Data Mining Concepts And Techniques Solution Manual

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Frequent Pattern Mining - Charu C. Aggarwal 2014-08-29
This comprehensive reference consists of 18 chapters from prominent researchers in the field. Each chapter is self-contained, and synthesizes one aspect of frequent pattern mining. An emphasis is placed on simplifying the content, so that students and practitioners can benefit from the book. Each chapter contains a survey describing key research on the topic, a case study and future directions. Key topics include: Pattern Growth Methods, Frequent Pattern Mining in Data Streams, Mining Graph Patterns, Big Data Frequent Pattern Mining, Algorithms for Data Clustering and more. Advanced-level students in computer science, researchers and practitioners from industry will find this book an invaluable reference.

Neural Networks and Deep Learning - Charu C. Aggarwal 2018-08-25
This book covers both classical and modern models in deep learning. The primary focus is on the theory and algorithms of deep learning. The theory and algorithms of neural networks are particularly important for understanding important concepts, so that one can understand the important design concepts of neural architectures in different applications. Why do neural networks work? When do they work better than off-the-shelf machine-learning models? When is depth useful? Why is training neural networks so hard? What are the pitfalls? The book is also rich in discussing different applications in order to give the practitioner a flavor of how neural architectures are designed for different types of problems. Applications associated with many different areas like recommender systems, machine translation, image captioning, image classification, reinforcement-learning based gaming, and text analytics are covered. The chapters of this book span three categories: The basics of neural networks: Many traditional machine learning models can be understood as special cases of neural networks. An emphasis is placed in the first two chapters on understanding the relationship between traditional machine learning and neural networks. Support vector machines, linear/logistic regression, singular value decomposition, matrix factorization, and recommender systems are shown to be special cases of neural networks. These methods are studied together with recent feature engineering methods like word2vec. Fundamentals of neural networks: A detailed discussion of training and regularization is provided in Chapters 3 and 4. Chapters 5 and 6 present radial-basis function (RBF) networks and restricted Boltzmann machines. Advanced topics in neural networks: Chapters 7 and 8 discuss recurrent neural networks and convolutional neural networks. Several advanced topics like deep reinforcement learning, neural Turing machines, Kohonen self-organizing maps, and generative adversarial networks are introduced in Chapters 9 and 10. The book is written for graduate students, researchers, and practitioners. Numerous exercises are available along with a solution manual to aid in classroom teaching. Where possible, an application-centric view is highlighted in order to provide an understanding of the practical uses of each class of techniques.

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).

Introduction to Data Mining - Pang-Ning Tan 2018-04-13
Introduction to Data Mining presents fundamental concepts and algorithms for those learning data mining for the first time. Each concept is explored thoroughly and supported with numerous examples. The text requires only a modest background in mathematics. Each major topic is organized into two chapters, beginning with basic concepts that provide necessary background for understanding each data mining technique, followed by more advanced concepts and algorithms.

Statistics and Probability with Applications for Engineers and Scientists - Bhisham C Gupta 2014-03-06
Introducing the tools of statistics and probability from the ground up An

understanding of statistical tools is essential for engineers and scientists who often need to deal with data analysis over the course of their work. Statistics and Probability with Applications for Engineers and Scientists walks readers through a wide range of popular statistical techniques, explaining step-by-step how to generate, analyze, and interpret data for diverse applications in engineering and the natural sciences. Unique among books of this kind, Statistics and Probability with Applications for Engineers and Scientists covers descriptive statistics first, then goes on to discuss the fundamentals of probability theory. Along with case studies, examples, and real-world data sets, the book incorporates clear instructions on how to use the statistical packages Minitab® and Microsoft® Office Excel® to analyze various data sets. The book also features: • Detailed discussions on sampling distributions, statistical estimation of population parameters, hypothesis testing, reliability theory, statistical quality control including Phase I and Phase II control charts, and process capability indices • A clear presentation of nonparametric methods and simple and multiple linear regression methods, as well as a brief discussion on logistic regression method • Comprehensive guidance on the design of experiments, including randomized block designs, one- and two-way layout designs, Latin square designs, random effects and mixed effects models, factorial and fractional factorial designs, and response surface methodology • A companion website containing data sets for Minitab and Microsoft Office Excel, as well as JMP ® routines and results Assuming no background in probability and statistics, Statistics and Probability with Applications for Engineers and Scientists features a unique, yet tried-and-true, approach that is ideal for all undergraduate students as well as statistical practitioners who analyze and illustrate real-world data in engineering and the natural sciences.

