Analysis of Neural Data (Springer Series in Statistics)

Robert E. Kass, Uri T. Eden, Emery N. Brown
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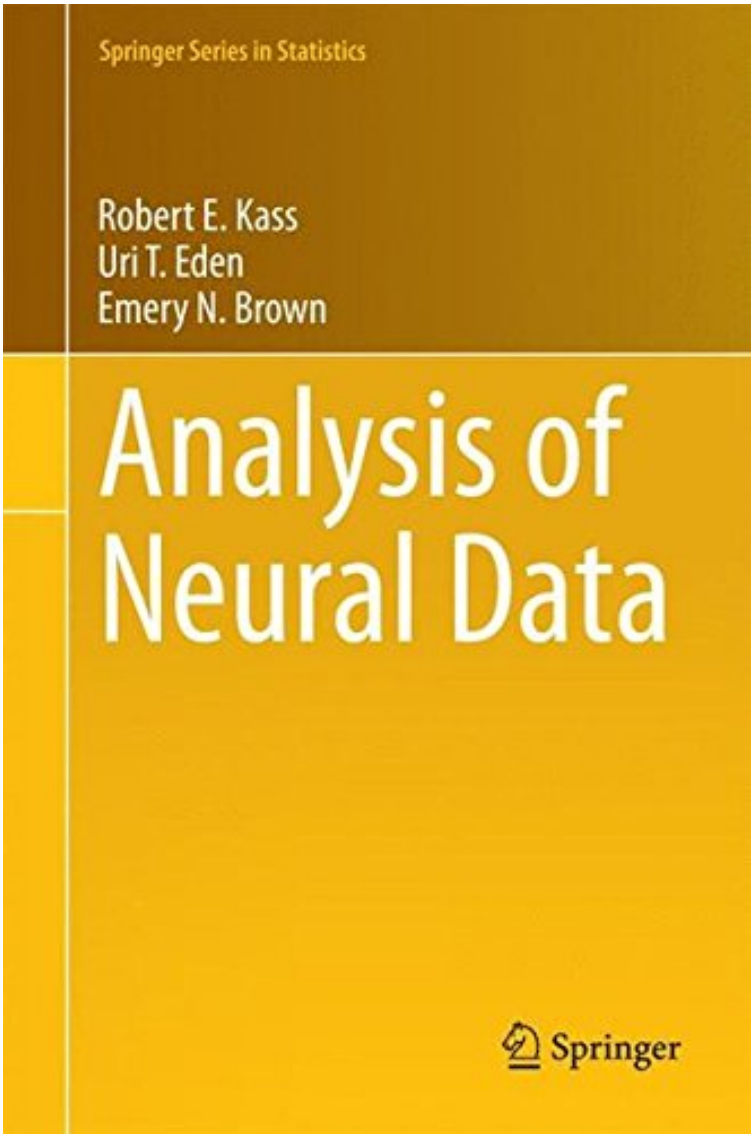

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Robert E. Kass, Uri T. Eden, Emery N. Brown : Analysis of Neural Data (Springer Series in Statistics) before purchasing it in order to gage whether or not it would be worth my time, and all praised Analysis of Neural Data (Springer Series in Statistics):

3 of 7 people found the following review helpful. Neural Data Probability DistributionsBy Joseph J GrenierAnalysis of Neural DataSpringer, New York, Berlin, HeidelbertReviewer: Joseph Grenier MD PhDThis book discusses Bayesian Statistics. More specifically it concerns Probability, Series, and concepts of mathematics essential for

multineuronal signal.There is not very much devotion to neuron data itself. I am a little disappointed for the neurophysiologists who are going to do their work based on this book.The text is more geared to statisticians. The reader should try to be familiar with the book Spikes, Nonlinear Dynamics in Neuroscience, and Matlab for the neuroscientist.

Continual improvements in data collection and processing have had a huge impact on brain research, producing data sets that are often large and complicated. By emphasizing a few fundamental principles, and a handful of ubiquitous techniques, Analysis of Neural Data provides a unified treatment of analytical methods that have become essential for contemporary researchers. Throughout the book ideas are illustrated with more than 100 examples drawn from the literature, ranging from electrophysiology, to neuroimaging, to behavior. By demonstrating the commonality among various statistical approaches the authors provide the crucial tools for gaining knowledge from diverse types of data. Aimed at experimentalists with only high-school level mathematics, as well as computationally-oriented neuroscientists who have limited familiarity with statistics, Analysis of Neural Data serves as both a self-contained introduction and a reference work.

