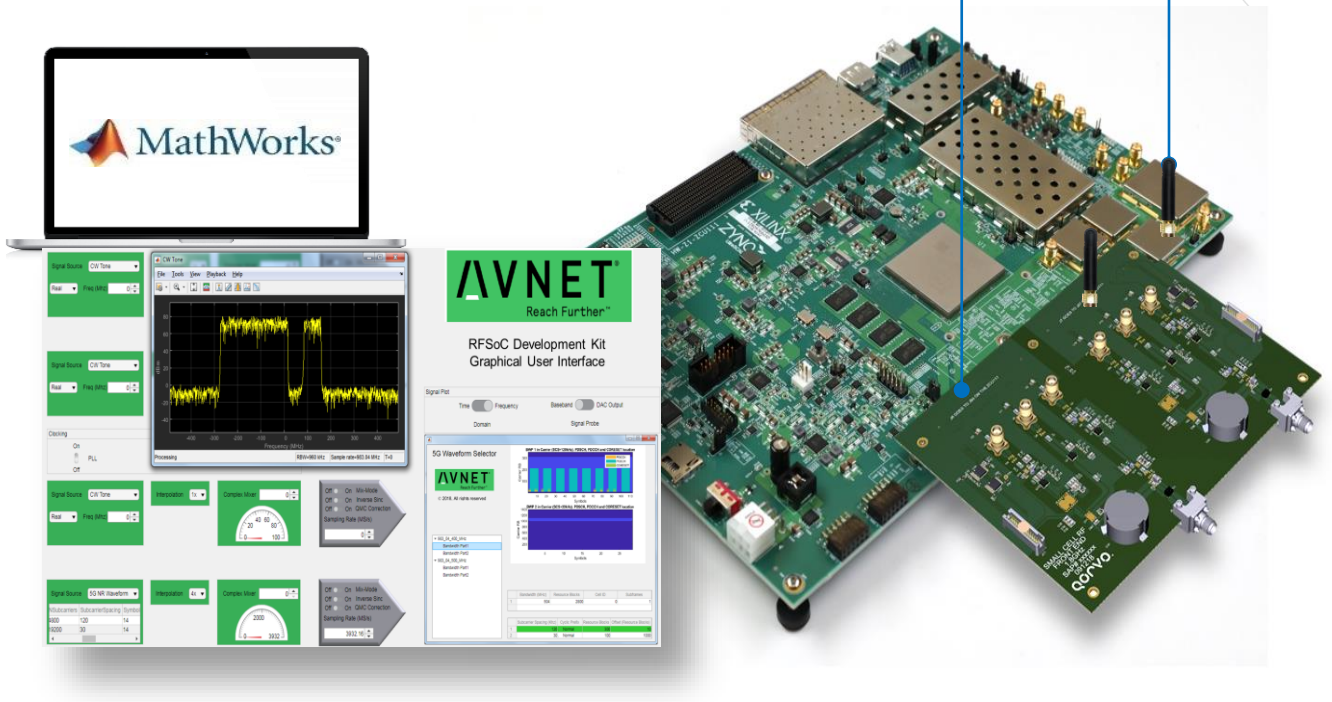
- Signal Capture & Analysis with MATLAB and Simulink
- Radio-in-the-loop co-simulation (Gigabit Ethernet)
- Over-the-air testing with 2x2 LTE Band-3 1800MHz FDD front end
- Direct-RF sampling without an external RF mixer

Kit includes:

- Zynq UltraScale+ RFSoC ZCU111 Evaluation Kit
- Qorvo 2x2 LTE Band-3 RF front-end card
- Avnet RFSoC Support Package for MATLAB & Simulink

Zynq UltraScale+ RFSoC ZCU111 Evaluation Kit
Xilinx OEM kit including XM500, Filters, Cables, etc.

