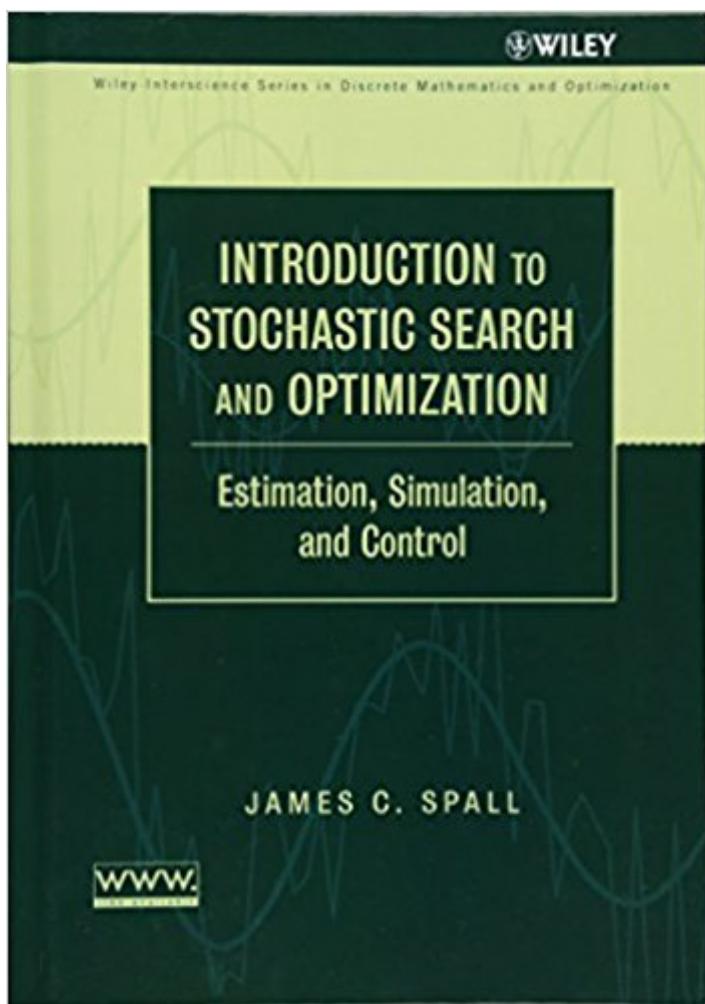The book was found

Introduction To Stochastic Search And Optimization

Synopsis

A unique interdisciplinary foundation for real-world problem solving Stochastic search and optimization techniques are used in a vast number of areas, including aerospace, medicine, transportation, and finance, to name but a few. Whether the goal is refining the design of a missile or aircraft, determining the effectiveness of a new drug, developing the most efficient timing strategies for traffic signals, or making investment decisions in order to increase profits, stochastic algorithms can help researchers and practitioners devise optimal solutions to countless real-world problems. Introduction to Stochastic Search and Optimization: Estimation, Simulation, and Control is a graduate-level introduction to the principles, algorithms, and practical aspects of stochastic optimization, including applications drawn from engineering, statistics, and computer science. The treatment is both rigorous and broadly accessible, distinguishing this text from much of the current literature and providing students, researchers, and practitioners with a strong foundation for the often-daunting task of solving real-world problems. The text covers a broad range of todayÃ¢â¬â„¢s most widely used stochastic algorithms, including: Random search Recursive linear estimation Stochastic approximation Simulated annealing Genetic and evolutionary methods Machine (reinforcement) learning Model selection Simulation-based optimization Markov chain Monte Carlo Optimal experimental design The book includes over 130 examples, Web links to software and data sets, more than 250 exercises for the reader, and an extensive list of references. These features help make the text an invaluable resource for those interested in the theory or practice of stochastic search and optimization.

Book Information

Hardcover: 618 pages

Publisher: Wiley-Interscience; 1 edition (March 2003)

Language: English

ISBN-10: 0471330523

ISBN-13: 978-0471330523

Product Dimensions: 7.3 x 1.4 x 10.2 inches

Shipping Weight: 2.8 pounds (View shipping rates and policies)

Average Customer Review: 5.0 out of 5 stars   5 customer reviews

Best Sellers Rank: #360,963 in Books (See Top 100 in Books)   #28 inÃ Â Books > Science & Math > Mathematics > Applied > Stochastic Modeling   #47 inÃ Â Books > Science & Math > Mathematics > Applied > Linear Programming   #1042 inÃ Â Books > Engineering & Transportation

Customer Reviews

"This volume deserves a prominent role not only as a textbook, but also as a desk reference for anyone who must cope with noisy dataÃ¢â ¬Â|" (Computing Reviews.com, January 6, 2006) "...well written and accessible to a wide audience...a welcome addition to the control and optimization community." (IEEE Control Systems Magazine, June 2005) "Ã¢â ¬Â|a step toward learning more about optimization techniques that often are not part of a statistician's training." (Journal of the American Statistical Association, December 2004) Ã¢â ¬Å"Ã¢â ¬Â|provides easy access to a very broad, but related, collection of topicsÃ¢â ¬Â|Ã¢â ¬Â• (Short Book Reviews, August 2004) "Rather than simply present various stochastic search and optimization algorithms as a collection of distinct techniques, the book compares and contrasts the algorithms within a broader context of stochastic methods." (Technometrics, August 2004, Vol. 46, No. 3)

This book should be on the desk of anyone interested in the theory and application of stochastic search and optimization. --Kevin Passino, Department of Electrical Engineering, The Ohio State University

Stochastic optimization seems to be a "dark corner" for the fields of optimization and of Monte Carlo methods. Spall brings a quantitative engineering perspective to the problems, yet gives theory its proper dues. Moreover, he weaves a consistent interpretation among these algorithms which deserve greater attention and focus. While he clearly is a practitioner, his original work in algorithmic stochastic search and that of those he's inspired will, in my opinion, enable new theory to arise, whereby problems with horrible violations of continuity and the like will be embedded in some kind of mathematical manifold, and notions of stochastic gradients will be seen as exploring these.I heartily applaud this book. It was, for me, one of those which changed the way I looked at things overall.

