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Autore	Spall James C.
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Descrizione fisica	1 online resource (620 pages)
Collana	Wiley-Interscience series in discrete mathematics and optimization
Disciplina	519.23
Soggetti	Stochastic processes Search theory Mathematical optimization
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Nota di bibliografia	Includes bibliographical references (p. 558-579) and index.
Nota di contenuto	1. Stochastic Search and Optimization: Motivation and Supporting Results -- 2. Direct Methods for Stochastic Search -- 3. Recursive Estimation for Linear Models -- 4. Stochastic Approximation for Nonlinear Root-Finding -- 5. Stochastic Gradient Form of Stochastic Approximation -- 6. Stochastic Approximation and the Finite-Difference Method -- 7. Simultaneous Perturbation Stochastic Approximation -- 8. Annealing-Type Algorithms -- 9. Evolutionary Computation I: Genetic Algorithms -- 10. Evolutionary Computation II: General Methods and Theory -- 11. Reinforcement Learning via Temporal Differences -- 12. Statistical Methods for Optimization in Discrete Problems -- 13. Model Selection and Statistical Information -- 14. Simulation-Based Optimization I: Regeneration, Common Random Numbers, and Selection Methods -- 15. Simulation-Based Optimization II: Stochastic Gradient and Sample Path Methods -- 16. Markov Chain Monte Carlo -- 17. Optimal Design for Experimental Inputs.
Sommario/riassunto	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 today'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.