Heading to the New Era of Computing with Intelligent and Secure Hardware System

Chenchen Liu
Clarkson University

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Abstract:

Today's computing has entered a new age of intelligence and security. On one hand, the computing content and applications have been dramatically reshaped by artificial intelligence (AI); on the other hand, the security of the computing systems have been impacted by the vulnerability of AI. This raised significant new challenges to hardware system designs with guaranteed intelligence and security. To solve these challenges, our research effort has been devoted to high-performance intelligent and secure hardware system designs. In this talk, I will provide an overview of the research status and challenges in intelligent and secure computing for deep learning computation. Next, I will present our work in designing hardware systems and chips with novel Non-Von Neumann computer architectures for enhanced computing intelligence. Then, I will explain our research in secure algorithm and hardware designs for AI computations. After that, our research in enabling the adaptivity of the hardware systems in deep learning computation will be introduced. Finally, I will describe my future research in computing security, reconfigurable intelligence system, novel computer architecture, etc.

Short Bio:

Chenchen Liu is an Assistant Professor at the Electrical and Computer Engineering Department of Clarkson University since July 2017. She received her Ph.D. in Computer Engineering from the University of Pittsburgh in 2017 and M.S. in Electrical and Communication Engineering from Peking University, China in 2013. Her research interests center on high-performance intelligent and secure computing for artificial intelligence (AI) in the field of secure hardware design, novel computer architecture, deep learning and its security, and other interdisciplinary applications in biomedical and biometric systems.