

SOM-VISION (v1.0)

**Course Specification**

## Course Description

This course will help you learn about the Kria™ System-on-Module (SOM) and Kria KV260 Vision AI Starter Kit, enabling you to accelerate vision-based applications using the KV260 Starter Kit right out of the box without any installation or FPGA knowledge.

The course also provides information on how you can build your own hardware and software components, customize an AI model, and perform benchmarking. In addition, design guidelines for developing your own carrier card are covered.

The emphasis of this course is on:

- Providing an overview of the Kria K26 SOM and its advantages
- Providing an overview of the Kria KV260 Vision AI Starter Kit and how to get started with the kit
- Running accelerated applications, such as the Smart Camera, AI Box, and Defect Detection applications, using the kit
- Running the NLP SmartVision demo application using the kit with the PetaLinux and Ubuntu images
- Building the hardware and software design components from scratch
- Customizing the AI models used in the applications
- Reviewing the design guidelines for developers to design their own carrier card

### What's New for 2023.1

- Introduction to Vitis Video Analytics SDK (VVAS) module: AI models have been updated to the latest version of VVAS and the Vitis™ AI 3.0 tool
- Building the Hardware and Software Design Components module: SOM developer workflows have been updated
- All accelerated applications have been migrated to an Ubuntu image
- All labs have been updated to the latest software versions

### Level – SOM 1

#### Course Details

- 2 days live instructor led training (in person or online)
- 8 lectures
- 4 labs
- 3 demos

**Price** – \$2,400 or 24 AMD Training Credits

**Course Part Number** – SOM-VISION

#### Who Should Attend?

- Software and AI developers who want to get started with using Kria SOMs

#### Prerequisites

- Basic knowledge of an embedded application development flow
- Vitis AI tool flow

#### Software Tools

- [Vivado™ Design Suite 2023.1](#)
- [Vitis unified software platform 2023.1](#)
- [PetaLinux Tools 2023.1](#)

#### Hardware

- Kria KV260 Vision AI Starter Kit
- MicroSD card (16 or 32 GB)
- Power supply (12V, 3A adapter)
- Camera module (AR1335 or USB webcam)

- 4K monitor as a display device
- USB microphone
- Cables such as Ethernet, micro-USB to USB-A, and HDMI or DisplayPort

After completing this comprehensive training, you will have the necessary skills to:

- Describe the Kria K26 SOM and its advantages
- Describe the features and capabilities of the KV260 Vision AI Starter Kit carrier card
- Get started with the Vision AI Starter Kit
- Deploy vision-based applications, such as the Smart Camera, AI Box, Defect Detection, and NLP SmartVision applications, using the kit
- Build the hardware and software design components from scratch
- Customize the AI models used in the applications
- Design your own carrier card

## Course Outline

### Day 1

- **Kria System-on-Module (SOM) Overview**  
Introduces the Kria K26 SOM and describes its advantages. Also outlines the features, functional interfaces, mechanical, and thermal aspects of the SOM. {Lecture}
- **Kria KV260 Vision AI Starter Kit Overview**  
Provides an overview of the Kria KV260 Vision AI Starter Kit, its features, and interfaces. The boot devices, heat sink, firmware, and power-on sequence for the kit are also described. {Lecture}
- **Getting Started with the Vision AI Starter Kit**  
Covers how the initial board setup looks like and how to set up the SD card, make the necessary connections with the kit, and boot the kit. Also shows how to use the platform management utility to install, select, and deploy different applications. {Lecture, Demos}
- **Introduction to Vitis Video Analytics SDK (VVAS)**  
Provides an overview of the Vitis Video Analytics SDK (VVAS) technology and its core components. {Lecture}
- **Accelerating Applications with the KV260 Vision AI Starter Kit**  
Describes the top-level block diagram and pipeline stages for different accelerated applications, such as the Smart Camera, AI Box, Defect Detection, NLP SmartVision applications. Also demonstrates how to deploy these applications using the KV260 Starter Kit. {Lecture, Demos, Labs}

### Day 2

- **Building the Hardware and Software Design Components**  
Illustrates how the hardware and software design components are built from scratch for an accelerated application. {Lecture, Lab}
- **Customizing the AI Models**  
Shows how to customize the AI models used in the accelerated applications. {Lecture, Lab}
- **Kria SOM Carrier Card Design Guide**  
Outlines the electrical, mechanical, firmware, thermal, and power-on configuration design considerations that must be addressed as part of designing an AMD SOM-compatible carrier card. {Lecture}

## Register Today

Morgan Advanced Programmable Systems, Inc. (Morgan A.P.S.) delivers public and private courses in locations throughout the central US region; including Iowa, Illinois, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, and Wisconsin.

Visit [morgan-aps.com/training](https://morgan-aps.com/training), for full course schedule and training information.



- You must have your tuition payment information available when you enroll. We accept credit cards (Visa, MasterCard, or American Express) as well as purchase orders and Xilinx training credits.

## Student Cancellation Policy

- Student cancellations received more than 7 days before the first day of class are entitled to a 100% refund. Refunds will be processed within 14 days.
- Student cancellations received less than 7 days before the first day of class are entitled to a 100% credit toward a future class.
- Student cancellations must be sent [here](#).

## Morgan A.P.S. Course Cancellation Policy

- We regret from time-to-time classes will need to be rescheduled or cancelled.
- In the event of cancellation, live on-line training may be offered as a substitute.
- Morgan A.P.S. may cancel a class up to 7 days before the scheduled start date of the class; all students will be entitled to a 100% refund.
- Under no circumstances is Morgan A.P.S. responsible or liable for travel, lodging or other incidental costs. Please be aware of this cancellation policy when making your arrangements.
- For additional information or to schedule a private class contact us [here](#).

## Online or in person training with real hardware

- Morgan Advanced Programmable Systems, Inc. has set up a training VPN where engineer participants can take classes online using the same computers and devCards used during in-person training.
- Even better, and upon request, you can use these computers after hours on training days to experiment with labs. This is not possible for in-person training.
- Additionally, just like in-person training, the laptops and devCards, tools, OS, and licensing are set up in advance.
- In some ways, live online-training is better than in-person...for example, you can grant the instructor permission to look at your Vivado, PetaLinux terminal, or Vitis for extended periods of time if your lab is not going exactly as planned to a missed step.
- This is often more comfortable than two engineers crowding around a laptop screen.
- Taking remote training also allows you to learn some tips and tricks for working remote. Whether your devCard is in the lab down the hall, or across the world via VPN, you can control your Xilinx based device quickly and efficiently.