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 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.

Data Mining, Southeast Asia Edition - Jiawei Han 2006-04-06
Our ability to generate and collect data has been increasing rapidly. Not only are all of our business, scientific, and government transactions now computerized, but the widespread use of digital cameras, publication tools, and bar codes also generate data. On the collection side, scanned

text and image platforms, satellite remote sensing systems, and the World Wide Web have flooded us with a tremendous amount of data. This explosive growth has generated an even more urgent need for new techniques and automated tools that can help us transform this data into useful information and knowledge. Like the first edition, voted the most popular data mining book by KD Nuggets readers, this book explores concepts and techniques for the discovery of patterns hidden in large data sets, focusing on issues relating to their feasibility, usefulness, effectiveness, and scalability. However, since the publication of the first edition, great progress has been made in the development of new data mining methods, systems, and applications. This new edition substantially enhances the first edition, and new chapters have been added to address recent developments on mining complex types of data—including stream data, sequence data, graph structured data, social network data, and multi-relational data. A comprehensive, practical look at the concepts and techniques you need to know to get the most out of real business data Updates that incorporate input from readers, changes in the field, and more material on statistics and machine learning Dozens of algorithms and implementation examples, all in easily understood pseudo-code and suitable for use in real-world, large-scale data mining projects Complete classroom support for instructors at www.mkp.com/datamining2e companion site

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

Data Mining - Ian H. Witten 2000
This book offers a thorough grounding in machine learning concepts combined with practical advice on applying machine learning tools and techniques in real-world data mining situations. Clearly written and effectively illustrated, this book is ideal for anyone involved at any level in the work of extracting usable knowledge from large collections of data. Complementing the book's instruction is fully functional machine learning software.

Data Mining - Mehmed Kantardzic 2011-08-16
This book reviews state-of-the-art methodologies and techniques for analyzing enormous quantities of raw data in high-dimensional data spaces, to extract new information for decision making. The goal of this book is to provide a single introductory source, organized in a systematic way, in which we could direct the readers in analysis of large data sets, through the explanation of basic concepts, models and methodologies developed in recent decades. If you are an instructor or professor and would like to obtain instructor's materials, please visit http://booksupport.wiley.com If you are an instructor or professor and would like to obtain a solutions manual, please send an email to: pressbooks@ieee.org

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.

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

Mining of Massive Datasets - Jure Leskovec 2014-11-13
Now in its second edition, this book focuses on practical algorithms for mining data from even the largest datasets.

Data Mining for Business Intelligence - Galit Shmueli 2006-12-11
Learn how to develop models for classification, prediction, and customer segmentation with the help of Data Mining for Business Intelligence In today's world, businesses are becoming more capable of accessing their ideal consumers, and an understanding of data mining contributes to this success. Data Mining for Business Intelligence, which was developed from a course taught at the Massachusetts Institute of Technology's Sloan School of Management, and the University of Maryland's Smith School of Business, uses real data and actual cases to illustrate the applicability of data mining intelligence to the development of successful business models. Featuring XLMiner, the Microsoft Office Excel add-in, this book allows readers to follow along and implement algorithms at their own speed, with a minimal learning curve. In addition, students and practitioners of data mining techniques are presented with hands-on, business-oriented applications. An abundant amount of exercises and examples are provided to motivate learning and understanding. Data Mining for Business Intelligence: Provides both a theoretical and practical understanding of the key methods of classification, prediction, reduction, exploration, and affinity analysis Features a business decision-making context for these key methods Illustrates the application and interpretation of these methods using real business cases and data This book helps readers understand the beneficial relationship that can be established between data mining and smart business practices, and is an excellent learning tool for creating valuable strategies and making wiser business decisions.

