16th SHANNON MEMORIAL LECTURE

Tuesday, June 11, 2019
3 PM: Reception
4 PM: Lecture

Qualcomm Institute - Atkinson Hall
Calit2 Auditorium
University of California, San Diego

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Kannan Ramchandran is a Professor of Electrical Engineering and Computer Science at UC Berkeley, where he has been since 1999. Prior to that, he was on the faculty of the University of Illinois at Urbana-Champaign from 1993 to 1999. Prof. Ramchandran is a recipient of the IEEE Kobayashi Computers and Communications Award for his pioneering contributions to theory and practice of distributed storage codes and distributed compression. He is a Fellow of the IEEE, has published extensively, and holds more than a dozen patents. He has received several awards for his research and teaching including an IEEE Information Theory Society and Communication Society Joint Best Paper award for 2012, an IEEE Communication Society Data Storage Best Paper award in 2010, two Best Paper awards from the IEEE Signal Processing Society in 1993 and 1999, an Okawa Foundation Award for outstanding research at Berkeley in 2001, a Hank Magnusky Scholar award at Illinois in 1998, and an EECS Departmental Outstanding Teaching award at Berkeley in 2009. His current research interests are at the intersection of coding and information theory, statistical signal processing, peer-to-peer networking, and machine learning.

ABSTRACT

Shannon-inspired research tales on duality, encryption, sampling and learning

We will provide short research vignettes that draw inspiration from Shannon's ground-breaking impact on modern information and communication systems. These reflect a personal research journey and include (i) a functional duality between source coding and channel coding, that is particularly interesting in the presence of side-information; (ii) exchangeability between the compression and encryption modules in a secure and efficient system; (iii) an interesting connection between sampling theory and sparse-graph coding theory uncovered in the setting of multi-band sub-Nyquist sampling; and, time-permitting, (iv) fast sparse polynomial learning using the power of codes.

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