



SPEAKER: **Boris Murmann**

TITLE: **Mixed-Signal Circuit Techniques for Near-Sensor Machine Learning and Data Analysis**

DATE: 27 Aug 2019, 11:00

PLACE: 13/2-005

#### ABSTRACT

Mixed-signal interfaces are the essential bridges between the physical world and the digital information processing backbone. In recent years, innovation in such interfaces has been increasingly fueled by application-level insight and the data-driven nature of modern systems. As a result, the traditional building block boundaries are blurring, and the extraction of information occurs through symbiotic interplay between analog and digital signal processing. In this talk, I will illustrate this trend using examples of small-scale machine learning and data analysis functions that operate at the physical interface. Specific examples include mixed-signal feature extraction circuits and compute fabric for machine learning inference, as well as data-compressive interfaces for high-dimensional sensor inputs.

Boris Murmann is a Professor of Electrical Engineering at Stanford University. He joined Stanford in 2004 after completing his Ph.D. degree in electrical engineering at the University of California, Berkeley in 2003. From 1994 to 1997, he was with Neutron Microelectronics, Germany, where he developed low-power and smart-power ASICs in automotive CMOS technology. Since 2004, he has worked as a consultant with numerous Silicon Valley companies. Dr. Murmann's research interests are in mixed-signal integrated circuit design, with special emphasis on sensor interfaces, data converters and custom circuits for embedded machine learning. In 2008, he was a co-recipient of the Best Student Paper Award at the VLSI Circuits Symposium and a recipient of the Best Invited Paper Award at the IEEE Custom Integrated Circuits Conference (CICC). He received the Agilent Early Career Professor Award in 2009 and the Friedrich Wilhelm Bessel Research Award in 2012. He has served as an Associate Editor of the IEEE Journal of Solid-State Circuits, an AdCom member and Distinguished Lecturer of the IEEE Solid-State Circuits Society, as well as the Data Converter Subcommittee Chair and the Technical Program Chair of the IEEE International Solid-State Circuits Conference (ISSCC). He is the founding faculty co-director of the Stanford SystemX Alliance and the faculty director of Stanford's System Prototyping Facility (SPF). He is a Fellow of the IEEE.

Organised by: **Alessandro Marchioro**