Next Generation of Data Mining - Hillol Kargupta 2008-12-24
Drawn from the US National Science Foundation's Symposium on Next Generation of Data Mining and Cyber-Enabled Discovery for Innovation (NGDM 07), Next Generation of Data Mining explores emerging technologies and applications in data mining as well as potential challenges faced by the field. Gathering perspectives from top experts across different disciplines, the book debates upcoming challenges and outlines computational methods. The contributors look at how ecology, astronomy, social science, medicine, finance, and more can benefit from the next generation of data mining techniques. They examine the algorithms, middleware, infrastructure, and privacy policies associated with ubiquitous, distributed, and high performance data mining. They also discuss the impact of new technologies, such as the semantic web, on data mining and provide recommendations for privacy-preserving mechanisms. The dramatic increase in the availability of massive, complex data from various sources is creating computing, storage,

communication, and human-computer interaction challenges for data mining. Providing a framework to better understand these fundamental issues, this volume surveys promising approaches to data mining problems that span an array of disciplines.

Advanced Data Mining Techniques - David L. Olson 2008-01-01
This book covers the fundamental concepts of data mining, to demonstrate the potential of gathering large sets of data, and analyzing these data sets to gain useful business understanding. The book is organized in three parts. Part I introduces concepts. Part II describes and demonstrates basic data mining algorithms. It also contains chapters on a number of different techniques often used in data mining. Part III focuses on business applications of data mining.

Data Mining and Analysis - Mohammed J. Zaki 2014-05-12
A comprehensive overview of data mining from an algorithmic perspective, integrating related concepts from machine learning and statistics.

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.

An Introduction to Machine Learning - Miroslav Kubat 2021-09-25
This textbook offers a comprehensive introduction to Machine Learning techniques and algorithms. This Third Edition covers newer approaches that have become highly topical, including deep learning, and auto-encoding, introductory information about temporal learning and hidden Markov models, and a much more detailed treatment of reinforcement learning. The book is written in an easy-to-understand manner with many examples and pictures, and with a lot of practical advice and discussions of simple applications. The main topics include Bayesian classifiers, nearest-neighbor classifiers, linear and polynomial classifiers, decision trees, rule-induction programs, artificial neural networks, support vector machines, boosting algorithms, unsupervised learning (including Kohonen networks and auto-encoding), deep learning, reinforcement learning, temporal learning (including long short-term memory), hidden Markov models, and the genetic algorithm. Special attention is devoted to performance evaluation, statistical assessment, and to many practical issues ranging from feature selection and feature construction to bias, context, multi-label domains, and the problem of imbalanced classes.

Principles of Data Mining - Max Bramer 2016-11-09
This book explains and explores the principal techniques of Data Mining, the automatic extraction of implicit and potentially useful information from data, which is increasingly used in commercial, scientific and other application areas. It focuses on classification, association rule mining and clustering. Each topic is clearly explained, with a focus on algorithms not mathematical formalism, and is illustrated by detailed worked examples. The book is written for readers without a strong background in mathematics or statistics and any formulae used are explained in detail. It can be used as a textbook to support courses at undergraduate or postgraduate levels in a wide range of subjects including Computer Science, Business Studies, Marketing, Artificial Intelligence, Bioinformatics and Forensic Science. As an aid to self study, this book aims to help general readers develop the necessary understanding of what is inside the 'black box' so they can use commercial data mining packages discriminatingly, as well as enabling advanced readers or academic researchers to understand or contribute to future technical advances in the field. Each chapter has practical exercises to enable readers to check their progress. A full glossary of technical terms used is included. This expanded third edition includes detailed descriptions of algorithms for classifying streaming data, both stationary data, where the underlying model is fixed, and data that is time-dependent, where the underlying model changes from time to time - a phenomenon known as concept drift.

Data Mining Techniques - Arun K. Pujari 2001
This Book Addresses All The Major And Latest Techniques Of Data Mining And Data Warehousing. It Deals With The Latest Algorithms For Discussing Association Rules, Decision Trees, Clustering, Neural Networks And Genetic Algorithms. The Book Also Discusses The Mining Of Web Data, Temporal And Text Data. It Can Serve As A Textbook For Students Of Compuer Science, Mathematical Science And Management Science, And Also Be An Excellent Handbook For Researchers In The Area Of Data Mining And Warehousing.

