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Edizione	[1st ed. 2020.]
Descrizione fisica	1 online resource (XVI, 422 p. 250 illus., 185 illus. in color.)
Disciplina	519.282
Soggetti	Mathematics - Data processing Computer science - Mathematics Mathematical statistics Image processing - Digital techniques Computer vision Statistics Computational Mathematics and Numerical Analysis Probability and Statistics in Computer Science Computer Imaging, Vision, Pattern Recognition and Graphics Statistical Theory and Methods Statistics in Engineering, Physics, Computer Science, Chemistry and Earth Sciences
Lingua di pubblicazione	Inglese
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Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	1 Introduction to Monte Carlo Methods -- 2 Sequential Monte Carlo -- 3 Markov Chain Monte Carlo - the Basics -- 4 Metropolis Methods and Variants -- 5 Gibbs Sampler and its Variants -- 6 Cluster Sampling Methods -- 7 Convergence Analysis of MCMC -- 8 Data Driven Markov Chain Monte Carlo -- 9 Hamiltonian and Langevin Monte Carlo -- 10 Learning with Stochastic Gradient -- 11 Mapping the Energy Landscape.
Sommario/riassunto	This book seeks to bridge the gap between statistics and computer science. It provides an overview of Monte Carlo methods, including Sequential Monte Carlo, Markov Chain Monte Carlo, Metropolis-Hastings, Gibbs Sampler, Cluster Sampling, Data Driven MCMC, Stochastic Gradient descent, Langevin Monte Carlo, Hamiltonian Monte

Carlo, and energy landscape mapping. Due to its comprehensive nature, the book is suitable for developing and teaching graduate courses on Monte Carlo methods. To facilitate learning, each chapter includes several representative application examples from various fields. The book pursues two main goals: (1) It introduces researchers to applying Monte Carlo methods to broader problems in areas such as Computer Vision, Computer Graphics, Machine Learning, Robotics, Artificial Intelligence, etc.; and (2) it makes it easier for scientists and engineers working in these areas to employ Monte Carlo methods to enhance their research.