PROBLEMS OF AUTOMATIC DATA-DRIVEN BANDWIDTH SELECTORS FOR NONPARAMETRIC REGRESSION

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Keywords: bandwidth selector, Fourier transform, kernel estimation, nonparametric regression

This note is concerned the problem of automatic data-driven bandwidth selectors for nonparametric regression. Some selectors were shown to be consistent and asymptotically unbiased by Rice (1984) and Härdle, Hall & Marron (1988). However, in simulation studies, it is often observed that most of selectors are biased toward undersmoothing and give smaller bandwidths more frequently than predicted by asymptotic results.This motivates us to study the causes of undersmoothing. An explanation of this fact is given here. The Fourier transformation is used for a remedy. This leads to the consideration of a new procedure which is simple modification of a classical selector. A simulation study suggests that the proposed selector is much more consistent than the classical one.