# Contents

## Part I  Simulation Methodologies

1. **Toward Agent-Supported and Agent-Monitored Model-Driven Simulation Engineering**
   
   Levent Yilmaz

2. **Service-Oriented Model Engineering and Simulation for System of Systems Engineering**
   
   Bernard P. Zeigler and Lin Zhang

3. **Research on High-Performance Modeling and Simulation for Complex Systems**
   
   Bo Hu Li, Xudong Chai, Tan Li, Baocun Hou, Duzheng Qin, Qinping Zhao, Lin Zhang, Aimin Hao, Jun Li, and Ming Yang

4. **Dynamic Data-Driven Simulation: Connecting Real-Time Data with Simulation**
   
   Xiaolin Hu

## Part II  Modeling Methodologies

5. **Learning Something Right from Models That Are Wrong: Epistemology of Simulation**
   
   Andreas Tolk

6. **Managing Hybrid Model Composition Complexity: Human–Environment Simulation Models**
   
   Hessam S. Sarjoughian, Gary R. Meyer, Isaac I. Ullah, and C. Michael Barton
Contents

7 Transformation of Conceptual Models to Executable High-Level Architecture Federation Models .................. 135
Gürkan Özhan and Halit Oğuztuğün

8 Using Discrete-Event Cell-Based Multimodels for the Simulation of Evacuation Processes ................. 175
Gabriel Wainer

Part III Quality Assurance and Reliability of Simulation Studies

9 Quality Indicators Throughout the Modeling and Simulation Life Cycle ............................................. 199
Osman Balci

10 Verification, Validation, and Replication Methods for Agent-Based Modeling and Simulation: Lessons Learned the Hard Way! ......................................................... 217
S.M. Niaz Arifin and Gregory R. Madey

11 Comparisons of Validated Agent-Based Model and Calibrated Statistical Model .................................. 243
Il-Chul Moon and Jang Won Bae

12 Generalized Discrete Events for Accurate Modeling and Simulation of Logic Gates ............................ 257
Maamar El Amine Hamri, Norbert Giambiasi, and Aziz Naamane

Part IV Cognitive, Emotive, and Social Simulation

13 Specification and Implementation of Social Science Models ....... 275
Paul K. Davis

14 Simulating Human Social Behaviors ................................. 289
Yu Zhang

Part V Body of Knowledge of Modeling & Simulation

15 A Review of Extant M&S Literature Through Journal Profiling and Co-citation Analysis ...................... 323
Navonil Mustafee, Korina Katsaliaki, and Paul Fishwick

Index ................................................................................. 347