MACHINE VISION

Xilinx Machine Vision Solutions

Xilinx provides a complete solution set for Machine Vision applications that includes FPGA and System on a Chip (SoC) devices, software, IP and development platforms. The solutions include a wide range of package and speed grade options that facilitate the different form factor requirements for Smart Cameras, high-performing devices that enable analytics and intensive processing in Frame Grabbers, and a variety of networking IPs for connecting to the industrial communication backbone or computer-based decision making.

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Device Table

Device Name	Product #	Logic	CPU	MHz	Package Size
Artix®-7	A35T – A200T	35kLC – 200kLC	Microblaze	100	10x10 – 17x17
Zynq® All Programmable SoC	7010 – 7045	28kLC – 218kLC	Dual Cortex A9 + Neon	667 – 866 for Cortex A9	13x13 – 19x19
Kintex®-7	K70T – K480T	65kLC – 478kLC	Microblaze	80	23x23 – 35x35
Spartan®-6	LX25T – LX150T	24kLC – 147kLC	Microblaze	80	8x8 – 31x31

Selected Development Kits

Development boards and kits from Xilinx partners provide convenient vehicles to prototype solutions and to evaluate system level advantages with Xilinx FPGAs. Further, the System-on-Modules provide means to accelerate development and time-to-market of customers' products.

Xilinx Development Kits	Features	Cost	Source
AES-Z7PZ-SVDK-G	Complete Development Platform based on the Zynq-7015. This includes the PicoZed System-on-Module (SOM), modular Carrier Board for Machine Vision applications, and an Aptina Camera Sensor Module	$595	Avnet
AES-Z7PZ-7Z0XX-SOM-I-G	PicoZed SOM modules based on the Zynq-7000 Series. Carrier Board is available as part of the Development Platform (AES-Z7PZ-SVDK-G)	$299 - $459	Avnet

IP Libraries for Machine Vision

Xilinx Alliance Members offer comprehensive IP solutions for Machine Vision applications on Xilinx devices. They can further tailor them to any application need for optimal utilization of All Programmable architectures.

Partner IP Solutions

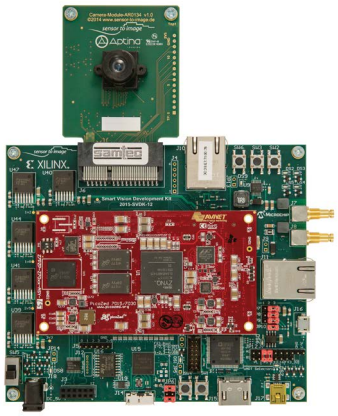
Name	Provider	Availability	Device Family Support
GigE Vision 10GigE Vision	Sensor-to-Image	Available	All Devices in the Device Table
USB3 Vision	Sensor-to-Image	Available	All Devices in the Device Table
CoaXPress	Sensor-to-Image	Available	All Devices in the Device Table
logiISP	Xylon	Available	All Devices in the Device Table

Partner Design Methodologies

In addition to the well-established software suite for designing the FPGA solutions, Xilinx provides through its partners, additional Machine Vision specific tools that enable a powerful methodology to design Machine Vision solutions rapidly leveraging both the embedded processor and the high-performing logic fabric.

Name	Provider	Availability	Device Family Support
Embedded VisualApplets	Silicon Software	Available	Zynq-7000 Series
HALCON	MVTec	Available	Zynq-7000 Series

Reference Designs



Smart Vision Development Kit (SVDK) (Purchased from Avnet)

- Avnet PicoZed System-on-Module with the Zynq-7015 All Programmable SoC (Zynq-7010 and Zynq-7020 devices based on SOMs are provided on specific request at order placement)
- Sensor-to-Image Carrier Board and connectivity IPs
- Aptina camera sensor module
- All necessary documentation to bring up the SVDK quickly

Design Tools & Methodologies

Vivado Design Suite

The Vivado® Design Suite delivers an SoC-strength, IP-centric and system-centric, next generation development environment that has been built from the ground up to address the productivity bottlenecks in system-level integration and implementation.

Digital Design Using Vivado IPI

Xilinx has developed a basic functional IP blocks library which can be used to create digital designs in a schematic view. The tutorial and laboratory exercises are created and available for use with the Xilinx University Program supported boards.

SDSoC Development Environment

The SDSoC™ development environment provides a greatly simplified ASSP-like C/C++ programming experience including an easy to use Eclipse IDE and a comprehensive design environment for heterogeneous Zynq All Programmable SoC and MPSoC deployment. Complete with the industry's first C/C++ full-system optimizing compiler, SDSoC delivers system level profiling, automated software acceleration in programmable logic, automated system connectivity generation, and libraries to speed programming.

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Partner Profiles

Sensor-to-Image

Sensor to Image GmbH is a specialist for imaging hardware as well for well-known industrial vision products like Smart Cameras, Frame Grabbers, and custom and customized components.

Silicon Software

Silicon Software is a developer and manufacturer of image processing components including hardware modules as well as software tool suites and provide both off-the-shelf and customized OEM solutions.

Xylon

Xylon is an electronic company focused on design of optimized IP cores for Xilinx All Programmable devices and design services that lower production costs and improve efficiency of electronics designers. Xylon logicBRICKS™ IP core library seamlessly blends with the Xilinx implementation tools, enables customers to shorten development time and keeps them ahead of competition

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