

Charu C. Aggarwal · Hawei Han · Editors

Frequent Pattern Mining

 Springer

Frequent Pattern Mining Charu Aggarwal

Pablo Moscato, Natalie Jane de Vries



Frequent Pattern Mining Charu Aggarwal:

Frequent Pattern Mining Charu C. Aggarwal, Jiawei Han, 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.

Frequent Pattern Mining in Health Care Database Dr. N. Venkatesan, **Data Science Concepts and Techniques with Applications** Usman Qamar, Muhammad Summair Raza, 2023-04-02 This textbook comprehensively covers both fundamental and advanced topics related to data science. Data science is an umbrella term that encompasses data analytics, data mining, machine learning, and several other related disciplines. The chapters of this book are organized into three parts. The first part, chapters 1 to 3, is a general introduction to data science. Starting from the basic concepts, the book will highlight the types of data, its use, its importance, and issues that are normally faced in data analytics, followed by presentation of a wide range of applications and widely used techniques in data science. The second part, which has been updated and considerably extended compared to the first edition, is devoted to various techniques and tools applied in data science. Its chapters 4 to 10 detail data pre-processing, classification, clustering, text mining, deep learning, frequent pattern mining, and regression analysis. Eventually, the third part, chapters 11 and 12, present a brief introduction to Python and R, the two main data science programming languages, and shows in a completely new chapter practical data science in the WEKA Waikato Environment for Knowledge Analysis, an open source tool for performing different machine learning and data mining tasks. An appendix explaining the basic mathematical concepts of data science completes the book. This textbook is suitable for advanced undergraduate and graduate students as well as for industrial practitioners who carry out research in data science. They both will not only benefit from the comprehensive presentation of important topics but also from the many application examples and the comprehensive list of further readings which point to additional publications providing more in-depth research results or provide sources for a more detailed description of related topics. This book delivers a systematic, carefully thought-out material on Data Science. Foreword by Witold Pedrycz, U Alberta, Canada. [Hands-on Pattern Mining](#) Uday Kiran Raje, 2025-08-11 This book introduces pattern mining by presenting various pattern mining techniques and giving hands-on experience with each technique. Pattern mining is a popular data mining technique with many real-world applications and involves discovering all user interest-based patterns that may exist in a database. Several models and numerous algorithms were described in the literature to find these patterns in binary databases, quantitative databases, uncertain databases, and streams. Since the lack of a Python toolkit

containing these algorithms has limited the wide adaptability of pattern mining techniques the author developed Pattern Mining PAMI Python library which currently contains 80 algorithms to discover useful patterns in transactional databases temporal databases quantitative databases and graphs The book consists of three main parts if supportLists endif Introduction The first chapter introduces big data types of learning techniques and the importance of pattern mining The second chapter introduces the PAMI library its organizational structure installation and usage if supportLists endif Pattern mining algorithms and examples The following chapters present the state of the art techniques for discovering user interest based patterns in 1 transactional databases 2 temporal databases 3 quantitative databases 4 uncertain databases 5 sequential databases and 6 graphs if supportLists endif Applications The book concludes with several applications where the predicted knowledge using TensorFlow and PyTorch was transformed into a database to discover future trends or patterns

Managing and Mining Graph Data Charu C. Aggarwal, Haixun Wang, 2010-02-02 Managing and Mining Graph Data is a comprehensive survey book in graph management and mining It contains extensive surveys on a variety of important graph topics such as graph languages indexing clustering data generation pattern mining classification keyword search pattern matching and privacy It also studies a number of domain specific scenarios such as stream mining web graphs social networks chemical and biological data The chapters are written by well known researchers in the field and provide a broad perspective of the area This is the first comprehensive survey book in the emerging topic of graph data processing Managing and Mining Graph Data is designed for a varied audience composed of professors researchers and practitioners in industry This volume is also suitable as a reference book for advanced level database students in computer science and engineering

