Concurrent functional linear regression via plug-in empirical likelihood

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Abstract

This talk introduces new simultaneous inference methods for concurrent functional linear regression. We construct a simultaneous confidence band for a functional covariate effect of interest. Our approach is based on a powerful nonparametric likelihood ratio method, with plug-in estimates for those regression coefficient functions we deem as less important. A simulation study shows that the proposed likelihood ratio-based procedure outperforms a competing Wald-type procedure. We apply the proposed methods to studying the effect of age on the occupation time curve derived from wearable device data obtained in an NHANES study.

Keywords: Bootstrap; Functional data analysis; Nonparametric likelihood ratio.