Statistical Machine Learning Seminar

Hosted by Department of Mathematical Sciences

- Date: Tuesday, March 15, 2016
- Time: 12:00-1:00
- Room: WH-100E
- Speaker: Junyi Dong (Mathematical Sciences)
- Title: Diagnostic Plotting Methods for Proportional Hazards Models With Time-dependent Covariates or Time-varying Regression Coefficients

Abstract

This is the first one of a series of two talks, the second of which will be on Thursday.

Given a sample of regression data from (Y,Z), we propose several new diagnostic plotting methods for the Cox models with the general external time-dependent covariates Z, which can be continuous, or with the time-varying regression coefficients. The main approach compares the non-parametric MLE of the survival function of Y against its expected (correct) expression under the given Cox model which can be mis-specified. This is different from the existing methods in the literatures such as log-log plots and residuals plots. The simulation studies and the data analysis of our breast cancer data suggest that the combination of these diagnostic plotting methods we proposed performs quite satisfactorily. These new diagnostic plotting methods naturally yield various tests for checking the validity of the Cox models. The main advantage of the new tests over the residual tests is in the case that the data do not fit any PH model. Then the new tests are still valid but not the residual tests.