ibr: Iterative Bias Reduction Multivariate Smoothing

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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 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 a R package named **ibr** to iteratively correct the initial bias of (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 briefly explain the stopping rules available in the package. Finally we present the package on two examples: a toy example in $\mathbb{R}^2$ and the original Los Angeles ozone dataset.

References

Cornillon, P-A, Hengartner, N. and Matzner-Løber, E (2009) Recursive Bias Estimation for high dimensional regression smoothers, *Submitted*