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Sommario/riassunto	Nonparametric function estimation with stochastic data, otherwise known as smoothing, has been studied by several generations of statisticians. Assisted by the ample computing power in today's servers, desktops, and laptops, smoothing methods have been finding their ways into everyday data analysis by practitioners. While scores of methods have proved successful for univariate smoothing, ones practical in multivariate settings number far less. Smoothing spline ANOVA models are a versatile family of smoothing methods derived through roughness penalties, that are suitable for both univariate and multivariate problems. In this book, the author presents a treatise on penalty smoothing under a unified framework. Methods are developed for (i) regression with Gaussian and non-Gaussian responses as well as with censored lifetime data; (ii) density and conditional density estimation under a variety of sampling schemes; and (iii) hazard rate estimation with censored life time data and covariates. The unifying themes are the general penalized likelihood method and the construction of multivariate models with built-in ANOVA

decompositions. Extensive discussions are devoted to model construction, smoothing parameter selection, computation, and asymptotic convergence.