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2019 16th International Conference on the European Energy Market (EEM) Aug 13 2022 The EEM is a well established conference in Europe, which brings together international representatives from science, industry and politics from different fields to discuss a wide range of issues related to energy markets These include not only topics concerning methodological aspects of modelling, such as mathematical formulations and solution approaches, but also those related to market design, regulatory and climate policies Additionally, the conference offers a platform for engaging discussions related to policies and challenges in the energy sector The conference is following the energy trends and will include new developments in the fields od Local Energy Communites and Energy Efficiency
International Conference on Intelligent Computing and Smart Communication 2019 Apr 16 2020 This book gathers high-quality research papers presented at the First International Conference, ICSC 2019, organised by THDC Institute of Hydropower Engineering and Technology, Tehri, India, from 20 to 21 April 2019. The book is divided into two major sections – Intelligent Computing and Smart Communication. Some of the areas covered are Parallel and Distributed Systems, Web Services, Databases and Data Mining Applications, Feature Selection and Feature Extraction, High-Performance Data Mining Algorithms, Knowledge Discovery, Communication Protocols and Architectures, High-speed Communication, High-Voltage Insulation Technologies, Fault Detection and Protection, Power System Analysis, Embedded Systems, Architectures, Electronics in Renewable Energy, CAD for VLSI, Green Electronics, Signal and Image Processing, Pattern Recognition and Analysis, Multi-Resolution Analysis and Wavelets, 3D and Stereo Imaging, and Neural Networks.
Swarm, Evolutionary, and Memetic Computing May 30 2021 This volume constitutes the thoroughly refereed post-conference proceedings of the 5th International Conference on Swarm, Evolutionary, and Memetic Computing, SEMCCO 2014, held in Bhubaneswar, India, in December 2014. The total of 96 papers presented in this volume was carefully reviewed and selected from 250 submissions for inclusion in the proceedings. The papers cover a wide range of topics in swarm, evolutionary, memetic and other intelligent computing algorithms and their real world applications in problems selected from diverse domains of science and engineering.
Demand Response Application in Smart Grids Jun 18 2020 This book analyzes issues surrounding the efficient integration of demand response programs (DRPs) on operation problems in smart grids. The benefits offered by demand response programs (DRPs) for load-serving entities, grid operators, and electricity consumers are explained, including decreased electricity prices and risk management. In-depth chapters discuss the flexibility of market operations, market power mitigation, and environmental benefits—making this a must-have reference for engineers and related practicing professionals working for organizations in the electricity market, including reliability organizations, distribution companies, transmission companies, and electric end-users.
Unit Commitment Adjustments Based on Risk Assessment Jul 12 2022 For many years, the electric power industry has been using optimization methods to help them solve the unit commitment problem, which is the problem of scheduling the production of electric power generating units, over a certain time horizon, in order to minimize the energy production costs. The referred time horizon is usually daily to weekly. This work expands the traditional unit commitment problem to account for the effect of unit commitment schedules on security issues. Specifically, this thesis focuses on the identification of operational high-risk scenarios that can be mitigated by modifying unit commitment schedules. Furthermore, it also addresses a strategy for risk mitigation that consists on imposing adequate constraint into a longer-term unit commitment problem formulation (up to one year). The proposed work involves using the concept of risk-based long-term sequential simulation to develop methods of strengthening security monitoring and decision-making capability for overload, low voltage, voltage instability, and cascading overload problems. The achievement of a good balance between security level and costs is the ultimate objective of the complete procedure.
Electric Power Systems Dec 13 2019 Electric Power Systems: Advanced Forecasting Techniques and Optimal Generation Scheduling helps readers develop their skills in modeling, simulating, and optimizing electric power systems. Carefully balancing theory and practice, it presents novel, cutting-edge developments in forecasting and scheduling. The focus is on understanding and solving pivotal problems in the management of electric power generation systems. Methods for Coping with Uncertainty and Risk in Electric Power Generation Outlining real-world problems, the book begins with an overview of electric power generation systems. Since the ability to cope with uncertainty and risk is crucial for power generating companies, the second part of the book examines the latest methods and models for self-scheduling, load forecasting, short-term electricity price forecasting, and wind power forecasting. Toward Optimal Coordination between Hydro, Thermal, and Wind Power Using case studies, the third part of the book investigates how to achieve the most favorable use of available energy sources. Chapters in this section discuss price-based scheduling for generating companies, optimal scheduling of a hydro producer, hydro-thermal coordination, unit commitment with wind generators, and optimal optimization of multigeneration systems. Written in a pedagogical style that will appeal to graduate students, the book also expands on research results that are useful for engineers and researchers. It presents the latest techniques in increasingly important areas of power system operations and planning.
Development of Unit Commitment Assessment Technique Based on Malaysia Grid Code Requirement Sep 02 2021
Electricity Markets Jan 14 2020 A comprehensive resource that provides the basic concepts of electric power systems, microeconomics, and optimization techniques Electricity Markets: Theories and Applications offers students and practitioners a clear understanding of the fundamental concepts of the economic theories, particularly microeconomic theories, as well as information on some advanced optimization methods of electricity markets. The authors—noted experts in the field—cover the basic drivers for the transformation of the electricity industry in both the United States and around the world and discuss the fundamentals of power system operation, electricity market design and structures, and electricity market operations. The text also explores advanced topics of power system operations and electricity market design and structure including zonal versus nodal pricing, market performance and market power issues, transmission pricing, and the emerging problems electricity markets face in smart grid and micro-grid environments. The authors also examine system planning under the context of electricity market regime. They explain the new ways to solve problems with the tremendous amount of economic data related to power systems that is now available. This important resource: Introduces fundamental economic concepts necessary to understand the operations and functions of electricity markets

