

MINING SEQUENTIAL PATTERNS FROM LARGE DATA SETS

by

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 Springer

Mining Sequential Patterns From Large Data Sets

Malcolm Atkinson



Mining Sequential Patterns From Large Data Sets:

Mining Sequential Patterns from Large Data Sets Wei Wang, Jiong Yang, 2005-07-26 In many applications e.g. bioinformatics web access traces system utilization logs etc the data is naturally in the form of sequences It has been of great interests to analyze the sequential data to find their inherent characteristics The sequential pattern is one of the most widely studied models to capture such characteristics Examples of sequential patterns include but are not limited to protein sequence motifs and web page navigation traces In this book we focus on sequential pattern mining To meet different needs of various applications several models of sequential patterns have been proposed We do not only study the mathematical definitions and application domains of these models but also the algorithms on how to effectively and efficiently find these patterns The objective of this book is to provide computer scientists and domain experts such as life scientists with a set of tools in analyzing and understanding the nature of various sequences by 1 identifying the specific models of sequential patterns that are most suitable and 2 providing an efficient algorithm for mining these patterns Chapter 1 INTRODUCTION Data Mining is the process of extracting implicit knowledge and discovery of interesting characteristics and patterns that are not explicitly represented in the databases The techniques can play an important role in understanding data and in capturing intrinsic relationships among data instances Data mining has been an active research area in the past decade and has been proved to be very useful

Mining Sequential Patterns from Large Data Sets Wei Wang, Jiong Yang, 2005-02-28 In many applications e.g. bioinformatics web access traces system utilization logs etc the data is naturally in the form of sequences It has been of great interests to analyze the sequential data to find their inherent characteristics The sequential pattern is one of the most widely studied models to capture such characteristics Examples of sequential patterns include but are not limited to protein sequence motifs and web page navigation traces In this book we focus on sequential pattern mining To meet different needs of various applications several models of sequential patterns have been proposed We do not only study the mathematical definitions and application domains of these models but also the algorithms on how to effectively and efficiently find these patterns The objective of this book is to provide computer scientists and domain experts such as life scientists with a set of tools in analyzing and understanding the nature of various sequences by 1 identifying the specific models of sequential patterns that are most suitable and 2 providing an efficient algorithm for mining these patterns Chapter 1 INTRODUCTION Data Mining is the process of extracting implicit knowledge and discovery of interesting characteristics and patterns that are not explicitly represented in the databases The techniques can play an important role in understanding data and in capturing intrinsic relationships among data instances Data mining has been an active research area in the past decade and has been proved to be very useful

Data Mining and Big Data Ying Tan, Hideyuki Takagi, Yuhui Shi, 2017-07-18 This book constitutes the refereed proceedings of the Second International Conference on Data Mining and Big Data DMBD 2017 held in Fukuoka Japan in July August 2017 The 53 papers presented in this volume were carefully reviewed and

selected from 96 submissions They were organized in topical sections named association analysis clustering prediction classification schedule and sequence analysis big data data analysis data mining text mining deep learning high performance computing knowledge base and its framework and fuzzy control Very Large Data Bases ,2005 **Searching for Frequent Sequential Patterns in Large Datasets** Linhui Jiang,2003 Proceedings of the 2001 ACM CIKM Henrique Paques,Ling Liu,David A. Grossman,2001 *Handbook of Research on Innovations in Database Technologies and Applications* Viviana E. Ferraggine,Jorge H. Doorn,Laura C. Rivero,2009-01-01 This book provides a wide compendium of references to topics in the field of the databases systems and applications Provided by publisher **Proceedings of the ... International Conference on Information and Knowledge Management** ,2001 **Mining Big Data for Frequent Patterns Using MapReduce Computing** Sumalatha Saleti,2023-08-31 The main motivation of frequent pattern mining is to extract useful patterns from the data sets Interesting associations among the data can be discovered by mining the frequent patterns Among the different kinds of pattern mining frequent itemset mining has been applied widely in many applications such as market basket analysis medical applications online transactions social network analysis and so forth An itemset is called frequent if the set of items in it appear frequently together However frequent itemset mining can find only the frequent itemsets the time regularity of the items cannot be found Sequential pattern mining considers both the frequency of the items and the order of items based on their time stamps It attracted great deal of attention in many applications such as customer buying trend analysis web access mining natural disaster analysis and so forth The patterns mined from sequential pattern mining algorithms do not consider the cost or profit of the item A sequence that is not frequent in a dataset may contribute much to the overall profit of the organization due to its high profit Hence utility sequential pattern mining considers quantity and timestamp of items as well as profit of each item Because of constantly arriving new data the resultant patterns of frequent pattern mining may become obsolete over time Hence it is necessary to incrementally process the data in order to refresh the mining results without mining from scratch The advancement in technology led to the generation of huge volumes of data from multiple sources such as social media online transactions internet applications and so forth This era of big data pose a challenge to explore large volumes of data and extract the knowledge in the form of useful patterns Moreover the conventional methods used in mining patterns are not suitable for handling the big data Hence in this thesis we investigate the solutions for frequent pattern mining on big data using a popular programming model known as MapReduce Firstly we propose a parallel algorithm for compressing the transactional data that makes the data simple and Bit Vector Product algorithm is proposed to mine the frequent itemsets from the compressed data Secondly distributed algorithm for mining sequential patterns using cooccurrence information is proposed Here we make use of item co occurrence information and reduce the search space using the pruning strategies Thirdly distributed high utility time interval sequential patterns with time information between the successive items are mined Finally an incremental algorithm is