Data Mining - Charu C. Aggarwal 2015-04-13
This textbook explores the different aspects of data mining from the fundamentals to the complex data types and their applications, capturing the wide diversity of problem domains for data mining issues. It goes beyond the traditional focus on data mining problems to introduce advanced data types such as text, time series, discrete sequences, spatial data, graph data, and social networks. Until now, no single book has addressed all these topics in a comprehensive and integrated way. The chapters of this book fall into one of three categories: Fundamental chapters: Data mining has four main problems, which correspond to clustering, classification, association pattern mining, and outlier analysis. These chapters comprehensively discuss a wide variety of methods for these problems. Domain chapters: These chapters discuss the specific methods used for different domains of data such as text data, time-series data, sequence data, graph data, and spatial data. Application chapters: These chapters study important applications such as stream mining, Web mining, ranking, recommendations, social networks, and privacy preservation. The domain chapters also have an applied flavor. Appropriate for both introductory and advanced data mining courses, Data Mining: The Textbook balances mathematical details and intuition. It contains the necessary mathematical details for professors and researchers, but it is presented in a simple and intuitive style to improve accessibility for students and industrial practitioners (including those with a limited mathematical background). Numerous illustrations, examples, and exercises are included, with an emphasis on semantically interpretable examples. Praise for Data Mining: The Textbook - "As I read through this book, I have already decided to use it in my classes. This is a book written by an outstanding researcher who has made fundamental contributions to data mining, in a way that is both accessible and up to date. The book is complete with theory and practical use cases. It's a must-have for students and professors alike!" -- Qiang Yang, Chair of Computer Science and Engineering at Hong Kong University of Science and Technology "This is the most amazing and comprehensive text book on data mining. It covers not only the fundamental problems, such as clustering, classification, outliers and frequent patterns, and different data types, including text, time series, sequences, spatial data and graphs, but also various applications, such as recommenders, Web, social network and privacy. It is a great book for graduate students and researchers as well as practitioners." -- Philip S. Yu, UIC Distinguished Professor and Wexler Chair in Information Technology at University of Illinois at Chicago

Multimedia Data Mining - Zhongfei Zhang 2008-12-02
Collecting the latest developments in the field, Multimedia Data Mining: A Systematic Introduction to Concepts and Theory defines multimedia data mining, its theory, and its applications. Two of the most active researchers in multimedia data mining explore how this young area has rapidly developed in recent years. The book first discusses the theoretical foundations of multimedia data mining, presenting commonly used feature representation, knowledge representation, statistical learning, and soft computing techniques. It then provides application examples that showcase the great potential of multimedia data mining technologies. In this part, the authors show how to develop a semantic repository training method and a concept discovery method in an imagery database. They demonstrate how knowledge discovery helps achieve the goal of imagery annotation. The authors also describe an effective solution to large-scale video search, along with an application of audio data classification and categorization. This novel, self-contained book examines how the merging of multimedia and data mining research can promote the understanding and advance the development of knowledge discovery in multimedia data.

Text Data Management and Analysis - ChengXiang Zhai 2016-06-30
Recent years have seen a dramatic growth of natural language text data, including web pages, news articles, scientific literature, emails, enterprise documents, and social media such as blog articles, forum posts, product reviews, and tweets. This has led to an increasing demand for powerful software tools to help people analyze and manage vast

amounts of text data effectively and efficiently. Unlike data generated by a computer system or sensors, text data are usually generated directly by humans, and are accompanied by semantically rich content. As such, text data are especially valuable for discovering knowledge about human opinions and preferences, in addition to many other kinds of knowledge that we encode in text. In contrast to structured data, which conform to well-defined schemas (thus are relatively easy for computers to handle), text has less explicit structure, requiring computer processing toward understanding of the content encoded in text. The current technology of natural language processing has not yet reached a point to enable a computer to precisely understand natural language text, but a wide range of statistical and heuristic approaches to analysis and management of text data have been developed over the past few decades. They are usually very robust and can be applied to analyze and manage text data in any natural language, and about any topic. This book provides a systematic introduction to all these approaches, with an emphasis on covering the most useful knowledge and skills required to build a variety of practically useful text information systems. The focus is on text mining applications that can help users analyze patterns in text data to extract and reveal useful knowledge. Information retrieval systems, including search engines and recommender systems, are also covered as supporting technology for text mining applications. The book covers the major concepts, techniques, and ideas in text data mining and information retrieval from a practical viewpoint, and includes many hands-on exercises designed with a companion software toolkit (i.e., MeTA) to help readers learn how to apply techniques of text mining and information retrieval to real-world text data and how to experiment with and improve some of the algorithms for interesting application tasks. The book can be used as a textbook for a computer science undergraduate course or a reference book for practitioners working on relevant problems in analyzing and managing text data.

