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A FULLY AUTOMATED BANDWIDTH SELECTION METHOD FOR FITTING ADDITIVE MODELS

by

Jean Opsomer
Iowa State University
David Ruppert
Cornell University

ABSTRACT

This article describes a fully automated bandwidth selection method for additive models that is applicable to the widely used backfitting algorithm of Buja, Hastie and Tibshirani (1989) and does not rely on cross-validation. The proposed plug-in estimator is an extension of the local linear regression estimator of Ruppert, Sheather and Wand (1996) and is shown to achieve the same $O_p(n^{-2/7})$ relative convergence rate for the bandwidth estimators of bivariate additive models. If more than two covariates are present, theoretical justification of the method requires independence of the covariates, but simulation experiments show that in practice the method is very robust to violations of this assumption. The article also develops two different estimators of the variance in case of homoskedasticity of the errors. The behavior of the method is demonstrated on a real dataset.