Healthcare Data Analytics Chandan K. Reddy, Charu C. Aggarwal, 2015-06-23 At the intersection of computer science and healthcare data analytics has emerged as a promising tool for solving problems across many healthcare related disciplines Supplying a comprehensive overview of recent healthcare analytics research Healthcare Data Analytics provides a clear understanding of the analytical techniques currently available Proceedings of the Fifth SIAM International Conference on Data Mining Hillol Kargupta, 2005-04-01 The Fifth SIAM International Conference on Data Mining continues the tradition of providing an open forum for the presentation and discussion of innovative algorithms as well as novel applications of data mining Advances in information technology and data collection methods have led to the availability of large data sets in commercial enterprises and in a wide variety of scientific and engineering disciplines The field of data mining draws upon extensive work in areas such as statistics machine learning pattern recognition databases and high performance computing to discover interesting and previously unknown information in data This conference results in data mining including applications algorithms software and systems **Data Streams** Charu C. Aggarwal, 2007-04-03 This book primarily discusses issues related to the mining aspects of data streams and it is unique in its primary focus on the subject This volume covers mining aspects of data streams comprehensively each contributed chapter contains a survey on the topic the key ideas

in the field for that particular topic and future research directions The book is intended for a professional audience composed of researchers and practitioners in industry This book is also appropriate for advanced level students in computer science

Proceedings of the First International Conference on Computational Intelligence and Informatics Suresh Chandra Satapathy,V. Kamakshi Prasad,B. Padmaja Rani,Siba K. Udgata,K. Srujan Raju,2016-11-26 The book covers a variety of topics which include data mining and data warehousing high performance computing parallel and distributed computing computational intelligence soft computing big data cloud computing grid computing cognitive computing image processing computer networks wireless networks social networks wireless sensor networks information and network security web security internet of things bioinformatics and geoinformatics The book is a collection of best papers submitted in the First International Conference on Computational Intelligence and Informatics ICCII 2016 held during 28 30 May 2016 at JNTUH CEH Hyderabad India It was hosted by Department of Computer Science and Engineering JNTUH College of Engineering in association with Division V Education Research CSI India

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

Digitale Infrastrukturen für die germanistische Forschung Henning Lobin, Roman Schneider, Andreas Witt, 2018-07-23 Die moderne sprachwissenschaftliche Forschung nutzt in zunehmender Weise digitale Forschungsinfrastrukturen und Informationssysteme Diese Entwicklung begann um die Jahrtausendwende und beschleunigt sich seither Der Band thematisiert nationale und europäische Infrastrukturverbände und verschiedene Sprachressourcen aus der germanistischen Sprachwissenschaft die über digitale Infrastrukturen auffindbar zugreifbar und wieder verwendbar sind

Online-Informationsverhalten von Business-to-Business-Käufern Maximilian Lüders, 2020-02-28 Maximilian Lüders widmet sich dem Online Informationsverhalten von Business to Business Käufern Die Erforschung organisationalen Kaufverhaltens ist Ende der 1990er Jahre zum Erliegen gekommen Während praxisorientierte Veröffentlichungen unterstellen dass das Internet einen großen Einfluss auf organisationales Informations und Kaufverhalten hat schweigt die wissenschaftliche Literatur hierzu weitestgehend Der Autor ergründet in zwei empirischen Studien das Online Informationsverhalten von B2B Käufern Erstens wird erforscht wann und wie sich organisationale Käufer online informieren und wie sich digitale Informationsquellen in bestehende Erkenntnisse im Feld einordnen Zweitens wird geklärt ob sich unterschiedliche Arten von Online Informationsverhalten aus Beobachtungsdaten von B2B Websites identifizieren lassen

Science and Technology for Shaping the Future of Mizoram Dr. K. Lalchhandama, 2017-05-26 This book is the direct outcome of the Mizoram Science Congress 2016 held on 13 and 14 November 2016