Qorvo Small Cell RF Front End
2x2 1800MHz FDD LTE Band 3



www.zedboard.org/rfsoc or www.mathworks.com/rfsoc

qorvo MathWorks samtec XILINX

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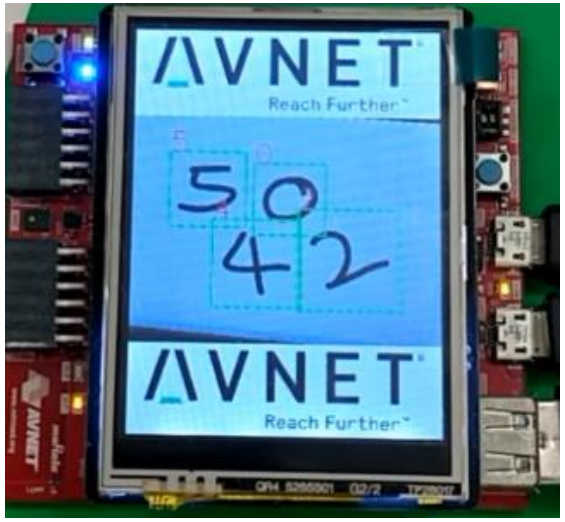
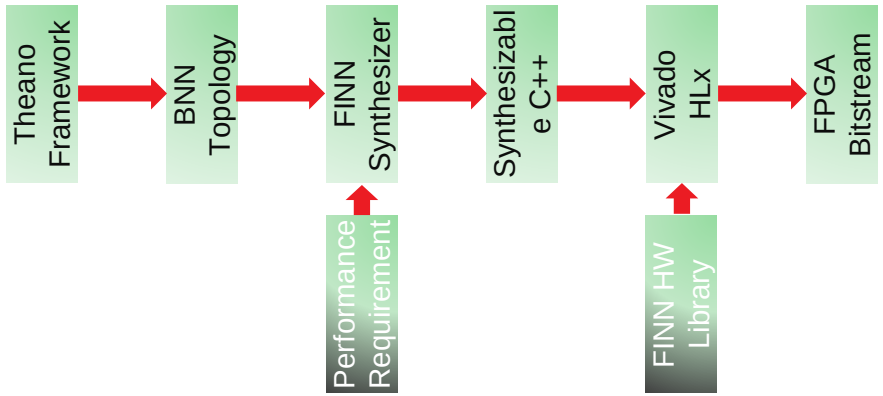
XILINX

Deep Learning on Minized



Block Diagram



Features

- Deep learning capability on low-end device XC7Z007s
- Multilayer Perceptron (MLP) network topology
- Extreme quantized network using Binarized Neural Networks*
- 95.8% accuracy on MNIST
- Small Fully Connected Layer: 256 nodes
- 91%/66% (LUT/FF) Resource Ultilization
- 2.8” TFT Arduino Shield for display

*Yaman, “FINN: A Framework for Fast, Scalable Binarized Neural Network Inference”