Statistical Methods in Research and Production - Owen L. Davies 1986-05-01

The Enterprise Big Data Lake - Alex Gorelik 2019-02-21
The data lake is a daring new approach for harnessing the power of big data technology and providing convenient self-service capabilities. But is it right for your company? This book is based on discussions with practitioners and executives from more than a hundred organizations, ranging from data-driven companies such as Google, LinkedIn, and Facebook, to governments and traditional corporate enterprises. You'll learn what a data lake is, why enterprises need one, and how to build one successfully with the best practices in this book. Alex Gorelik, CTO and founder of Waterline Data, explains why old systems and processes can no longer support data needs in the enterprise. Then, in a collection of essays about data lake implementation, you'll examine data lake initiatives, analytic projects, experiences, and best practices from data experts working in various industries. Get a succinct introduction to data warehousing, big data, and data science Learn various paths enterprises take to build a data lake Explore how to build a self-service model and best practices for providing analysts access to the data Use different methods for architecting your data lake Discover ways to implement a data lake from experts in different industries

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

Introduction to Data Science - Laura Igual 2017-02-22
This accessible and classroom-tested textbook/reference presents an introduction to the fundamentals of the emerging and interdisciplinary field of data science. The coverage spans key concepts adopted from statistics and machine learning, useful techniques for graph analysis and

parallel programming, and the practical application of data science for such tasks as building recommender systems or performing sentiment analysis. Topics and features: provides numerous practical case studies using real-world data throughout the book; supports understanding through hands-on experience of solving data science problems using Python; describes techniques and tools for statistical analysis, machine learning, graph analysis, and parallel programming; reviews a range of applications of data science, including recommender systems and sentiment analysis of text data; provides supplementary code resources and data at an associated website.

Data Mining and Machine Learning - Mohammed J. Zaki 2019-12-31
The fundamental algorithms in data mining and machine learning form the basis of data science, utilizing automated methods to analyze patterns and models for all kinds of data in applications ranging from scientific discovery to business analytics. This textbook for senior undergraduate and graduate courses provides a comprehensive, in-depth overview of data mining, machine learning and statistics, offering solid guidance for students, researchers, and practitioners. The book lays the foundations of data analysis, pattern mining, clustering, classification and regression, with a focus on the algorithms and the underlying algebraic, geometric, and probabilistic concepts. New to this second edition is an entire part devoted to regression methods, including neural networks and deep learning.

Fundamentals of Machine Learning for Predictive Data Analytics, second edition - John D. Kelleher 2020-10-20
The second edition of a comprehensive introduction to machine learning approaches used in predictive data analytics, covering both theory and practice. Machine learning is often used to build predictive models by extracting patterns from large datasets. These models are used in predictive data analytics applications including price prediction, risk assessment, predicting customer behavior, and document classification. This introductory textbook offers a detailed and focused treatment of the most important machine learning approaches used in predictive data analytics, covering both theoretical concepts and practical applications. Technical and mathematical material is augmented with explanatory worked examples, and case studies illustrate the application of these models in the broader business context. This second edition covers recent developments in machine learning, especially in a new chapter on deep learning, and two new chapters that go beyond predictive analytics to cover unsupervised learning and reinforcement learning.

