

Course Description

This course describes how to use DNN algorithms, models, inference and training, and frameworks on an edge computing platform.

The emphasis of this course is on:

- Using the architectural features of the Deep Learning Processor Unit (DPU)
- Optimizing a model for an edge application using the Deep Neural Network Development Kit (DNNDK)
- Setting up an edge platform
- Creating custom applications
- Deploying the design

Level – EMBD 2

Course Duration – 1 day live instructor led training (in person or online)

Price – \$800 or 8 Xilinx Training Credits

Course Part Number – EMBD-AIEDGE

Who Should Attend? – FPGA developers and anyone who needs to accelerate their software applications using FPGAs

Prerequisites

- Basic knowledge of machine learning concepts
- Basic knowledge of Xilinx FPGA architecture
- Comfort with the C/C++/Python programming language

Software Tools

- Vivado® Design Suite, PetaLinux, Xilinx SDK, and DNNDK tools

Hardware

- Architecture: Xilinx Zynq® UltraScale+™ MPSoC

** Check with [Morgan Advanced Programmable Systems, Inc.](http://www.morgan-aps.com) for the specifics of the in-class lab board or other customizations.

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

- Describe Xilinx machine learning solutions for edge-based applications
- Utilize DNN algorithms, models, inference and training, and frameworks on an edge computing platform
- Use the architectural features of the DPU processing engine to optimize the model for an edge application
- Use DNNDK to implement your design in the edge
- Describe the supported frameworks and network modes and pre-trained models for edge applications
- Describe the environment to set up the edge platform and how to create a custom application and deploy the design

Course Outline

Introduction to Xilinx Machine Learning Solutions for Edge Applications

Describes Xilinx machine learning solutions for edge-based applications. {Lecture}

Overview of ML Concepts

Overview of ML concepts such as DNN algorithms, models, inference and training, and frameworks. {Lecture}

DPU Architecture Overview

Describes the DPU architecture, supported CNN operations, DPU data flow, and design considerations. {Lecture}

Deep Neural Network Development Kit (DNNDK) Software Stack

Covers the DNNDK tool flow. With the DNNDK tool, deep learning algorithms can deploy in the DPU, which is an efficient hardware platform, running on a Xilinx FPGA. {Lecture}

DNNDK-Supported Frameworks

Describes the support for many common machine learning frameworks such as Caffe and TensorFlow. {Lecture}

Using DNNDK for Custom Applications with Xilinx SoCs

Describes steps such as generating the trained model, optimizing the trained model, and creating an application that uses the optimized model to accelerate the design. {Lecture, Demo}

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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.

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