Outlier Analysis

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This book provides comprehensive coverage of the field of outlier analysis from a computer science point of view. It integrates methods from data mining, machine learning, and statistics within the computational framework and therefore appeals to multiple communities. The chapters of this book can be organized into three categories:
Basic algorithms: Chapters 1 through 7 discuss the fundamental algorithms for outlier analysis, including probabilistic and statistical methods, linear methods, proximity-based methods, high-dimensional (subspace) methods, ensemble methods, and supervised methods.
Domain-specific methods: Chapters 8 through 12 discuss outlier detection algorithms for various domains of data, such as text, categorical data, time-series data, discrete sequence data, spatial data, and network data.
Applications: Chapter 13 is devoted to various applications of outlier analysis. Some guidance is also provided for the practitioner.The second edition of this book is more detailed and is written to appeal to both researchers and practitioners. Significant new material has been added on topics such as kernel methods, one-class support-vector machines, matrix factorization, neural networks, outlier ensembles, time-series methods, and subspace methods. It is written as a textbook and can be used for classroom teaching.

Outlier Analysis Details

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Jin Shusong says

Outlier detection is quite important in practice. However, this problem is also very difficult since it belongs to the unsupervised learning family. This book explained a lots of popular methods employed for this problem. Some methods are quite updated. The references listed in the book are also good reading materials. Since this book is not a handbook, some methods are explained very briefly. One need to read the references and go back to this book as a summary. But overall, this book is an excellent reference in this area.

Terran M says

This is an excellent, clearly-written book on outlier analysis and its cousin, anomaly detection. In my opinion the author uses exactly the right amount of equations, coupled with good prose, to clearly convey the concepts and provide a coherent framework to attach them to. If you liked Introduction to Statistical Learning by Jame et al, I think you will also like this book.

Note that although it is well written, this is not an introductory book. To decide if you are ready for it, I recommend downloading and reading the first chapter from the author's website. Look at the exercises at the end; if you can do them easily, you're ready for this book. If you have any difficulty at all, go read or review Hastie and Tibshirani first and then come back.