

Functional Single Index Models for Functional Covariate

Jane-Ling Wang, University of California, Davis
Ciren Jiang, SAMSI

Abstract

This talk aims at extending the single index models for multivariate covariates and univariate response variables to longitudinal response, possibly measured with errors, for both longitudinal and time-invariant covariates. The extension differs from current single index models in two ways: (i) it accommodates longitudinal data, both as response and as covariates; and (ii) the time-dynamic effects of the single-index is reflected in the model. The proposed estimator for the index parameters is shown to be root-n consistent and asymptotically normally distributed. We also address the nonparametric estimation of regression functions and provide estimates with optimal convergence rates. One advantage of the new approach is that the same bandwidth is used to estimate both the nonparametric mean function and the parameters in the single-index. The finite sample performance of the proposed procedure is studied through simulations and AIDS CD4 cell count data.