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Nota di contenuto	Nonparametric Regression Methods for Longitudinal Data Analysis; Preface; Contents; Acronyms; 1 Introduction; 1.1 Motivating Longitudinal Data Examples; 1.1.1 Progesterone Data; 1.1.2 ACTG 388 Data; 1.1.3 MACS Data; 1.2 Mixed-Effects Modeling: from Parametric to Nonparametric; 1.2.1 Parametric Mixed-Effects Models; 1.2.2 Nonparametric Regression and Smoothing; 1.2.3 Nonparametric Mixed-Effects Models; 1.3 Scope of the Book; 1.3.1 Building Blocks of the NPME Models; 1.3.2 Fundamental Development of the NPME Models; 1.3.3 Further Extensions of the NPME Models 1.4 Implementation of Methodologies1.5 Options for Reading This Book; 1.6 Bibliographical Notes; 2 Parametric Mixed-Effects Models; 2.1 Introduction; 2.2 Linear Mixed-Effects Model; 2.2.1 Model Specification; 2.2.2 Estimation of Fixed and Random-Effects; 2.2.3 Bayesian Interpretation; 2.2.4 Estimation of Variance Components; 2.2.5 The EM-Algorithms; 2.3 Nonlinear Mixed-Effects Model; 2.3.1 Model Specification; 2.3.2 Two-Stage Method; 2.3.3 First-Order Linearization Method; 2.3.4 Conditional First-Order Linearization

Method; 2.4 Generalized Mixed-Effects Model
 2.4.1 Generalized Linear Mixed-Effects Model 2.4.2 Examples of GLME Model; 2.4.3 Generalized Nonlinear Mixed-Effects Model; 2.5 Summary and Bibliographical Notes; 2.6 Appendix: Proofs; 3 Nonparametric Regression Smoothers; 3.1 Introduction; 3.2 Local Polynomial Kernel Smoother; 3.2.1 General Degree LPK Smoother; 3.2.2 Local Constant and Linear Smoothers; 3.2.3 Kernel Function; 3.2.4 Bandwidth Selection; 3.2.5 An Illustrative Example; 3.3 Regression Splines; 3.3.1 Truncated Power Basis; 3.3.2 Regression Spline Smoother; 3.3.3 Selection of Number and Location of Knots
 3.3.4 General Basis-Based Smoother 3.4 Smoothing Splines; 3.4.1 Cubic Smoothing Splines; 3.4.2 General Degree Smoothing Splines; 3.4.3 Connection between a Smoothing Spline and a LME Model; 3.4.4 Connection between a Smoothing Spline and a State-Space Model; 3.4.5 Choice of Smoothing Parameters; 3.5 Penalized Splines; 3.5.1 Penalized Spline Smoother; 3.5.2 Connection between a Penalized Spline and a LME Model; 3.5.3 Choice of the Knots and Smoothing Parameter Selection; 3.5.4 Extension; 3.6 Linear Smoother; 3.7 Methods for Smoothing Parameter Selection; 3.7.1 Goodness of Fit
 3.7.2 Model Complexity 3.7.3 Cross-Validation; 3.7.4 Generalized Cross-Validation; 3.7.5 Generalized Maximum Likelihood; 3.7.6 Akaike Information Criterion; 3.7.7 Bayesian Information Criterion; 3.8 Summary and Bibliographical Notes; 4 Local Polynomial Methods; 4.1 Introduction; 4.2 Nonparametric Population Mean Model; 4.2.1 Naive Local Polynomial Kernel Method; 4.2.2 Local Polynomial Kernel GEE Method; 4.2.3 Fan-Zhang 's Two-step Method; 4.3 Nonparametric Mixed-Effects Model; 4.4 Local Polynomial Mixed-Effects Modeling; 4.4.1 Local Polynomial Approximation; 4.4.2 Local Likelihood Approach 4.4.3 Local Marginal Likelihood Estimation

Sommario/riassunto

Incorporates mixed-effects modeling techniques for more powerful and efficient methods This book presents current and effective nonparametric regression techniques for longitudinal data analysis and systematically investigates the incorporation of mixed-effects modeling techniques into various nonparametric regression models. The authors emphasize modeling ideas and inference methodologies, although some theoretical results for the justification of the proposed methods are presented. With its logical structure and organization, beginning with basic principles, the text develops t