Introduction to Data Mining - Pang-Ning Tan 2018

Data Mining for Business Analytics - Galit Shmueli 2019-10-14
Data Mining for Business Analytics: Concepts, Techniques, and Applications in Python presents an applied approach to data mining concepts and methods, using Python software for illustration Readers will learn how to implement a variety of popular data mining algorithms in Python (a free and open-source software) to tackle business problems and opportunities. This is the sixth version of this successful text, and the first using Python. It covers both statistical and machine learning algorithms for prediction, classification, visualization, dimension reduction, recommender systems, clustering, text mining and network analysis. It also includes: A new co-author, Peter Gedeck, who brings both experience teaching business analytics courses using Python, and expertise in the application of machine learning methods to the drug-discovery process A new section on ethical issues in data mining Updates and new material based on feedback from instructors teaching MBA, undergraduate, diploma and executive courses, and from their students More than a dozen case studies demonstrating applications for the data mining techniques described End-of-chapter exercises that help readers gauge and expand their comprehension and competency of the material presented A companion website with more than two dozen data sets, and instructor materials including exercise solutions, PowerPoint slides, and case solutions Data Mining for Business Analytics: Concepts, Techniques, and Applications in Python is an ideal textbook for graduate and upper-undergraduate level courses in data mining, predictive analytics, and business analytics. This new edition is also an excellent reference for analysts, researchers, and practitioners working with quantitative methods in the fields of business, finance, marketing, computer science, and information technology. "This book has by far the most comprehensive review of business analytics methods that I have ever seen, covering everything from classical approaches such as linear and logistic regression, through to modern methods like neural networks, bagging and boosting, and even much more business specific procedures such as social network analysis and text mining. If not the bible, it is at

the least a definitive manual on the subject." —Gareth M. James, University of Southern California and co-author (with Witten, Hastie and Tibshirani) of the best-selling book An Introduction to Statistical Learning, with Applications in R

The Data Science Design Manual - Steven S. Skiena 2017-07-01
This engaging and clearly written textbook/reference provides a must-have introduction to the rapidly emerging interdisciplinary field of data science. It focuses on the principles fundamental to becoming a good data scientist and the key skills needed to build systems for collecting, analyzing, and interpreting data. The Data Science Design Manual is a source of practical insights that highlights what really matters in analyzing data, and provides an intuitive understanding of how these core concepts can be used. The book does not emphasize any particular programming language or suite of data-analysis tools, focusing instead on high-level discussion of important design principles. This easy-to-read text ideally serves the needs of undergraduate and early graduate students embarking on an "Introduction to Data Science" course. It reveals how this discipline sits at the intersection of statistics, computer science, and machine learning, with a distinct heft and character of its own. Practitioners in these and related fields will find this book perfect for self-study as well. Additional learning tools: Contains "War Stories," offering perspectives on how data science applies in the real world Includes "Homework Problems," providing a wide range of exercises and projects for self-study Provides a complete set of lecture slides and online video lectures at www.data-manual.com Provides "Take-Home Lessons," emphasizing the big-picture concepts to learn from each chapter Recommends exciting "Kaggle Challenges" from the online platform Kaggle Highlights "False Starts," revealing the subtle reasons why certain approaches fail Offers examples taken from the data science television show "The Quant Shop" (www.quant-shop.com)

Linear Algebra and Optimization for Machine Learning - Charu C. Aggarwal 2020-05-13
This textbook introduces linear algebra and optimization in the context of machine learning. Examples and exercises are provided throughout this text book together with access to a solution's manual. This textbook targets graduate level students and professors in computer science, mathematics and data science. Advanced undergraduate students can also use this textbook. The chapters for this textbook are organized as follows: 1. Linear algebra and its applications: The chapters focus on the basics of linear algebra together with their common applications to singular value decomposition, matrix factorization, similarity matrices (kernel methods), and graph analysis. Numerous machine learning applications have been used as examples, such as spectral clustering, kernel-based classification, and outlier detection. The tight integration of linear algebra methods with examples from machine learning differentiates this book from generic volumes on linear algebra. The focus is clearly on the most relevant aspects of linear algebra for machine learning and to teach readers how to apply these concepts. 2. Optimization and its applications: Much of machine learning is posed as an optimization problem in which we try to maximize the accuracy of regression and classification models. The "parent problem" of optimization-centric machine learning is least-squares regression. Interestingly, this problem arises in both linear algebra and optimization, and is one of the key connecting problems of the two fields. Least-squares regression is also the starting point for support vector machines, logistic regression, and recommender systems. Furthermore, the methods for dimensionality reduction and matrix factorization also require the development of optimization methods. A general view of optimization in computational graphs is discussed together with its applications to back propagation in neural networks. A frequent challenge faced by beginners in machine learning is the extensive background required in linear algebra and optimization. One problem is that the existing linear algebra and optimization courses are not specific to machine learning; therefore, one would typically have to complete more course material than is necessary to pick up machine learning. Furthermore, certain types of ideas and tricks from optimization and linear algebra recur more frequently in machine learning than other application-centric settings. Therefore, there is significant value in developing a view of linear algebra and optimization that is better suited to the specific perspective of machine learning.