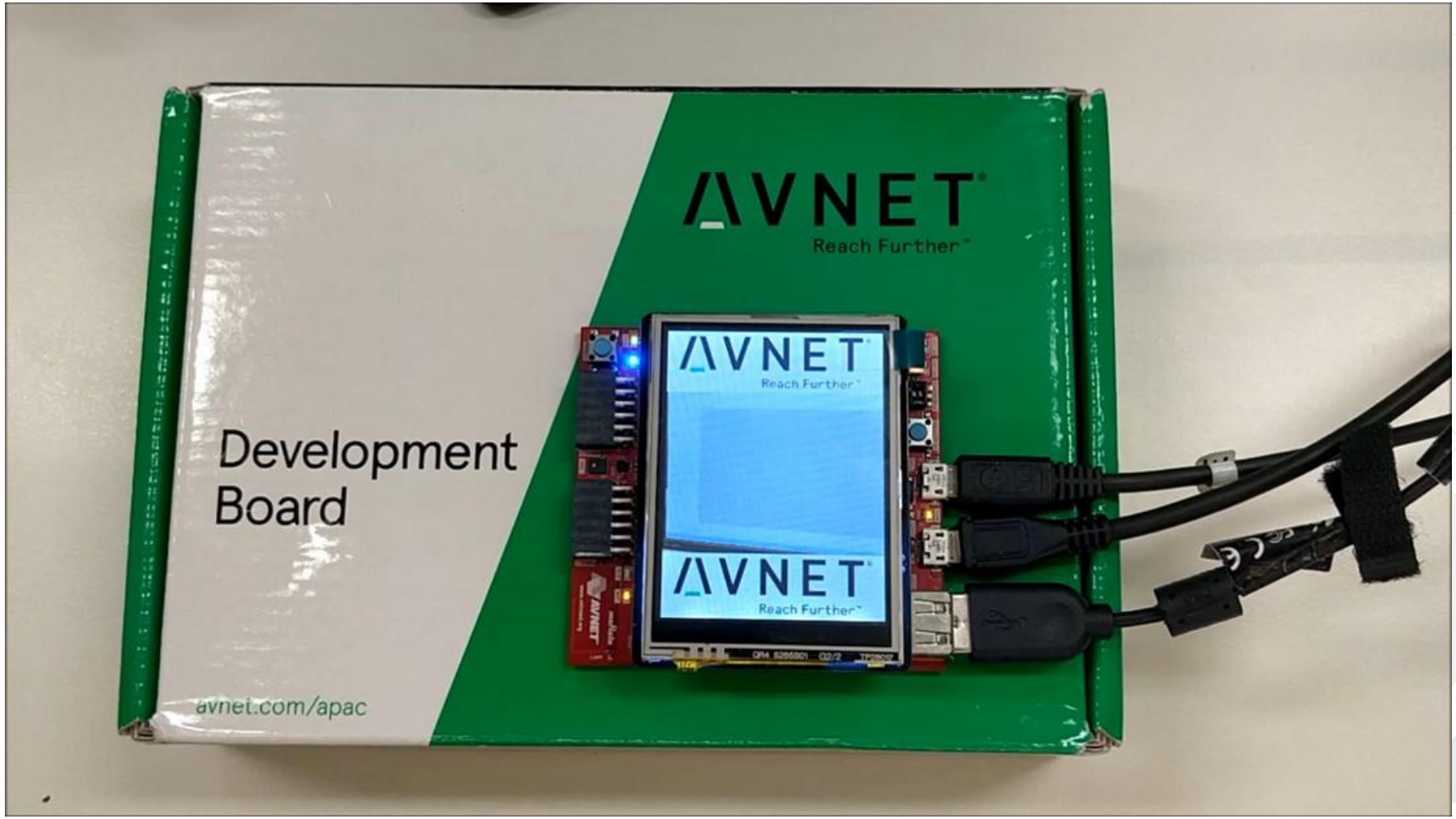
Key Components

- Minized Zynq XC7Z007s

Target Applications

- Smart camera for surveillance
- Smart camera for industrial automation

Binary Neural Network on Minized FPGA



Autonomous Guided Vehicle (AGV) & Deephi Face Recognition Camera

Kunhou Automation

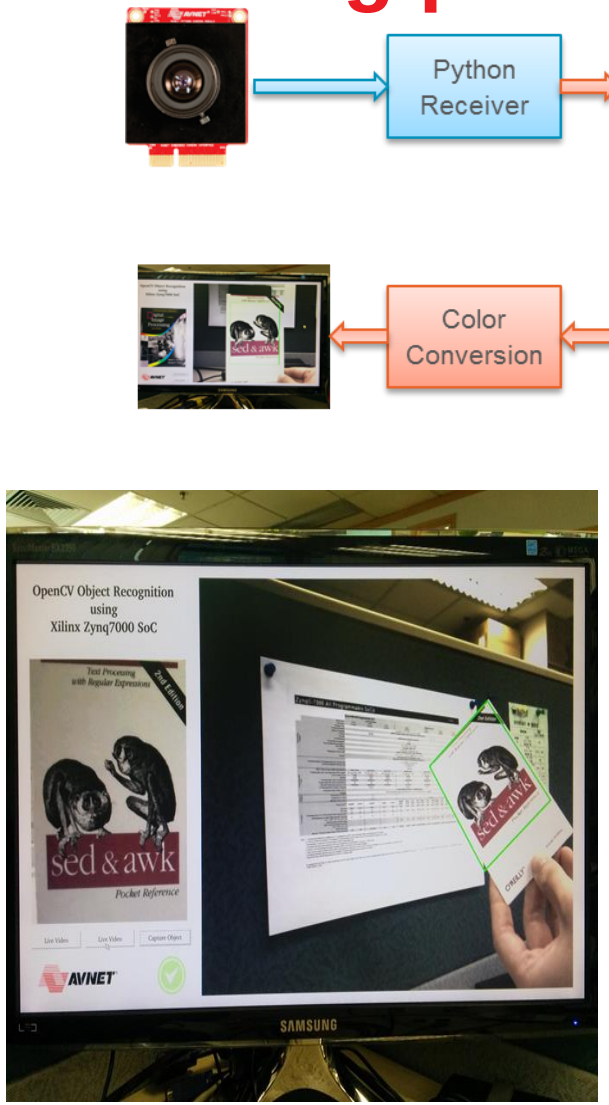
- Industrial grade SLAM
- Includes SDK (navikit™)for custom control task application development
- Includes host AGV fleet management system
- Chasis customization support (multi-terrain, payload platform, etc. etc.)

