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Data Mining and Data Warehousing - Parteek Bhatia 2019-04-30
Written in lucid language, this valuable textbook brings together fundamental concepts of data mining and data warehousing in a single volume. Important topics including information theory, decision tree, Naïve Bayes classifier, distance metrics, partitioning clustering, associate mining, data marts and operational data store are discussed comprehensively. The textbook is written to cater to the needs of undergraduate students of computer science, engineering and information technology for a course on data mining and data warehousing. The text simplifies the understanding of the concepts through exercises and practical examples. Chapters such as classification, associate mining and cluster analysis are discussed in detail with their practical implementation using Weka and R language data mining tools. Advanced topics including big data analytics, relational data models and NoSQL are discussed in detail. Pedagogical features including unsolved problems and multiple-choice questions are interspersed throughout the book for better understanding.
Practical Guide for Biomedical Signals Analysis Using Machine Learning Techniques - Abdulhamit Subasi 2019-03-16
Practical Guide for Biomedical Signals Analysis Using Machine Learning Techniques: A MATLAB Based Approach presents how machine learning and biomedical signal processing methods can be used in biomedical signal analysis. Different machine learning applications in biomedical signal analysis, including those for electrocardiogram, electroencephalogram and electromyogram are described in a practical and comprehensive way, helping readers with limited knowledge. Sections cover biomedical signals and machine learning techniques, biomedical signals, such as electroencephalogram (EEG), electromyogram (EMG) and electrocardiogram (ECG), different signal-processing techniques, signal de-noising, feature extraction and dimension reduction techniques, such as PCA, ICA, KPCA, MSPCA, entropy measures, and other statistical measures, and more. This book is a valuable source for bioinformaticians, medical doctors and other members of the biomedical field who need a cogent resource on the most recent and promising machine learning techniques for biomedical signals analysis. Provides comprehensive knowledge in the application of machine learning tools in biomedical signal analysis for medical diagnostics, brain computer interface and man/machine interaction Explains how to apply machine learning techniques to EEG, ECG and EMG signals Gives basic knowledge on predictive modeling in biomedical time series and advanced knowledge in machine learning for biomedical time series
Adaptive Stream Mining - Albert Bifet 2010
This book is a significant contribution to the subject of mining time-changing data streams and addresses the design of learning algorithms for this purpose. It introduces new contributions on several different aspects of the problem, identifying research opportunities and increasing the scope for applications. It also includes an in-depth study of stream mining and a theoretical analysis of proposed methods and algorithms. The first section is concerned with the use of an adaptive sliding window algorithm (ADWIN). Since this has rigorous performance guarantees, using it in place of counters or accumulators, it offers the possibility of extending such guarantees to learning and mining algorithms not initially designed for drifting data. Testing with several methods, including Naïve Bayes, clustering, decision trees and ensemble methods, is

discussed as well. The second part of the book describes a formal study of connected acyclic graphs, or 'trees', from the point of view of closure-based mining, presenting efficient algorithms for subtree testing and for mining ordered and unordered frequent closed trees. Lastly, a general methodology to identify closed patterns in a data stream is outlined. This is applied to develop an incremental method, a sliding-window based method, and a method that mines closed trees adaptively from data streams. These are used to introduce classification methods for tree data streams.
Principles of Data Mining - David J. Hand 2001-08-17
The first truly interdisciplinary text on data mining, blending the contributions of information science, computer science, and statistics. The growing interest in data mining is motivated by a common problem across disciplines: how does one store, access, model, and ultimately describe and understand very large data sets? Historically, different aspects of data mining have been addressed independently by different disciplines. This is the first truly interdisciplinary text on data mining, blending the contributions of information science, computer science, and statistics. The book consists of three sections. The first, foundations, provides a tutorial overview of the principles underlying data mining algorithms and their application. The presentation emphasizes intuition rather than rigor. The second section, data mining algorithms, shows how algorithms are constructed to solve specific problems in a principled manner. The algorithms covered include trees and rules for classification and regression, association rules, belief networks, classical statistical models, nonlinear models such as neural networks, and local "memory-based" models. The third section shows how all of the preceding analysis fits together when applied to real-world data mining problems. Topics include the role of metadata, how to handle missing data, and data preprocessing.
Bridging the Socio-technical Gap in Decision Support Systems - Ana Respício 2010
Presents the advances in decision support theory and practice with a focus on bridging the socio-technical gap. This book covers a wide range of topics including: Understanding DM, Design of DSS, Web 2.0 Systems in Decision Support, Business Intelligence and Data Warehousing, Applications of Multi-Criteria Decision Analysis, and more.
Data Mining - Harold L. Capri 2015-02-25
Data mining is an area of research where appropriate methodological research and technical means are experienced to produce useful knowledge from different types of data. Data mining techniques use a broad family of computationally intensive methods that include decision trees, neural networks, rule induction, machine learning and graphic visualisation. This book discusses the principles, applications and emerging challenges of data mining.
Quantitative Modelling in Marketing and Management - Luiz Moutinho 2015-11-06
The field of marketing and management has undergone immense changes over the past decade. These dynamic changes are driving an increasing need for data analysis using quantitative modelling. Problem solving using the quantitative approach and other models has always been a hot topic in the fields of marketing and management. Quantitative modelling seems admirably suited to help managers in their strategic decision making on operations management issues. In social sciences, quantitative research refers

