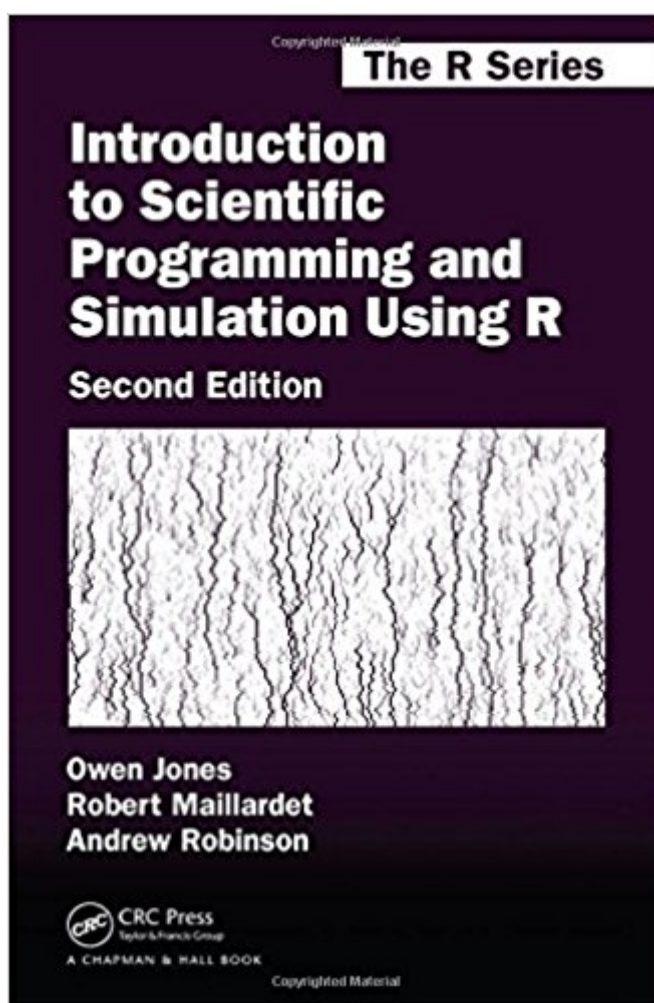The book was found

Introduction To Scientific Programming And Simulation Using R, Second Edition (Chapman & Hall/CRC The R Series)

Synopsis

Learn How to Program Stochastic Models Highly recommended, the best-selling first edition of Introduction to Scientific Programming and Simulation Using R was lauded as an excellent, easy-to-read introduction with extensive examples and exercises. This second edition continues to introduce scientific programming and stochastic modelling in a clear, practical, and thorough way. Readers learn programming by experimenting with the provided R code and data. The bookÃ¢â¬â„¢s four parts teach: Core knowledge of R and programming concepts How to think about mathematics from a numerical point of view, including the application of these concepts to root finding, numerical integration, and optimisation Essentials of probability, random variables, and expectation required to understand simulation Stochastic modelling and simulation, including random number generation and Monte Carlo integration   In a new chapter on systems of ordinary differential equations (ODEs), the authors cover the Euler, midpoint, and fourth-order Runge-Kutta (RK4) schemes for solving systems of first-order ODEs. They compare the numerical efficiency of the different schemes experimentally and show how to improve the RK4 scheme by using an adaptive step size.   Another new chapter focuses on both discrete- and continuous-time Markov chains. It describes transition and rate matrices, classification of states, limiting behaviour, Kolmogorov forward and backward equations, finite absorbing chains, and expected hitting times. It also presents methods for simulating discrete- and continuous-time chains as well as techniques for defining the state space, including lumping states and supplementary variables. Building readersÃ¢â¬â„¢ statistical intuition, Introduction to Scientific Programming and Simulation Using R, Second Edition shows how to turn algorithms into code. It is designed for those who want to make tools, not just use them. The code and data are available for download from CRAN.

Book Information

Series: Chapman & Hall/CRC The R Series

Hardcover: 606 pages

Publisher: Chapman and Hall/CRC; 2 edition (June 12, 2014)

Language: English

ISBN-10: 1466569999

ISBN-13: 978-1466569997

Product Dimensions: 9.4 x 6.2 x 1.3 inches

Shipping Weight: 2.2 pounds (View shipping rates and policies)

Average Customer Review: 4.3 out of 5 stars   34 customer reviews

Best Sellers Rank: #212,340 in Books (See Top 100 in Books)   #27 inÃ Â Books > Science & Math > Mathematics > Number Systems   #176 inÃ Â Books > Computers & Technology > Software > Mathematical & Statistical   #513 inÃ Â Books > Computers & Technology > Programming > Introductory & Beginning

