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## Generalized varying coefficient models: a smooth variable selection technique

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*Abstract:* We consider nonparametric smoothing and variable selection in generalized varying coefficient models. Generalized varying coefficient models are commonly used for analyzing the time-dependent effects of covariates on responses, which are not necessary continuous, but for example counts or categories. We present the P-spline estimator in this context and show its estimation consistency for a diverging number of knots (or B-spline basis functions), by using an approximation of the link function. The combination of P-splines with nonnegative garrote (which is a variable selection method) leads to good estimation and variable selection. The method is illustrated with a simulation study and a real data example.

*Key words and phrases:* generalized varying coefficient models; longitudinal data; nonparametric smoothing; P-splines; variable selection.