to the systematic empirical investigation of social phenomena via statistical, mathematical or computational techniques. The first edition of "Quantitative Modelling in Marketing and Management" focused on the description and applications of many quantitative modelling approaches applied to marketing and management. The topics ranged from fuzzy logic and logical discriminant models to growth models and k-clique models. The second edition follows the thread of the first one by covering a myriad of techniques and applications in the areas of statistical, computer, mathematical as well as other novel nomothetic methods. It greatly reinforces the areas of computer, mathematical and other modeling tools that are designed to bring a level of awareness and knowledge among academics and researchers in marketing and management, so that there is an increase in the application of these new approaches that will be embedded in future scholarly output. Contents:Statistical Modelling:A Review of the Major Multidimensional Scaling Models for the Analysis of Preference/Dominance Data in Marketing (Wayne S DeSarbo and Sunghoon Kim)Role of Structural Equation Modelling in Theory Testing and Development (Parikshat S Manhas, Ajay K Manrai, Lalita A Manrai and Ramjit)Partial Least Squares Path Modelling in Marketing and Management Research: An Annotated Application (Joaquín Aldás-Manzano)Statistical Model Selection (Graeme D Hutcheson)Computer Modelling:Artificial Neural Networks and Structural Equation Modelling: An Empirical Comparison to Evaluate Business Customer Loyalty (Arnaldo Coelho, Luiz Moutinho, Graeme D Hutcheson and Maria Manuela Santos Silva)The Application of NN to Management Problems (Arnaldo Coelho, Luiz Moutinho, Graeme D Hutcheson and Maria Manuela Santos Silva)Meta-heuristics in Marketing (Stephen Hurley and Luiz Moutinho)Non-parametric Test with Fuzzy Data and Its Applications in the Performance Evaluation of Customer Capital (Yu-Lan Lee, Ming-leih Wu and Chunti Su)Too Much ADO About Nothing? Fuzzy Measurement of Job Stress for School Leaders (Berlin Wu and Mei Fen Liu)Interactive Virtual Platform for Shopping Furniture Based on Unity 3D (Yingwan Wu, Simon Fong, Suash Deb and Thomas Hanne)Mathematical and Other Models:Qualitative Comparison Analysis: An Example Analysis of Clinical Directorates and Resource Management (Malcolm J Beynon, Aoife McDermott and Mary A Keating)Growth Models (Mladen Sokele)Bayesian Prediction with Linear Dynamic Model: Principle and Application (Yun Li, Luiz Moutinho, Kwaku K Opong and Yang Pang)PROMETHEE: Technical Details and Developments, and its Role in Performance Management (Malcolm J Beynon and Harry Barton)Data Mining Process Models: A Roadmap for Knowledge Discovery (Armando B Mendes, Luís Cavique and Jorge M A Santos)Metaheuristics in Logistics (Thomas Hanne, Suash Deb and Simon Fong)A Model for Optimizing Earned Attention in Social Media Based on a Memetic Algorithm (Pedro Godinho, Luiz Moutinho and Manuela Silva)Stream-based Classification for Social Network Recommendation Systems (Yan Zhuang and Hang Yang)Clique Communities in Social Networks (Luís Cavique, Armando B Mendes and Jorge M A Santos)Measuring the Effects of Marketing Actions: The Role of Matching Methodologies (Iola Pinto and Margarida GMS Cardoso)Mathematical Programming Applied to Benchmarking in Economics and Management (Jorge Santos, Armando B Mendes, Luís Cavique and Magdalena Kapelko)Conclusion Readership: Undergraduates and postgraduates of management and business administration, academic researchers marketing professionals, financial professionals and business consultants. Key Features:Contains statistical (more commonly known), computer, mathematical, and other modelling approaches that provide a framework to analyse the issues, tools and examples associated with each techniqueDemonstrates the applicability of quantitative methods and highlights the potential utilisation of each methodology by using the research (quantitative) modelling approachKeywords:Quantitative Analysis;Modeling;Marketing Management;Statistical Modelling;Computer Modelling;Memetic Algorithm;Structural Equation Modelling;Artificial Neural Networks

