



## Handbook of Cluster Analysis (Chapman & Hall/CRC Handbooks of Modern Statistical Methods)

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Handbook of Cluster Analysis provides a comprehensive and unified account of the main research developments in cluster analysis. Written by active, distinguished researchers in this area, the book helps readers make informed choices of the most suitable clustering approach for their problem and make better use of existing cluster analysis tools.

The book is organized according to the traditional core approaches to cluster analysis, from the origins to recent developments. After an overview of approaches and a quick journey through the history of cluster analysis, the book focuses on the four major approaches to cluster analysis. These approaches include methods for optimizing an objective function that describes how well data is grouped around centroids, dissimilarity-based methods, mixture models and partitioning models, and clustering methods inspired by nonparametric density estimation. The book also describes additional approaches to cluster analysis, including constrained and semi-supervised clustering, and explores other relevant issues, such as evaluating the quality of a cluster.

This handbook is accessible to readers from various disciplines, reflecting the interdisciplinary nature of cluster analysis. For those already experienced with cluster analysis, the book offers a broad and structured overview. For newcomers to the field, it presents an introduction to key issues. For researchers who are temporarily or marginally involved with cluster analysis problems, the book gives enough algorithmic and practical details to facilitate working knowledge of specific clustering areas.

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#### **Editorial Review**

#### Review

"After an overview of approaches and a quick journey through the history of Cluster analysis, the book focuses on the four major approaches to Cluster analysis. ... This handbook is accessible to readers from various disciplines. .... All articles have a vast amount of hints to literature. So, the greatest benefit is that the interested reader can find the literature for her/his special clustering purpose."

?Rainer Schlittgen, University of Hamburg, Germany, in Statistical Papers, September 2016

"From the wide ranging 'Handbooks of modern statistical methods' series, this book seeks to be a non-exhaustive guide to the subject in a large and expanding field. The book is well laid out over 31 chapters each having its own introduction and conclusion, spanning the material in a logical manner aiding accessibility. Its main focus is on partitioning sets, and care is taken to explain the exploratory nature of the analysis in contrast with the predictive task of classification (i.e. it covers unsupervised rather than supervised classification)...This is a comprehensive reference guide, which is well organized and has an approachable style with many examples. Great care has been taken to provide an appropriate level of detail by using illustrative and topical examples. As an overview of an increasingly important field, it provides a vital first reference guide for a range of techniques and modelling considerations."

?Mark Pilling, University of Manchester, in *Statistics in Society (Series A)*, October 2016

"This handbook is accessible to readers from various disciplines...All articles have a vast amount of hints to literature. So, the greatest benefit is that the interested reader can find the literature for her/his special clustering purpose."

?Statistical Papers, June 2016

#### About the Author

Christian Hennig is a senior lecturer in the Department of Statistical Science at University College London. Dr. Hennig is currently secretary of the International Federation of Classification Societies and associate editor of *Statistics and Computing, Computational Statistics and Data Analysis, Advances in Data Analysis and Classification*, and *Statistical Methods and Applications*. His main research interests are cluster analysis, philosophy of statistics, robust statistics, multivariate analysis, data visualization, and model selection.

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