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Profile regularization after retention variable selection for ultrahigh dimensional partially linear models. (Chinese. English summary) Zbl 1485.62036

Summary: In this paper, we consider the ultrahigh dimensional partially linear model, in which the dimension of the parametric vector is exponential order of the sample size. Based on profile least squares and regularization after retention method, we propose a new method to perform variable selection for the ultrahigh dimensional partially linear model. Under certain regularity conditions, it is proved that the estimator achieves sign consistency. Compared with Lasso, SIS-Lasso and adaptive Lasso, it is found that the proposed method is better in terms of recovering the coefficient sign of linear part through the numerical simulation and real data analysis.

MSC:
62G05 Nonparametric estimation
62G20 Asymptotic properties of nonparametric inference

Keywords:
partially linear model; variable selection; high-dimensional data; Lasso; sign consistency; regularization after retention

Full Text: Link