Title:
Graph estimation with matrix variate normal instances

Speaker:
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Time & Place:
Wednesday, December 10, 2014, 4:00-5:00pm
Room 133 SMI
(Cookies & Coffee @ 3:30 in Rm 1210 MSC)

Abstract:
Undirected graphs can be used to describe matrix variate distributions. In this talk, I present new methods for estimating the graphical structures and underlying parameters, namely, the row and column covariance and inverse covariance matrices from the matrix variate data. Under sparsity conditions, we show that one is able to recover the graphs and covariance matrices with a single random matrix from the matrix variate normal distribution. Our method extends, with suitable adaptation, to the general setting where replicates are available. We establish consistency and obtain the rates of convergence in the operator and the Frobenius norm. We show that having replicates will allow one to estimate more complicated graphical structures and achieve faster rates of convergence. We provide simulation evidence and a real data example showing that we can recover graphical structures as well as estimating the precision matrices, as predicted by theory.