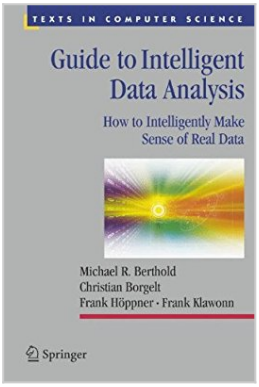


# Guide to Intelligent Data Analysis: How to Intelligently Make Sense of Real Data (Texts in Computer Science)

*By Michael R. Berthold, Christian Borgelt, Frank Höppner, Frank Klawonn*



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Each passing year bears witness to the development of ever more powerful computers, increasingly fast and cheap storage media, and even higher bandwidth data connections. This makes it easy to believe that we can now – at least in principle – solve any problem we are faced with so long as we only have enough data. Yet this is not the case. Although large databases allow us to retrieve many different single pieces of information and to compute simple aggregations, general patterns and regularities often go undetected. Furthermore, it is exactly these patterns, regularities and trends that are often most valuable. To avoid the danger of “drowning in information, but starving for knowledge” the branch of research known as data analysis has emerged, and a considerable number of methods and software tools have been developed. However, it is not these tools alone but the intelligent application of human intuition in combination with computational power, of sound background knowledge with computer-aided modeling, and of critical reflection with convenient automatic model construction, that results in successful intelligent data analysis projects. Guide to Intelligent Data Analysis provides a hands-on instructional approach to many basic data analysis techniques, and explains how these are used to solve data analysis problems. Topics and features: guides the reader through the process of data analysis, following the interdependent steps of project understanding, data understanding, data preparation, modeling, and deployment and monitoring; equips the reader with the necessary information in order to obtain hands-on experience of the topics under discussion; provides a review of the basics of classical statistics that support and justify many data analysis methods, and a glossary of statistical terms; includes numerous examples using R and KNIME, together with appendices introducing the open source software; integrates illustrations and case-study-style examples to support pedagogical exposition. This practical and systematic textbook/reference for graduate and advanced undergraduate students is also essential reading for all professionals who face data analysis problems. Moreover, it is a book to be used following one’s exploration of it. Dr. Michael R. Berthold is Nycomed-Professor of

Bioinformatics and Information Mining at the University of Konstanz, Germany. Dr. Christian Borgelt is Principal Researcher at the Intelligent Data Analysis and Graphical Models Research Unit of the European Centre for Soft Computing, Spain. Dr. Frank Höppner is Professor of Information Systems at Ostfalia University of Applied Sciences, Germany. Dr. Frank Klawonn is a Professor in the Department of Computer Science and Head of the Data Analysis and Pattern Recognition Laboratory at Ostfalia University of Applied Sciences, Germany. He is also Head of the Bioinformatics and Statistics group at the Helmholtz Centre for Infection Research, Braunschweig, Germany.

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Review

From the reviews:

“The authors, leading scholars in the field based in Germany and Spain, seek to offer a hands-on instructional approach to basic data analysis techniques and consider their use in solving problems. The reader is taken through the process, following the interlinked steps of project understanding, data understanding, data preparation, modelling, and deployment and monitoring. The text reviews the basics of classical statistics that support and justify many data analysis methods, and includes a glossary of statistical terms.” (Times Higher Education, 26 May 2011)

“The clear and complete exposition of arguments, along with the attention to formalization and the balanced number of bibliographic references, make this book a bright introduction to intelligent data analysis. It is an excellent choice for graduate or advanced undergraduate courses, as well as for researchers and professionals who want get acquainted with this field of study. … Overall, the authors hit their target producing a textbook that aids in understanding the basic processes, methods, and issues for intelligent data analysis.” (Corrado Mencar, ACM Computing Reviews, April, 2011)

“The book provides a thorough introduction to data mining that covers theoretical background as well as the use of tools (KNIME and R). The book is intended as a textbook for a broad audience from graduate and advanced undergraduate students to professional data analysts. … each chapter ends with a list of references to identify relevant research. Hence, I recommend this book as an introductory text on data analysis for the intended target audience.” (Gottfried Vossen, Zentralblatt MATH, Vol. 1210, 2011)

From the Back Cover

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- Supplies further tools and information at the associated website: http://www.idaguide.net/

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