Presents basic characteristics of power systems and physical laws governing operation Includes mathematical optimization methods related to electricity markets and their applications to practical market clearing issues Electricity Markets: Theories and Applications is an authoritative text that explores the basic concepts of the economic theories and key information on advanced optimization methods of electricity markets.

Advances in Swarm Intelligence Dec 25 2020 This two-volume set LNCS 13344 and 13345 constitutes the proceedings of the 13th International Conference on Advances in Swarm Intelligence, ICSI 2022, which took place in Xi'an, China, in July 2022. The theme of this year's conference was "Serving Life with Swarm Intelligence". The 85 full papers presented were carefully reviewed and selected from 171 submissions. The papers of the first part cover topics such as: Swarm Intelligence and Nature-Inspired Computing; Swarm-based Computing Algorithms for Optimization; Particle Swarm Optimization; Ant Colony Optimization; Differential Evolution; Genetic Algorithm and Evolutionary Computation; Fireworks Algorithms; Brain Storm Optimization Algorithm; Bacterial Foraging Optimization Algorithm; DNA Computing Methods; Multi-Objective Optimization; Swarm Robotics and Multi-Agent System; UAV Cooperation and Control; Machine Learning; Data Mining; and Other Applications.

International Conference on Intelligent Computing and Smart Communication 2019 Apr 09 2022 This book gathers high-quality research papers presented at the First International Conference, ICSC 2019, organised by THDC Institute of Hydropower Engineering and Technology, Tehri, India, from 20 to 21 April 2019. The book is divided into two major sections – Intelligent Computing and Smart Communication. Some of the areas covered are Parallel and Distributed Systems, Web Services, Databases and Data Mining Applications, Feature Selection and Feature Extraction, High-Performance Data Mining Algorithms, Knowledge Discovery, Communication Protocols and Architectures, High-speed Communication, High-Voltage Insulation Technologies, Fault Detection and Protection, Power System Analysis, Embedded Systems, Architectures, Electronics in Renewable Energy, CAD for VLSI, Green Electronics, Signal and Image Processing, Pattern Recognition and Analysis, Multi-Resolution Analysis and Wavelets, 3D and Stereo Imaging, and Neural Networks.