Data Mining and Learning Analytics - Samira ElAtia 2016-09-20

Addresses the impacts of data mining on education and reviews applications in educational research teaching, and learning This book discusses the insights, challenges, issues, expectations, and practical implementation of data mining (DM) within educational mandates. Initial series of chapters offer a general overview of DM, Learning Analytics (LA), and data collection models in the context of educational research, while also defining and discussing data mining's four guiding principles— prediction, clustering, rule association, and outlier detection. The next series of chapters showcase the pedagogical applications of Educational Data Mining (EDM) and feature case studies drawn from Business, Humanities, Health

Sciences, Linguistics, and Physical Sciences education that serve to highlight the successes and some of the limitations of data mining research applications in educational settings. The remaining chapters focus exclusively on EDM's emerging role in helping to advance educational research—from identifying at-risk students and closing socioeconomic gaps in achievement to aiding in teacher evaluation and facilitating peer conferencing. This book features contributions from international experts in a variety of fields. Includes case studies where data mining techniques have been effectively applied to advance teaching and learning Addresses applications of data mining in educational research, including: social networking and education; policy and legislation in the classroom; and identification of at-risk students Explores Massive Open Online Courses (MOOCs) to study the effectiveness of online networks in promoting learning and understanding the communication patterns among users and students Features supplementary resources including a primer on foundational aspects of educational mining and learning analytics Data Mining and Learning Analytics: Applications in Educational Research is written for both scientists in EDM and educators interested in using and integrating DM and LA to improve education and advance educational research.

Data Mining with Microsoft SQL Server 2008 - Jamie MacLennan 2011-03-10

Understand how to use the new features of Microsoft SQL Server 2008 for data mining by using the tools in Data Mining with Microsoft SQL Server 2008, which will show you how to use the SQL Server Data Mining Toolset with Office 2007 to mine and analyze data. Explore each of the major data mining algorithms, including naive bayes, decision trees, time series, clustering, association rules, and neural networks. Learn more about topics like mining OLAP databases, data mining with SQL Server Integration Services 2008, and using Microsoft data mining to solve business analysis problems.

Creating New Learning Experiences on a Global Scale - Erik Duval 2007-08-31

This book constitutes the refereed proceedings of the Second European Conference on Technology Enhanced Learning, EC-TEL 2007, held in Crete, Greece in September 2007. The papers presented were carefully reviewed and selected from 116 submissions. The conference provides a unique forum for all research related to technology-enhanced learning, as well as its interactions with knowledge management, business processes and work environments.

Predictive Data Mining - Sholom M. Weiss 1998

This book is the first technical guide to provide a complete, generalized road map for developing data-mining applications, together with advice on performing these large-scale, open-ended analyses for real-world data warehouses.

Data Mining with Rattle and R - Graham Williams 2011-08-04

Data mining is the art and science of intelligent data analysis. By building knowledge from information, data mining adds considerable value to the ever increasing stores of electronic data that abound today. In performing data mining many decisions need to be made regarding the choice of methodology, the choice of data, the choice of tools, and the choice of algorithms. Throughout this book the reader is introduced to the basic concepts and some of the more popular algorithms of data mining. With a focus on the hands-on end-to-end process for data mining, Williams guides the reader through various capabilities of the easy to use, free, and open source Rattle Data Mining Software built on the sophisticated R Statistical Software. The focus on doing data mining rather than just reading about data mining is refreshing. The book covers data understanding, data preparation, data refinement, model building, model evaluation, and practical deployment. The reader will learn to rapidly deliver a data mining project using software easily installed for free from the Internet. Coupling Rattle with R delivers a very sophisticated data mining environment with all the power, and more, of the many commercial offerings.

Principles and Theory for Data Mining and Machine Learning - Bertrand Clarke 2009-07-21

Extensive treatment of the most up-to-date topics Provides the theory and concepts behind popular and emerging methods Range of topics drawn from Statistics, Computer Science, and Electrical Engineering

Data Preparation for Data Mining - Dorian Pyle 1999-03-22

This book focuses on the importance of clean, well-structured data as the first step to successful data mining. It shows how data should be prepared prior to mining in order to maximize mining performance.

The Minimum Description Length Principle - Peter D. Grünwald 2007

This introduction to the MDL Principle provides a reference accessible to graduate students and researchers in statistics, pattern classification, machine learning, and data mining, to philosophers interested in the foundations of statistics, and to researchers in other applied sciences that involve model selection.