Principles and Techniques in Combinatorics - Lin Simon Mingyan 2018-08-10
The solutions to each problem are written from a first principles approach, which would further augment the understanding of the important and recurring concepts in each chapter. Moreover, the

solutions are written in a relatively self-contained manner, with very little knowledge of undergraduate mathematics assumed. In that regard, the solutions manual appeals to a wide range of readers, from secondary school and junior college students, undergraduates, to teachers and professors.

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.

Artificial Intelligence - Stuart Russell 2016-09-10
Artificial Intelligence: A Modern Approach offers the most comprehensive, up-to-date introduction to the theory and practice of artificial intelligence. Number one in its field, this textbook is ideal for one or two-semester, undergraduate or graduate-level courses in Artificial Intelligence.

Data Mining Techniques - Michael J. A. Berry 2004-04-09
Many companies have invested in building large databases and data warehouses capable of storing vast amounts of information. This book offers business, sales and marketing managers a practical guide to accessing such information.

Data Mining for Business Analytics - Galit Shmueli 2016-04-18
An applied approach to data mining and predictive analytics with clear exposition, hands-on exercises, and real-life case studies. Readers will work with all of the standard data mining methods using the Microsoft® Office Excel® add-in XLMiner® to develop predictive models and learn how to obtain business value from Big Data. Featuring updated topical coverage on text mining, social network analysis, collaborative filtering, ensemble methods, uplift modeling and more, the Third Edition also includes: Real-world examples to build a theoretical and practical understanding of key data mining methods End-of-chapter exercises that help readers better understand the presented material Data-rich case studies to illustrate various applications of data mining techniques Completely new chapters on social network analysis and text mining A companion site with additional data sets, instructors material that include solutions to exercises and case studies, and Microsoft PowerPoint® slides https://www.dataminingbook.com Free 140-day license to use XLMiner for Education software Data Mining for Business Analytics: Concepts, Techniques, and Applications in XLMiner®, Third Edition is an ideal textbook for upper-undergraduate and graduate-level courses as well as professional programs on data mining, predictive modeling, and Big Data analytics. The new edition is also a unique reference for analysts, researchers, and practitioners working with predictive analytics in the fields of business, finance, marketing, computer science, and information technology. Praise for the Second Edition "...full of vivid and thought-provoking anecdotes... needs to be read by anyone with a serious interest in research and marketing."– Research Magazine "Shmueli et al. have done a wonderful job in presenting the field of data mining - a welcome addition to the literature." – ComputingReviews.com "Excellent choice for business analysts...The book is a perfect fit for its intended audience." – Keith McCormick, Consultant and Author of SPSS Statistics For Dummies, Third Edition and SPSS Statistics for Data Analysis and Visualization Galit Shmueli, PhD, is Distinguished Professor at National Tsing Hua University's Institute of Service Science. She has designed and instructed data mining courses since 2004 at University of Maryland, Statistics.com, The Indian School of Business, and National Tsing Hua University, Taiwan. Professor Shmueli is known for her research and teaching in business analytics, with a focus on statistical and data mining methods in information systems and healthcare. She has authored over 70 journal articles, books, textbooks and book chapters. Peter C. Bruce is President and Founder of the Institute for Statistics Education at www.statistics.com. He has written multiple journal articles and is the

developer of Resampling Stats software. He is the author of Introductory Statistics and Analytics: A Resampling Perspective, also published by Wiley. Nitin R. Patel, PhD, is Chairman and cofounder of Cytel, Inc., based in Cambridge, Massachusetts. A Fellow of the American Statistical Association, Dr. Patel has also served as a Visiting Professor at the Massachusetts Institute of Technology and at Harvard University. He is a Fellow of the Computer Society of India and was a professor at the Indian Institute of Management, Ahmedabad for 15 years.