XILINX
Morgan
Advanced Programmable Systems

Developing Xilinx AI Solutions for Edge-based Applications
EMBD 2

EMBD-AIEDGE (v1.0)   **Course Specification**

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. 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 be deployed 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}

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**, for full course schedule and training information.

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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.

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 training with real hardware

During the Covid-19 period, some companies do not allow their staff to participate in live in-person training.

- Consequently, 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 has 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.