1. Record Nr. UNINA9910139030003321

| | |
|---|---|
| Autore | Rubinstein Reuven Y |
| Titolo | Fast sequential Monte Carlo methods for counting and optimization / / Reuven Rubinstein, Ad Ridder, Radislav Vaisman |
| Pubbl/distr/stampa | Hoboken, New Jersey : , : John Wiley & Sons, Inc., , [2014]<br>©2014 |
| ISBN | 1-118-61235-3<br>1-118-61232-9<br>1-118-61231-0 |
| Edizione | [1st edition] |
| Descrizione fisica | 1 online resource (208 p.) |
| Collana | Wiley series in probability and statistics |
| Altri autori (Persone) | RidderAd <1955-><br>VaismanRadislav |
| Disciplina | 518/.282 |
| Soggetti | Mathematical optimization<br>Monte Carlo method |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Note generali | Description based upon print version of record. |
| Nota di bibliografia | Includes bibliographical references and index. |
| Nota di contenuto | Cover; Title Page; Contents; Preface; Chapter 1 Introduction to Monte Carlo Methods; Chapter 2 Cross-Entropy Method; 2.1. Introduction; 2.2. Estimation of Rare-Event Probabilities; 2.3. Cross-Entrophy Method for Optimization; 2.3.1. The Multidimensional 0/1 Knapsack Problem; 2.3.2. Mastermind Game; 2.3.3. Markov Decision Process and Reinforcement Learning; 2.4. Continuous Optimization; 2.5. Noisy Optimization; 2.5.1. Stopping Criterion; Chapter 3 Minimum Cross-Entropy Method; 3.1. Introduction; 3.2. Classic MinxEnt Method; 3.3. Rare Events and MinxEnt; 3.4. Indicator MinxEnt Method 3.4.1. Connection between CE and IME3.5. IME Method for Combinatorial Optimization; 3.5.1. Unconstrained Combinatorial Optimization; 3.5.2. Constrained Combinatorial Optimization: The Penalty Function Approach; Chapter 4 Splitting Method for Counting and Optimization; 4.1. Background; 4.2. Quick Glance at the Splitting Method; 4.3. Splitting Algorithm with Fixed Levels; 4.4. Adaptive Splitting Algorithm; 4.5. Sampling Uniformly on Discrete Regions; 4.6. Splitting Algorithm for Combinatorial Optimization; 4.7. Enhanced Splitting Method for Counting; 4.7.1. Counting with the Direct |

Estimator

4.7.2. Counting with the Capture-Recapture Method4.8. Application of Splitting to Reliability Models; 4.8.1. Introduction; 4.8.2. Static Graph Reliability Problem; 4.8.3. BMC Algorithm for Computing S(Y); 4.8.4. Gibbs Sampler; 4.9. Numerical Results with the Splitting Algorithms; 4.9.1. Counting; 4.9.2. Combinatorial Optimization; 4.9.3. Reliability Models; 4.10. Appendix: Gibbs Sampler; Chapter 5 Stochastic Enumeration Method; 5.1. Introduction; 5.2. OSLA Method and Its Extensions; 5.2.1. Extension of OSLA: nSLA Method; 5.2.2. Extension of OSLA for SAW: Multiple Trajectories; 5.3. SE Method
5.3.1. SE Algorithm5.4. Applications of SE; 5.4.1. Counting the Number of Trajectories in a Network; 5.4.2. SE for Probabilities Estimation; 5.4.3. Counting the Number of Perfect Matchings in a Graph; 5.4.4. Counting SAT; 5.5. Numerical Results; 5.5.1. Counting SAW; 5.5.2. Counting the Number of Trajectories in a Network; 5.5.3. Counting the Number of Perfect Matchings in a Graph; 5.5.4. Counting SAT; 5.5.5. Comparison of SE with Splitting and SampleSearch; Appendix A Additional Topics; A.1. Combinatorial Problems; A.1.1. Counting; A.1.2. Combinatorial Optimization; A.2. Information
A.2.1. Shannon EntropyA.2.2. Kullback-Leibler Cross-Entropy; A.3. Efficiency of Estimators; A.3.1. Complexity; A.3.2. Complexity of Randomized Algorithms; Bibliography; Abbreviations and Acronyms; List of Symbols; Index; Series Page

Sommario/riassunto

A comprehensive account of the theory and application of Monte Carlo methods  Based on years of research in efficient Monte Carlo methods for estimation of rare-event probabilities, counting problems, and combinatorial optimization, Fast Sequential Monte Carlo Methods for Counting and Optimization is a complete illustration of fast sequential Monte Carlo techniques. The book provides an accessible overview of current work in the field of Monte Carlo methods, specifically sequential Monte Carlo techniques, for solving abstract counting and optimization problems.