Bootstrap Approximations in Model Checks for Regression

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Abstract

Let $M = \{m_\theta : \theta \in \Theta\}$ be a parametric model for an unknown regression function m. For example, M may consist of all polynomials or trigonometric polynomials with a given bound on the degree. To check the full model M (i.e., to test for$H_0 : m \in M$), it is known that optimal tests should be based on the empirical process of the regressors marked by the residuals. In this article we show that the distribution of this process may be approximated by the wild bootstrap. The method is applied to simulated datasets as well as to real data.