Statistical Machine Learning Seminar
Hosted by Department of Mathematical Sciences

- Date: Tuesday, September 9, 2014
- Time: 12:00-1:00
- Room: OW-100E
- Speaker: Ganggang Xu (Mathematical Sciences)
- Title: Asymptotic optimality and efficient computation of the leave-subject-out cross-validation

Abstract

Although the leave-subject-out cross-validation (CV) has been widely used in practice for tuning parameter selection for various nonparametric and semiparametric models of longitudinal data, its theoretical property is unknown and solving the associated optimization problem is computationally expensive, especially when there are multiple tuning parameters. In this paper, by focusing on the penalized spline method, we show that the leave-subject-out CV is optimal in the sense that it is asymptotically equivalent to the empirical squared error loss function minimization. An efficient Newton-type algorithm is developed to compute the penalty parameters that optimize the CV criterion. Simulated and real data are used to demonstrate the effectiveness of the leave-subject-out CV in selecting both the penalty parameters and the working correlation matrix.

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