

1103-42-77

Enrico Au-Yeung*, DePaul University, 5th Floor Schmitt Academic Center, 2320 N. Kenmore Ave., Chicago, IL 60614. *A new class of random matrices and second-order stochastic chaos.*

Part of this talk is joint work with Ozgur Yilmaz at the University of British Columbia

We propose a new class of random matrices that enables the recovery of signals with sparse representation in a known basis with overwhelmingly high probability. These random matrices are not made using independently and identically distributed random variables, as in the case of Gaussian or Bernoulli matrices. Therefore, as a benefit, far fewer number of random variables are needed to generate these new types of random matrices. Our techniques draw on the recent development in second-order random chaotic processes.

If time permits, the speaker will discuss application of probability in Banach space to non-asymptotic aspects of vector quantization. It is commonly believed that a machine can learn the pattern from a data set if the number of samples is sufficiently large. But the usual justification is based on large-sample asymptotic theory and does not necessarily apply when the dimension of the underlying model is possibly unknown. (Received August 12, 2014)