

Compact Vitis AI

Online Live

Workshop

Applicable Technologies	Requirements	Contact
Architecture: Xilinx® Alveo™ accelerator cards, Xilinx®, SoCs, and MPSoCs and ACAPs	Basic knowledge of machine learning concepts Comfort with the C/C++/Python programming language, software development flow	Michael Schwarz P. +49 7664 91313-15 E. info@plc2.de
Fee (net per person)	Inclusive	Duration
OL € 1,900	Training material	3 days
WO € 2,300	Plus beverages during breaks Lunch	3 days

Workshop

This course presents the Vitis™ AI development tool-kit for AI inference on Xilinx® hardware platforms in conjunction with DNN algorithms, the trained model from associated frameworks. The target deployment focuses on Alveo™ cards, Zynq® SoCs, Zynq® UltraScale+™ MPSoCs and Versal® ACAP. The target designs need to incorporate a Deep Learning Processor Unit (DPU) IP as presented in the course to support the Vitis™ AI tools.

The basics of Machine Learning (ML) and challenges in neural network training are revisited to relate to the concepts and scope of Vitis™ AI. As it supports mainstream frameworks like TensorFlow and PyTorch, a wide variety of models for diverse machine learning tasks are available and a comprehensive pre-optimized model library is at hand offering models that can readily be deployed on Xilinx® devices.

The concepts of the Vitis™ AI development kit are shown with the framework-specific tools to prune and optimize the trained models, to reduce the computation load, and then quantize the model according to the target DPU spec for efficient mapping. The AI compiler generates deployable code for the microarchitecture of the DPU.

It will be demonstrated how the Vitis™ AI tools can be used to analyze the model performance and debugging. To complete the full deployment, the final chapters present Vitis™ AI libraries and APIs and show how to integrate the pre- and postprocessing with DPU for optimized inference.

Due to accompanying exercises, the course offers in-depth and practice-oriented training. Attendees of the online live course will do the practical exercises in the afternoon on their own.

Agenda

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| 01. Vitis™ AI development environment | 09. Processor Unit (DPU) |
| 02. Frameworks supported by the Vitis™ AI development environment | 10. DPU target architectures |
| 03. Setting up the Vitis™ AI development environment | 11. Vitis™ AI library |
| 04. Overview of ML concepts | 12. Creating a hardware platform with the DPU |
| 05. AI optimizer | 13. Generating a DPU kernel in Vitis™ |
| 06. AI quantizer and AI compiler | 14. Create a Vitis™ embedded acceleration platform |
| 07. AI profiler and AI debugger | 15. Creating a custom application |
| 08. Introduction to the deep learning | 16. Customizing the AI models |