proposed to make use of the knowledge obtained in ii previous mining while mining sequential patterns All the proposed algorithms are tested on our in house Hadoop cluster composed of one master node and eight data nodes *Data Mining for Association Rules and Sequential Patterns* Jean-Marc Adamo,2012-12-06 Data mining includes a wide range of activities such as classification clustering similarity analysis summarization association rule and sequential pattern discovery and so forth The book focuses on the last two previously listed activities It provides a unified presentation of algorithms for association rule and sequential pattern discovery For both mining problems the presentation relies on the lattice structure of the search space All algorithms are built as processes running on this structure Proving their properties takes advantage of the mathematical properties of the structure Part of the motivation for writing this book was postgraduate teaching One of the main intentions was to make the book a suitable support for the clear exposition of problems and algorithms as well as a sound base for further discussion and investigation Since the book only assumes elementary mathematical knowledge in the domains of lattices combinatorial optimization probability calculus and statistics it is fit for use by undergraduate students as well The algorithms are described in a C like pseudo programming language The computations are shown in great detail This makes the book also fit for use by implementers computer scientists in many domains as well as industry engineers

Proceedings of the ... IEEE International Conference on Fuzzy Systems ,2004 *Finding Frequent Patterns from Graph Datasets* Michihiro Kuramochi,2005 Proceedings of the Twenty-fifth International Conference on Very Large Databases, Edinburgh, Scotland, UK, 7-10 September, 1999 Malcolm Atkinson,1999 This is the silver anniversary of one of the longest running database conferences VLDB is among the best established forums for discussion in the international database community and is organized every year by the VLDB Endowment *Proceedings of the 2000 ACM SIGMOD International Conference on Management of Data* Weidong Chen,Jeffrey F. Naughton,Philip A. Bernstein,2000

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Mining Sequential Patterns From Large Data Sets: Bestsellers in 2023 The year 2023 has witnessed a remarkable surge in literary brilliance, with numerous captivating novels enthralling the hearts of readers worldwide. Lets delve into the realm of top-selling books, exploring the engaging narratives that have enthralled audiences this year. The Must-Read : Colleen Hoover's "It Ends with Us" This poignant tale of love, loss, and resilience has gripped readers with its raw and emotional exploration of domestic abuse. Hoover skillfully weaves a story of hope and healing, reminding us that even in the darkest of times, the human spirit can prevail. Uncover the Best : Taylor Jenkins Reids "The Seven Husbands of Evelyn Hugo" This captivating historical fiction novel unravels the life of Evelyn Hugo, a Hollywood icon who defies expectations and societal norms to pursue her dreams. Reids absorbing storytelling and compelling characters transport readers to a bygone era, immersing them in a world of glamour, ambition, and self-discovery. Mining Sequential Patterns From Large Data Sets : Delia Owens "Where the Crawdads Sing" This mesmerizing coming-of-age story follows Kya Clark, a young woman who grows up alone in the marshes of North Carolina. Owens weaves a tale of resilience, survival, and the transformative power of nature, captivating readers with its evocative prose and mesmerizing setting. These popular novels represent just a fraction of the literary treasures that have emerged in 2023. Whether you seek tales of romance, adventure, or personal growth, the world of literature offers an abundance of compelling stories waiting to be discovered. The novel begins with Richard Pape, a bright but troubled young man, arriving at Hampden College. Richard is immediately drawn to the group of students who call themselves the Classics Club. The club is led by Henry Winter, a brilliant and charismatic young man. Henry is obsessed with Greek mythology and philosophy, and he quickly draws Richard into his world. The other members of the Classics Club are equally as fascinating. Bunny Corcoran is a wealthy and spoiled young man who is always looking for a good time. Charles Tavis is a quiet and reserved young man who is deeply in love with Henry. Camilla Macaulay is a beautiful and intelligent young woman who is drawn to the power and danger of the Classics Club. The students are all deeply in love with Morrow, and they are willing to do anything to please him. Morrow is a complex and mysterious figure, and he seems to be manipulating the students for his own purposes. As the students become more involved with Morrow, they begin to commit increasingly dangerous acts. The Secret History is a masterful and gripping novel that will keep you guessing until the very end. The novel is a cautionary tale about the dangers of obsession and the power of evil.

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