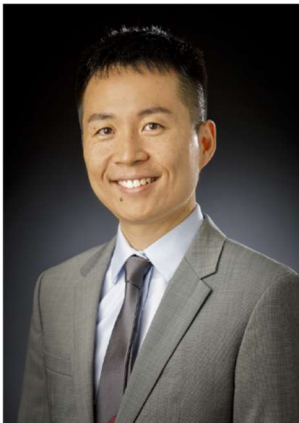


## ECE Seminar: Enhancing Side-Channel Security of Analog-to-Digital Converters

Friday, October 11, 2024, 11:30am – 12:30pm  
Online via Zoom meeting link below

### John Hu, Ph.D.



**Dr. John Hu** received a B.S. degree in electronics and information engineering from Beihang University, Beijing, China, in 2006 and the M.S. and Ph.D. degrees in electrical and computer engineering from Ohio State University, Columbus, OH, USA, in 2007 and 2010, respectively. From 2011 to 2012, he was an Analog IC Designer at Texas Instruments, Dallas, TX. Between 2012 and 2016, he was a Member of Technical Staff, IC Design at Maxim Integrated, San Diego, CA. From 2016 to 2019, he was a Staff Engineer at Qualcomm, Tempe, AZ. In 2019, he joined the School of Electrical and Computer Engineering at Oklahoma State University, Stillwater, OK, where he is currently an assistant professor and Jack H. Graham Endowed Fellow of Engineering. His research interests include analog and mixed-signal VLSI design for hardware security, power management, and energy-efficient computing.

**Abstract:** Side-channel attacks (SCA) are an increasing concern for hardware and integrated circuit (IC) design, particularly regarding information security and privacy. While much research has focused on the SCA resilience of digital and communication systems, the overall security of a signal chain is only as strong as its weakest link. This talk will discuss the SCA vulnerabilities of analog-to-digital converters (ADCs), a ubiquitous component in most electronic systems. We will begin by reviewing the basic principles of SCAs, demonstrating how attackers can leverage their knowledge of the hardware implementation to extract sensitive information. We will then discuss specific attacks on successive approximation (SAR) ADCs, including those utilizing multi-level perceptron (MLP) and convolutional neural network (CNN). Finally, we will outline existing countermeasures and discuss future research directions in enhancing the side-channel security of ADCs.

**Zoom Link for Joining Online:**

<https://wichitastate.zoom.us/j/92549582487?pwd=Q2tiUDINYVV4dXk1Zmc1b1VwTFpVQT09>