Statistics Seminar

Department of Mathematical Sciences

DATE:	Thursday, August 31, 2017
TIME:	1.15p-2.15p
LOCATION:	WH 100E
SPEAKER:	Qiqing Yu, Binghamton University
TITLE:	The Marginal Distribution Approach For Testing Independence And Goodness-of-fit In Linear Models

Abstract

We propose a test to simultaneously test the assumption of independence and goodness-of-fit for a linear regression model $Y=\beta X+W$, where $\beta\in R^p$. If $E(|Y||X)=\infty$, then all existing tests are not valid and their levels with a nominal size 0.05 can be as large as 0.9. Our approach is valid even if $E(|Y||X)=\infty$ or $E(||X||)=\infty$. Thus it is more realistic than all the existing tests. Our approach is based on the difference between two estimators of the marginal distribution F_Y, and thus it is called the MD approach. We establish the consistency of the MD test. We compare the MD approach to the existing tests such as the test in R package``gam" or the test in Sen and Sen (2014) through simulation studies. If the existing tests are valid, then none of the existing tests and the MD test is uniformly more powerful than the other. We apply the MD approach to 3 real data sets.