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Abstract

Title:

Estimating the error distribution in semiparametric models

In this talk I will review my research on estimating the error distribution in semiparametric models, with emphasis on regression models with independent errors and covariates. I will begin by looking back at a 2004 paper on efficient estimation of the error variance and of other expectations of the error distribution in nonparametric regression. Then I will review several papers building on this, in which we estimate the error distribution by a residual-based empirical distribution function (which requires suitable estimators of the regression function). We identify various regression models where the residual-based empirical distribution function allows a simple (uniform) expansion, which, in particular, characterizes an efficient estimator of the error distribution. The expansion also provides the basis for constructing goodness-of-fit tests, for example distribution free martingale-transform tests about the form of the error distribution. To conclude, I will present some unpublished work on estimating the error distribution function in single-index regression.