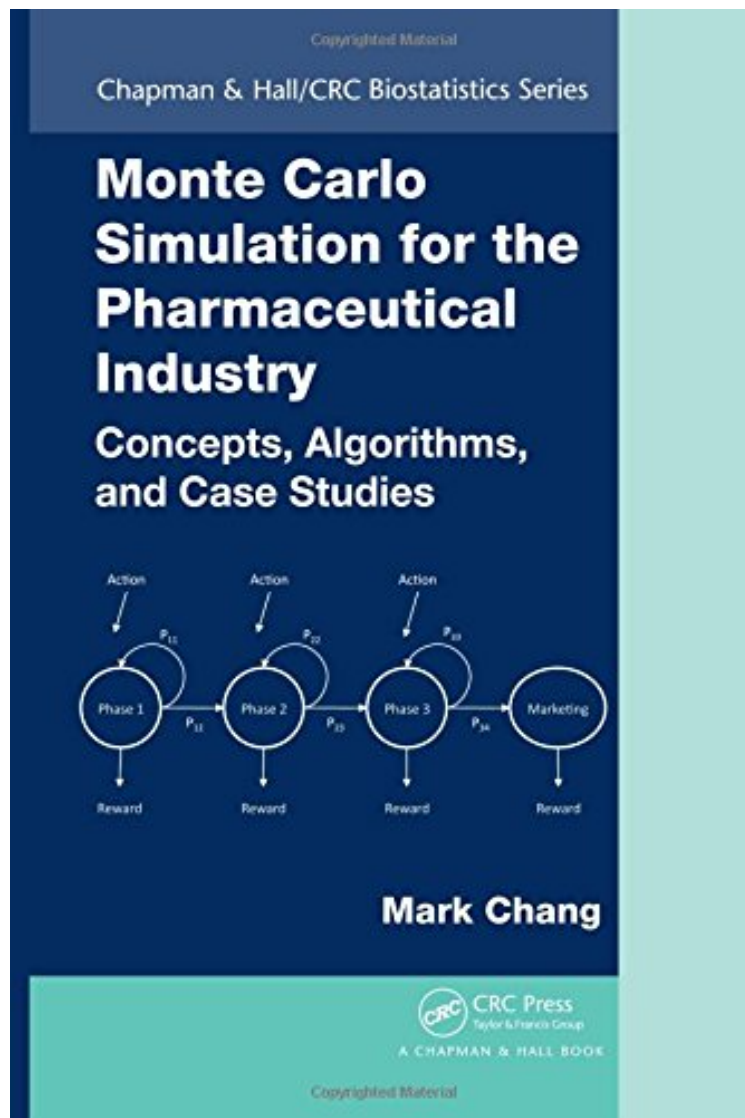


(Online library) Monte Carlo Simulation for the Pharmaceutical Industry: Concepts, Algorithms, and Case Studies (Chapman Hall/CRC Biostatistics Series)

Monte Carlo Simulation for the Pharmaceutical Industry: Concepts, Algorithms, and Case Studies (Chapman Hall/CRC Biostatistics Series)

Mark Chang

audiobook / *ebooks / Download PDF / ePub / DOC



DOWNLOAD



READ ONLINE

#3028234 in Books CRC Press 2010-09-29 Original language: English PDF # 1 9.40 x 1.30 x 6.30l, 2.05 #File Name: 1439835926564 pages | File size: 58.Mb

Mark Chang : Monte Carlo Simulation for the Pharmaceutical Industry: Concepts, Algorithms, and Case Studies (Chapman Hall/CRC Biostatistics Series) before purchasing it in order to gage whether or not it would be worth my time, and all praised Monte Carlo Simulation for the Pharmaceutical Industry: Concepts, Algorithms, and

Case Studies (Chapman Hall/CRC Biostatistics Series):

