Data Mining for Association Rules and Sequential Patterns: Sequential and Parallel Algorithms

Von Jean-Marc Adamo
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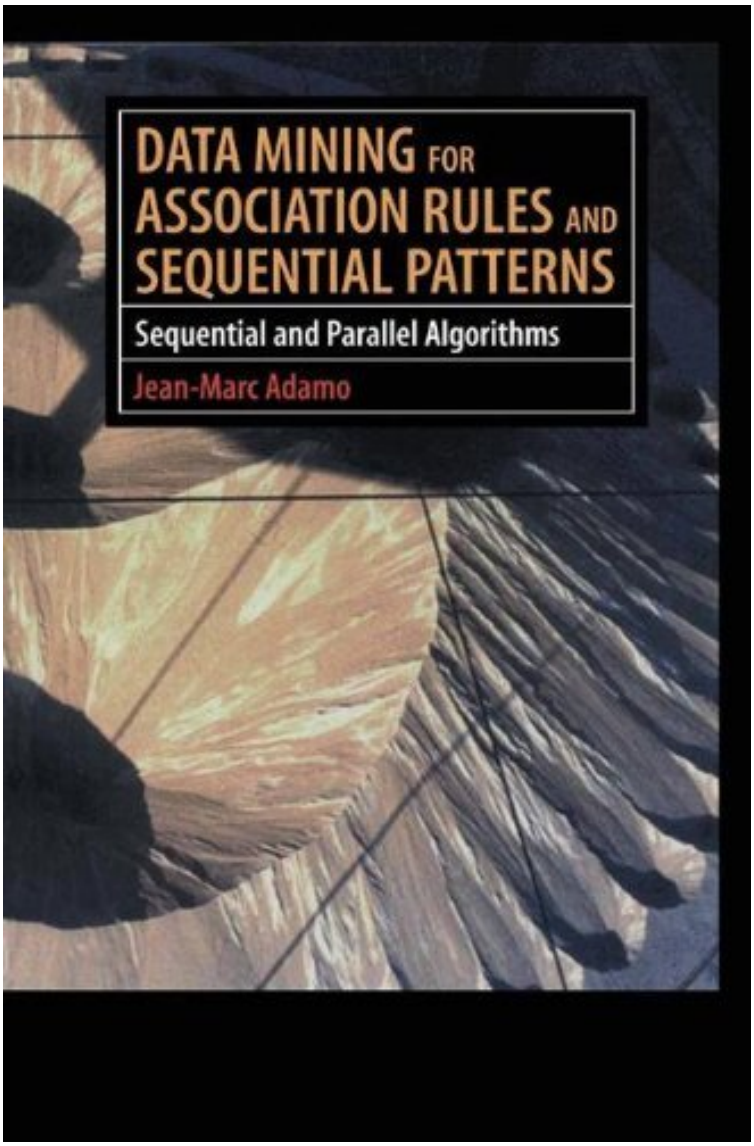

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Moderner Beitrag auf wissenschaftlichem NiveauVon Ein KundeDas Buch von Adamo fhrt formal konsistent in die beiden verwandten Bereiche Assoziations- und Sequenzmuster-Analyse ein. Ausgehend von einer gewissenhaften Darstellung der elementaren Grundlagen und der frhen Original-Algorithmen von Agrawal et.al. werden auch die wichtigsten erweiterten Algorithmen behandelt.Als Besonderheit behandelt das Buch sowohl sequentielle als auch parallele Algorithmen, jeweils basierend auf einer Gitter-Partitionierung des Suchraumes. Fr die berchtigt anspruchsvolle Implementierung paralleler Mining-Algorithmen bezieht sich Adamo auf sein MPI-basiertes ARCH-Projekt an der Universitt von Lyon. Leser, deren Interessen ber die akademische Anwendung hinausgehen, werden auf diese nicht-standardisierte Kommunikationsbibliothek verzichten und eine direktere Implementierung mit den etablierten Mitteln der Zielplattformen bevorzugen.Dieses Buch ist ein anspruchsvoller und moderner Beitrag zum Themenbereich Data-Mining. Die formale Exaktheit macht es zwar zu keiner leichten Lektre im professionellen Alltag, aber zu einer wertvollen Referenz auf wissenschaftlichem Niveau. Die einleitenden Kapitel eignen sich gut zur Ergnzung des Grundlagenstudiums ber Fach-Journale, die hheren Kapitel erlauben die Einarbeitung in hochentwickelte und fortgeschrittene Mining-Algorithmen mit besonderem Schwerpunkt auf Parallelisierung.Dr. Alexander EbbesGIP Research Institute

KurzbeschreibungRecent advances in data collection, storage technologies, and computing power have made it possible for companies, government agencies and scientific laboratories to keep and manipulate vast amounts of data relating to their activities. This state-of-the-art monograph discusses essential algorithms for sophisticated data mining methods used with large-scale databases, focusing on two key topics: association rules and sequential pattern discovery. This will be an essential book for practitioners and professionals in computer science and computer engineering.KurzbeschreibungRecent advances in data collection, storage technologies, and computing power have made it possible for companies, government agencies and scientific laboratories to keep and manipulate vast amounts of data relating to their activities. This state-of-the-art monograph discusses essential algorithms for sophisticated data mining methods used with large-scale databases, focusing on two key topics: association rules and sequential pattern discovery. This will be an essential book for practitioners and professionals in computer science and computer engineering.Synopsis The book 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. Mining for association rules and sequential patterns is known to be a problem with large computational complexity. The issue of designing efficient parallel algorithms should be considered as critical. Most algorithms in the book are devised for both sequential and parallel execution. Parallel algorithm design takes advantage of the lattice structure of the search space. Partitioning is performed via lattice recursive bisection. Database partitioning is also used as an additional source of parallelism. Part of the motivation for writing this book was postgraduate teaching. 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.