Deephi Neural Network Camera

- Face detection
- Face recognition
- Web interface
- Wifi Interface Platform

Object Recognition on EMBV Kit Complete Embedded Video system training platform design

- Introduction to Object Recognition
- Introduction to Embedded Vision Kit
- Introduction to Reference Design
- Demo Flow
- Labs
- Lab0: OpenCV Source Code Walkthrough
- Lab1: Building Video Base Platform
- Lab2: Building Feature Detector HLS Module
- Lab3: Integrating HLS Module in Vivado
- Lab4: Complete Object Recognition VivadoDesign
- Lab5: Putting Everything Together
- Lab QT GUI
- Conclusion

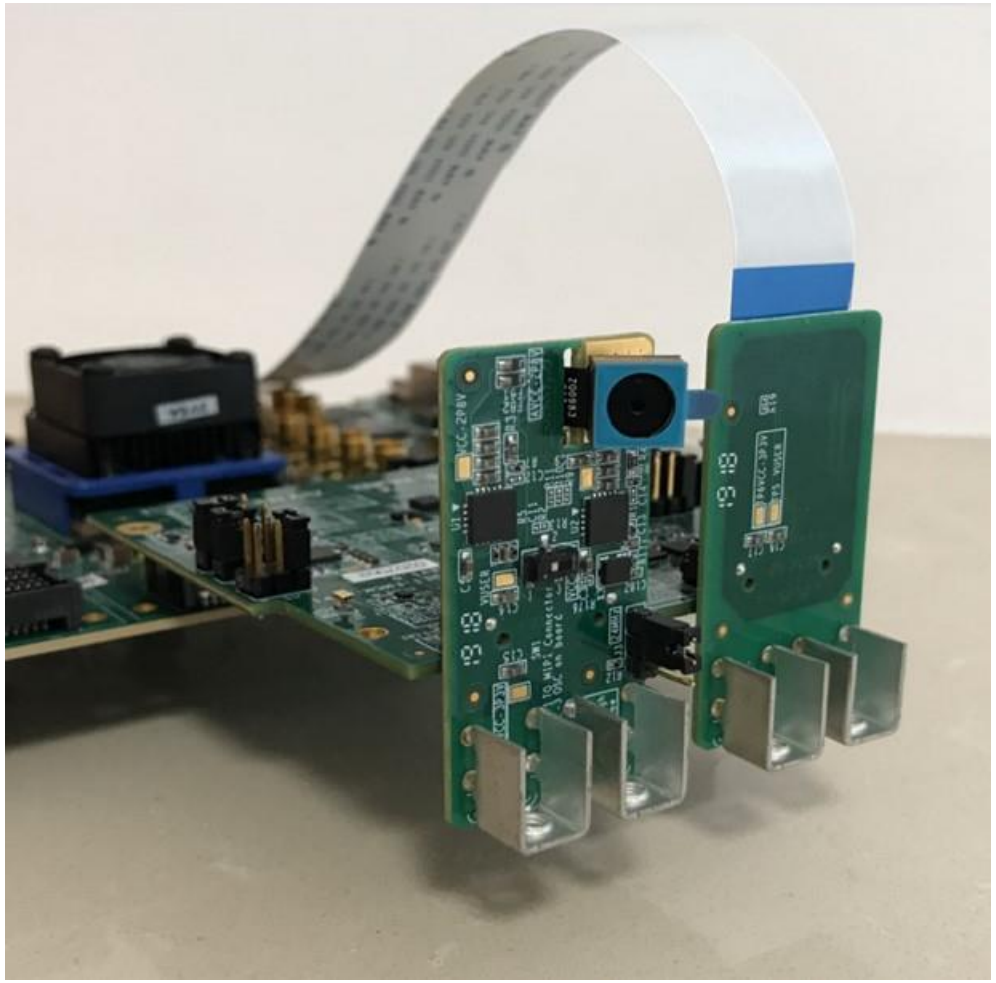


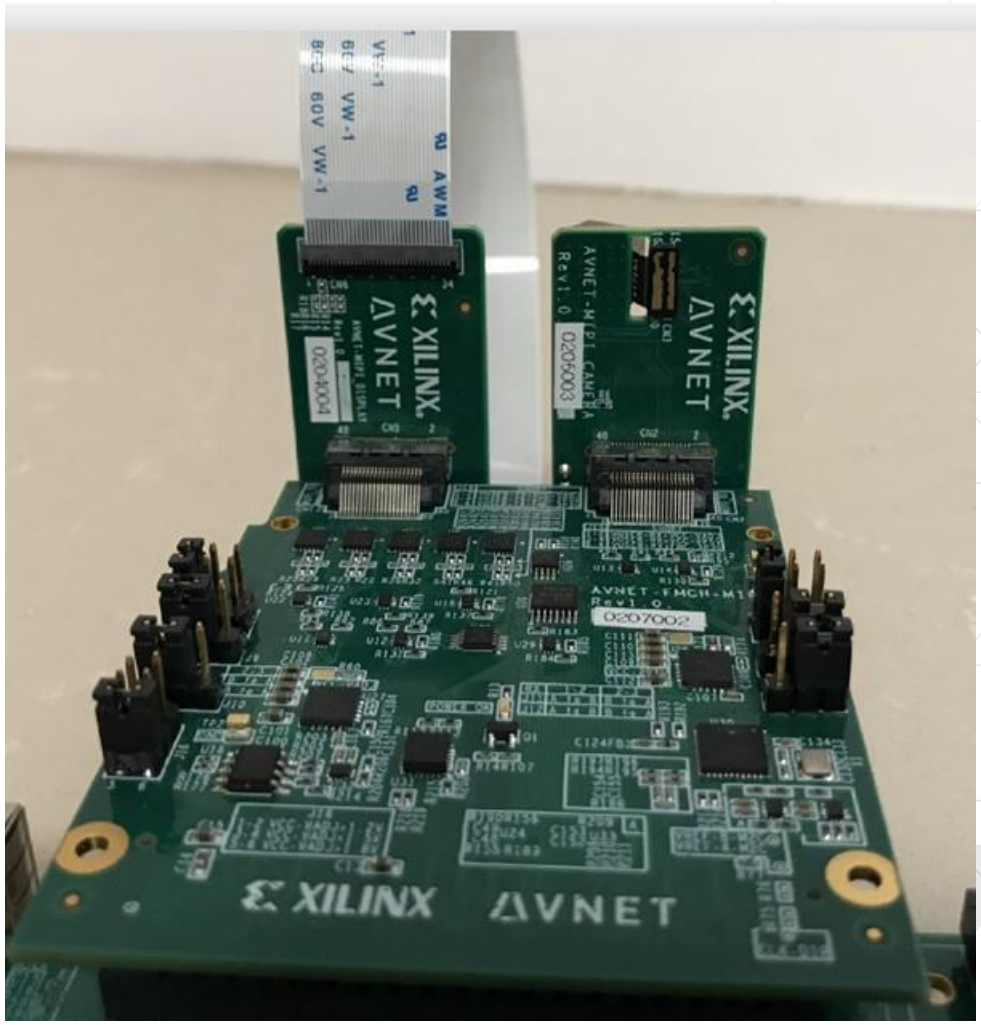
AVNET 2.5G MIPI FMC

- Support max 4 lane GTH MIPI Tx
- Support max 4 lane GTH MIPI Rx
- Support 1920*1080 60Hz panel
- Support 13MP camera module
- Support 4 lane MIPI TX & RX loopback
- Only support Ultrascale & Ultrascale Plus device with GTH