Data Mining: Concepts and Techniques - Jiawei Han 2011-06-09
Data Mining: Concepts and Techniques provides the concepts and techniques in processing gathered data or information, which will be used in various applications. Specifically, it explains data mining and the tools used in discovering knowledge from the collected data. This book is referred as the knowledge discovery from data (KDD). It focuses on the feasibility, usefulness, effectiveness, and scalability of techniques of large data sets. After describing data mining, this edition explains the methods of knowing, preprocessing, processing, and warehousing data. It then presents information about data warehouses, online analytical processing (OLAP), and data cube technology. Then, the methods involved in mining frequent patterns, associations, and correlations for large data sets are described. The book details the methods for data classification and introduces the concepts and methods for data clustering. The remaining chapters discuss the outlier detection and the trends, applications, and research frontiers in data mining. This book is intended for Computer Science students, application developers, business professionals, and researchers who seek information on data mining. Presents dozens of algorithms and implementation examples, all in pseudo-code and suitable for use in real-world, large-scale data mining projects Addresses advanced topics such as mining object-relational databases, spatial databases, multimedia databases, time-series databases, text databases, the World Wide Web, and applications in several fields Provides a comprehensive, practical look at the concepts and techniques you need to get the most out of your data

Data Science for Business - Foster Provost 2013-07-27
Written by renowned data science experts Foster Provost and Tom Fawcett, Data Science for Business introduces the fundamental principles of data science, and walks you through the "data-analytic thinking" necessary for extracting useful knowledge and business value from the data you collect. This guide also helps you understand the many data-mining techniques in use today. Based on an MBA course Provost has taught at New York University over the past ten years, Data Science for Business provides examples of real-world business problems to illustrate these principles. You'll not only learn how to improve communication between business stakeholders and data scientists, but also how participate intelligently in your company's data science projects. You'll also discover how to think data-analytically, and fully appreciate how data science methods can support business decision-making. Understand how data science fits in your organization—and how you can use it for competitive advantage Treat data as a business asset that requires careful investment if you're to gain real value Approach business problems data-analytically, using the data-mining process to gather good data in the most appropriate way Learn general concepts for actually extracting knowledge from data Apply data science principles when interviewing data science job candidates

Handbook of Computational Statistics - James E. Gentle 2012-07-06
The Handbook of Computational Statistics - Concepts and Methods (second edition) is a revision of the first edition published in 2004, and contains additional comments and updated information on the existing chapters, as well as three new chapters addressing recent work in the field of computational statistics. This new edition is divided into 4 parts in the same way as the first edition. It begins with "How Computational Statistics became the backbone of modern data science" (Ch.1): an overview of the field of Computational Statistics, how it emerged as a separate discipline, and how its own development mirrored that of hardware and software, including a discussion of current active research. The second part (Chs. 2 - 15) presents several topics in the supporting field of statistical computing. Emphasis is placed on the need for fast and accurate numerical algorithms, and some of the basic methodologies for transformation, database handling, high-dimensional data and graphics treatment are discussed. The third part (Chs. 16 - 33) focuses on statistical methodology. Special attention is given to smoothing, iterative procedures, simulation and visualization of multivariate data. Lastly, a set of selected applications (Chs. 34 - 38) like Bioinformatics, Medical Imaging, Finance, Econometrics and Network Intrusion Detection highlight the usefulness of computational statistics in real-world applications.

Business Intelligence and Data Mining - Anil Maheshwari 2014-12-31
"This book is a splendid and valuable addition to this subject. The whole book is well written and I have no hesitation to recommend that this can be adapted as a textbook for graduate courses in Business Intelligence and Data Mining." Dr. Edi Shivaji, Des Moines, Iowa "As a complete novice to this area just starting out on a MBA course I found the book incredibly useful and very easy to follow and understand. The concepts are clearly explained and make it an easy task to gain an understanding of the subject matter." -- Mr. Craig Domoney, South Africa. Business Intelligence and Data Mining is a conversational and informative book in the exploding area of Business Analytics. Using this book, one can easily gain the intuition about the area, along with a solid toolset of major data mining techniques and platforms. This book can thus be gainfully used as a textbook for a college course. It is also short and accessible enough for a busy executive to become a quasi-expert in this area in a couple of hours. Every chapter begins with a case-let from the real world, and ends with a case study that runs across the chapters.