Very clearly written, and good coverage of subject by a practicing expert in the field (I may be biased because I am about to take the course he teaches).

I stumbled upon this book searching for a Genetic Algorithm book. The coverage of topics are unique and very interesting. This is the first book I came across that treats both the evolutionary

algorithms (GA) and the stochastic search methods. Recursive Linear Estimator (e.g. Kalman Filter), Markov Chain Monte Carlo (e.g. Metropolis-Hastings, Gibbs), and Reinforcement Learning, are some of the stochastic material discussed. Continuous and discrete parameters are treated as well as noisy data, but not so much on constrained optimization.The algorithms presented are very practical and theoretically well founded. When I learned about SPSA, I was most impressed to find out that it is possible to estimate the gradient by just two objective function calls (instead of finite differencing every dimension of the parameter vector to be optimized), and this is regardless of the number of dimensions of the parameter vector!The book is aimed at rather general audiences in science and engineering. Rigorous mathematical details are avoided.

Introduction to Stochastic Search and Optimization provides comprehensive, current information on methods for real-world problem solving, including stochastic gradient and non-gradient techniques, as well as relatively recent innovations such as simulated annealing, genetic algorithms, and MCMC. It is written to be read and understood by graduate students, industrial practitioners, and experienced researchers in the field. Web links to software and data sets, and an extensive list of references of the book allows the reader to explore deeper into certain topic areas. I also found the index to be very comprehensive and carefully done. The appendices are as a refresher and summary of much of the prerequisite material. The book is somewhat unique in providing a balanced discussion of algorithms, including both their strengths and weaknesses. The book is among very few books that have integrated essential parts of statistical fields with optimization and decision making. The book's inclusion of a chapter on optimal experimental design is an example of such integration. The approaches discussed in the book could be used for financial decision making, forecasting, and quality improvement, among many other areas.

A must have for anyone interested in otimization! Extremely well written and objective.

Continuous-time Stochastic Control and Optimization with Financial Applications (Stochastic Modelling and Applied Probability) The Little Book on Digital Marketing SEO - Search Engine Optimization: Tips and tricks for keyword research in SEO or Search Engine Optimization Introduction to Stochastic Search and Optimization Stochastic Simulation: Algorithms and Analysis (Stochastic Modelling and Applied Probability, No. 57) (No. 100) Introduction to Linear Optimization (Athena Scientific Series in Optimization and Neural Computation, 6) Simulated Annealing and Boltzmann Machines: A Stochastic Approach to Combinatorial Optimization and Neural Computing

Google Semantic Search: Search Engine Optimization (SEO) Techniques That Get Your Company More Traffic, Increase Brand Impact, and Amplify Your Online Presence (Que Biz-Tech) SEO Made Simple (second edition): Search Engine Optimization Strategies For Dominating The World's Largest Search Engine Pyomo Ã¢ ¬â ¢ Optimization Modeling in Python (Springer Optimization and Its Applications) Engineering Design Optimization using Calculus Level Methods: A Casebook Approach: Math Modeling, Simulation, & Optimization Warriors Word Scramble: Word Scramble Games - Word Search, Word Puzzles And Word Scrambles (Word Games, Brain Games, Word Search, Word Search Games, Word ... Scramble, Word Scrabble, Unscramble Word) Magic Search Words-Health: Strategies and Search Tactics to Discover the Best of the Internet (Magic Search Words) Word Search: 100 Word Search Puzzles: Volume 3: A Unique Book With 100 Stimulating Word Search Brain Teasers, Each Puzzle Accompanied By A Beautiful ... Relaxation Stress Relief & Art Color Therapy) Word Search For Adult 100 Puzzles Book Volume1: Word Search Book Word Find Puzzles Large Print Game (Word Search Book For Adult 1) Word Search: 100 Word Search Puzzles: Volume 1: A Unique Book With 100 Stimulating Word Search Brain Teasers, Each Puzzle Accompanied By A Beautiful ... Relaxation Stress Relief & Art Color Therapy) Word Search Book Vol.1: 1,000 Verbs for Daily use (Word Search Games Puzzles) (50 Carefully Designed Word Search with Solution to Twist Your Brain Book 1) Word Search: 100 Word Search Puzzles: Volume 2: A Unique Book With 100 Stimulating Word Search Brain Teasers, Each Puzzle Accompanied By A Beautiful ... Relaxation Stress Relief & Art Color Therapy) Google SEO for Bloggers: Easy Search Engine Optimization and Website marketing for Google Love Digital Marketing Handbook: A Guide to Search Engine Optimization, Pay Per Click Marketing, Email Marketing, Social Media Marketing and Content Marketing Ultimate Guide to Search Engine Optimization: Drive Traffic, Boost Conversion Rates and Make Tons of Money (Ultimate Series)