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Special Issue Optimization and Modeling of Complex Systems

Guest Editors ■ Y. Yoshida, M. Al Achhab

PAPERS

Dual Simplex Method for Optimal Coordination of DOCR's in Distribution System with D-FACTS

Optimization of Suitable Propagation Model for Mobile Communication in Different Area

Distributed CA-CFAR and OS-CFAR Detectors Mentored by Biogeography Based Optimization Tool

A prediction Model Based on Nelder-Mead Algorithm for the Energy Production of PV Module

Allocation Processes for Worst Scenarios in Fuzzy Asset Management Using Weighted Average Value-at-Risks

Diagnosis Methods for Wind Turbine Doubly Fed Induction Generator under Grid Defects

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BIOGRAPHICAL NOTES:

Yuji Yoshida has been a full professor at the University of Kitakyushu, and his major theme is decision-making under uncertainty containing randomness and fuzziness. He has written more than one hundred papers in major academic journals and in books regarding these fields, and he has given a lot of presentations in international conferences. He is a member of SOFT, the Operations Research Society of Japan, Mathematical Society of Japan and so on. He was also an area editor the journals 'International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems' and 'International Journal of Knowledge-Based Intelligent Engineering Systems'.

Mohammed Al Achhab received his PhD in December 2006 from the University of Franche-Comté, Besançon, France, in the field of formal verification of reactive systems. He was a Temporary Lecturer and Research Assistant, at the University of Franche-Comté from 2005 to 2006. He was an Assistant Professor at the Faculty of Sciences Dhar El Mehraz, Fez from 2007 to 2012. Currently, he is a Professor at the National School of Applied Sciences of Tetuan. His research focuses on the analysis and validation of the business process and adaptive e-learning.

PREFACE:

In modern society the complexity of systems is increasing, and the optimization technologies in controls of systems have been improved such as energy prediction and robotics. Recently due to the networking of systems, its optimization methods are also developed, for example, mobile networks and traffic systems. Nowadays artificial intelligence with big data appears and it enables highly accurate judgements, for example, diagnosis and financial engineering. In spite of these development, mathematical modeling and optimization theory remain major important tools for us to understand and improve the complex systems. This special issue deals with the optimization models for complex systems and it contains six papers selected from OMCS'18 in IEEE CiSt'18 conference with careful peer review process.

The first paper entitled 'Dual Simplex Method for Optimal Coordination of DOCR's in Distribution System with D-FACTS', Bougouffa and Chaghi describes a constrained optimization problem regarding setting and coordination of directional over-current relay. The LP dual simplex method is applied to determine the optional time dial setting of the relays in compensated system by thyristor controlled series capacitor.

The second paper entitled 'Optimization of Suitable Propagation Model for Mobile Communication in Different Area', Oudira et al. describes the most widely used empirical path loss models in a mobile communication system, and the experimental data are compared by the root mean square error.

The third paper entitled 'Distributed CA-CFAR and OS-CFAR Detectors Mentored by Biogeography Based Optimization Tool', Gouri et al. describes distributed constant false alarm rate detection in homogeneous and heterogeneous Gaussian clutter using the genetic algorithm and biogeography based on the optimization method with Neyman-Pearson type test.

The fourth paper entitled 'A prediction Model Based on Nelder-Mead Algorithm for the Energy Production of PV Module', Oudira et al. describes a reliable model of a photovoltaic module for energy prediction. This paper presents applies the Nelder-Mead simplex search method to identify the parameters of solar cell and photovoltaic module models.

The fifth paper entitled 'Allocation Processes for Worst Scenarios in Fuzzy Asset Management Using Weighted Average Value-at-Risks', Yoshida describes dynamic portfolio allocation in asset management by perception-based extension for fuzzy random variables. Dynamic worst scenarios are investigated by weighted average value-at-risks and mathematical programming.

The sixth paper entitled 'Diagnosis Method for Wind Turbine Doubly Fed Induction Generator under Grid Defects', Hammouchi et al. describes a method developed for diagnosis defects of doubly-fed induction generator in wind turbine, and it proposes a method to diagnose the defects attacking wind turbine generator based on frequency spectrum analysis and Lissajous curves of doubly fed induction generator stator and rotor currents.

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