Feature Engineering for Machine Learning and Data Analytics Guozhu Dong, Huan Liu, 2018-03-14 Feature engineering plays a vital role in big data analytics Machine learning and data mining algorithms cannot work without data Little can be achieved if there are few features to represent the underlying data objects and the quality of results of those algorithms largely depends on the quality of the available features Feature Engineering for Machine Learning and Data Analytics provides a comprehensive introduction to feature engineering including feature generation feature extraction feature transformation feature selection and feature analysis and evaluation The book presents key concepts methods examples and applications as well as chapters on feature engineering for major data types such as texts images sequences time series graphs streaming data software engineering data Twitter data and social media data It also contains generic feature generation approaches as well as methods for generating tried and tested hand crafted domain specific features The first chapter defines the concepts of features and feature engineering offers an overview of the book and provides pointers to topics not covered in this book The next six chapters are devoted to feature engineering including feature generation for specific data types The subsequent four chapters cover generic approaches for feature engineering namely feature selection feature transformation based feature engineering deep learning based feature

engineering and pattern based feature generation and engineering The last three chapters discuss feature engineering for social bot detection software management and Twitter based applications respectively This book can be used as a reference for data analysts big data scientists data preprocessing workers project managers project developers prediction modelers professors researchers graduate students and upper level undergraduate students It can also be used as the primary text for courses on feature engineering or as a supplement for courses on machine learning data mining and big data analytics

Recommender Systems Charu C. Aggarwal, 2016-03-28 This book comprehensively covers the topic of recommender systems which provide personalized recommendations of products or services to users based on their previous searches or purchases Recommender system methods have been adapted to diverse applications including query log mining social networking news recommendations and computational advertising This book synthesizes both fundamental and advanced topics of a research area that has now reached maturity The chapters of this book are organized into three categories Algorithms and evaluation These chapters discuss the fundamental algorithms in recommender systems including collaborative filtering methods content based methods knowledge based methods ensemble based methods and evaluation Recommendations in specific domains and contexts the context of a recommendation can be viewed as important side information that affects the recommendation goals Different types of context such as temporal data spatial data social data tagging data and trustworthiness are explored Advanced topics and applications Various robustness aspects of recommender systems such as shilling systems attack models and their defenses are discussed In addition recent topics such as learning to rank multi armed bandits group systems multi criteria systems and active learning systems are introduced together with applications Although this book primarily serves as a textbook it will also appeal to industrial practitioners and researchers due to its focus on applications and references Numerous examples and exercises have been provided and a solution manual is available for instructors

Business and Consumer Analytics: New Ideas Pablo Moscato, Natalie Jane de Vries, 2019-05-30 This two volume handbook presents a collection of novel methodologies with applications and illustrative examples in the areas of data driven computational social sciences Throughout this handbook the focus is kept specifically on business and consumer oriented applications with interesting sections ranging from clustering and network analysis meta analytics memetic algorithms machine learning recommender systems methodologies parallel pattern mining and data mining to specific applications in market segmentation travel fashion or entertainment analytics A must read for anyone in data analytics marketing behavior modelling and computational social science interested in the latest applications of new computer science methodologies The chapters are contributed by leading experts in the associated fields The chapters cover technical aspects at different levels some of which are introductory and could be used for teaching Some chapters aim at building a common understanding of the methodologies and recent application areas including the introduction of new theoretical results in the complexity of core problems Business and marketing professionals may use the book to familiarize

themselves with some important foundations of data science The work is a good starting point to establish an open dialogue of communication between professionals and researchers from different fields Together the two volumes present a number of different new directions in Business and Customer Analytics with an emphasis in personalization of services the development of new mathematical models and new algorithms heuristics and metaheuristics applied to the challenging problems in the field Sections of the book have introductory material to more specific and advanced themes in some of the chapters allowing the volumes to be used as an advanced textbook Clustering Proximity Graphs Pattern Mining Frequent Itemset Mining Feature Engineering Network and Community Detection Network based Recommending Systems and Visualization are some of the topics in the first volume Techniques on Memetic Algorithms and their applications to Business Analytics and Data Science are surveyed in the second volume applications in Team Orienteering Competitive Facility location and Visualization of Products and Consumers are also discussed The second volume also includes an introduction to Meta Analytics and to the application areas of Fashion and Travel Analytics Overall the two volume set helps to describe some fundamentals acts as a bridge between different disciplines and presents important results in a rapidly moving field combining powerful optimization techniques allied to new mathematical models critical for personalization of services Academics and professionals working in the area of business analytics data science operations research and marketing will find this handbook valuable as a reference Students studying these fields will find this handbook useful and helpful as a secondary textbook