Data Mining and Big Data - Ying Tan 2018-06-09
This book constitutes the refereed proceedings of the Third International Conference on Data Mining and Big Data, DMBD 2018, held in Shanghai, China, in June 2018. The 74 papers presented in this volume were carefully reviewed and selected from 126 submissions. They are organized in topical sections named: database, data preprocessing, matrix factorization, data analysis, visualization, visibility analysis, clustering, prediction, classification, pattern discovery, text mining and knowledge management, recommendation system in social media, deep learning, big data, Industry 4.0, practical applications

From Data and Information Analysis to Knowledge Engineering - Myra Spiliopoulou 2006-04-20
This volume collects revised versions of papers presented at the 29th Annual Conference of the Gesellschaft für Klassifikation, the German Classification Society, held at the Otto-von-Guericke-University of Magdeburg, Germany, in March 2005. In addition to traditional subjects like Classification, Clustering, and Data Analysis, converage extends to a wide range of topics relating to Computer Science: Text Mining, Web Mining, Fuzzy Data Analysis, IT Security, Adaptivity and Personalization, and Visualization.

Data Mining - Robert Stahlbock 2009-11-10
Over the course of the last twenty years, research in data mining has seen a substantial increase in interest, attracting original contributions from various disciplines including computer science, statistics, operations research, and information systems. Data mining supports a wide range of applications, from medical decision making, bioinformatics, web-usage mining, and text and image recognition to prominent business applications in corporate planning, direct marketing, and credit scoring. Research in information systems equally reflects this inter- and multidisciplinary approach, thereby advocating a series of papers at the intersection of data mining and information systems research. This special issue of Annals of Information Systems contains original papers and substantial extensions of selected papers from the 2007 and 2008 International Conference on Data Mining (DMIN'07 and DMIN'08, Las Vegas, NV) that have been rigorously peer-reviewed. The issue brings together topics on both information systems and data mining, and aims to give the reader a current snapshot of the contemporary research and state of the art practice in data mining.

R and Data Mining - Yanchang Zhao 2012-12-31
R and Data Mining introduces researchers, post-graduate students, and analysts to data mining using R, a free software environment for statistical computing and graphics. The book provides practical methods for using R in applications from academia to industry to extract knowledge from vast amounts of data. Readers will find this book a valuable guide to the use of R in tasks such as classification and prediction, clustering, outlier detection, association rules, sequence analysis, text mining, social network analysis, sentiment analysis, and more. Data mining techniques are growing in popularity in a broad range of areas, from banking to insurance, retail, telecom, medicine, research, and government. This book focuses on the modeling phase of the data mining process, also addressing data exploration and model evaluation. With three in-depth case studies, a quick reference guide, bibliography, and links to a wealth of online resources, R and Data Mining is a valuable, practical guide to a powerful method of analysis. Presents an introduction into using R for data mining applications, covering most popular data mining techniques Provides code examples and data so that readers can easily learn the techniques Features case studies in real-world

applications to help readers apply the techniques in their work

Knowledge Discovery in Databases: PKDD 2003 - Nada Lavrač 2003-11-18
The proceedings of ECML/PKDD2003 are published in two volumes: the P- ceedings of the 14th European Conference on Machine Learning (LNAI 2837) and the Proceedings of the 7th European Conference on Principles and Practice of Knowledge Discovery in Databases (LNAI 2838). The two conferences were held on September 22–26, 2003 in Cavtat, a small tourist town in the vicinity of Dubrovnik, Croatia. As machine learning and knowledge discovery are two highly related ?elds, theco-locationofbothconferencesisbene?cialforbothresearchcommunities.In Cavtat, ECML and PKDD were co-located for the third time in a row, following the successful co-location of the two European conferences in Freiburg (2001) and Helsinki (2002). The co-location of ECML2003 and PKDD2003 resulted in a joint program for the two conferences, including paper presentations, invited talks, tutorials, and workshops. Out of 332 submitted papers, 40 were accepted for publication in the ECML2003proceedings,and40wereacceptedforpublicationinthePKDD2003 proceedings. All the submitted papers were reviewed by three referees. In ad- tion to submitted papers, the conference program consisted of four invited talks, four tutorials, seven workshops, two tutorials combined with a workshop, and a discovery challenge.

Machine Learning and Data Mining - Igor Kononenko 2007-04-30
Good data mining practice for business intelligence (the art of turning raw software into meaningful information) is demonstrated by the many new techniques and developments in the conversion of fresh scientific discovery into widely accessible software solutions. Written as an introduction to the main issues associated with the basics of machine learning and the algorithms used in data mining, this text is suitable foradvanced undergraduates, postgraduates and tutors in a wide area of computer science and technology, as well as researchers looking to adapt various algorithms for particular data mining tasks. A valuable addition to libraries and bookshelves of the many companies who are using the principles of data mining to effectively deliver solid business and industry solutions.