Customer Reviews

"Computation has become so central to the field of statistics that any practicing statistician must have a basic understanding of scientific programming and stochastic modeling. Introduction to Scientific Programming and Simulation Using R provides an excellent entry-level text on the subject. This is a well written and well-designed book that will appeal to a wide readership and prove useful for several different types of courses. It provides a very good introduction to programming using the R language that has become widely used in statistical education and practice. It also introduces the fundamental tools needed for stochastic modeling: numerical analysis, probability, and simulation. -Christopher H. Schmid, Journal of the American Statistical Association Praise for the First Edition: "Overall, the authors have produced a highly readable text. As prerequisites do not go beyond first-year calculus, the book should appeal to a wide audience; it should also be eminently suitable for self-study. On a somewhat larger scale, it may help to further establish R as a kind of Swiss Army knife for computational science. I strongly recommend it."Ã¢â ¬â ¢C. Kleiber, UniversitÃƒÂ¤t Basel, Basel, Switzerland, in Statistical Papers, March 2012 This book is a good resource for someone who wants to learn R and use R for statistical computing and graphics. It will also serve well as a textbook or a reference book for students in a course related to computational statistics.Ã¢â ¬â ¢Hon Keung Tony Ng, Technometrics, May 2011 Ã¢â ¬Â| a very coherent and useful account of its chosen subject matter. Ã¢â ¬Â| The programming section Ã¢â ¬Â| is more comprehensive than Braun & Murdoch (2007), but more accessible than Venables & Ripley (2000). Ã¢â ¬Â| The book deserves a place on university library shelves Ã¢â ¬Â| One very useful feature of the book is that nearly every chapter has a set of exercises. There are also plenty of well-chosen examples throughout the book that are used to explain the material. I also appreciated the clear and attractive programming style of the R code presented in the book. I found very little in the way of typos or solecisms. Ã¢â ¬Â| I can strongly recommend the book for its intended audience. If I ever again have to teach our stochastic modelling course, I will undoubtedly use some of the exercises and examples from Scientific Programming and Simulation Using R.Ã¢â ¬â ¢David Scott, Australian & New Zealand Journal of Statistics, 2011 It is not often that I think that a statistics text is one that most scientifc statisticians should have in their personal libraries. Introduction to Scientific

Programming and Simulation Using R is such a text. Ã¢â ¬Â| This text provides scientific researchers with a working knowledge of R for both reviewing and for engaging in the statistical evaluation of scientific data. Ã¢â ¬Â|It is particularly useful for understanding and developing modeling and simulation software. I highly recommend the text, finding it to be one of the most useful books I have read on the subject.Ã¢â ¬â ¢Journal of Statistical Software, September 2010, Volume 36 The authors have written an excellent introduction to scientific programming with R. Their clear prose, logical structure, well-documented code and realistic examples made the book a pleasure to read. One particularly useful feature is the chapter of cases studies at the end, which not only demonstrates complete analyses but also acts as a pedagogical tool to review and integrate material introduced throughout the book. Ã¢â ¬Â| I would strongly recommend this book for readers interested in using R for simulations, particularly for those new to scientific programming or R. It is also very student-friendly and would be suitable either as a course textbook or for self-study.Ã¢â ¬â ¢Significance, September 2009 I think that the techniques of scientific programming presented will soon enable the novice to apply statistical models to real-world problems. The writing style is easy to read and the book is suitable for private study. If you have never read a book on scientific programming and simulation, then I recommend that you start with this one.Ã¢â ¬â ¢International Statistical Review, 2009

This is a well written book which is designed for a mathematically sophisticated audience that wants to get a deeper understanding of statistics using simulations. University level calculus is a must and more advanced math, especially matrix algebra, is highly recommended. If you have the math background this is a very good book. Everything you want in a textbook is here, the writing is clear, the examples are useful and the advice for additional reading is spot on. On the other hand, the problems are at times unnecessarily difficult. The coverage of the R programming language is good but novices will struggle to go from the well written explanations of the syntax to the fairly hardcore end of chapter exercises. The book covers a huge amount of material: basic to advanced programming and data structures, computer science issues (like numeric accuracy), hardcore math topics like root finding algorithms and integration, fundamentals of statistics like basic probably and common distributions are all here. Basically, this book covers a huge swath of material needed for statistics and statistical programming. If you have some exposure to the topics and if you have a strong background in math this book should be superb for you. If you are starting from scratch and/or if you do not have a strong math background this book will probably blow you away.

This book is NOT just about learning R programming. Many other comments seem to focus on using this book for learning R programming. But if you had programming experiences in any other programming language and you want to learn the concepts of numeric methods and simulation, this is a perfect book. There is only one minor flaw: there is no instructor's guide available. However, if you contact the author, a brief set of R programs for some selected problems will be available. With these solutions, this book becomes excellent for learning/teaching Scientific Programming and Simulation. Students enjoyed the simulation of forest fire greatly. The book starts with introduction to R programming just enough for learning numeric methods later. Once the basics are covered, the subject of numeric methods is the major focus. Finally, the book culminates when the subject of simulation is covered. Students left with a desire wanting to learn more.If you are looking for a book for covering R only, this is not the one. If you don't enjoy doing scientific programming, this book is not for you. But, if you are look for a book for teaching scientific programming and simulation in a computer science department, this is the book.

