ABSTRACT: An efficient method to estimate functional linear model has been proposed and developed for the longitudinal data under the setting of Local Box-Cox transformation (LBCT). When one Box-Cox transformation is not enough to approximate big longitudinal data, multiple Box-Cox transformations on response variable by some time (age) variable should be used for approximation to normality. These multiple Box-Cox transformations will be called as Local Box Transformation (BCT). To apply LBCT, we adopt a three-step estimation procedure. First, we split the longitudinal data by some time (age) variable. We then apply LBCT on each data in second step, and in third step, we accomplish efficient estimation of our models by incorporating three nonparametric smoothers, known as local polynomial smoother, kernel smoother and spline smoother. An application of our method has been demonstrated by using NGHS (National Growth and Health Study) longitudinal data.

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