A Price Based Unit Commitment Jan 18 2023

Optimization of Unit Commitment and Economic Dispatch in Microgrids Based on Genetic Algorithm and Mixed Integer Linear Programming Nov 16 2022 Energy Management System (EMS) applications of modern power networks like microgrids have to respond to a number of stringent challenges due to current energy revolution. Optimal resource dispatch tasks must be handled with specific regard to the addition of new resource types and the adoption of novel modeling considerations. In addition, due to the comprehensive changes concerning the multi cell grid structure, new policies should be fulfilled via microgrids' EMS. At the same time achieving a variety of conflicting goals in different microgrids requires a universal and a multi criteria optimization tool. In this work two dispatch-optimizers based on genetic algorithm and mixed integer linear programming for a centralized EMS are introduced which can schedule the unit commitment and economic dispatch of microgrid units. In the proposed methods, different network restrictions like voltages and equipment loadings and unit constraints have been considered.

Renewable Energy Towards Smart Grid Jun 30 2021 The book contains select proceedings of the International Conference on Smart Grid Energy Systems and Control (SGESC 2021). The proceedings is divided into 03 volumes, and this volume focuses on renewable energy towards the smart grid. It includes papers related to smart grid, renewable energy, its integration, and DERs in the network for better energy management and ancillary services. The book presents cutting-edge research in the emerging fields of micro, nano, and smart devices and systems from experts. Most of the contributors have built devices or systems or developed processes or algorithms in these areas. This book is a unique collection of chapters from different areas with a common theme and will be immensely useful to academic researchers and practitioners in the industry.

Price-based Unit Commitment Electricity Storage Arbitrage with Piecewise Linear Price-effects Nov 04 2021

Technological Innovation for Resilient Systems Nov 11 2019 This book constitutes the refereed proceedings of the 9th IFIP WG 5.5/SOCOLNET Advanced Doctoral Conference on Computing, Electrical and Industrial Systems, DoCEIS 2018, held in Costa de Caparica, Portugal, in May 2018. The 30 revised full papers presented were carefully reviewed and selected from 74 submissions. The papers present selected results produced in engineering doctoral programs and focus on technological innovation for resilient systems. Research results and ongoing work are presented, illustrated and discussed in the following areas: collaborative systems, decision support systems, supervision systems, energy management, smart grids, sensing systems, electrical systems, simulation and analysis, monitoring systems, and energy distribution systems.

Applications of Nature-Inspired Computing in Renewable Energy Systems Feb 13 2020 Renewable energy is crucial to preserve the environment. This energy involves various systems that must be optimized and assessed to provide better performance; however, the design and development of renewable energy systems remains a challenge. It is crucial to implement the latest innovative research in the field in order to develop and improve renewable energy systems. Applications of Nature-Inspired Computing in Renewable Energy Systems discusses the latest research on nature-inspired computing approaches applied to the design and development of renewable energy systems and provides new solutions to the renewable energy domain. Covering topics such as microgrids, wind power, and artificial neural networks, it is ideal for engineers, industry professionals, researchers, academicians, practitioners, teachers, and students.

Power System Optimization Modeling in GAMS Feb 07 2022 This unique book describes how the General Algebraic Modeling System (GAMS) can be used to solve various power system operation and planning optimization problems. This book is the first of its kind to provide readers with a comprehensive reference that includes the solution codes for basic/advanced power system optimization problems in GAMS, a computationally efficient tool for analyzing optimization problems in power and energy systems. The book covers theoretical background as well as the application examples and test case studies. It is a suitable reference for dedicated and general audiences including power system professionals as well as researchers and developers from the energy sector and electrical power engineering community and will be helpful to undergraduate and graduate students.

The Next Generation of Electric Power Unit Commitment Models Feb 19 2023 Over the years, the electric power industry has been using optimization methods to help them solve the unit commitment problem. The result has been savings of tens and perhaps hundreds of millions of dollars in fuel costs. Things are changing, however. Optimization technology is improving, and the industry is undergoing radical restructuring. Consequently, the role of commitment models is changing, and the value of the improved solutions that better algorithms might yield is increasing. The dual purpose of this book is to explore the technology and needs of the next generation of computer models for aiding unit commitment decisions. Because of the unit commitment problem's size and complexity and because of the large economic benefits that could result from its improved solution, considerable attention has been devoted to algorithm development in the book. More systematic procedures based on a variety of widely

