STATISTICAL INFERENCE IN SINGLE-INDEX AND PARTIALLY NONLINEAR MODELS

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Abstract. A finite series approximation technique is introduced. We first apply this approximation technique to a semiparametric single-index model to construct a nonlinear least squares (LS) estimator for an unknown parameter and then discuss the confidence region for this parameter based on the asymptotic distribution of the nonlinear LS estimator. Meanwhile, a computational algorithm and a small sample study for this nonlinear LS estimator are developed. Additionally, we apply the finite series approximation technique to a partially nonlinear model and obtain some new results.

Key words and phrases: Asymptotic normality, semiparametric single-index regression model, finite series approximation, partially nonlinear model.