

## Solution Of Economic Load Dispatch Problem In Power System

This book addresses the principles and applications of metaheuristic approaches in engineering and related fields. The first part covers metaheuristics tools and techniques such as ant colony optimization and Tabu search, and their applications to several classes of optimization problems. In turn, the book's second part focuses on a wide variety of metaheuristics applications in engineering and/or the applied sciences, e.g. in smart grids and renewable energy. In addition, the simulation codes for the problems discussed are included in an appendix for ready reference. Intended for researchers aspiring to learn and apply metaheuristic techniques, and gathering contributions by prominent experts in the field, the book offers readers an essential introduction to metaheuristics, its theoretical aspects and applications.

The objective is to provide the latest developments in the area of soft computing. These are the cutting edge technologies that have immense application in various fields. All the papers will undergo the peer review process to maintain the quality of work.

Faced with an ever-growing resource scarcity and environmental regulations, the last 30 years have witnessed the rapid development of various renewable power sources, such as wind, tidal, and solar power generation. The variable and uncertain nature of these resources is well-known, while the utilization of power electronic converters presents new challenges for the stability of the power grid. Consequently, various control and operational strategies have been proposed and implemented by the industry and research community, with a growing requirement for flexibility and load regulation placed on conventional thermal power generation. Against this background, the modelling and control of conventional thermal engines, such as those based on diesel and gasoline, are experiencing serious obstacles when facing increasing environmental concerns. Efficient control that can fulfill the requirements of high efficiency, low pollution, and long durability is an emerging requirement. The modelling, simulation, and control of thermal energy systems are key to providing innovative and effective solutions. Through applying detailed dynamic modelling, a thorough understanding of the thermal conversion mechanism(s) can be achieved, based on which advanced control strategies can be designed to improve the performance of the thermal energy system, both in economic and environmental terms. Simulation studies and test beds are also of great significance for these research activities prior to proceeding to field tests. This Special Issue will contribute a practical and comprehensive forum for exchanging novel research ideas or empirical practices that bridge the modelling, simulation, and control of thermal energy systems. Papers that analyze particular aspects of thermal energy systems, involving, for example, conventional power plants, innovative thermal power generation, various thermal engines, thermal energy storage, and fundamental heat transfer management, on the basis of one or more of the following topics are invited in this Special Issue: • Power plant modelling, simulation, and control; • Thermal engines; • Thermal energy control in building energy systems; • Combined heat and power (CHP) generation; • Thermal energy storage systems; • Improving thermal comfort technologies; • Optimization of complex thermal systems; • Modelling and control of thermal networks; • Thermal management of fuel cell systems; • Thermal control of solar utilization; • Heat pump control; • Heat exchanger control.

Four modified versions of particle swarm optimizer (PSO) have been applied to the economic power dispatch with valve-point effects. In order to obtain the optimal solution, traditional PSO search a new position around the current position. The proposed strategies which explore the vicinity of particle's best position found so far leads to a better result. In addition, to deal with the equality constraint of the economic dispatch problems, a simple mechanism is also devised that the difference of the demanded load and total generating power is evenly shared among units except the one reaching its generating limit. To show their capability, the proposed algorithms are applied to thirteen. Comparison among particle swarm optimization is given. The results show that the proposed algorithms indeed produce more optimal solutions in both cases. The different PSO techniques are New PSO, Self-Adaptive PSO and Chaotic PSO Among the different PSO techniques, it is found that Self-Adaptive PSO is better than other PSO techniques in terms of better solutions, speed of convergence, time of execution and robustness but it has more premature convergence.

AI and Machine Learning Paradigms for Health Monitoring System

Intelligent Data Analytics

Power System Operation and Control

Innovative Computational Intelligence: A Rough Guide to 134 Clever Algorithms

Proceedings of ICPERES 2014

6th International Conference, SEMCCO 2015, Hyderabad, India, December 18-19, 2015, Revised Selected Papers

This book contains a collection of the papers accepted in the 18th Asia Pacific Symposium on Intelligent and Evolutionary Systems (IES 2014), which was held in Singapore from 10-12th November 2014. The papers contained in this book demonstrate notable intelligent systems with good analytical and/or empirical results.