researched algorithms have been proposed and tested. These techniques have included dynamic programming, branch-and-bound mixed integer programming (MIP), linear and network programming approaches, and Benders decomposition methods, among others. Recently, metaheuristic methods have been tested, such as genetic programming and simulated annealing, along with expert systems and neural networks. Because electric markets are changing rapidly, how UC models are solved and what purposes they serve need reconsideration. Hence, the book brings together people who understand the problem and people who know what improvements in algorithms are really possible. The two-fold result in The Next Generation of Electric Power Unit Commitment Models is an assessment of industry needs and new formulations and computational approaches that promise to make unit commitment models more responsive to those needs.
Bacterial Foraging Approach To Profit Based Unit Commitment Mar 08 2022 In this novel, A power station feeds different types of consumers such as domestic, commercial, industrial, agricultural etc. The design of a power plant must take into account the future increase in load. For this purpose load forecasting studies have to be made to predict the increase in load in the next 20 years or so. The increase in generation capacity should meet the maximum demand. The total load in any power system varies from instant to instant. The increase in power generation will increase the thermal plant operating cost. So in order to reduce the fuel cost and to enhance the economical efficiency, a profit based unit commitment should be maintained. Electrical power industry plans to improve its efficiency by providing a more reliable energy at least cost to consumers.
Nature Inspired Computing for Data Science Feb 24 2021 This book discusses the current research and concepts in data science and how these can be addressed using different nature-inspired optimization techniques. Focusing on various data science problems, including classification, clustering, forecasting, and deep learning, it explores how researchers are using nature-inspired optimization techniques to find solutions to these problems in domains such as disease analysis and health care, object recognition, vehicular ad-hoc networking, high-dimensional data analysis, gene expression analysis, microgrids, and deep learning. As such it provides insights and inspiration for researchers to wanting to employ nature-inspired optimization techniques in their own endeavors.
Genetic Algorithms in Applications Oct 23 2020 Genetic Algorithms (GAs) are one of several techniques in the family of Evolutionary Algorithms - algorithms that search for solutions to optimization problems by "evolving" better and better solutions. Genetic Algorithms have been applied in science, engineering, business and social sciences. This book consists of 16 chapters organized into five sections. The first section deals with some applications in automatic control, the second section contains several applications in scheduling of resources, and the third section introduces some applications in electrical and electronics engineering. The next section illustrates some examples of character recognition and multi-criteria classification, and the last one deals with trading systems. These evolutionary techniques may be useful to engineers and scientists in various fields of specialization, who need some optimization techniques in their work and who may be using Genetic Algorithms in their applications for the first time. These applications may be useful to many other people who are getting familiar with the subject of Genetic Algorithms.
Study for Price-Based Unit Commitment with Carbon Dec 17 2022
