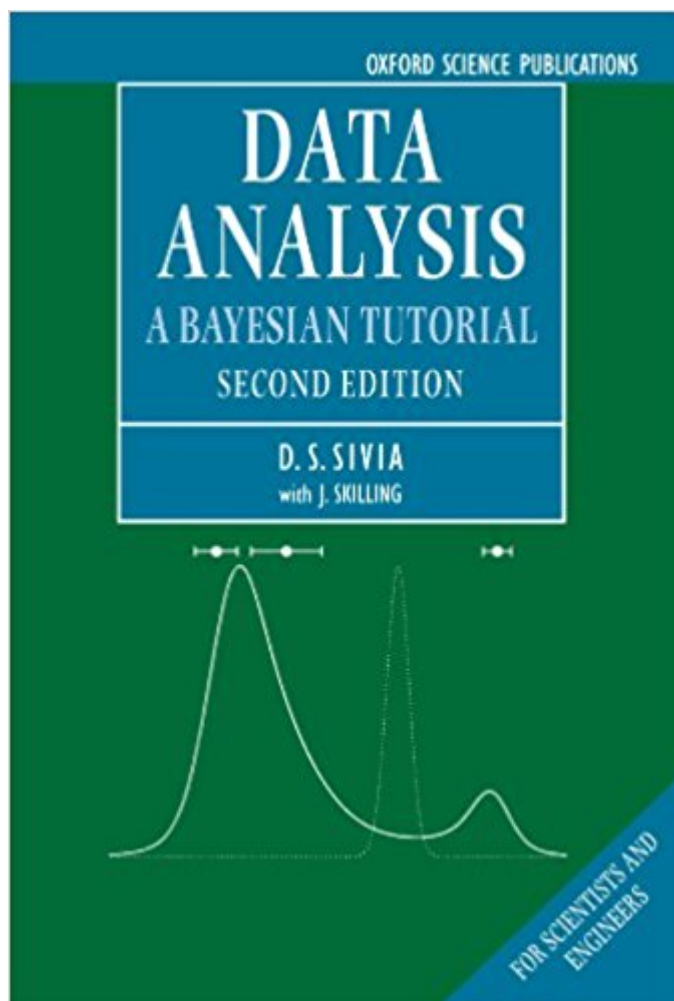The book was found

Data Analysis: A Bayesian Tutorial

Synopsis

Statistics lectures have been a source of much bewilderment and frustration for generations of students. This book attempts to remedy the situation by expounding a logical and unified approach to the whole subject of data analysis.This text is intended as a tutorial guide for senior undergraduates and research students in science and engineering. After explaining the basic principles of Bayesian probability theory, their use is illustrated with a variety of examples ranging from elementary parameter estimation to image processing. Other topics covered include reliability analysis, multivariate optimization, least-squares and maximum likelihood, error-propagation, hypothesis testing, maximum entropy and experimental design.The Second Edition of this successful tutorial book contains a new chapter on extensions to the ubiquitous least-squares procedure, allowing for the straightforward handling of outliers and unknown correlated noise, and a cutting-edge contribution from John Skilling on a novel numerical technique for Bayesian computation called 'nested sampling'.

Book Information

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Customer Reviews

"Review from previous edition Providing a clear rationale for some of the most widely used procedures."--European Journal of Engineering Education"This small (less than 200 pages) but much-needed book contains a wealth of worked-out numerical examples of Bayesian treatments of data, expounded from a theoretical standpoint identical to ours. It should be considered an adjunct to the present work, supplying a great deal of practical advice for the beginner, at an elementary level that will be grasped readily by every science or engineering student."--Ed Jaynes in

'Probability Theory: The Logic of Science', CUP 2003

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As a physics student I was frustrated by statistics with its apparent lack of conceptual foundation and the toolbox approach to data analysis. A little more than 15 years ago, I picked up the first edition of this book and learned Bayesian data analysis from it. The topic is introduced from a practical perspective designed for someone who wants to use these methods for data analysis applied to real problems. This relatively small book clearly, cogently, and pleasantly covers the concepts, the theory and practice. I was pleased to be able to use this text to guide me in applying Bayesian data analysis methods to my own problems. Today, as an experienced practitioner, I find myself still referring to it.For the last seven years, I have taught an upper level undergraduate/graduate level course on Bayesian Data Analysis in the physics and computer science departments at the University at Albany (SUNY). This text is required reading, and I find the students to be more than grateful for it. It is perfect for someone who wants to hit the ground running in applying these methods to real problems.This book is extremely valuable. I most highly recommend it!

A friend of mine introduced me to Bayesian analysis as a framework for handling the acoustic analysis problems which we deal with. He recommended this text as a good introduction to the theory and he is correct. I am working my way through the text and am trying to implement the exploration of the parameter spaces that must be explored. The book does not have code to help you get started, but that was not my purpose for getting the book. Sivia provides a very readable and comprehensive explanation of the Bayesian methods.

This book is a tremendous resource. The relevant theory is presented through a series of explicit examples, in clear and concise language. The only background needed is some multivariate calculus. Highly recommended.

I really learned to appreciate Bayesian statistics by working the insightful example problems provided in the first few sections of the book. Read Jaynes for his argumentation and philosophical underpinnings. Read Sivia to jump start your inner Bayesian.

Awesome book on Bayesian stats. Calculus is a prerequisite to understanding it.

Hard to understand; not for a beginner.

This book is well written and comprehensive. I am enjoying reading it for the first time, and plan to use it as a reference in the future. I am a professional researcher in the physical sciences.

Solid introduction to Bayesian statistics with several examples from the physical sciences. This very well written text is self contained. The Bayesian method is motivated from first principles and basic probability. A good companion to other "classical" Bayesian statistics books such as BDA by Gelman et al.

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