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ELECTRICAL & COMPUTER ENGINEERING
TEXAS A&M UNIVERSITY

S E M I N A R

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RNS Data Conversion and Signal Processing

by

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Abstract: An ancient number arithmetic over 2000 years old – the Remainder Number System (RNS) – has recently enabled the silicon demonstration of a non-interleaved 2-GS/s, 8-bit flash ADC that achieves an effective resolution bandwidth (ERBW) of 1.74 GHz in a 65-nm CMOS process. The interesting properties of RNS not only shows promise in data conversion, it also reveals potentials for number-crunching-centric applications such as deep-learning accelerators and parallel computing. In this talk, we will dissect the converter work published at the 2017 VLSI Symposium in detail, paralleled by some aspects of RNS signal processing and outlooks.

Dr. Yun Chiu is the Erik Jonsson Professor of the Uniersity of Texas at Dallas. He received his Ph.D. from UC Berkeley. Before UTD, he was a professor at the University of Illinois at Urbana-Champaign. Dr. Chiu was known instrumental in advancing the adaptive signal-processing techniques for performance enhancement of data converters, mixed-signal, and RF circuits. He co-received the Jack Kilby Outstanding Paper Award from the 2004 ISSCC, the Outstanding Evening Session Award from the 2017 ISSCC, and the Best Paper Award from the 2012 CICC. He has served or is serving on the technical program committees of several IEEE solid-state circuits conferences, including the ISSCC, VLSI, CICC, and A-SSCC. Dr. Chiu has over 100 conference, journal and book publications.