March 2, 2018

STUDENT SEMINAR

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Title

A Semiparametric Approach to Model Effect Modification

Speaker

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(4th year Ph.D. student in Statistics, UW-Madison)

Time & Place

Friday, March 2, 2018
4pm, Room 133 SMI

Pizza @ 3:45pm, Room 133 SMI

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Abstract

One fundamental statistical question for research areas such as precision medicine and health disparity is about discovering effect modification of treatment or exposure by observed covariates. We propose a semiparametric framework for identifying such effect modification. Instead of using the traditional outcome models, we directly posit semiparametric models on contrasts, or expected differences of the outcome under different treatment choices or exposures. Through semiparametric estimation theory, all valid estimating equations, including the efficient scores, are derived. Besides providing flexible models for effect modification, our approach also enables dimension reduction in presence of high dimensional data. The asymptotic and non-asymptotic properties of the proposed methods are explored via a unified statistical and algorithm analysis. Comparison with existing methods in both simulation and real data analysis demonstrates the superiority of our estimators especially for an efficiency improved version.