Joint Symposium of eMDC-2019 & ISSM-2019

Invited Talk

Accelerating AI on FPGAs for Smart Manufacturing

Ted Way

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About the Speaker

Ted Way is a senior program manager on the AI and Advanced Architecture engineering team at Microsoft, where he works on hardware acceleration of AI algorithms. Previously he worked on the Azure Machine Learning platform, specifically on the accelerated AI service and integration of AI with Azure IoT Edge. He's passionate about telling the story of how AI will empower people and organizations to achieve more. He holds BS degrees in electrical engineering and computer engineering, MS degrees in electrical engineering and biomedical engineering, and a PhD in biomedical engineering, all from the University of Michigan—Ann Arbor. His PhD dissertation was on "spell check for radiologists," a computer-aided diagnosis (CAD) system that uses image processing and machine learning to predict lung cancer malignancy on chest CT scans. Ted is also local to Hsinchu, Taiwan, where he graduated from the Bilingual Department of the National Experimental High School at the Science-Based Industrial Park.

Abstract

The benefits of AI in manufacturing are easy to imagine –defect analysis, predictive maintenance, workplace safety, and much more. However, the operationalization of AI models in production is challenging. Sending one image from an AOI camera to the cloud requires high bandwidth, and a typical AI model to analyze the image could take 8 billion calculations. In this talk we will show how the Microsoft AI Platform can be used to train an AI model for manufacturing defect analysis, deploy it to an edge server in a factory, and accelerate it on an FPGA for ultra-fast inference.