This is an outstanding book, that fills a real need. Assuming no background in statistics, it covers the data analysis methods neuroscientists need to know, from standard material like hypothesis tests, to specialized methods that have recently found use in our field. It has the detail and insight needed for those developing their own statistical methods. And for the working neurobiologist it has plenty of practical tricks, tips, and examples, coming straight from the experts. This book is a must for anyone serious about quantitative analysis in neuroscience.Kenneth D. Harris, Professor of Quantitative Neuroscience, University College London"Analysis of Neural Data" is a thorough, authoritative textbook on the fastest growing statistical field. All relevant topics are covered in depth with examples from the literature and thoughtful comments. Particularly welcome is the discussion of multivariate statistics, time series and Bayesian methods, topics frequently encountered in neuroscience research but infrequently discussed in standard statistics textbooks. A highly readable, useful and commendable textbook! Apostolos P. Georgopoulos, Regents Professor of Neuroscience, University of MinnesotaThis book is a unique and valuable resource for any scientist who wants to approach neural data analysis in a rigorous fashion, or to gain a broad overview of modern statistical concepts and approaches. While the book is an eminently practical guide, it is far from a cookbook. The individual who is willing to invest the time to read it will be deeply rewarded not only with everyday methodological guidance, but also, with a comprehensive understanding of the mathematical foundations of statistics. The first chapter, in which the authors lucidly present a perspective on what statistics has to offer, should be required reading for all neuroscientists or at least, all who care about data. The authors have met the difficult and competing challenges of creating a book t "This is an outstanding book, that fills a real need. Assuming no background in statistics, it covers the data analysis methods neuroscientists need to know, from standard material like hypothesis tests, to specialized methods that have recently found use in our field. It has the detail and insight needed for those developing their own statistical methods. And for the working neurobiologist it has plenty of practical tricks, tips, and examples, coming straight from the experts. This book is a must for anyone serious about quantitative analysis in neuroscience." (Kenneth D. Harris, Professor of Quantitative Neuroscience, University College London)"Analysis of Neural Data is a thorough, authoritative textbook on the fastest growing statistical field. All relevant topics are covered in depth with examples from the literature and thoughtful comments. Particularly welcome is the discussion of multivariate statistics, time series and Bayesian methods, topics frequently encountered in neuroscience research but infrequently discussed in standard statistics textbooks. A highly readable, useful and commendable textbook!" (Apostolos P. Georgopoulos, Regents Professor of Neuroscience, University of Minnesota)"This book is a unique and valuable resource for any scientist who wants to approach neural data analysis in a rigorous fashion, or to gain a broad overview of modern statistical concepts and approaches. While the book is an eminently practical guide, it is far from a cookbook. The individual who is willing to invest the time to read it will be deeply rewarded not only with everyday methodological guidance, but also, with a comprehensive understanding of the mathematical foundations of statistics. The first chapter, in which the authors lucidly present a perspective on what statistics has to offer, should be required reading for all neuroscientists or at least, all who care about data. The authors have met the difficult and competing challenges of creating a book that is both practical and rigorous. To do this, they combine a crisp writing style with a number of helpful strategies, including the use of many carefully-chosen examples from the neuroscience literature, and vivid reminders of the difference between the world of mathematical objects and the world of data. Mathematical concepts that are typically omitted from elementary texts are not avoided, but are discussed in a way that makes their relevance evident...The book is a one-of-a-kind resource that combines practicality, rigor, and accessibility; it is a book that was sorely needed and is an extremely valuable reference." (Jonathan D. Victor, Fred Plum Professor, Brain and Mind Research Institute and Department of Neurology, Weill Cornell Medical College)"Analysis of Neural Data provides an invaluable guide for neuroscientists seeking to summarize and interpret their data. The authors -- leading statisticians who have developed and applied many of the methods they describe themselves are also outstanding

teachers, and the treatment they provide is at once accessible, authoritative, comprehensive, and up-to-date. The book provides a carefully structured introduction to statistical methods for students at the beginning of their research careers as well as a treatment of several advanced methods that will be of value to practicing researchers." (James L. McClelland, Lucie Stern Professor in the Social Sciences, Director, Center for Mind, Brain and Computation, Stanford University)"Written by eminent statisticians, this book covers a range of topics from basic mathematics to state-of-the-art statistical analyses of neural data. Researchers conducting experiments will learn the principles of data analysis and will begin analyzing data using the methods provided. Theoreticians will be introduced to more than 100 intriguing experiments that will teach them to form persuasive interpretations. Analysis of Neural Data should become a standard reference for neuroscience research." (Shigeru Shinomoto, Department of Physics, Kyoto University)From the Back CoverContinual improvements in data collection and processing have had a huge impact on brain research, producing data sets that are often large and complicated. By emphasizing a few fundamental principles, and a handful of ubiquitous techniques, Analysis of Neural Data provides a unified treatment of analytical methods that have become essential for contemporary researchers. Throughout the book ideas are illustrated with more than 100 examples drawn from the literature, ranging from electrophysiology, to neuroimaging, to behavior. By demonstrating the commonality among various statistical approaches the authors provide the crucial tools for gaining knowledge from diverse types of data. Aimed at experimentalists with only high-school level mathematics, as well as computationally-oriented neuroscientists who have limited familiarity with statistics, Analysis of Neural Data serves as both a self-contained introduction and a reference work.