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3.8 Conditional Quantile Estimation; 3.9 Conditional Variance Estimation; 3.10 Conditional Covariance Estimation; 3.11 Applications in Risk Management; 3.12 Applications in Portfolio Selection; Chapter 4: Semiparametric and Structural Models; 4.1 Single-Index Model; 4.2 Additive Model; 4.3 Other Semiparametric Models; Chapter 5: Empirical Risk Minimization; 5.1 Empirical Risk; 5.3 Support Vector Machines; 5.4 Stagewise Methods; 5.5 Adaptive Regressograms; Part II: Visualization; Chapter 6: Visualization of Data; 6.1 Scatter Plots; 6.2 Histogram and Kernel Density Estimator; 6.3 Dimension Reduction; 6.4 Observations as Objects; Chapter 7: Visualization of Functions; 7.1 Slices; 7.2 Partial Dependence Functions; 7.3 Reconstruction of Sets; 7.4 Level Set Trees; 7.5 Unimodal Densities; Appendix A: R Tutorial; A.1 Data Visualization; A.2 Linear Regression; A.3 Kernel Regression; A.4 Local Linear Regression; A.5 Additive Models: Backfitting; A.6 Single-Index Regression; A.7 Forward Stagewise Modeling; A.8 Quantile Regression; References; Author Index; Topic Index

Sommario/riassunto

"This book uniquely utilizes visualization tools to explain and study statistical learning methods. Covering classification and regression, the book is divided into two parts. First, various visualization methods are introduced and explained. Here, the reader is presented with applications of visualization techniques to learning samples (including projection pursuit, graphical matrices, and parallel coordinate plots) as well as functions, and sets. Next, the author provides a "toolbox" that contains formal definitions of the methods applied in the book and then proceeds to present visualizations of classified learning samples and classified test samples. Visualization methods are applied for the initial exploration of data, to identify the correct type of classifier, and to estimate the best achievable classification error. Once identified, the classifier's properties, proper uses, and overall performance are demonstrated and measured using visualization methods. Key areas of coverage include linear methods, kernel methods, additive models and trees, boosting, support vector machines, and nearest neighbor methods. In addition to providing applications to engineering and biomedicine, the author also uses financial data sets as real data examples to illustrate nonparametric function estimation. The author's own R software is used throughout to reproduce and modify the book's computations and research. Readers can duplicate these applications using the software, available via the book's related Web site"--
