

Preface

Stochastic programming problems are very difficult to solve as they involve optimization as well as uncertainty analysis. Algorithms for solving large-scale nonlinear stochastic programming problems are very few in number, as are the engineering applications of these problems. This book introduces two algorithms for large-scale stochastic nonlinear problems for both open equation systems and black box models. These algorithms are the Better Optimization of Nonlinear Uncertain Systems (BONUS) algorithm and the L-shaped BONUS algorithm. Real-world applications of these algorithms in the areas of energy and environmental engineering are also detailed. Many have contributed to this book. Researchers who worked with Dr. Diwekar including Dr. Adrian Lee, Dr. Kemal Sahin, Dr. Juan Salazar, and Dr. Yogendra Shastri, as well as collaborators such as Dr. Emil Constantinescu, Dr. Victor Zavala, and Dr. Stephen Zitney have provided the material for this book with their research. Thanks also to our group members Dr. Pahola Benavides, Dr. Berhane Gabreslassie, Dr. Rajib Mukherjee, Shivam Tyagi, and Kirti Yenki who went through the first draft of the book and meticulously pointed out mistakes. Hope you enjoy this work.

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Programming Problems

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