Indiana University-Purdue University Indianapolis

Department of Mathematical Sciences

STATISTICS SEMINAR

12:15pm—1:15pm, Tuesday, Feb. 27, 2018
SL 137

Speaker: **Ziting Tang** (PhD candidate)
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Title: Bootstrapping Robust Estimates of Regression

Abstract:

We introduce a new computer-intensive method to estimate the distribution of robust regression estimates. The basic idea behind our method is to bootstrap a reweighted representation of the estimates. To obtain a bootstrap method that is asymptotically correct, we include the auxiliary scale estimate in our reweighted representation of the estimates. Our method is computationally simple because for each bootstrap sample we only have to solve a linear system of equations. The weights we use are decreasing functions of the absolute value of the residuals and hence outlying observations receive small weights. This results in a bootstrap method that is resistant to the presence of outliers in the data. The breakdown points of the quantile estimates derived with this method are higher than those obtained with the bootstrap. We illustrate our method on two datasets and we report the results of a Monte Carlo experiment on confidence intervals for the parameters of the linear model.

Reference:

Salibian-Barrera, Matias, and Ruben H. Zamar. "Bootstrapping robust estimates of regression." Annals of Statistics (2002): 556-582.