

Fall Seminar Series

Department of Electrical and Computer Engineering

Wednesday, August 30, 2023

Noon – 1:00 PM EST

<https://temple.zoom.us/j/91871837946>

CHARM: Composing Heterogeneous Accelerators for Matrix Multiply on ACAP Architecture

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Abstract:

In this talk, we will answer the following two questions:

Q1: Which platform beats 7nm GPU A100 in energy efficiency?

A1: AMD Versal ACAP (FPGA+AI Chip)!

Q2: How to program AMD Versal ACAP, i.e., FPGA + AI Chip within the same chip die for deep learning applications in 10 lines of code?

A2: Use CHARM!



Biography: Peipei Zhou is an assistant professor of the Electrical Computer Engineering (ECE) department at the University of Pittsburgh. She has over 10 years of experience in hardware and software co-design. She has published 20+ papers in top-tier IEEE/ACM computer system and design automation conferences and journals including FPGA, FCCM, DAC, ICCAD, ISPASS, TCAD, TECS, TODAES, IEEE Micro, etc. The algorithm and tool proposed in her FCCM'18 paper have been realized in the commercial Vitis HLS (high-level synthesis) compiler from Xilinx (acquired by AMD in

Feb 2022). Her work in FPGA acceleration for deep learning won the 2019 Donald O. Pederson Best Paper Award from the IEEE Council for Design Automation (CEDA). Her work in cloud-based application optimization won the 2018 IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS) Best Paper Nominee and her work in FPGA acceleration for computer vision won the 2018 IEEE/ACM International Conference on Computer-Aided Design (ICCAD) Best Paper Nominee. Before joining Pitt, she worked as a full-time staff software engineer in industry and led a team to develop CNN and MM kernels in the deep learning libraries for two generations of AI training application-specific integrated circuit (ASIC) chip products.