IPS122: Joint Likelihood Inference for Semi-parametric Nonlinear Mixed-Effects Models with Covariate Measurement Errors and Change Points

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Abstract:

Semiparametric nonlinear mixed-effects models are very flexible in modeling complex longitudinal data. Covariates are often introduced in the models to partially explain inter-individual variations. In practice, statistical analyses may become complicated due to measurement errors and missing data in covariates as well as change points on response trajectories. We consider semiparametric nonlinear mixed-effects models which incorporate measurement errors and missing data in time-varying covariates and change points. We propose an approximate joint model likelihood estimation method for the model parameters by using Monte Carlo Expectation-Maximization algorithm. The proposed method is illustrated in a real dataset. A simulation study is conducted for the method comparison and evaluation.

Keywords:
Longitudinal data; Change point; Covariate measurement error; Monte Carlo Expectation-Maximization algorithm.