

1. Record Nr.	UNINA9910555010703321
Autore	Tang Jiangjun
Titolo	Simulation and Computational Red Teaming for Problem Solving // Jiangjun Tang, George Leu, Hussein A. Abbass
Pubbl/distr/stampa	Hoboken : , : Wiley, , c2020 [Piscataqay, New Jersey] : , : IEEE Xplore, , [2019]
ISBN	1-119-52720-1 1-119-52718-X 1-119-52710-4
Descrizione fisica	1 online resource (493 pages)
Collana	IEEE Press Series on Computational Intelligence Ser.
Altri autori (Persone)	AbbassHussein A LeuGeorge
Disciplina	153.43
Soggetti	Problem solving Simulation methods
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	13.4 COMPUTATIONAL RED TEAMING PURPOSES
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Intro; TITLE PAGE; COPYRIGHT PAGE; CONTENTS; LIST OF FIGURES; LIST OF TABLES; PREFACE; PART I ON PROBLEM SOLVING, COMPUTATIONAL RED TEAMING, AND SIMULATION; CHAPTER 1 PROBLEM SOLVING, SIMULATION, AND COMPUTATIONAL RED TEAMING; CHAPTER 1 PROBLEM SOLVING, SIMULATION, AND COMPUTATIONAL RED TEAMING; 1.1 INTRODUCTION; 1.2 PROBLEM SOLVING; 1.3 COMPUTATIONAL RED TEAMING AND SELF-'VERIFICATION AND VALIDATION'; CHAPTER 2 INTRODUCTION TO FUNDAMENTALS OF SIMULATION; 2.1 INTRODUCTION; 2.2 SYSTEM; 2.3 CONCEPTS IN SIMULATION; 2.4 SIMULATION TYPES; 2.5 TOOLS FOR SIMULATION; 2.6 CONCLUSION PART II BEFORE SIMULATION STARTSCHAPTER 3 THE SIMULATION PROCESS; 3.1 INTRODUCTION; 3.2 DEFINE THE SYSTEM AND ITS ENVIRONMENT; 3.3 BUILD A MODEL; 3.4 ENCODE A SIMULATOR; 3.5 DESIGN SAMPLING MECHANISMS; 3.6 RUN SIMULATOR UNDER DIFFERENT SAMPLES; 3.7 SUMMARISE RESULTS; 3.8 MAKE A RECOMMENDATION; 3.9 AN EVOLUTIONARY APPROACH; 3.10 A BATTLE SIMULATION BY LANCHESTER SQUARE LAW; CHAPTER 4 SIMULATION WORLDVIEW AND CONFLICT RESOLUTION; 4.1 SIMULATION

WORLDVIEW; 4.2 SIMULTANEOUS EVENTS AND CONFLICTS IN SIMULATION; 4.3 PRIORITY QUEUE AND BINARY HEAP; 4.4 CONCLUSION CHAPTER 5 THE LANGUAGE OF ABSTRACTION AND REPRESENTATION5. 1 INTRODUCTION; 5.2 INFORMAL REPRESENTATION; 5.3 SEMI-FORMAL REPRESENTATION; 5.4 FORMAL REPRESENTATION; 5.5 FINITE-STATE MACHINE; 5.6 ANT IN MAZE MODELLED BY FINITE-STATE MACHINE; 5.7 CONCLUSION; CHAPTER 6 EXPERIMENTAL DESIGN; 6.1 INTRODUCTION; 6.2 FACTOR SCREENING; 6.3 METAMODEL AND RESPONSE SURFACE; 6.4 INPUT SAMPLING; 6.5 OUTPUT ANALYSIS; 6.6 CONCLUSION; PART III SIMULATION METHODOLOGIES; CHAPTER 7 DISCRETE EVENT SIMULATION; 7.1 DISCRETE EVENT SYSTEMS; 7.2 DISCRETE EVENT SIMULATION; 7.3 CONCLUSION; CHAPTER 8 DISCRETE TIME SIMULATION
8.1 INTRODUCTION8.2 DISCRETE TIME SYSTEM AND MODELLING; 8.3 SAMPLE PATH; 8.4 DISCRETE TIME SIMULATION AND DISCRETE EVENT SIMULATION; 8.5 A CASE STUDY: CAR-FOLLOWING MODEL; 8.6 CONCLUSION; CHAPTER 9 CONTINUOUS SIMULATION; 9.1 CONTINUOUS SYSTEM; 9.2 CONTINUOUS SIMULATION; 9.3 NUMERICAL SOLUTION TECHNIQUES FOR CONTINUOUS SIMULATION; 9.4 SYSTEM DYNAMICS APPROACH; 9.5 COMBINED DISCRETE-CONTINUOUS SIMULATION; 9.6 CONCLUSION; CHAPTER 10 AGENT-BASED SIMULATION; 10.1 INTRODUCTION; 10.2 AGENT-BASED SIMULATION; 10.3 EXAMPLES OF AGENT-BASED SIMULATION; 10.4 CONCLUSION
PART IV SIMULATION AND COMPUTATIONAL RED TEAMING SYSTEMSCHAPTER 11 KNOWLEDGE ACQUISITION; 11.1 INTRODUCTION; 11.2 AGENT-ENABLED KNOWLEDGE ACQUISITION: CORE PROCESSES; 11.3 HUMAN AGENTS; 11.4 HUMAN-INSPIRED AGENTS; 11.5 MACHINE AGENTS; 11.6 SUMMARY DISCUSSION AND PERSPECTIVES ON KNOWLEDGE ACQUISITION; CHAPTER 12 COMPUTATIONAL INTELLIGENCE; 12.1 INTRODUCTION; 12.2 EVOLUTIONARY COMPUTATION; 12.3 ARTIFICIAL NEURAL NETWORKS; 12.4 CONCLUSION; CHAPTER 13 COMPUTATIONAL RED TEAMING; 13.1 INTRODUCTION; 13.2 COMPUTATIONAL RED TEAMING: THE CHALLENGE LOOP; 13.3 COMPUTATIONAL RED TEAMING OBJECTS

Sommario/riassunto

AN AUTHORITATIVE GUIDE TO COMPUTER SIMULATION GROUNDED IN A MULTI-DISCIPLINARY APPROACH FOR SOLVING COMPLEX PROBLEMS

Simulation and Computational Red Teaming for Problem Solving offers a review of computer simulation that is grounded in a multi-disciplinary approach. The authors present the theoretical foundations of simulation and modeling paradigms from the perspective of an analyst. The book provides the fundamental background information needed for designing and developing consistent and useful simulations. In addition to this basic information, the authors explore several advanced topics. The book's advanced topics demonstrate how modern artificial intelligence and computational intelligence concepts and techniques can be combined with various simulation paradigms for solving complex and critical problems. Authors examine the concept of Computational Red Teaming to reveal how the combined fundamentals and advanced techniques are used successfully for solving and testing complex real-world problems. This important book: . Demonstrates how computer simulation and Computational Red Teaming support each other for solving complex problems. Describes the main approaches to modeling real-world phenomena and embedding these models into computer simulations. Explores how a number of advanced artificial intelligence and computational intelligence concepts are used in conjunction with the fundamental aspects of simulation Written for researchers and students in the computational modelling and data analysis fields, Simulation and Computational Red Teaming for Problem

Solving covers the foundation and the standard elements of the process of building a simulation and explores the simulation topic with a modern research approach.
