A flexible leverage measure with applications to quantile regression

by

Matias Salibian-Barrera University of British Columbia 6356 Agricultural Road, Vancouver, BC 722 W 168th St, New York, NY matias@stat.ubc.ca

Abstract

Although quantile regression estimators are robust against the presence of observations with atypically large responses, they can be seriously affected by a few points that deviate from the majority of the sample in the covariate space. This problem can be alleviated by down-weighting observations with high-leverage. Unfortunately, when the covariates are not elliptically distributed, Mahalanobis distances may not be able to correctly identify atypical points. In this talk I will discuss the use of weighted quantile regression estimators with weights based on a leverage measure constructed using Rosenblatt's multivariate transformation. I will show that this measure is able to reflect non-elliptical structures and illustrate the proposed weighted quantile regression estimators on growth measurements on Finnish children.

This is joint work with Ying Wei, Department of Statistics, Columbia University.