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Control Applications in Modern Power Systems

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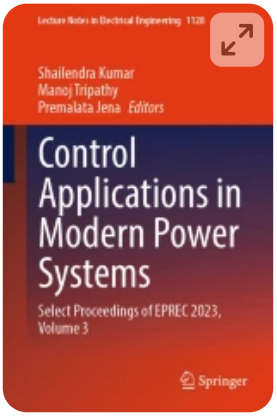

Control Applications in Modern Power Systems

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Shailendra Kumar, Manoj Tripathy, Premalata Jena

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About this book

This book entitled “Control Applications in Modern Power System - Select Proceedings of EPREC-2023 provides rigorous discussions, case studies, and recent developments in the emerging areas of control systems, especially, load frequency control, wide-area monitoring, control & instrumentation, optimization, intelligent control, energy management system, SCADA systems, design of

control strategies is essential for controlling the reactive power and maintains the voltage profiles, etc. The readers would benefit from enhancing their knowledge and skills in the domain areas. Also, this book may help the readers in developing new and innovative ideas. The book can be a valuable reference for beginners, researchers, and professionals interested in developments in control systems.

Keywords

Industrial Automation
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Dr. Manoj Tripathy received his B.E. degree in electrical engineering from Nagpur University, Nagpur, India, in 1999, the M.Tech. degree in instrumentation and control from Aligarh Muslim University, Aligarh, India, in 2002, and the Ph.D. degree from the Indian Institute of Technology Roorkee, Roorkee, India, in 2008. He is currently working as a Professor in the Department of Electrical Engineering, Indian Institute of Technology Roorkee, Uttarakhand, India. He is an IEEE senior member, a Member of the Institution of &Technology (IET), and a Life member of the Institution of Engineers (India). His fields of interest are Power System Protection, Automation, Cybersecurity, Smart Grid Protection, Microgrid Protection, Digital/Numerical Relays, Artificial Intelligence Relays, Relay Testing, Protection Scheme for a Line with FACTS devices, Testing of Electrical Equipment, Calibration of Meters, Signal and Image Processing problems, Speech Signal Enhancement

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Dr. Premalata Jena is currently an Associate Professor at the Department of Electrical Engineering, Indian Institute of Technology Roorkee, Uttarakhand, India. She received her B.Tech degree in electrical engineering from the Utkal University, Bhubaneswar, India, in 2001, her M.Tech degree in Electrical Engineering from the Indian Institute of Technology Kharagpur, Kharagpur, India, in 2006, and her Ph.D. degree from the Indian Institute of Technology Kharagpur, Kharagpur, India, in 2011.She has seven years of teaching experience. She is an IEEE member and INAE, Young Associate. She received many awards such as the the Women Excellence Award and Early Carrier Research Award, SERB, DST, Gov. of

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Optimal Tuning of Single Input Power System Stabilizer Using Chaotic Quasi-Oppositional Differential Search Algorithm

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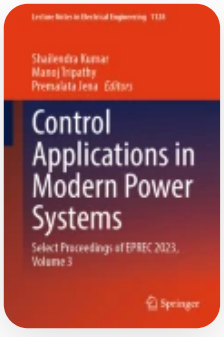

Control Applications in Modern Power Systems

(EPREC 2023)

Sourav Paul, Sneha Sultana, Provas Kumar Roy, Pravin Kumar Burnwal, Devjeet Sengupta & Nirmalya Dey

Part of the book series: Lecture Notes in Electrical Engineering ((LNEE,volume 1128))

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Abstract

In this research work, the concept of the Chaotic Quasi-Oppositional Differential Search Algorithm (CQODSA) has been successfully implemented on a single input power system stabilizer for the optimum tuning so as to damp low-frequency oscillations. The Heffron-Phillips model has been considered to evaluate the efficiency of the proposed

algorithm by incorporating it in a device with a separate infinite bus. The enactment in terms of the prototype algorithm is tested for wide-loading scenarios to claim the applicability of CQODSA under flexible scenarios. By contrasting the findings with those of other well-known algorithms, the superiority of the established method has been proven.

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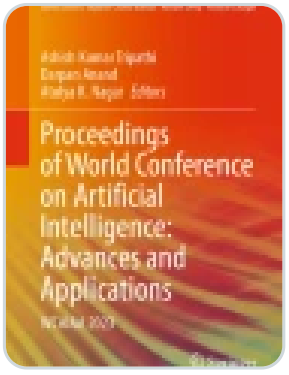

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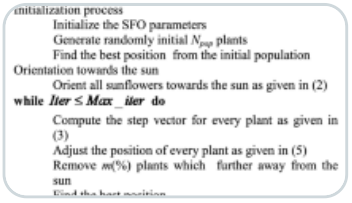

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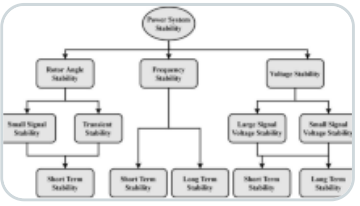

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