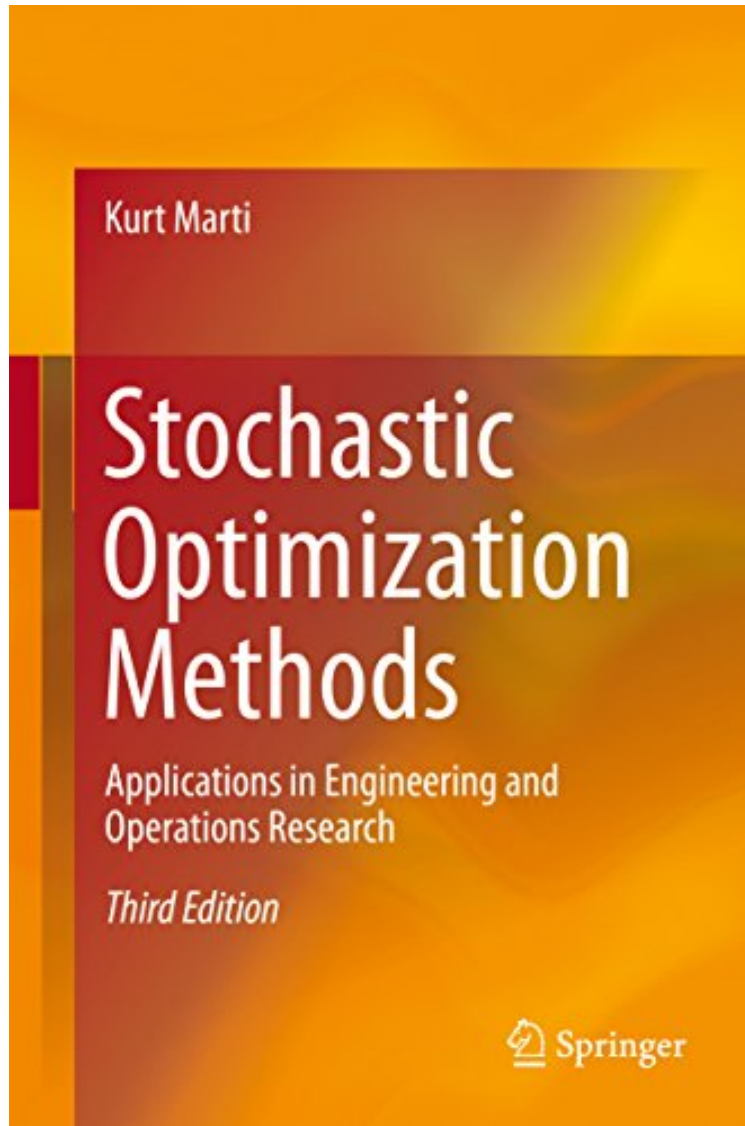



Stochastic Optimization Methods: Applications in Engineering and Operations Research

Kurt Marti

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Kurt Marti : Stochastic Optimization Methods: Applications in Engineering and Operations Research before purchasing it in order to gage whether or not it would be worth my time, and all praised Stochastic Optimization Methods: Applications in Engineering and Operations Research:

This book examines optimization problems that in practice involve random model parameters. It details the

computation of robust optimal solutions, i.e., optimal solutions that are insensitive with respect to random parameter variations, where appropriate deterministic substitute problems are needed. Based on the probability distribution of the random data and using decision theoretical concepts, optimization problems under stochastic uncertainty are converted into appropriate deterministic substitute problems. Due to the probabilities and expectations involved, the book also shows how to apply approximative solution techniques. Several deterministic and stochastic approximation methods are provided: Taylor expansion methods, regression and response surface methods (RSM), probability inequalities, multiple linearization of survival/failure domains, discretization methods, convex approximation/deterministic descent directions/efficient points, stochastic approximation and gradient procedures and differentiation formulas for probabilities and expectations. In the third edition, this book further develops stochastic optimization methods. In particular, it now shows how to apply stochastic optimization methods to the approximate solution of important concrete problems arising in engineering, economics and operations research.

The considered book presents a mathematical analysis of the stochastic models of important applied optimization problems. It presents detailed methods to solve these problems, rigorously proves their properties, and uses examples to illustrate the proposed methods. This book would be particularly beneficial to mathematicians working in the field of stochastic control and mechanical design. (Antanas Zilinskas, *Interfaces*, Vol. 45 (6), 2015)

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About the Author: Dr. Kurt Marti is a full Professor of Engineering Mathematics at the "Federal Armed Forces University of Munich". He is Chairman of the IFIP-Working Group 7.7 on "Stochastic Optimization" and has been Chairman of the GAMM-Special Interest Group "Applied Stochastics and Optimization". Professor Marti has published several books, both in German and in English and he is author of more than 160 papers in refereed journals.