Table of Contents

Preface .................................................................................................................................................. xix

Section 1
Computing and Information Technologies

Chapter 1
The Open System for Master Production Scheduling: Information Technology for Semantic Connections between Data and Mathematical Models .............................................................. 1

Hyoung-Gon Lee, Massachusetts Institute of Technology, USA
Edmund W. Schuster, Massachusetts Institute of Technology, USA
Stuart J. Allen, Marysville, USA
Pinaki Kar, New York, USA

Chapter 2
A Unified Classification Ecosystem for Auctions .................................................................................. 15

Dimitrios M. Emiris, University of Piraeus, Greece
Charis A. Marentakis, University of Piraeus, Greece

Section 2
Decision Analysis

Chapter 3
Fuzzy Multi-Choice Goal Programming for Supplier Selection ......................................................... 39

Ching-Ter Chang, Chang Gung University, Taiwan
Cheng-Yuan Ku, National Chung Cheng University, Taiwan
Hui-Ping Ho, National Chung Cheng University and Chienkuo Technology University, Taiwan

Chapter 4
Solution of Correlated Multi-Response Optimization Problem: Case Study in Submerged Arc Welding ................................................................................................................................. 61

Saurav Datta, National Institute of Technology - Rourkela, India
Goutam Nandi, Jadavpur University, India
Asish Bandypadhyay, Jadavpur University, India
Pradip Kumar Pal, Jadavpur University, India
Chapter 5
Decision-Making Elements for the Design of Emerging Multi-Dimensional Auctions............... 80
Charis A. Marentakis, University of Piraeus, Greece
Dimitrios M. Emiris, University of Piraeus, Greece

Section 3
Military and Homeland Security

Chapter 6
Discrete Combat Models: Investigating the Solutions to Discrete Forms of
Lanchester’s Combat Models.......................................................................................... 106
William P. Fox, Naval Postgraduate School, USA

Chapter 7
A Graph-Search Based Navigation Algorithm for Traversing A Potentially
Hazardous Area with Disambiguation........................................................................ 123
Xugang Ye, Johns Hopkins University, USA
Carey E. Priebe, Johns Hopkins University, USA

Section 4
Nonlinear Complementarity Problem

Chapter 8
Numerical Studies on Reformulation Techniques for Continuous Network Design
with Asymmetric User Equilibria .................................................................................. 138
Xuegang (Jeff) Ban, Rensselaer Polytechnic Institute, USA
Michael Ferris, University of Wisconsin-Madison, USA
Henry X. Liu, University of Minnesota, USA

Chapter 9
A New Hybrid Inexact Logarithmic-Quadratic Proximal Method for Nonlinear
Complementarity Problems .......................................................................................... 158
Ying Zhou, Iowa State University, USA
Lizhi Wang, Iowa State University, USA

Section 5
Optimization

Chapter 10
A Note on the Connection Between the Primal-Dual and the A* Algorithm ...................... 170
Xugang Ye, Johns Hopkins University, USA
Shih-Ping Han, Johns Hopkins University, USA
Anhua Lin, Middle Tennessee State University, USA
Chapter 11
Global Bacteria Optimization Meta-Heuristic Algorithm for Jobshop Scheduling................................. 182
Jairo R. Montoya-Torres, Universidad de La Sabana, Colombia
Libardo S. Gómez-Vizcaíno, Fundación Centro de Investigación en Modelación Empresarial del Caribe, Colombia
Elyn L. Solano-Charris, Universidad de La Sabana, Colombia
Carlos D. Paternina-Arboleda, Universidad del Norte, Colombia

Section 6
Revenue Management

Chapter 12
Dynamic Pricing Model for Substitutable Products .................................................................................. 195
Ue-Pyng Wen, National Tsing Hua University, Taiwan, ROC
Yi Chen, VisEra Technologies Company, Taiwan, ROC

Chapter 13
Optimizing Cash Management for Large Scale Bank Operations......................................................... 211
Mark Frost, Fiserv, USA
Jeff Kennington, Southern Methodist University, USA
Anusha Madhavan, Southern Methodist University, USA

Section 7
Simulation

Chapter 14
Automatic Partitioning of Large Scale Simulation in Grid Computing for Run Time Reduction......................... 225
Nurcin Celik, The University of Arizona, USA
Esfandyar Mazhari, The University of Arizona, USA
John Canby, Schlumberger, Indonesia
Omid Kazemi, The University of Arizona, USA
Parag Sarfare, NetApp Inc., USA
Majed S. Al-Otaibi, The University of Arizona, USA
Young-Jun Son, The University of Arizona, USA

Chapter 15
Assessing Transport Aircraft Inspection Strategies ............................................................................... 253
Alan W. Johnson, Air Force Institute of Technology, USA
Theodore Heiman, 388th Fighter Wing, USA
Martha Cooper, The Ohio State University, USA
Raymond R. Hill, Air Force Institute of Technology, USA
Section 8
Stochastic Models

Chapter 16
Analysis of State Dependent Vacation Queues with Threshold Gated Service Policy ......................... 274

Thomas (Yew Sing) Lee, University of Illinois at Chicago, USA

Chapter 17
Performance of Two-Component Systems with Imperfect Repair ................................................................. 292

Mohammed Hafeeh, Kuwait Institute for Scientific Research, Kuwait

Section 9
Stochastic Optimization

Chapter 18

Lizhi Wang, Iowa State University, USA
Nan Kong, Purdue University, USA

Chapter 19
Polynomial Approximation for Two Stage Stochastic Programming with Separable Objective ................................................................. 322

Lijian Chen, University of Louisville, USA
Dustin J. Banet, University of Louisville, USA

Compilation of References .................................................................................................................................................. 334

About the Contributors .................................................................................................................................................. 361

Index................................................................................................................................................................................. 370