Nonparametric Estimation of Non-Smooth Functional

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Abstract
In statistical inference, one of the basic problem is that of estimating functionals. This problem is considered in the nonparametric set-up. The quality of estimation depends on smoothness properties of the functional F. However, a non-smooth functional lack some degree of properties traditionally relied upon in estimation. Lack of these traditional properties highlights the reason why standard techniques fail to give sharp results. In estimating non-smooth functional, the lower and upper bounds are constructed for the MiniMax Risk. When working in the context of MiniMax estimation, the lower bounds are important. A single-value MiniMax lower bound is established by applying the general lower bound technique based on testing two composite hypotheses. A vital step is the construction of two special priors and bounding the chi-square distance between two normal mixtures. An estimator is constructed using approximation theory and Hermite polynomials and is shown to be asymptotically sharp MiniMax when the means are bounded by a given value.

Key Words: *Non-Smooth Functional, Nonparametric, Minimax*