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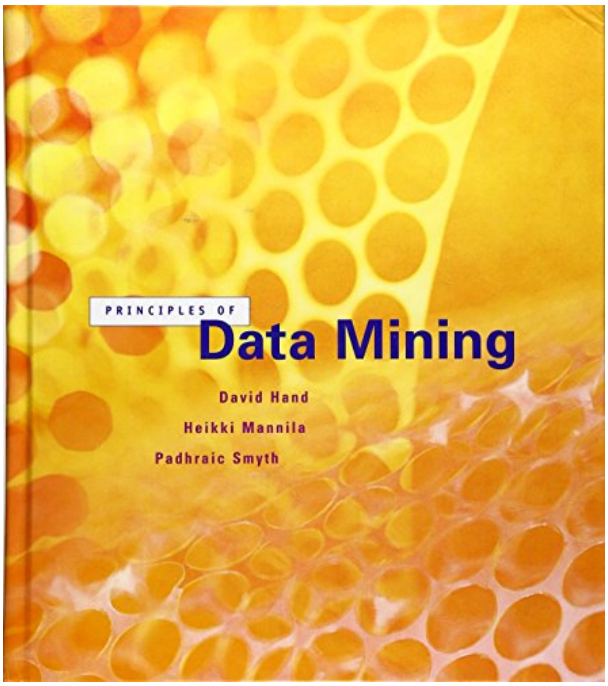

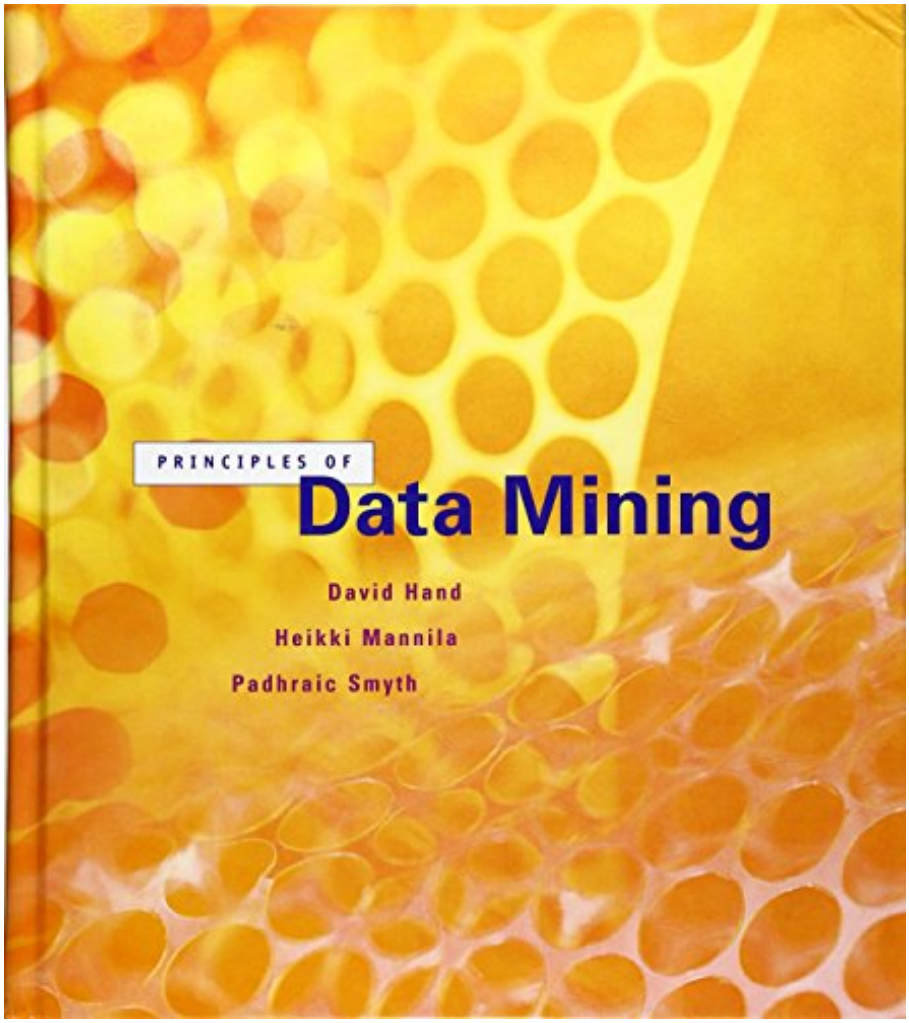

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The growing interest in data mining is motivated by a common problem across disciplines: how does one store, access, model, and ultimately describe and understand very large data sets? Historically, different aspects of data mining have been addressed independently by different disciplines. This is the first truly interdisciplinary text on data mining, blending the contributions of information science, computer science, and statistics.

