Department of Computer Science
香港城市大學
City University of Hong Kong

**COMPUTER SCIENCE COLLOQUIUM**

# Hardware-software Co-design of Memristive Systems for Edge Intelligence


SPEAKER **Dr. Yi Huang**

Postdoctoral Researcher
Department of Electrical and Computer Engineering University of Massachusetts Amherst


DATE 2 Oct, 2025 (Thu)
TIME 10:00 AM - 12:00 PM
VENUE online via Tencent Meeting (https://meeting.tencent.com/dm/1J882bKLCoe1 )

## ABSTRACT


Recent advances in artificial intelligence (AI) have driven remarkable performance across diverse applications. However, the increasing scale and complexity of AI algorithms have introduced significant challenges in size, weight, power, and cost (SWaP+C) of conventional computing hardware, especially for edge applications where computing resources are limited. Analog in-memory computing (AIMC) hardware based on memristor devices offers a promising solution by enabling energy-efficient and parallel vector-matrix multiplication, the core operation in most AI models. This talk will cover the hardware-software co-design of memristive systems, demonstrating how innovations from circuits to algorithms can unlock the full potential of AIMC hardware. By bridging mixed-signal circuit design, signal processing, and neural network optimization, we enable practical edge applications ranging from language classification to wireless communications, paving the way for the next generation of intelligent edge devices.


## BIOGRAPHY

Dr. Yi Huang is a Postdoctoral Researcher in the Department of Electrical and Computer Engineering at the University of Massachusetts Amherst. He earned his Ph.D. from the same department in September 2025 under the supervision of Professor Qiangfei Xia and holds both a B.S. and an M.S. from the School of Artificial Intelligence and Automation at Huazhong University of Science and Technology. His research interests include hardware-software co-design of memristive systems, brain-inspired computing for energy-efficient AI, and intelligent sensing and communication systems. His work has been published in leading journals, including Nature Electronics (featured on the July 2025 cover) and Nature Reviews Electrical Engineering. His research has been recognized by the EIPBN Workshop on Emerging Memory Infrastructure (2024) and with the ECE David H. Navon Scholarship (2022) from the University of Massachusetts Amherst.

**All are welcome!**

*In case of questions, please contact Prof LU Zhichao at zhichao.lu@cityu.edu.hk, or visit the CS Departmental Seminar Web at https://www.cs.cityu.edu.hk/events/cs-seminars/recent-cs-colloquiums.*