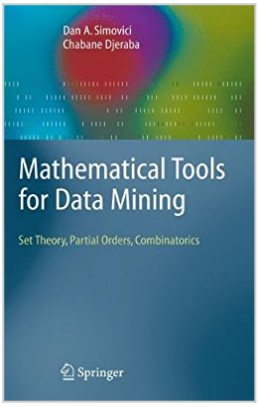

Mathematical Tools for Data Mining: Set Theory, Partial Orders, Combinatorics (Advanced Information and Knowledge Processing)

By Dan A. Simovici, Chabane Djeraba

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This book integrates the mathematics of data mining with its applications, offering the reader a reference to the mathematical tools required for data mining.

Dedicated to the study of set-theoretical foundations of data mining, this book is focused on set theory and several closely related areas: partially ordered sets and lattice theory, metric spaces and combinatorics. The book is structured into 4 parts and presents a comprehensive discussion of the subject.

Features and topics include: - Study of functions and relations, - Applications are provided throughout, - Presents graphs and hypergraphs, - Covers partially ordered sets, lattices and Boolean algebras, - Finite partially ordered sets, - Focuses on metric spaces, - Includes combinatorics, - Discusses the theory of the Vapnik-Chervonenkis dimension of collections of sets.

Intended as a reference for the working data miner and researchers, a good knowledge of calculus is required to make the best use of this book, which will prove a useful reference.

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Editorial Review

From the Back Cover

The maturing of the field of data mining has brought about an increased level of mathematical sophistication. Such disciplines like topology, combinatorics, partially ordered sets and their associated algebraic structures (lattices and Boolean algebras), and metric spaces are increasingly applied in data mining research. This book presents these mathematical foundations of data mining integrated with applications to provide the reader with a comprehensive reference.

Mathematics is presented in a thorough and rigorous manner offering a detailed explanation of each topic, with applications to data mining such as frequent item sets, clustering, decision trees also being discussed. More than 400 exercises are included and they form an integral part of the material. Some of the exercises are in reality supplemental material and their solutions are included. The reader is assumed to have a knowledge of elementary analysis.

Features and topics:

• Study of functions and relations

• Applications are provided throughout

• Presents graphs and hypergraphs

• Covers partially ordered sets, lattices and Boolean algebras

• Finite partially ordered sets

• Focuses on metric spaces

• Includes combinatorics

• Discusses the theory of the Vapnik-Chervonenkis dimension of collections of sets

This wide-ranging, thoroughly detailed volume is self-contained and intended for researchers and graduate students, and will prove an invaluable reference tool.

Review

From the reviews:

"The book is organized into four parts, with a total of 15 chapters. Each chapter … offers numerous exercises and references for further reading. … Overall, Simovici and Djeraba’s presentation of both the theoretical grounds and the practical aspects of the various data mining methodologies is good. … The book is intended

for readers who have a data mining background … . It will help this audience to improve their knowledge of how different data mining strategies operate from a mathematical standpoint." (Aris Gkoulalas-Divanis, ACM Computing Reviews, February, 2009)

Users Review

From reader reviews:

Charles Eiland:

Reading a guide tends to be new life style in this era globalization. With studying you can get a lot of information that may give you benefit in your life. Along with book everyone in this world could share their idea. Ebooks can also inspire a lot of people. Plenty of author can inspire their own reader with their story or maybe their experience. Not only the storyline that share in the books. But also they write about the information about something that you need example of this. How to get the good score toefl, or how to teach children, there are many kinds of book that you can get now. The authors on earth always try to improve their expertise in writing, they also doing some study before they write for their book. One of them is this Mathematical Tools for Data Mining: Set Theory, Partial Orders, Combinatorics (Advanced Information and Knowledge Processing).

John Vandorn:

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