Data Mining the Web - Zdravko Markov 2007-04-06
This book introduces the reader to methods of data mining on the web, including uncovering patterns in web content (classification, clustering, language processing), structure (graphs, hubs, metrics), and usage (modeling, sequence analysis, performance).

Probabilistic Graphical Models - Daphne Koller 2009-07-31
A general framework for constructing and using probabilistic models of complex systems that would enable a computer to use available information for making decisions. Most tasks require a person or an automated system to reason—to reach conclusions based on available information. The framework of probabilistic graphical models, presented in this book, provides a general approach for this task. The approach is model-based, allowing interpretable models to be constructed and then manipulated by reasoning algorithms. These models can also be learned automatically from data, allowing the approach to be used in cases where manually constructing a model is difficult or even impossible. Because uncertainty is an inescapable aspect of most real-world applications, the book focuses on probabilistic models, which make the uncertainty explicit and provide models that are more faithful to reality. Probabilistic Graphical Models discusses a variety of models, spanning Bayesian networks, undirected Markov networks, discrete and continuous models, and extensions to deal with dynamical systems and relational data. For each class of models, the text describes the three fundamental cornerstones: representation, inference, and learning, presenting both basic concepts and advanced techniques. Finally, the book considers the use of the proposed framework for causal reasoning and decision making under uncertainty. The main text in each chapter provides the detailed technical development of the key ideas. Most chapters also include boxes with additional material: skill boxes, which describe techniques; case study boxes, which discuss empirical cases related to the approach described in the text, including applications in computer vision, robotics, natural language understanding, and computational biology; and concept boxes, which present significant concepts drawn from the material in the chapter. Instructors (and readers) can group chapters in various combinations, from core topics to more technically advanced material, to suit their particular needs.

Handbook of Statistical Analysis and Data Mining Applications - Robert Nisbet 2017-11-09

Handbook of Statistical Analysis and Data Mining Applications, Second Edition, is a comprehensive professional reference book that guides business analysts, scientists, engineers and researchers, both academic and industrial, through all stages of data analysis, model building and implementation. The handbook helps users discern technical and business problems, understand the strengths and weaknesses of modern data mining algorithms and employ the right statistical methods for practical application. This book is an ideal reference for users who want to address massive and complex datasets with novel statistical approaches and be able to objectively evaluate analyses and solutions. It has clear, intuitive explanations of the principles and tools for solving problems using modern analytic techniques and discusses their application to real problems in ways accessible and beneficial to practitioners across several areas—from science and engineering, to medicine, academia and commerce. Includes input by practitioners for practitioners Includes tutorials in numerous fields of study that provide step-by-step instruction on how to use supplied tools to build models Contains practical advice from successful real-world implementations Brings together, in a single resource, all the information a beginner needs to understand the tools and issues in data mining to build successful data mining solutions Features clear, intuitive explanations of novel analytical tools and techniques, and their practical applications

Data Mining Applications with R - Yanchang Zhao 2013-11-26
Data Mining Applications with R is a great resource for researchers and professionals to understand the wide use of R, a free software environment for statistical computing and graphics, in solving different problems in industry. R is widely used in leveraging data mining techniques across many different industries, including government, finance, insurance, medicine, scientific research and more. This book presents 15 different real-world case studies illustrating various techniques in rapidly growing areas. It is an ideal companion for data mining researchers in academia and industry looking for ways to turn this versatile software into a powerful analytic tool. R code, Data and color figures for the book are provided at the RDataMining.com website. Helps data miners to learn to use R in their specific area of work and see how R can apply in different industries Presents various case studies in real-world applications, which will help readers to apply the techniques in their work Provides code examples and sample data for readers to easily learn the techniques by running the code by themselves

Social and Political Implications of Data Mining: Knowledge Management in E-Government - Rahman, Hakikur 2009-02-28
"This book focuses on the data mining and knowledge management implications that lie within online government"--Provided by publisher.

Foundations and Advances in Data Mining - Wesley Chu 2005-09-15
With the growing use of information technology and the recent advances in web systems, the amount of data available to users has increased exponentially. Thus, there is a critical need to understand the content of the data. As a result, data-mining has become a popular research topic in recent years for the treatment of the "data rich and information poor" syndrome. In this carefully edited volume a theoretical foundation as well as important new directions for data-mining research are presented. It brings together a set of well respected data mining theoreticians and researchers with practical data mining experiences. The presented theories will give data mining practitioners a scientific perspective in data mining and thus provide more insight into their problems, and the provided new data mining topics can be expected to stimulate further research in these important directions.