The book consists of three sections. The first, foundations, provides a tutorial overview of the principles underlying data mining algorithms and their application. The presentation emphasizes intuition rather than rigor. The second section, data mining algorithms, shows how algorithms are constructed to solve specific problems in a principled manner. The algorithms covered include trees and rules for classification and regression, association rules, belief networks, classical statistical models, nonlinear models such as neural networks, and local "memory-based" models. The third section shows how all of the preceding analysis fits together when applied to real-world data mining problems. Topics include the role of metadata, how to handle missing data, and data preprocessing.

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40 of 40 people found the following review helpful.
finally a good statistical and computer science perspective on data mining
By Michael R. Chernick
This book is not an introductory text. Anyone interested in a particular topic should consult the preface of the text to find out what it is about. The negative reviewers were not fair to the authors on that score. Had they read the preface they would have found out (1) how the authors define data mining, (2) that they see it as a subject with an important mix of statistical methodology and computer science and (3) that it is intended as

an advanced undergraduate or first year graduate text on the topic.
They also provide a very well organized structure for the text that is well described in the preface. It consists of three parts. Chapter 1 is an essential introduction that is informative to everyone. Chapters 2 through 4 go through basic statistical ideas that statisticians would be very familiar with and others could view as a refresher. The authors have experience teaching this course to engineering and science majors and have found that many of these students unfortunately do not have the prerequisite statistical inference ideas and need this material covered in the course.

Chapters 5 through 8 cover the components of data mining algorithms and the remaining chapters deal with the details of the tasks and algorithms.

The book features a further reading section at the end of each chapter that provides a very nice guide to the useful and most significant relevant literature. The author's have done a very good job at this. One mistake I found was a reference to Miller (1980). I think this was intended to be a reference to the seocnd edition fo Rupert Miller's text "Simultaneous Statistical Inference" which was published in 1981 by Springer-Verlag but the full citation is missing from the list of references in the back of the book.

This book deserves 5 stars because it does what it intends to do. It presents the field of data mining in a clear way covering topics on classfication and kernel methods expertly. David Hand has published a great deal on these techniques including many fine books.

Mannila and Smyth bring to the text the computer science perspective. There is much useful material on optimization methods and computational complexity.

Statistical modeling and issues of the "curse of dimensionality" and the "overfitting problem" are key issues that this text emphasizes and expertly addresses.

The only thing the text misses is details on specific algorithms. But I do not grade them down for that because it was not their intention. They emphasize methodology and issues and that is the most critical thing a practitioner needs to know first before embarking on his own attack at mining data.

The text does provide most of the current important methods. Although Vapnik's work is mentioned and his two books are referenced there is very little discussion of support vector machines and the use of Vapnik-Chervonenkis classes and dimension in data mining. The new book by Hastie, Tibshirani and Friedman goes into much greater detail on specific algorithms include some only briefly discussed in this text (e.g. support vector machines). The support vector approach is also nicely treated in "Learning with Kernels" by Scholkopf and Smola.

I highly recommend this book for anyone interested in data mining. It is a great reference source and an eloquent text to remind you of the pitfalls of thoughtless mining or "data-dredging". It also has many nice practical examples and some interesting success stories on the application of data mining to specific problems.

8 of 9 people found the following review helpful.
Great book with a great layout!
By Kevin Nasman
I'd been struggling with the seemingly infinite ways to approach data mining and this book cleared it all up for me. It is absolutely full of information and is a great base reference. It does not contain complete algorithms or step by step instructions (you can get those anywhere these days) but instead is a

comprehensive survey of all the best known methods for data mining. I really like how the authors combined classical mining techniques with more modern ones (ex: Bayesian Networks). Other books try to stay in one camp or the other, all while denying that they use very similar sub-components.
This book is well worth it. I promise you will find more information than you could possibly retain.

38 of 39 people found the following review helpful.
A wonderful book but not a cookbook
By Robert Ehrlich
I am a professional data miner (20 yrs. experience) and data mining can be a treacherous business compared to conventional statistical analysis. There are many software packages that offer the novice a seemingly plethora of "information-extracting" tools. There is a tendency in the field to regard one or another of these as the final and eternal answer to a particular objective. This is the best guide so far in assisting the novice data miner in avoiding dumb mistakes and selecting the strongest analytical tool suited to data structure and objectives.
This book can be read and understood by anyone who has had a decent basic course in statistics or or in pattern recognition. It alerts the reader to potential pitfalls in using a particular data mining procedure. It also clearly describes essential differences between procedures. Examples from real data are clear and integrated with the text.
This is not a "cookbook" that teaches you keystroke by keystroke how to implement an algorithm. Instead this book is a guide in understanding the fundamentals behind each procedure (as good as possible assuming low level math skills), and hints on interpetation of output, especially limits to interpretation. It is very well written and can stand alone as a guide or serve as a testbook in a data mining class.
Now if they would just write a book on bayesian decision-making in the same way.

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