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CECS Seminar

“Programmability, Scalability, and Security for Reconfigurable Computing in the Cloud”

Deming Chen

Abel Bliss Professor of Engineering, Director of AMD
Center of Excellence, and Co-Lead for IIDAI Hybrid
Cloud at the University of Illinois, Urbana-Champaign



Thursday, November 3rd

3:00-4:00 p.m. PST

Location: EH 2430

[Zoom Link](#)

Abstract: Reconfigurable Computing uses FPGAs (Field-Programmable Gate Arrays) as an alternative to microprocessors to enable high-performance and low-energy customized computing. It is becoming a mainstream technology as evident by Intel’s \$16.7B acquisition of Altera in 2015 and AMD’s \$49B acquisition of Xilinx in 2022. However, challenges remain in terms of FPGA programmability, scalability, and security before reconfigurable computing makes a transformative impact in the computing world, especially in the cloud. In this talk, Dr. Chen will present some new concepts and research results that demonstrate initial promises to overcome these challenges, including shared virtual memory system for computing with FPGAs, scalable high-level synthesis for FPGA programming, and trusted execution environment with accelerators. These results are developed within the AMD-Xilinx Center of Excellence and the Hybrid-Cloud Thrust of the IBM-Illinois Discovery Accelerator Institute at UIUC.

Biography: Deming Chen is the Abel Bliss Professor of the Grainger College of Engineering at University of Illinois at Urbana-Champaign (UIUC). His current research interests include reconfigurable computing, hybrid cloud, system-level design methodologies, machine learning and acceleration, and hardware security. He has published more than 250 research papers, received ten Best Paper Awards and one ACM/SIGDA TCFPGA Hall-of-Fame Paper Award, and given more than 140 invited talks. He is an IEEE Fellow, an ACM Distinguished Speaker, and the Editor-in-Chief of ACM Transactions on Reconfigurable Technology and Systems (TRETs). He is the Director of the AMD-Xilinx Center of Excellence and the Hybrid-Cloud Thrust Co-Lead of the IBM-Illinois Discovery Accelerator Institute at UIUC. He has been involved in several startup companies, such as AutoESL and Inspirit IoT. He received his Ph.D. from the Computer Science Department of UCLA in 2005.