Power System Operation and Control is comprehensively designed for undergraduate and postgraduate courses in electrical engineering. This book aims to meet the requirements of electrical engineering students and is useful for practicing engineers.

Advances in Metaheuristics: Applications in Engineering Systems provides details on current approaches utilized in engineering optimization. It gives a comprehensive background on metaheuristic applications, focusing on main engineering sectors such as energy, process, and materials. It discusses topics such as algorithmic enhancements and performance measurement approaches, and provides insights into the implementation of metaheuristic strategies to multi-objective optimization problems. With this book, readers can learn to solve real-world engineering optimization problems effectively using the appropriate techniques from emerging fields including evolutionary and swarm intelligence, mathematical programming, and multi-objective optimization. The ten chapters of this book are divided into three parts. The first part discusses three industrial applications in the energy sector. The second focuses on process optimization and considers three engineering applications: optimization of a three-phase separator, process plant, and a pre-treatment process. The third and final part of this book covers industrial applications in material engineering, with a particular focus on sand mould-systems. It also includes discussions on the potential improvement of algorithmic characteristics via strategic algorithmic enhancements. This book helps fill the existing gap in literature on the implementation of metaheuristics in engineering applications and real-world engineering systems. It will be an important resource for engineers and decision-makers selecting and implementing metaheuristics to solve specific engineering problems.

This two-volume set (CCIS 1395-1396) constitutes the refereed proceedings of the Third International Conference on Futuristic Trends in Network and Communication Technologies, FTNCT 2020, held in Taganrog, Russia, in October 2020. The 80 revised papers presented were carefully reviewed and selected from 291 submissions. The prime aim of the conference is to invite researchers from different domains of network and communication technologies to a single platform to showcase their research ideas. The selected papers are organized in topical sections on communication technologies; security and privacy; futuristic computing technologies; network and computing technologies; wireless networks and Internet of Things (IoT).

Select Proceedings of CHSN 2021

Hybrid Simplex Method for Optimizing Economic Load Dispatch Problem

Third International Conference, FTNCT 2020, Taganrog, Russia, October 14–16, 2020, Revised Selected Papers, Part II

Implementation of Optimization Algorithms to Solve Economic Load Dispatch Problem

18th EPIA Conference on Artificial Intelligence, EPIA 2017, Porto, Portugal, September 5-8, 2017, Proceedings

Micro-Electronics and Telecommunication Engineering

The first notable feature of this book is its innovation. Computational intelligence (CI), a fast evolving area, is currently attracting lots of researchers' attention in dealing with many complex problems. At present, there are quite a lot competing books existing in the market. Nevertheless, the present book is markedly different from the existing books in that it presents new paradigms of CI that have rarely mentioned before, as opposed to the traditional CI techniques or methodologies employed in other books. During the past decade, a number of new CI algorithms are proposed. Unfortunately, they spread in a number of unrelated publishing directions which may hamper the use of such published resources. These provide us with motivation to analyze the existing research for categorizing and synthesizing it into one. The mission of this book is really important since those algorithms are going to be a new revolution in computer science. We hope it will stimulate the readers to make novel contributions or even start a new paradigm based on nature phenomena.

Although structured as a textbook, the book's straightforward, self-contained style will also appeal to a wide audience of professionals, researchers and independent learners. We believe that the book will be instrumental in initiating an integrated approach to complex problems by allowing cross-fertilization of design principles from different design philosophies. The second feature of this book is its comprehensiveness: Through an extensive literature research, there are 134 innovative CI algorithms covered in this book.

The objective of the ELD problem is to determine the optimal combination of power outputs of all generating units so as to meet the required demand at minimum cost while satisfying the constraints. Over the past decade, in order to solve economic load dispatch problem, many salient methods have been developed such as hierarchical numerical method, genetic algorithm, evolutionary programming, neural network approaches, differential evolution, particle swarm optimization, and the hybrid methods. In this work hybrid Simplex method is applied to solve ELD problem, which is a local search method combined with random exploitation of the worst point. Modifications in the simplex method are made by adding random exploitation of the worst point and by using multiple simplex instead of a single simplex. The promising result on the benchmark function shows the applicability of the method for solving ELD problem. The test results obtained for three, four, and six generator system prove the authentication of the method.

