Abstract:
Human brain is the most sophisticated organ that nature ever builds. Building a machine that can function like a human brain, indubitably, is the ultimate dream of a computer architect. Although we have not yet fully understood the working mechanism of human brains, the part that we have learned in past seventy years already guided us to many remarkable successes in computing applications, e.g., artificial neural network and machine learning. The recently emerged research on “neuromorphic computing”, which stands for hardware acceleration of brain-inspired computing, has become one of the most active areas in computer engineering. The talk will start with a background introduction of neuromorphic computing, followed by two examples of hardware acceleration schemes of learning and neural network algorithms and memristor-based computing engine, respectively. At the end, I will share our prospects on the future technology challenges and advances of neuromorphic computing.

Biography:
Hai (Helen) Li is currently Clare Boothe Luce Associate Professor of Electrical and Computer Engineering Department at Duke University, USA. She has authored or co-authored 190+ technical papers published in peer-reviewed journals and conferences. She authored a book entitled Nonvolatile Memory Design: Magnetic, Resistive, and Phase Changing (CRC Press, 2011). Her current research interests include memory design and architecture, neuromorphic architecture for brain-inspired computing systems, and architecture/circuit/device cross-layer optimization for low power and high performance. Dr. Li serves as an Associate Editor of TVLSI, TCAD, Todaes, TMSCS, TECS, CEM, and the IET Cyber-Physical Systems: Theory & Applications. She has served as technical program committee members for over 20 international conference series. She was a recipient of the NSF CAREER Award in 2012, the DARPA YFA Award in 2013, and TUM-IAS Hans Fisher Fellowship in 2017.