

Efficient estimation of the Nonparametric Mean and Covariance Functions for Longitudinal and Sparse Functional Data

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Abstract: We consider the estimation of mean and covariance functions for longitudinal and sparse functional data by using the full quasi-likelihood coupling a modification of the local kernel smoothing method. The proposed estimators are shown to be consistent, asymptotically normal, and semiparametrically efficient in terms of their linear functionals. Their superiority to the competitors is further illustrated numerically through simulation studies. The method is applied to analyze AIDS study and atmospheric study. Supplementary materials for this article are available online.