Statistics Colloquium

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“Distance-to-set penalties and priors for estimation under constraints”

Monday May 13, 2024, at 11:30 AM
Jones 303, 5747 S. Ellis Avenue
Pre-Seminar refreshments will be served at 11:00 AM in Jones 303

Abstract

We consider a penalty framework based on regularizing the squared distance to set-based constraints for several core statistical tasks. These distance-to-set penalties provide a simple way to cast constrained optimization problems in more tractable unconstrained forms. We will see that they often avoid drawbacks that arise from popular alternatives such as shrinkage method, and can be more flexible than existing algebraic and regularization penalties. We discuss a general strategy for eliciting effective algorithms in this framework using majorization-minimization (MM), the general principle behind EM that transfers difficult problems onto a sequence of more manageable subproblems. We showcase new progress on classical problems including sparse covariance estimation using this approach, and discuss recent connections to Bayesian constraint relaxation and non-Euclidean divergences.