



Iterative bias reduction multivariate smoothing in R: The ibr package

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In multivariate nonparametric analysis, sparseness of the covariates also called curse of dimensionality, forces one to use large smoothing parameters. This leads to a biased smoother. Instead of focusing on optimally selecting the smoothing parameter, we fix it to some reasonably large value to ensure an over-smoothing of the data. The resulting base smoother has a small variance but a substantial bias. In this paper, we propose an R package named ibr to iteratively correct the initial bias of the (base) estimator by an estimate of the bias obtained by smoothing the residuals. After a brief description of Iterated Bias Reduction smoothers, we examine the base smoothers implemented in the packages: Nadaraya-Watson kernel smoothers and thin plate splines smoothers. Then, we explain the stopping rules available in the package and their implementation. Finally we illustrate the package on two examples: a toy example in RxR and the original Los Angeles ozone dataset.

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