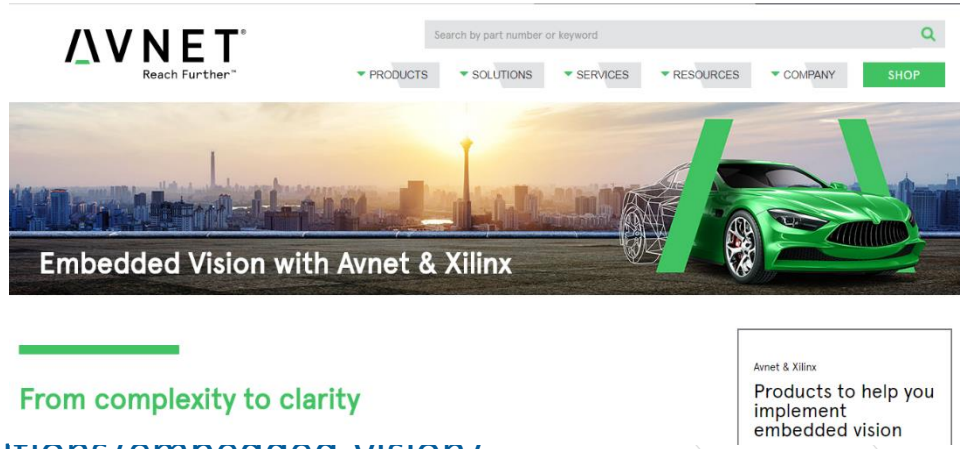
AVNET XILINX

AVNET 2.5G MIPI FMC





Embedded Vision Campaign



- **Theme: From Complexity to Clarity**
- **APAC Website:**
  - https://www.avnet.com/wps/portal/apac/products/technology-solutions/embedded-vision/
- **Time: March – December 2018**
- **Activities: Webinar, Wechat, Exhibition show, Techday, Technology forum, etc.**
- **Coming webinar:**
  - Time: May-10, Morning
  - Topic: 赛灵思和安富利专注嵌入式视觉应用，助力人工智能和汽车辅助驾驶
  - Introduction: 嵌入式视觉是近几年越来越热门的技术，自动驾驶和人工智能的热潮更是加快企业快速部署相关的应用，以至于国际主要的半导体厂商都纷纷涌入这项热门技术。赛灵思作为全球领先的全可编程解决方案与器件供应商，在计算机视觉、人工智能和高级驾驶员辅助系统(ADAS) 等方面都可以为客户提供完整的解决方案和先进的设计工具链。本研讨会邀请到赛灵思和安富利的市场和技术专家给大家详细讲述“全可编程FPGA”在上述新兴市场的解决方案和成功案例，帮助设计者快速开发产品并尽快面市。

Avnet MiniZed SpeedWay

> MiniZed SpeedWay Design Workshop

- Avnet Open for Global MiniZed SpeedWay Design Workshop Series
- Four Proposed SpeedWay Workshops
  - Developing Zynq Software
  - Developing Zynq Hardware
  - Integrating Sensors on MiniZed with PetaLinux
  - A Practical Guide to Getting Started with Xilinx SDSoC

> China Evnet

- City:
  - North: Beijing, Shenyang, Qingdao
  - East: Nanjing, Shanghai, Suzhou, Hangzhou
  - West: Chengdu, Chongqing, Xian
  - South: Shenzhen, Guangzhou, Fuzhou

SPEEDWAY

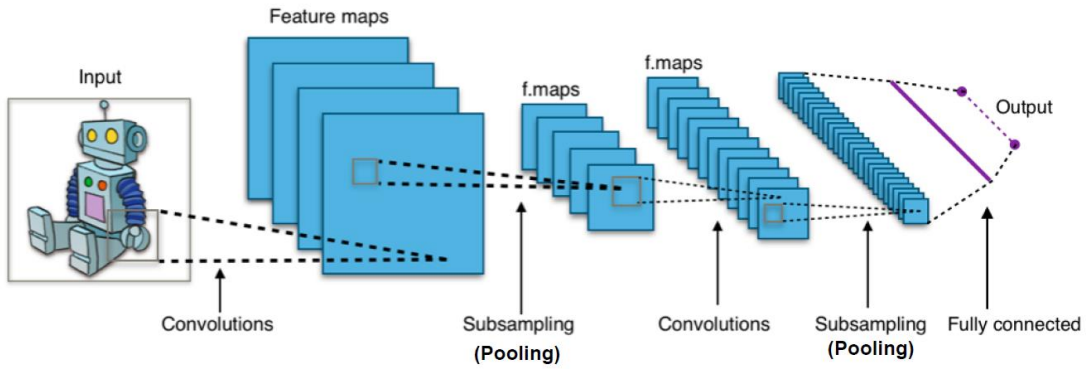
Avnet MiniZed

TE PMOD sensor

Avnet Nanjing Speedway – 16 March

Avnet Branded AI Workshop Training

- AI design chain:
  - We developed Xilinx HLS tools based CNN design methodology and will present detailed workshop to FAE and customer
    - CNN ROI-pooling HLS implementation by specialist Albert
    - BNN on MinZed implementation by GDS Robert



CNN ROI Pooling by HLS

BNN on MinZed

Support Request

- Send support request form to – fpga_support@avnet.com
- Will evaluate based on business potential and technical alignment, available technology etc. etc.
- Assigned engineer to follow-up and support

谢谢 ！

Adaptable.
Intelligent.