MICHIGAN STATE UNIVERSITY
Department of Statistics and Probability

COLLOQUIUM

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Getting your arrays in order with convex optimization

Tuesday, November 17, 2020
10:20 AM - 11:10 AM Eastern Standard Time
Zoom

Abstract

Clustering is a fundamental unsupervised learning technique that aims to discover groups of objects in a dataset. Biclustering extends clustering to two dimensions where both observations and variables are grouped simultaneously, such as clustering both cancerous tumors and genes or both documents and words. We develop and study a convex formulation of the generalization of biclustering to co-clustering the modes of multiway arrays or tensors, the generalization of matrices. Our convex co-clustering (CoCo) estimator is guaranteed to obtain a unique global minimum of the formulation and generates an entire solution path of possible co-clusters governed by a single tuning parameter. We extensively study our method in several simulated settings, and also apply it to an online advertising dataset. We also provide a finite sample bound for the prediction error of our CoCo estimator.

Zoom details can be found at: https://stt.natsci.msu.edu/stt-colloquium-zoom-info/

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