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12. Probability and Statistics

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The mean sum of squared error of a wavelet based multinomial density estimator

A wavelet-based estimator is introduced to smooth multinomial data. If the underlying density has rth bounded derivative, the mean sum of squared error of the estimator is $O(K^{-1}N^{-2r/(2r+1)})$, where K is the number of cells and N is the total number of cell counts. No boundary conditions are needed, and the smoothness condition can be relaxed to piecewise smoothness.

Reference: P. Hall and P. Patil, Formulae for mean integrated squared error of nonlinear wavelet-based density estimators, *Ann. Statist.* **23** (1995), 905–928.