Knowledge Discovery Process and Methods to Enhance Organizational Performance - Kweku-Muata Osei-Bryson 2015-03-16
Although the terms "data mining" and "knowledge discovery and data mining" (KDDM) are sometimes used interchangeably, data mining is actually just one step in the KDDM process. Data mining is the process of extracting useful information from data, while KDDM is the coordinated process of understanding the business and mining the data in order to id

Data Mining with SQL Server 2005 - ZhaoHui Tang 2005-10-03
Your in-depth guide to using the new Microsoft data mining standard to solve today's business problems Concealed inside your data warehouse and data marts is a wealth of valuable information just waiting to be discovered. All you need are the right tools to extract that information and put it to use. Serving as your

expert guide, this book shows you how to create and implement data mining applications that will find the hidden patterns from your historical datasets. The authors explore the core concepts of data mining as well as the latest trends. They then reveal the best practices in the field, utilizing the innovative features of SQL Server 2005 so that you can begin building your own successful data mining projects. You'll learn: The principal concepts of data mining How to work with the data mining algorithms included in SQL Server data mining How to use DMX-the data mining query language The XML for Analysis API The architecture of the SQL Server 2005 data mining component How to extend the SQL Server 2005 data mining platform by plugging in your own algorithms How to implement a data mining project using SQL Server Integration Services How to mine an OLAP cube How to build an online retail site with cross-selling features How to access SQL Server 2005 data mining features programmatically

Data Mining with Decision Trees - Lior Rokach 2008
This is the first comprehensive book dedicated entirely to the field of decision trees in data mining and covers all aspects of this important technique.Decision trees have become one of the most powerful and popular approaches in knowledge discovery and data mining, the science and technology of exploring large and complex bodies of data in order to discover useful patterns. The area is of great importance because it enables modeling and knowledge extraction from the abundance of data available. Both theoreticians and practitioners are continually seeking techniques to make the process more efficient, cost-effective and accurate. Decision trees, originally implemented in decision theory and statistics, are highly effective tools in other areas such as data mining, text mining, information extraction, machine learning, and pattern recognition. This book invites readers to explore the many benefits in data mining that decision trees offer: Self-explanatory and easy to follow when compacted Able to handle a variety of input data: nominal, numeric and textual Able to process datasets that may have errors or missing values High predictive performance for a relatively small computational effort Available in many data mining packages over a variety of platforms Useful for various tasks, such as classification, regression, clustering and feature selection

Handbook of Computational Statistics - Yuichi Mori 2004-07-14
The Handbook of Computational Statistics: Concepts and Methodology is divided into four parts. It begins with an overview over the field of Computational Statistics. The second part presents several topics in the supporting field of statistical computing. Emphasis is placed on the need of fast and accurate numerical algorithms and it discusses some of the basic methodologies for transformation, data base handling and graphics treatment. The third part focuses on statistical methodology. Special attention is given to smoothing, iterative procedures, simulation and visualization of multivariate data. Finally a set of selected applications like Bioinformatics, Medical Imaging, Finance and Network Intrusion Detection highlight the usefulness of computational statistics.

Contemporary Issues in Exploratory Data Mining in the Behavioral Sciences - John J. McArdle 2013-08-15
This book reviews the latest techniques in exploratory data mining (EDM) for the analysis of data in the social and behavioral sciences to help researchers assess the predictive value of different combinations of variables in large data sets. Methodological findings and conceptual models that explain reliable EDM techniques for predicting and understanding various risk mechanisms are integrated throughout. Numerous examples illustrate the use of these techniques in practice. Contributors provide insight through hands-on experiences with their own use of EDM techniques in various settings. Readers are also introduced to the most popular EDM software programs. A related website at http://mephisto.unige.ch/pub/edm-book-supplement/offers color versions of the book's figures, a supplemental paper to chapter 3, and R commands for some chapters. The results of EDM analyses can be perilous – they are often taken as predictions with little regard for cross-validating the results. This carelessness can be catastrophic in terms of money lost or patients misdiagnosed. This book addresses these concerns and advocates for the development of checks and balances for EDM analyses. Both the promises and the perils of EDM are addressed. Editors McArdle and Ritschard taught the "Exploratory Data Mining" Advanced Training Institute of the American Psychological Association (APA). All contributors are top researchers from the US and Europe. Organized into two parts--methodology and applications, the techniques covered include decision, regression, and SEM tree models, growth mixture modeling, and time

based categorical sequential analysis. Some of the applications of EDM (and the corresponding data) explored include: selection to college based on risky prior academic profiles the decline of cognitive abilities in older persons global perceptions of stress in adulthood predicting mortality from demographics and cognitive abilities risk factors during pregnancy and the impact on neonatal development Intended as a reference for researchers, methodologists, and advanced students in the social and behavioral sciences including psychology, sociology, business, econometrics, and medicine, interested in learning to apply the latest exploratory data mining techniques. Prerequisites include a basic class in statistics.