Optimization and Security Challenges in Smart Power Grids Jan 26 2021 This book provides an overview of state-of-the-art research on “Systems and Optimization Aspects of Smart Grid Challenges.” The authors have compiled and integrated different aspects of applied systems optimization research to smart grids, and also describe some of its critical challenges and requirements. The promise of a smarter electricity grid could significantly change how consumers use and pay for their electrical power, and could fundamentally reshape the current Industry. Gaining increasing interest and acceptance, Smart Grid technologies combine power generation and delivery systems with advanced communication systems to help save energy, reduce energy costs and improve reliability. Taken together, these technologies support new approaches for load balancing and power distribution, allowing optimal runtime power routing and cost management. Such unprecedented capabilities, however, also present a set of new problems and challenges at the technical and regulatory levels that must be addressed by Industry and the Research Community.
Distributed Energy Resources Management Sep 21 2020 At present, the impact of distributed energy resources in the operation of power and energy systems is unquestionable at the distribution level, but also at the whole power system management level. Increased flexibility is required to accommodate intermittent distributed generation and electric vehicle charging. Demand response has already been proven to have a great potential to contribute to an increased system efficiency while bringing additional benefits, especially to the consumers. Distributed storage is also promising, e.g., when jointly used with the currently increasing use of photovoltaic panels. This book addresses the management of distributed energy resources. The focus includes methods and techniques to achieve an optimized operation, to aggregate the resources, namely, by virtual power players, and to remunerate them. The integration of distributed resources in electricity markets is also addressed as a main drive for their efficient use.
Electrical Power Unit Commitment Jun 11 2022 This volume in the SpringerBriefs in Energy series offers a systematic review of unit commitment (UC) problems in electrical power generation. It updates texts written in the late 1990s and early 2000s by including the fundamentals of both UC and state-of-the-art modeling as well as solution algorithms and highlighting stochastic models and mixed-integer programming techniques. The UC problems are mostly formulated as mixed-integer linear programs, although there are many variants. A number of algorithms have been developed for, or applied to, UC problems, including dynamic programming, Lagrangian relaxation, general mixed-integer programming algorithms, and Benders decomposition. In addition the book discusses the recent trends in solving UC problems, especially stochastic programming models, and advanced techniques to handle large numbers of integer- decision variables due to scenario propagation
Complex System Modelling and Control Through Intelligent Soft Computations Aug 21 2020 The book offers a snapshot of the theories and applications of soft computing in the area of complex systems modeling and control. It presents the most important findings discussed during the 5th International Conference on Modelling, Identification and Control, held in Cairo, from August 31-September 2, 2013. The book consists of twenty-nine selected contributions, which have been thoroughly reviewed and extended before their inclusion in the volume. The different chapters, written by active researchers in the field, report on both current theories and important applications of soft-computing. Besides providing the readers with soft-computing fundamentals, and soft-computing based inductive methodologies/algorithms, the book also discusses key industrial soft-computing applications, as well as multidisciplinary solutions developed for a variety of purposes, like windup control, waste management, security issues, biomedical applications and many others. It is a perfect reference guide for graduate students, researchers and practitioners in the area of soft computing, systems modeling and control.
Price-Based Commitment Decisions in the Electricity Market Sep 14 2022 Offering a re-evaluation of the power industry, this book discusses decision-making for problems where a particular decision affects the options available at the next decision time. It covers a wide range of topics, from dynamic programming to future market decisions.
Price-Based Commitment Decisions in the Electricity Market Jan 06 2022 With major structural changes occuring in the electric power industry, many long-standing ways of operation will need to be

