The Chinese University of Hong Kong
Department of Statistics

Seminar

Computationally Efficient Tensor Completion with Statistical Optimality

By

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Abstract

We develop methods for estimating a low rank tensor from noisy observations on a subset of its entries to achieve both statistical and computational efficiencies. There have been a lot of recent interests in this problem of noisy tensor completion. Much of the attention has been focused on the fundamental computational challenges often associated with problems involving higher order tensors, yet very little is known about their statistical performance. To fill in this void, in this article, we characterize the fundamental statistical limits of noisy tensor completion by establishing minimax optimal rates of convergence for estimating a k-th order low rank tensor which suggest significant room for improvement over the existing approaches. Furthermore, we propose a polynomial-time computable estimating procedure based upon power iteration and a secondorder spectral initialization that achieves the optimal rates of convergence. Our method is fairly easy to implement and numerical experiments are presented to further demonstrate the practical merits of our estimator.

Date: February 8, 2018 (Thursday)
Time: 11:00 a.m. - 12:00 p.m.
Venue: Lee Shau Kee Building (LSK) - Room 515
        The Chinese University of Hong Kong

ALL INTERESTED ARE WELCOME