Managing and Mining Uncertain Data Charu C. Aggarwal, 2010-07-08 Managing and Mining Uncertain Data a survey with chapters by a variety of well known researchers in the data mining field presents the most recent models algorithms and applications in the uncertain data mining field in a structured and concise way This book is organized to make it more accessible to applications driven practitioners for solving real problems Also given the lack of structurally organized information on this topic Managing and Mining Uncertain Data provides insights which are not easily accessible elsewhere Managing and Mining Uncertain Data is designed for a professional audience composed of researchers and practitioners in industry This book is also suitable as a reference book for advanced level students in computer science and engineering as well as the ACM IEEE SIAM INFORMS and AAAI Society groups

e-Infrastructure and e-Services for Developing Countries Rafik Zitouni, Max Agueh, Pélégie Houngue, Hénoc Soude, 2020-02-13 This book constitutes the thoroughly refereed proceedings of the 11th International Conference on e Infrastructure and e Services for Developing Countries AFRICOMM 2019 held in Porto Novo Benin in December 2019 The 19 full papers were carefully selected from 46 submissions The accepted papers provide a wide range of research topics including targeted infrastructures Internet of Things IoT wireless and mobile networks intelligent transportation systems ITS software and network security cloud and virtualization data analytics and machine learning

Machine Learning for Data Streams Albert Bifet, Ricard Gavaldà, Geoffrey Holmes, Bernhard Pfahringer, 2018-03-16 A hands on approach to tasks and techniques in data stream mining and real time analytics with

examples in MOA a popular freely available open source software framework Today many information sources including sensor networks financial markets social networks and healthcare monitoring are so called data streams arriving sequentially and at high speed Analysis must take place in real time with partial data and without the capacity to store the entire data set This book presents algorithms and techniques used in data stream mining and real time analytics Taking a hands on approach the book demonstrates the techniques using MOA Massive Online Analysis a popular freely available open source software framework allowing readers to try out the techniques after reading the explanations The book first offers a brief introduction to the topic covering big data mining basic methodologies for mining data streams and a simple example of MOA More detailed discussions follow with chapters on sketching techniques change classification ensemble methods regression clustering and frequent pattern mining Most of these chapters include exercises an MOA based lab session or both Finally the book discusses the MOA software covering the MOA graphical user interface the command line use of its API and the development of new methods within MOA The book will be an essential reference for readers who want to use data stream mining as a tool researchers in innovation or data stream mining and programmers who want to create new algorithms for MOA

Next-Gen Technologies in Computational Intelligence R. Anandan,M. Senthil Kumar,Biji C. L.,Vicente García Díaz,Souvik Pal,2024-06-07 The Proceeding includes the research contribution from the International Conference on Next Gen Technologies in Computational Intelligence NGTCA 2023 held on March 24th 2023 at Vels Institute of Science Technology and Advanced Studies NGCTA 2023 is the flagship conference of the Computer Society of India Region 7 Computer Society of India CSI is the largest association of IT professionals in India CSI is a non profit organization established in 1965 and its members are committed to the advancement of theory and practice of Computer Engineering and Technology Systems The Mission of CSI is to facilitate research knowledge sharing learning and career enhancement for all categories of IT professionals while simultaneously inspiring and nurturing new entrants into the industry and helping them to integrate into the IT community At present CSI has 76 chapters across India over 550 student branches with 1 00 000 plus members It serves its members through technical events seminars workshops conferences publications journals research projects competitions special interest groups awards recognitions etc Various CSI chapters conduct Research Convention every year

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