I have reviewed some very good books on R programming, but this one really stands above the others. If I could only keep one reference book for R, this would be the one.Even though the authors clearly intended this as a university textbook, the examples are interesting and accessible to anyone who wants to learn R (I use the book for self-study). Part I introduces the basic features of the R language, data analysis, and graphics. Throughout the text, the authors use clear and interesting examples.Part II presents some interesting applications of R, but there are probably other packages better suited to these types of numerical techniques. Part III, a concise overview of Probability, is primarily a reference--Don't expect to learn probability and statistics from this book. That said, I keep coming back to this book. It is a great resource.Although textbooks can have pretty scary price tags, if you can find it used or at a discount, then it is worth adding to your collection.

I share the generally held view that R has a steep learning curve but the effort spent learning it is well rewarded. I study both statistics and econometrics and I find that R straddles both more easily than most statistical packages, because of its flexibility and the fact that someone, somewhere has thought about your problem and written a solution for it. However, once the fundamentals of R are grasped it is not long before one is left craving to know how to tap into the core strength of R, which is its programming capability. This is where "SP&SUR" comes into its own. It is easy to follow and builds up well. The examples are clear and easy to follow. This book is undoubtedly the key that unlocks R. Highly recommended.

If you are a graduate student in statistics, biostatistics, or the like, and are struggling with R programming, then this book should do the trick. So many books are out there regarding how to to do DATA ANALYSIS with R. This book is not another one of those. This book is what is needed to learn to program R for statistical computing NOT data analysis, and there is a big difference. This book will prepare you for classes in statistical computing and after doing some of the exercises, you will be ready for books like Maria Rizzo's Statistical Computing with R and Givens and Hoeting's Computational Statisics. You will learn how to write loops (I know everybody is trying to avoid this) and functions and how to do simulations, numerical optimization, root finding, and there is even some goodies about graphics. The book obviously doesnt cover everything, no book could, but if you combine this book with one of the others mentioned above, then you should be well equipped for statistical research using R.

This is my first time writing a review for a book. I bought about 10 books on R at the same time...this was the book that really helped me out in learning the R programmin lanugaue. What I loved the most about this book is that there are programming exercies at the end of each chapter so you can practice what you just learned which is how I really learn. Also the book is very clear....the fist 7 chapters are on R programming basics only. Reading those 7 chpaters is the fastest way to get you going with R programming--

Introduction to Scientific Programming and Simulation Using R, Second Edition (Chapman & Hall/CRC The R Series) Introduction to Scientific Programming and Simulation Using R (Chapman & Hall/CRC The R Series) Statistics and Data Analysis for Microarrays Using R and Bioconductor, Second Edition (Chapman & Hall/CRC Mathematical and Computational Biology) Introduction to Modern Cryptography, Second Edition (Chapman & Hall/CRC Cryptography and Network Security Series) Measure and Integral: An Introduction to Real Analysis, Second Edition (Chapman & Hall/CRC Pure and Applied Mathematics) Making Music with Computers: Creative Programming in Python (Chapman & Hall/CRC Textbooks in Computing) Using R for Numerical Analysis in Science and Engineering (Chapman & Hall/CRC The R Series) A Concise Introduction to Pure Mathematics, Fourth Edition (Chapman Hall/CRC Mathematics Series) Flexible, Reliable Software: Using Patterns and Agile Development (Chapman & Hall/CRC Textbooks in Computing) Modeling and Analysis of Stochastic Systems, Second Edition (Chapman & Hall/CRC Texts in Statistical Science) Topological Vector Spaces, Second Edition (Chapman & Hall/CRC Pure and Applied Mathematics)

Environmental and Ecological Statistics with R, Second Edition (Chapman & Hall/CRC Applied Environmental Statistics) Introduction to Stochastic Processes (Chapman & Hall/CRC Probability Series) Linear Models with R, Second Edition (Chapman & Hall/CRC Texts in Statistical Science) Generalized Linear Models, Second Edition (Chapman & Hall/CRC Monographs on Statistics & Applied Probability) Machine Learning: An Algorithmic Perspective, Second Edition (Chapman & Hall/Crc Machine Learning & Pattern Recognition) Introduction to Set Theory, Third Edition, Revised and Expanded (Chapman & Hall/CRC Pure and Applied Mathematics) Introduction to Proteins: Structure, Function, and Motion (Chapman & Hall/CRC Mathematical and Computational Biology) An Introduction to Systems Biology: Design Principles of Biological Circuits (Chapman & Hall/CRC Mathematical and Computational Biology) Introduction to Computational Biology: Maps, Sequences and Genomes (Chapman & Hall/CRC Interdisciplinary Statistics)