thoroughly reexamined. This book discusses decision making for problems where a particular decision affects the options available at the next decision time. The deregulation of the electric utility industry will shift the emphasis from a cost-based to a price-based approach; the resulting increase in uncertainty requires that a stochastic approach be adopted for optimal decision-making. This monograph covers a wide range of topics including dynamic programming, ordinal optimization, price modelling and forecasting, future market decisions, reserve market decisions and decisions in a congested market place.
Modern Optimization Techniques with Applications in Electric Power Systems Mar 16 2020 This book presents the application of some AI related optimization techniques in the operation and control of electric power systems. With practical applications and examples the use of functional analysis, simulated annealing, Tabu-search, Genetic algorithms and fuzzy systems for the optimization of power systems is discussed in detail. Preliminary mathematical concepts are presented before moving to more advanced material. Researchers and graduate students will benefit from this book. Engineers working in utility companies, operations and control, and resource management will also find this book useful. ?
Electricity Markets May 10 2022 A comprehensive resource that provides the basic concepts of electric power systems, microeconomics, and optimization techniques Electricity Markets: Theories and Applications offers students and practitioners a clear understanding of the fundamental concepts of the economic theories, particularly microeconomic theories, as well as information on some advanced optimization methods of electricity markets. The authors—noted experts in the field—cover the basic drivers for the transformation of the electricity industry in both the United States and around the world and discuss the fundamentals of power system operation, electricity market design and structures, and electricity market operations. The text also explores advanced topics of power system operations and electricity market design and structure including zonal versus nodal pricing, market performance and market power issues, transmission pricing, and the emerging problems electricity markets face in smart grid and micro-grid environments. The authors also examine system planning under the context of electricity market regime. They explain the new ways to solve problems with the tremendous amount of economic data related to power systems that is now available. This important resource: Introduces fundamental economic concepts necessary to understand the operations and functions of electricity markets Presents basic characteristics of power systems and physical laws governing operation Includes mathematical optimization methods related to electricity markets and their applications to practical market clearing issues Electricity Markets: Theories and Applications is an authoritative text that explores the basic concepts of the economic theories and key information on advanced optimization methods of electricity markets.
Proceedings of the 4th International Conference on Electrical Engineering and Control Applications May 18 2020 This book gathers papers presented during the 4th International Conference on Electrical Engineering and Control Applications. It covers new control system models, troubleshooting tips and complex system requirements, such as increased speed, precision and remote capabilities. Additionally, the papers discuss not only the engineering aspects of signal processing and various practical issues in the broad field of information transmission, but also novel technologies for communication networks and modern antenna design. This book is intended for researchers, engineers and advanced postgraduate students in the fields of control and electrical engineering, computer science and signal processing, as well as mechanical and chemical engineering.
Applications of Modern Heuristic Optimization Methods in Power and Energy Systems Nov 23 2020 Reviews state-of-the-art technologies in modern heuristic optimization techniques and presents case studies showing how they have been applied in complex power and energy systems problems Written by a team of international experts, this book describes the use of metaheuristic applications in the analysis and design of electric power systems. This includes a discussion of optimum energy and commitment of generation (nonrenewable & renewable) and load resources during day-to-day operations and control activities in regulated and competitive market structures, along with transmission and distribution systems. Applications of Modern Heuristic Optimization Methods in Power and Energy Systems begins with an introduction and overview of applications in power and energy systems before moving on to planning and operation, control, and distribution. Further chapters cover the integration of renewable energy and the smart grid and electricity markets. The book finishes with final conclusions drawn by the editors. Applications of Modern Heuristic Optimization Methods in Power and Energy Systems: Explains the application of differential evolution in electric power systems' active power multi-objective optimal dispatch Includes studies of optimization and stability in load frequency control in modern power systems Describes optimal compliance of reactive power requirements in near-shore wind power plants Features contributions from noted experts in the field Ideal for power and energy systems designers, planners, operators, and consultants, Applications of Modern Heuristic Optimization Methods in Power and Energy Systems will also benefit engineers, software developers, researchers, academics, and students.
Smart and Sustainable Power Systems Mar 28 2021 The smart grid initiative, integrating advanced sensing technologies, intelligent control methods, and bi-directional communications into the contemporary electricity grid, offers excellent opportunities for energy efficiency improvements and better integration of distributed generation, coexisting with centralized generation units within an active network. A large share of the installed capacity for recent renewable energy sources already comprises insular electricity grids, since the latter are preferable due to their high potential for renewables. However, the increasing share of renewables in the power generation mix of insular power systems presents a significant challenge to efficient management of the insular distribution networks, mainly due to the variability and uncertainty of renewable generation. More than other electricity grids, insular electricity grids require the incorporation of sustainable resources and the maximization of the integration of local resources, as well as specific solutions to cope with the inherent characteristics of renewable generation. Insular power systems need a new generation of methodologies and tools to face the new paradigm of large-scale renewable integration. Smart and Sustainable Power Systems: Operations, Planning, and Economics of Insular Electricity Grids discusses the modeling, simulation, and optimization of insular power systems to address the effects of large-scale integration of renewables and demand-side management. This practical book: Describes insular power systems, renewable energies, uncertainty, variability, reserves, and demand response Examines state-of-the-art forecasting techniques, power flow calculations, and scheduling models Covers probabilistic and stochastic approaches, scenario generation, and short-term operation Includes comprehensive testing and validation of the mathematical models using real-world data Explores electric price signals, competitive operation of distribution networks, and network expansion planning Smart and Sustainable Power Systems: Operations, Planning, and Economics of Insular Electricity Grids provides a valuable resource for the design of efficient methodologies, tools, and solutions for the development of a truly sustainable and smart grid.
Optimization Methods Applied to Power Systems ? Oct 03 2021 Electrical power systems are complex networks that include a set of electrical components that allow distributing the electricity generated in the conventional and renewable power plants to distribution systems so it can be received by final consumers (businesses and homes). In practice, power system management requires solving different design, operation, and control problems. Bearing in mind that computers are used to solve these complex optimization problems, this book includes some recent contributions to this field that cover a large

