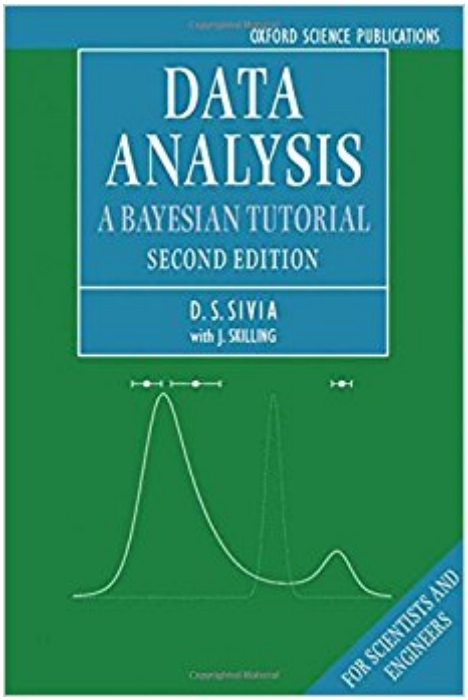
Data Analysis: A Bayesian Tutorial



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

This book is a must for those that are introducing themselves in bayesian statistics. It goes very strightforward in to the main topics and the mathematical notation is easy to follow. If you are just beginning I would recommend to read this book before Jaynes' book Probability Theory: The Logic of Science and after William M. Bolstad's Introduction to Bayesian Statistics

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.

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.

I've given the book four stars only because I don't feel qualified to give it five. Its exposition is truly masterful, partly because Sivia and Skilling are careful to explain the differences between quantities that could easily be (and often are) confused.The authors give numerous practical tips, with reference to real-life problems that they explain in detail. Especially helpful is the authors' practice of treating several variations of a single problem, such as: "Here's how we'd analyze the data if we knew X and Y; later, we'll treat the case where we have to estimate X; finally, we'll treat a general case where we must estimate both."Highly recommended, both for its content and as an example of how to teach a subject that's unfamiliar to most readers.

Very nice book. Fills a need for a concise 'basic' introduction to Bayesian learning. Very similar in scope to Abu Mostafa's book learning from data, to the book of Hastie, Tibshirani, James and Witten intro to statistical learning, or to Andrew Ng's Coursera machine learning intro course. Lots more math than those courses but that's to be expected for a book on Bayesian learning. There are lots of fully worked out examples in this book. The amount of math may make it hard for the less mathematically inclined reader to follow the examples. People have lots of good things to say about Kruschke's Bayesian statistics book but that one is too long to be considered a 'short course'.

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.

This is an excellent book about the use of Bayesian statistic in data analysis. It taught me a lot, and

even inspired me to apply the techniques presented in the book to my own research work. I highly recommend this book to anyone willing to learn about Bayesian statistic and applications. The book is very well written, with a lot of working examples.

Excellent reference book, great addition to your library. Easy and understandable, light reading and great problem solver. A must have if you're interested in bayesian data analysis.

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