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User Manual

ADVANCED COMPUTATIONAL METHODS IN LIFE SYSTEM MODELING AND SIMULATION

International Conference on Life System Modeling and Simulation, LSMS 2017 and International Conference on Intelligent Computing for Sustainable Energy and Environment, ICSEE 2017

1. Introduction

This document serves as a comprehensive guide to the content and organization of the publication "Advanced Computational Methods in Life System Modeling and Simulation." This three-volume set (CCIS 761, CCIS 762, and CCIS 763) comprises the thoroughly refereed proceedings of two significant international conferences:

- The International Conference on Life System Modeling and Simulation (LSMS 2017)
- The International Conference on Intelligent Computing for Sustainable Energy and Environment (ICSEE 2017)

Both conferences were held concurrently in Nanjing, China, in September 2017. The volumes present 208 revised full papers, carefully selected from over 625 submissions, representing cutting-edge research in various computational and intelligent computing domains relevant to life systems, energy, and environment.

Figure 1: Front cover of the publication, illustrating the title, editors (Minrui Fei, Shiwei Ma, Xin Li, Xin Sun, Li Jia, Zhou Su), and the series "Communications in Computer and Information Science 761."

2. Structure and Navigation

The content is organized into topical sections, facilitating navigation through the diverse research areas. Each volume (CCIS 761, CCIS 762, CCIS 763) contains a subset of these sections. Users are encouraged to refer to the specific volume's table of contents for precise paper distribution.

2.1. Topical Sections Overview

The papers are broadly categorized into the following key areas:

- Biomedical Signal Processing
- Computational Methods in Organism Modeling
- Medical Apparatus and Clinical Applications
- Bionics Control Methods, Algorithms and Apparatus
- Modeling and Simulation of Life Systems
- Data Driven Analysis
- Image and Video Processing
- Advanced Fuzzy and Neural Network Theory and Algorithms
- Advanced Evolutionary Methods and Applications
- Advanced Machine Learning Methods and Applications
- Intelligent Modeling, Monitoring, and Control of Complex Nonlinear Systems
- Advanced Methods for Networked Systems
- Control and Analysis of Transportation Systems
- Advanced Sliding Mode Control and Applications
- Advanced Analysis of New Materials and Devices
- Computational Intelligence in Utilization of Clean and Renewable Energy Resources
- Intelligent Methods for Energy Saving and Pollution Reduction
- Intelligent Methods in Developing Electric Vehicles, Engines and Equipment
- Intelligent Computing and Control in Power Systems
- Modeling, Simulation and Control in Smart Grid and Microgrid
- Optimization Methods
- Computational Methods for Sustainable Environment

Each paper within these sections has undergone a rigorous peer-review process to ensure academic quality and relevance.

3. Key Themes and Topics

The proceedings cover a broad spectrum of advanced computational methods and intelligent computing applications. Key themes include:

- **Life System Modeling and Simulation:** Focuses on computational approaches for understanding and simulating biological systems, including biomedical signal processing, organism modeling, and medical device applications.
- **Intelligent Computing for Sustainable Energy and Environment:** Explores the application of intelligent methods to address challenges in energy efficiency, renewable resources, pollution control, and smart grid technologies.
- **Advanced Algorithms and Methodologies:** Features papers on fuzzy and neural networks, evolutionary algorithms, machine learning, and optimization techniques, demonstrating their utility across various scientific and engineering disciplines.
- **Control and Systems Engineering:** Includes research on complex nonlinear systems, networked systems, transportation control, and sliding mode control, highlighting advancements in automation

and system stability.

This collection serves as a valuable resource for researchers, academics, and industry professionals interested in the interdisciplinary fields of computational science, intelligent systems, and their applications in life sciences, energy, and environmental sustainability.

4. Specifications

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