Optimization problems are real world problems we encounter in many areas such as mathematics, engineering, science, business, and economics, e.g. in product and process design, production, traffic control, scheduling and even strategic planning. Optimization is a discipline of dealing with those kinds of problems where one has to minimize or maximize one or more objectives that are functions of some integer or real variables without exploiting the given constraints. For decades' scientists are researching to emerge out with modified and faster techniques. In this book, history of Optimization as well as various optimization techniques like genetic algorithm, ant colony optimization, pattern search, particle swarm optimization, Artificial Bee Colony, Simulated Annealing & Hybrid Optimization techniques have been discussed for solving various optimization problems. Due to the various optimization techniques, available nowadays the solution of every complex problems can be done in acceptable times. The results confirm superior performance of the proposed algorithms in solving many real-world problems. Therefore, Optimization is a mathematical tool to find the maximum or minimum of a function in some feasible region. There is no any industry which is not involved in the solution of optimization problems. In the operational planning of power system, Economic load dispatch (ELD) is a common task which concern with the optimization problems. The objective of ELD problem is to schedule the output of the connected units of the plant so as to fulfill the load demand at minimum operating cost while satisfying all operational constraints. Here, Genetic Algorithm & Simulated Annealing have been implemented to solve ELD problem for IEEE 5, 6, 14 bus system, Standard 15- & 20-Unit thermal generating system. Economic load dispatch problem is one of the most important ones in the power system operation and planning. The main objective of the economic load dispatch problem is to determine optimal combination of power output of all generating units so as to meet the required particular load demand at minimum cost of generation while satisfying the system constraints such as equality and non-equality constraint. The two major factors to be considered while dispatching power to generating units are the cost of generation and the quantity of power supplied. The relation between the cost of generation and the power is approximated by a quadratic polynomial equation and is solved by mathematical programming techniques. In past year numbers of techniques have been utilized to solving the economic load dispatch problem, some of these techniques are the conventional optimization techniques and some are based on the intelligent technique. The objective of this book is to study different naturally inspired intelligent optimization techniques & also to solve economic load dispatch (ELD) problem by considering equality and inequality constraints to satisfy the consumers demand. In this book standard IEEE 5, 6, 14 bus system, standard 15 & 20-unit thermal generating system have been considered for ELD operation. Here Genetic Algorithm & Simulated Annealing algorithm have been implemented to solve ELD problem. The main objective of the book work is summarized as follows. Study of different naturally inspired intelligent optimization techniques & history of optimization. Finding the solution of ELD problem, so minimization of the total fuel cost by satisfying the power system constraints Using the GA and SA techniques to find out the optimal solution for the ELD problem. Investigate the effectiveness of these methods for ELD problem with losses. Compare the results obtained from these two methods, i.e. Genetic Algorithm (GA) and Simulated Annealing (SA). This book has been arranged in six chapters. Lt. Kishan Bhushan SahayProf. S.K. SrivastavaAbhishek Kumar

Bachelor Thesis from the year 2008 in the subject Engineering - Power Engineering, VIT University (VIT University), course: Power Electronics and Drives, language: English, abstract: Four modified versions of particle swarm optimizer (PSO) have been applied to the economic power dispatch with valve-point effects. In order to obtain the optimal solution, traditional PSO search a new position around the current position. The proposed strategies which explore the vicinity of particle's best position found so far leads to a better result. In addition, to deal with the equality constraint of the economic dispatch problems, a simple mechanism is also devised that the difference of demanded load and total generating power is evenly shared among units except the one reaching its generating limit. To show their capability, the proposed algorithms are applied to thirteen. Comparison among particle swarm optimization and other modified particle swarm optimization is given. The results show that the proposed algorithms indeed produce more optimal solutions in both cases. The different PSO techniques are New PSO, Self Adaptive PSO and Chaotic PSO. Among the different PSO techniques, it is found that Self-Adaptive PSO is better than other PSO techniques in terms of better solution, speed of convergence, time of execution and robustness but it has more premature convergence.