Data Mining - Jiawei Han 2022-10-01
Data Mining: Concepts and Techniques, Fourth Edition provides the theories and methods for processing data or information used in various applications. Specifically, it explains data mining and the tools used in discovering knowledge from collected data, known as KDD. The book focuses on the feasibility, usefulness, effectiveness and scalability of techniques of large datasets. After describing data mining, the authors explain the methods of knowing, preprocessing, processing and warehousing data. They then present information about data warehouses, online analytical processing (OLAP), and data cube technology. Then, the methods involved in mining frequent patterns, associations, and correlations for large data sets are described. The book details the methods for data classification and introduces the concepts and methods for data clustering. The remaining chapters discuss the outlier detection and the trends, applications, and research frontiers in data mining. Users from computer science students, application developers, business professionals, and researchers who seek information on data mining will find this resource very helpful. Presents dozens of algorithms and implementation examples, all in pseudo-code and suitable for use in real-world, large-scale data mining projects Addresses advanced topics such as mining object-relational databases, spatial databases, multimedia databases, time-series databases, text databases, the World Wide Web, and applications in several fields Provides a comprehensive, practical look at the concepts and techniques needed to get the most out of your data

Data Mining - Mehmed Kantardzic 2019-11-12
Presents the latest techniques for analyzing and extracting information from large amounts of data in high-dimensional data spaces The revised and updated third edition of Data Mining contains in one volume an introduction to a systematic approach to the analysis of large data sets that integrates results from disciplines such as statistics, artificial intelligence, data bases, pattern recognition, and computer visualization. Advances in deep learning technology have opened an entire new spectrum of applications. The author—a noted expert on the topic—explains the basic concepts, models, and methodologies that have been developed in recent years. This new edition introduces and expands on many topics, as well as providing revised sections on software tools and data mining applications. Additional changes include an updated list of references for further study, and an extended list of problems and questions that relate to each chapter.This third edition presents new and expanded information that: • Explores big data and cloud computing • Examines deep learning • Includes information on convolutional neural networks (CNN) • Offers reinforcement learning • Contains semi-supervised learning and S3VM • Reviews model evaluation for unbalanced data Written for graduate students in computer science, computer engineers, and computer information systems professionals, the updated third edition of Data Mining continues to provide an essential guide to the basic principles of the technology and the most recent developments in the field.

Principles of Data Mining - Max Bramer 2007-03-06
This book explains the principal techniques of data mining: for classification, generation of association rules and clustering. It is written for readers without a strong background in mathematics or statistics and focuses on detailed examples and explanations of the algorithms given. This will benefit readers of all levels, from those who use data mining via commercial packages, right through to academic researchers. The book aims to help the general reader develop the necessary understanding to use commercial data mining packages, and to enable advanced readers to understand or contribute to future technical advances. Includes exercises and glossary.

Foundations of Machine Learning, second edition - Mehryar Mohri 2018-12-25
A new edition of a graduate-level machine learning textbook that focuses on the analysis and theory of algorithms. This book is a general introduction to machine learning that can serve as a textbook for

graduate students and a reference for researchers. It covers fundamental modern topics in machine learning while providing the theoretical basis and conceptual tools needed for the discussion and justification of algorithms. It also describes several key aspects of the application of these algorithms. The authors aim to present novel theoretical tools and concepts while giving concise proofs even for relatively advanced topics. Foundations of Machine Learning is unique in its focus on the analysis and theory of algorithms. The first four chapters lay the theoretical foundation for what follows; subsequent chapters are mostly self-contained. Topics covered include the Probably Approximately Correct (PAC) learning framework; generalization bounds based on Rademacher complexity and VC-dimension; Support Vector Machines (SVMs); kernel methods; boosting; on-line learning; multi-class classification; ranking; regression; algorithmic stability; dimensionality reduction; learning automata and languages; and reinforcement learning. Each chapter ends with a set of exercises. Appendixes provide additional material including concise probability review. This second edition offers three new chapters, on model selection, maximum entropy models, and conditional entropy models. New material in the appendixes includes a major section on Fenchel duality, expanded coverage of concentration inequalities, and an entirely new entry on information theory. More than half of the exercises are new to this edition.