Weighted nonlinear quantile regression and oracle model selection

by
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Abstract

We suggest a weighted quantile regression estimation approach for nonlinear models when the number of parameters is fixed or diverges. The proposed estimation method is applicable to other models. We use the SCAD and adaptive-LASSO penalty schemes to select variables/parameters in the models. We establish asymptotic distributions of the proposed estimators showing that the variable/parameter selection methods perform as well as if the correct submodels are known in advance. We also suggest an algorithm for implementation of the proposed methodology. Simulations are conducted to compare different estimators. A real example is used to illustrate the performance of the proposed methodology.