A New Wavelet Linear Survival Function Estimator

Hassan Doosti (Ferdowsi University of Mashhad, Iran)

The filed of nonparametric function estimation has broadened its appeal in recent years with an array of new tools for statistical analysis. In particular, theoretical and applied research on the filed of wavelets has had noticeable influence on statistical topics such as survival function estimation, nonparametric regression, nonparametric density estimation and many other related topics. Let $\{X_n, n \geq 1\}$ be a stationary sequence of random variables with survival function $\bar{F}(x) = P[X_1 > x]$. A wavelet linear survival function $\bar{F}_n(x)$ based on $X_1, X_2, \cdots, X_n$ is proposed as an estimator for $\bar{F}_n(x)$. We establish the rate of convergence for introduced estimator. Also strong consistency and pointwise as well as uniform of $\bar{F}_n(x)$ are discussed.
These results are useful in the study of kernel-type density and failure rate estimators of the unknown density and failure rate function. Some preliminaries of the linear wavelet estimator of a survival function is given in section 2 and section 3 provides its asymptotic properties.

Nonparametric Estimation of Partial Derivatives of a Multivariate Probability Density for Mixing Sequences by the Method of Wavelets

N. Hosseinioun (Department of Statistics, Ferdowsi University of Mashhad, Iran) in collaboration with Hasan Doosti and H.A. Nirumand

The mathematical theory of wavelet and their applications in statistics have become a well-known technique for non-parametric curve estimation. We Consider the problem of estimation of the partial derivatives of a multivariate probability density f of mixing sequences, using wavelet based method. Many stochastic processes and time series are known to be mixing. Under certain weak assumptions autoregressive and more generally bilinear time series models are strongly mixing with exponential mixing coefficients. The problem of density estimation from dependent samples is often considered. For instance quadratic losses were considered by several authors . We investigate the variance and the rate of the almost convergence of wavelet-based estimators. Rate of convergence of estimators when f belongs to the Besov space is also established.