

Stanford University
Departments of Mathematics and Statistics

PROBABILITY SEMINAR

4pm, Monday, October 22, 2018
Sequoia Hall Room 200

Refreshments served at 3:30pm in the Lounge.

Speaker: Moses Charikar, *Stanford Computer Science*

Title: **Efficient Profile Maximum Likelihood for Universal
Symmetric Property Estimation**

Abstract:

Symmetric properties of distributions arise in multiple settings. For each of these, separate estimators and analysis techniques have been developed. Recently, Orlitsky et al showed that a single estimator that maximizes profile maximum likelihood (PML) is sample competitive for all symmetric properties. Further, they showed that even a $2^{n^{1-\delta}}$ -approximate maximizer of the PML objective can serve as such a universal plug-in estimator. (Here n is the size of the sample). Unfortunately, no polynomial time computable PML estimator with such an approximation guarantee was known. We provide the first such estimator and show how to compute it in time nearly linear in n . We also present some preliminary experimental results.

This is joint work with Kiran Shiragur and Aaron Sidford (Stanford MS&E).