0 of 1 people found the following review helpful. this book is not useful for biostatisticiansBy sabinthis book is not useful for biostatisticians. do not buy it. I wasted my money and could not resale it.4 of 4 people found the following review helpful. VERY IMPORTANT TECHNIQUES FOR PHARMA STATISTICIANS WITH APPLICATIONS TO ADAPTIVE TRIAL DESIGNSBy Michael R. ChernickMark Chang is a leading statistician in the pharmaceutical industry. He has written some very influential books on adaptive designs (among the first published in biostatistics). His approach is the classical frequentist approach as opposed to the Bayesian approach recently covered in another CRC text by Berry, Carlin, Lee and Muller. Monte Carlo Simulation is important in the evaluation of the operating characteristics (frequentist) of a variety of adaptive clinical trial designs. In this text Mark takes an extensive look at the role Monte Carlo methods play in all phases of the drug development process with adaptive designs playing a role as described extensively in Chapter 6. But the book covers the use of Monte Carlo for a variety of other type of statistical problems and methods. The book starts out with techniques such as bootstrap , neural networks and genetic algorithms as well as the use of Monte Carlo to estimate integrals as an alternative to numerical integration. Many examples are given along with pseudo-computer code. There are a wide number of topics not covered in the typical biostatistics/biopharmaceutical statistics textbooks including decision theory, Markov decision processes, dynamic programming, Bayesian approaches to decision theory, game theory, randomization, methods of pseudorandom number generation for many useful probability distributions, and clinical trial design. Specific topics included are drug discovery, pharmacodynamics, pharmacokinetics, toxicology, drug pricing, drug commercialization, molecular design, and disease modeling and biological pathway simulation. As a biostatistician in the industry I am familiar with many of the methods used in clinical trial development and to some extent preclinical research. But there is a lot of material from the non-clinical realm of drug developments and marketing aspects that I have very little knowledge of. Mark Chang covers it all based on his vast experience in the industry. He does a good job of motivating the applications, explaining the techniques and putting things in context. Also much of the book deals with sophisticated mathematical and statistical techniques not typically covered by books on simulation or books on the statistical aspects of clinical trials or preclinical research. This makes it a valuable reference for biostatisticians, statisticians in marketing and/or management in the pharmaceutical industry. The only potential criticism that I would have is that it tries to cover so much. One might argue that the material could be presented more systematically and perhaps written in more detail in three separate books. One would cover the clinical trial problems (including group sequential and adaptive designs) and their solution via Monte Carlo. Another could cover marketing and decision theory and their applications both Bayesian and classical via Monte Carlo methods. Perhaps, the third could be on the drug discovery, preclinical and nonclinical areas of pharmaceutical research where simulation plays a role. But I must say that unless or until something better comes along this is a unique and valuable reference book that I find very useful.

Helping you become a creative, logical thinker and skillful "simulator," Monte Carlo Simulation for the Pharmaceutical Industry: Concepts, Algorithms, and Case Studies provides broad coverage of the entire drug development process, from drug discovery to preclinical and clinical trial aspects to commercialization. It presents the theories and methods needed to carry out computer simulations efficiently, covers both descriptive and pseudocode algorithms that provide the basis for implementation of the simulation methods, and illustrates real-world problems through case studies. The text first emphasizes the importance of analogy and simulation using examples from a variety of areas, before introducing general sampling methods and the different stages of drug development. It then focuses on simulation approaches based on game theory and the Markov decision process, simulations in classical and adaptive trials, and various challenges in clinical trial management and execution. The author goes on to cover prescription drug marketing strategies and brand planning, molecular design and simulation, computational systems biology and biological pathway simulation with Petri nets, and physiologically based pharmacokinetic modeling and pharmacodynamic models. The final chapter explores Monte Carlo computing techniques for statistical inference. This book offers a systematic treatment of computer simulation in drug development. It not only deals with the principles and methods of Monte Carlo simulation, but also the applications in drug development, such as statistical trial monitoring, prescription drug marketing, and molecular docking.

"Overall, the book does not only cover a very broad range of different topics but manages to explain these coherently. this book is not only of interest for scientists in the pharmaceutical industry but also for academia due to its thorough presentation." Frank Emmert-Streib, *Statistical Methods in Medical Research*, 21(6), 2012 " well written and easy to read. this book is worthwhile reading as a long introduction to Monte Carlo simulation and its eventual application in pharmaceutical industry. It can convince people to consider this methodology "Sophie Donnet, *International Statistical* , 2012 "This is an ambitious book covering a very wide array of topics the theoretical presentation is reliable and sophisticated the ability of the author to condense such a broad array of topics, and to present them in a cohesive

manner, is quite impressive, and means that the book will contain information of relevance to a wide audience. Many statisticians working in the pharmaceutical industry will benefit from having access to a copy of this book. Some statisticians working outside the industry may also benefit from having access to a copy, particularly those working in areas overlapping with the pharmaceutical industry, such as clinical science and health economics." Ian C. Marschner, Australian New Zealand Journal of Statistics, 2011 "For industry statisticians, scientists, and software engineers and programmers, Chang, who works for a pharmaceutical company, details concepts, theories, algorithms, and case studies for carrying out computer simulations in the drug development process, from drug discovery to clinical trial aspects to commercialization. He covers analogy and simulation using examples from different areas, general sampling methods and the different stages of drug development, simulation approaches based on game theory and the Markov decision process, simulations in classical and adaptive trials, and challenges in clinical trial management and execution. He then addresses prescription drug marketing strategies and brand planning, molecular design and simulation, computational systems biology and biological pathway simulation with Petri nets, and physiologically based pharmacokinetic modeling and pharmacodynamic models, ending with Monte Carlo computing techniques for statistical inference." SciTech Book News, February 2011

About the Author Mark Chang is the executive director of biostatistics and data management at AMAG Pharmaceuticals in Lexington, Massachusetts. Dr. Chang is an elected fellow of the American Statistical Association. He is the author of the best-selling Adaptive Design Theory and Implementation Using SAS and R and co-author of the best-selling Adaptive Design Methods in Clinical Trials.