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Orthogonal Regression for Nonparametric Estimation of Errors-In-Variables Models

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Abstract : Two new algorithms for nonparametric estimation of errors-in-variables models are proposed. The first algorithm is based on penalized regression spline. The spline is represented as a piecewise-linear function and for each linear portion orthogonal regression is estimated. This algorithm is iterative. The second algorithm involves locally weighted regression estimation. When the independent variable is measured with error such estimation is a complex nonlinear optimization problem. The simulation results have shown the advantage of the second algorithm under the assumption that true smoothing parameters values are known. Nevertheless the use of some indexes of fit to smoothing parameters selection gives the similar results and has an oversmoothing effect.

Keywords : grade point average, orthogonal regression, penalized regression spline, locally weighted regression
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