variety of problems. More specifically, the book includes contributions about topics such as controllers for the frequency response of microgrids, post-contingency overflow analysis, line overloads after line and generation contingences, power quality disturbances, earthing system touch voltages, security-constrained optimal power flow, voltage regulation planning, intermittent generation in power systems, location of partial discharge source in gas-insulated switchgear, electric vehicle charging stations, optimal power flow with photovoltaic generation, hydroelectric plant location selection, cold-thermal-electric integrated energy systems, high-efficiency resonant devices for microwave power generation, security-constrained unit commitment, and economic dispatch problems.

Computational Intelligence, Cyber Security and Computational Models Aug 01 2021 This book aims at promoting high-quality research by researchers and practitioners from academia and industry at the International Conference on Computational Intelligence, Cyber Security, and Computational Models ICC3 2015 organized by PSG College of Technology, Coimbatore, India during December 17 – 19, 2015. This book enriches with innovations in broad areas of research like computational modeling, computational intelligence and cyber security. These emerging inter disciplinary research areas have helped to solve multifaceted problems and gained lot of attention in recent years. This encompasses theory and applications, to provide design, analysis and modeling of the aforementioned key areas.

Recent Studies on Computational Intelligence Oct 11 2019 This book gathers the latest quality research work of Ph.D. students working on the current areas presented in the Doctoral Symposium on Computational Intelligence (DoSCI 2020). The book includes works in the areas of artificial intelligence, deep learning, evolutionary algorithms, swarm intelligence, fuzzy sets and vague sets, rough set theoretic approaches, quantum-inspired computational intelligence, hybrid computational intelligence, machine learning, computer vision, soft computing, distributed computing, parallel and grid computing, cloud computing, high-performance computing, biomedical computing, decision support and decision making. The book is useful for researchers, students, engineers, practitioners and academicians in their advance studies.

Intelligent Computing in Control and Communication Jul 20 2020 This book consists of peer-reviewed papers presented at the First International Conference on Intelligent Computing in Control and Communication (ICCC 2020). It comprises interesting topics in the field of applications of control engineering, communication and computing technology. As the current world is witnessing the use of various intelligent techniques for their independent problem solving, so this book may have a wide importance for all range of researchers and scholars. The book serves as a reference for researchers, professionals and students from across electrical, electronic and computer engineering disciplines.

Genetic-based Unit Commitment Algorithm Oct 15 2022

Market Operations in Electric Power Systems Dec 05 2021 An essential overview of post-deregulation market operations inelectrical power systems Until recently the U.S. electricity industry was dominated byvertically integrated utilities. It is now evolving into adistributive and competitive market driven by market forces andincreased competition. With electricity amounting to a $200 billionper year market in the United States, the implications of thisrestructuring will naturally affect the rest of the world. Why is restructuring necessary? What are the components ofrestructuring? How is the new structure different from the oldmonopoly? How are the participants strategizing their options tomaximize their revenues? What are the market risks and how are theyevaluated? How are interchange transactions analyzed and approved?Starting with a background sketch of the industry, this hands-onreference provides insights into the new trends in power systemsoperation and control, and highlights advanced issues in thefield. Written for both technical and nontechnical professionals involvedin power engineering, finance, and marketing, this must-haveresource discusses: * Market structure and operation of electric power systems * Load and price forecasting and arbitrage * Price-based unit commitment and security constrained unitcommitment * Market power analysis and game theory applications * Ancillary services auction market design * Transmission pricing and congestion Using real-world case studies, this timely survey offers engineers,consultants, researchers, financial managers, university professorsand students, and other professionals in the industry acomprehensive review of electricity restructuring and how itsradical effects will shape the market.

Robust Optimal Planning and Operation of Electrical Energy Systems Apr 28 2021 This book discusses the recent developments in robust optimization (RO) and information gap design theory (IGDT) methods and their application for the optimal planning and operation of electric energy systems. Chapters cover both theoretical background and applications to address common uncertainty factors such as load variation, power market price, and power generation of renewable energy sources. Case studies with real-world applications are included to help undergraduate and graduate students, researchers and engineers solve robust power and energy optimization problems and provide effective and promising solutions for the robust planning and operation of electric energy systems.

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