High Performance Computing and Networking

Hybrid Soft Computing Approaches

Computational Intelligence in Remanufacturing

Economic dispatch with valve point effect using various PSO techniques

Proceedings of the International Conference on Soft Computing for Problem Solving (SocProS 2011) December 20-22, 2011

Artificial Intelligence and Evolutionary Computations in Engineering Systems

The book provides a platform for dealing with the flaws and failings of the soft computing paradigm through different manifestations. The different chapters highlight the necessity of the hybrid soft computing methodology in general with emphasis on several application perspectives in particular. Typical examples include (a) Study of Economic Load Dispatch by Various Hybrid Optimization Techniques, (b) An Application of Color Magnetic Resonance Brain Image Segmentation by Para Optimum LG Activation Function, (c) Hybrid Rough-PSO Approach in Remote Sensing Imagery Analysis, (d) A Study and Analysis of Hybrid Intelligent Techniques for Breast Cancer Detection using Breast Thermograms, and (e) Hybridization of 2D-3D Images for Human Face Recognition. The elaborate findings of the chapters enhance the exhibition of the hybrid soft computing paradigm in the field of intelligent computing.

A metaheuristic is a higher-level procedure designed to select a partial search algorithm that may lead to a good solution to an optimization problem, especially with incomplete or imperfect information. This unique compendium focuses on the insights of hybrid metaheuristics. It illustrates the recent researches on evolving novel hybrid metaheuristic algorithms, and prominently highlights its diverse application areas. As such, the book helps readers to grasp the essentials of hybrid metaheuristics and to address real world problems. The must-have volume serves as an inspiring read for professionals, researchers, academics and graduate students in the fields of artificial intelligence, robotics and machine learning.

Power Generation, Operation, and ControlJohn Wiley & Sons

A comprehensive text on the operation and control of power generation and transmission systems In the ten years since Allen J. Wood and Bruce F. Wollenberg presented their comprehensive introduction to the engineering and economic factors involved in operating and controlling power generation systems in electric utilities, the electric power industry has undergone unprecedented change. Deregulation, open access to transmission systems, and the birth of independent power producers have altered the structure of the industry, while technological advances have created a host of new opportunities and challenges. In Power Generation, Operation, and Control, Second Edition, Wood and Wollenberg bring professionals and students alike up to date on the most current practices in the tradition of the first edition, the first practical, hands-on guide to theoretical developments and to the application of advanced operations research methods to realistic electric power engineering problems. This one-of-a-kind text also addresses the interaction between human and economic factors to prepare readers to make real-world decisions that go beyond the limits of mere technical calculations. The Second Edition features vital new material, including: • A computer disk developed by the authors to help readers solve complicated problems • Examination of Optimal Power Flow (OPF) • Treatment of unit commitment expanded to incorporate the Lagrange relaxation technique • Introduction to the use of bounding techniques and other contingency selection methods • Applications suited to the new, deregulated systems as well as to the traditional, vertically organized utilities company Wood and Wollenberg draw upon nearly 30 years of classroom testing to provide valuable data on operations research, state estimation methods, fuel scheduling techniques, and more.

Power Generation, Operation, and Control

Research Anthology on Clean Energy Management and Solutions

Optimization and Control of Electrical Machines

Select Proceedings of MedCom 2020

Applications of Artificial Intelligence in Electrical Engineering

POWER SYSTEM OPTIMIZATION

Electrical machines are used in the process of energy conversion in the generation, transmission and consumption of electric power. In addition to this, electrical machines are considered the main part of electrical drive systems. Electrical machines are the subject of advanced research. In the development of an electrical machine, the design of its different structures is very important. This design ensures the robustness, energy efficiency, optimal cost and high reliability of the system. Using advanced techniques of control and new technology products has brought electrical machines into their optimal functioning mode. Different techniques of control can be applied depending on the goals considered. The aim of this book is to present recent work on the design, control and applications of electrical machines.

