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| Altri autori (Persone) | CalafioreGiuseppe<br>DabbeneFabrizio |
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| Soggetti | Control theory<br>System analysis<br>Stochastic processes<br>Algorithms |
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| Nota di bibliografia | Includes bibliographical references and index. |
| Nota di contenuto | Uncertainty and Robustness -- Probability and Robustness of Uncertain Systems -- Elements of Probability Theory -- Uncertain Linear Systems and Robustness -- Linear Robust Control Design -- Some Limits of the Robustness Paradigm -- Probabilistic Methods for Robustness -- Monte Carlo Methods -- Randomized Algorithms in Systems and Control -- Probability Inequalities -- Statistical Learning Theory and Control Design -- Sequential Algorithms for Probabilistic Robust Design -- Sequential Algorithms for LPV Systems -- Scenario Approach for Probabilistic Robust Design -- Random Number and Variate Generation -- Statistical Theory of Radial Random Vectors -- Vector Randomization Methods -- Statistical Theory of Radial Random Matrices -- Matrix Randomization Methods -- Applications of Randomized Algorithms. |
| Sommario/riassunto | The presence of uncertainty in a system description has always been a critical issue in control. The main objective of Randomized Algorithms |

for Analysis and Control of Uncertain Systems, with Applications (Second Edition) is to introduce the reader to the fundamentals of probabilistic methods in the analysis and design of systems subject to deterministic and stochastic uncertainty. The approach propounded by this text guarantees a reduction in the computational complexity of classical control algorithms and in the conservativeness of standard robust control techniques. The second edition has been thoroughly updated to reflect recent research and new applications with chapters on statistical learning theory, sequential methods for control and the scenario approach being completely rewritten. Features: · self-contained treatment explaining Monte Carlo and Las Vegas randomized algorithms from their genesis in the principles of probability theory to their use for system analysis; · development of a novel paradigm for (convex and nonconvex) controller synthesis in the presence of uncertainty and in the context of randomized algorithms; · comprehensive treatment of multivariate sample generation techniques, including consideration of the difficulties involved in obtaining identically and independently distributed samples; · applications of randomized algorithms in various endeavours, such as PageRank computation for the Google Web search engine, unmanned aerial vehicle design (both new in the second edition), congestion control of high-speed communications networks and stability of quantized sampled-data systems. Randomized Algorithms for Analysis and Control of Uncertain Systems (second edition) is certain to interest academic researchers and graduate control students working in probabilistic, robust or optimal control methods and control engineers dealing with system uncertainties. The present book is a very timely contribution to the literature. I have no hesitation in asserting that it will remain a widely cited reference work for many years. M. Vidyasagar The Communications and Control Engineering series reports major technological advances which have potential for great impact in the fields of communication and control. It reflects research in industrial and academic institutions around the world so that the readership can exploit new possibilities as they become available.