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Nota di contenuto	Smoothing of Multivariate Data: Density Estimation and Visualization; CONTENTS; Preface; Introduction; 1.1 Smoothing; 1.2 Visualization; 1.3 Density Estimation; 1.4 Plan of the Book; 1.5 Web Page and the Code; 1.6 Bibliographic Notes; PART I VISUALIZATION; 1 Visualization of Data; 1.1 Scatter Plots, Projections, and Slices; 1.1.1 Scatter Plots; 1.1.2 Projections; 1.1.3 Dynamic Scatter Plots; 1.1.4 Slices; 1.1.5 Prosections; 1.1.6 Subsetting; 1.2 Univariate Data; 1.2.1 Line Plot, ID Scatter Plot, Index Plot, Time Series Plot; 1.2.2 Empirical Distribution Function and Tail Plot 1.2.3 PP-Plot and QQ-Plot 1.2.4 Box Plot; 1.2.5 Kernel Estimates; 1.3 Parallel Level Plots; 1.3.1 Multivariate Time Series; 1.3.2 One-dimensional Curves; 1.3.3 Point Clouds; 1.4 Graphical Matrices; 1.4.1 Bar Matrix; 1.4.2 Index Plot Matrix; 1.5 Observations as Objects; 1.5.1 Parallel Coordinate Plots; 1.5.2 Multivariate Time Series; 1.5.3 Andrew's Curves; 1.5.4 Faces; 1.5.5 Other Possibilities; 1.6 Linking Across Dimensions; 1.7 Descriptive Statistics; 1.7.1 Location; 1.7.2 Dispersion; 1.7.3 Higher Order Moments; 1.8 Dimension Reduction of Data; 1.8.1 Principal Components 1.8.2 Projection Pursuit 1.8.3 Self-organizing Maps; 1.8.4

Multidimensional Scaling; 2 Visualization of Functions; 2.1 Visualization of Low-dimensional Functions; 2.1.1 One-dimensional Functions; 2.1.2 Two-and Three-dimensional Functions; 2.1.3 Dimension Reduction of Functions; 2.2 Visualization of the Spread; 2.2.1 Density Type Visualizations; 2.2.2 Distribution Function Type Visualizations; 2.3 Bibliographic Notes; 2.3.1 Visualization of High-dimensional Functions; 2.3.2 Visualization of the Spread of Multivariate Densities; 3 Visualization of Trees; 3.1 Visualization of Spatial Trees 3.1.1 Spatial Tree 3.1.2 Spatial Tree Plot; 3.1.3 Colors and Labels; 3.2 Visualization of Function Trees; 3.2.1 Function Tree; 3.2.2 Function Tree Plot; 3.3 Bibliographic Notes; 4 Level Set Trees; 4.1 Definition of a Level Set Tree; 4.2 Volume Transform; 4.2.1 Volume Transform and Volume Function; 4.2.2 A Limit Volume Function; 4.3 Barycenter Plot; 4.4 Interpretations; 4.4.1 Mode Isomorphism; 4.4.2 Skewness and Kurtosis; 4.5 Examples of Level Set Trees; 4.5.1 Three-dimensional Example; 4.5.2 Four-dimensional Example; 4.6 Bibliographic Notes; 4.6.1 Morse Theory; 4.6.2 Reeb Graphs; Exercises
5 Shape Trees 5.1 Functions and Sets; 5.2 Definition of a Shape Tree; 5.3 Shape Transforms; 5.3.1 Radius Transform; 5.3.2 Tail Probability Transform; 5.3.3 Probability Content Transform; 5.4 Location Plot; 5.5 Choice of the Parameters; 5.5.1 Reference Point; 5.5.2 Radius Function versus Probability Content Function; 5.5.3 Choice of the Metric; 5.6 Examples of Shape Trees; 5.6.1 Uni- and Bimodality; 5.6.2 Multimodality of Level Sets; 5.7 Shapes of Densities; 5.8 2D Shape Transforms; 5.8.1 A 2D Volume Function; 5.8.2 A 2D Probability Content Function; 6 Tail Trees; 6.1 Tail Trees 6.1.1 Connected Sets and Single Linkage Clustering

Sommario/riassunto

An applied treatment of the key methods and state-of-the-art tools for visualizing and understanding statistical data Smoothing of Multivariate Data provides an illustrative and hands-on approach to the multivariate aspects of density estimation, emphasizing the use of visualization tools. Rather than outlining the theoretical concepts of classification and regression, this book focuses on the procedures for estimating a multivariate distribution via smoothing. The author first provides an introduction to various visualization tools that can be used to construct representations of multivar
