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Spline smoothing in a partly linear model. (English) Zbl 0623.62030

J. R. Stat. Soc., Ser. B 48, 244-248 (1986).

The following model is considered:

$$Y_i = X_i' \beta + f(t_i) + e_i,$$

where the errors e_i are independently and identically distributed with zero means, β is an unknown k -vector and f is an unknown mapping from \mathbb{R} into \mathbb{R} of which the m -th derivative is square integrable.

The problem of estimating β and f is considered through the minimization of a criterium which is the sum of two terms, the residual sum of squares and a measure of smoothness of f .

Consistency and asymptotic normality of $\hat{\beta}$ are studied; moreover it is shown that $\hat{\beta}$ and \hat{f} are the Bayes estimates under some prior distribution.

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MSC:

- 62G05 Nonparametric estimation
- 62J99 Linear inference, regression
- 62F15 Bayesian inference
- 62E20 Asymptotic distribution theory in statistics

Cited in **144** Documents

Keywords:

spline smoothing; partly linear model; nonparametric regression; square- integrable derivatives; residual sum of squares; measure of smoothness; Consistency; asymptotic normality; Bayes estimates