



## **Flexible regression models for functional data**

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**Abstract:** We propose a generalization of the functional linear model, where both the response and the covariate are functional data, observed on the same/different time domain. In contrast to the typical functional linear models, we allow the relationship between the response and covariate to be nonlinear and vary with both the current time point and the covariate. In this framework we develop methodology for estimation and inference of the unknown relationship, by allowing for correlated error structure as well as sparse and/or irregular sampling design. Hypothesis testing about the relationship is also discussed. The proposed method is illustrated through simulation study and application to real world data.