Power System Optimization is intended to introduce the methods of multi-objective optimization in integrated electric power system operation, covering economic, environmental, security and risk aspects as well. Evolutionary algorithms which mimic natural evolutionary principles to constitute random search and optimization procedures are appended in this new edition to solve generation scheduling problems. Written in a student-friendly style, the book provides simple and understandable basic computational concepts and algorithms used in generation scheduling so that the readers can develop their own programs in any high-level programming language. This clear, logical overview of generation scheduling in electric power systems permits both students and power engineers to understand and apply optimization on a dependable basis. The book is particularly easy-to-use with sound and consistent terminology and perspective throughout. This edition presents systematic coverage of local and global optimization techniques such as binary- and real-coded genetic algorithms, evolutionary algorithms, particle swarm optimization and differential evolutionary algorithms. The economic dispatch problem presented, considers higher-order nonlinearities and discontinuities in input-output characteristics in fossil fuel burning plants due to valve-point loading, ramp-rate limits and prohibited operating zones. Search optimization techniques presented are those which participate efficiently in decision making to solve the multiobjective optimization problems. Stochastic optimal generation scheduling is also updated in the new edition. Generalized Z-bus distribution factors (GZBDF) are presented to compute the active and reactive power flow on transmission lines. The interactive decision making methodology based on fuzzy set theory, in order to determine the optimal generation allocation to committed generating units, is also discussed. This book is intended to meet the needs of a diverse range of groups interested in the application of optimization techniques to power system operation. It requires only an elementary knowledge of numerical techniques and matrix operation to understand most of the topics. It is designed to serve as a textbook for postgraduate electrical engineering students, as well as a reference for faculty, researchers, and power engineers interested in the optimization techniques and applications of power systems. Key Features The book discusses • Load flow techniques and economic dispatch—both classical and rigorous Economic dispatch considering valve-point loading, ramp-rate limits and prohibited operating zones Real coded genetic algorithms for economic dispatch Evolutionary programming for economic dispatch Particle swarm optimization for economic dispatch Differential evolutionary algorithm for economic dispatch Stochastic multiobjective thermal power dispatch with security Generalized Z-bus distribution factors to compute line flow Stochastic multiobjective hydrothermal generation scheduling Multiobjective thermal power dispatch using artificial neural networks Fuzzy multiobjective generation scheduling Multiobjective generation scheduling by searching weight pattern

Artificial intelligence is increasingly finding its way into industrial and manufacturing contexts. The prevalence of AI in industry from stock market trading to manufacturing makes it easy to forget how complex artificial intelligence has become. Engineering provides various current and prospective applications of these new and complex artificial intelligence technologies. Applications of Artificial Intelligence in Electrical Engineering is a critical research book that examines the advancing developments in artificial intelligence with a focus on theory and research and their implications. Highlighting a wide range of topics such as evolutionary computing, image processing, and swarm intelligence, this book is essential for engineers, manufacturers, technology developers, IT specialists, managers, academicians, researchers, computer scientists, and students.

Optimization of Power System Operation, 2nd Edition, offers a practical, hands-on guide to theoretical developments and to the application of advanced optimization methods to realistic electric power engineering problems. The book includes: New chapter on Application of Renewable Energy, and a new chapter on Operation of Smart Grid New topics include wheeling model, multi-area wheeling, and the total transfer capability computation in multiple areas Continues to provide engineers and academics with a complete picture of the optimization of techniques used in modern power system operation

Applications in Engineering Systems

Bio-Inspired Computing and Applications

Computational Vision and Bio-Inspired Computing

Volume 1

Group Search Optimizer for Economic Load Dispatch

A Hybrid Technique for Power System Optimization

Optimization of Power System Operation, 2nd Edition, offers a practical, hands-on guide to theoretical developments and to the application of advanced optimization methods to realistic electric power engineering problems. The book includes: New chapter on Application of Renewable Energy, and a new chapter on Operation of Smart Grid New topics include wheeling model, multi-area wheeling, and the total transfer capability computation in multiple areas Continues to provide engineers and academics with a complete picture of the optimization of techniques used in modern power system operation

Classical and Recent Aspects of Power System Optimization presents conventional and meta-heuristic optimization methods and algorithms for power system studies. The classic aspects of optimization in power systems, such as optimal power flow, economic dispatch, unit commitment and power quality optimization are covered, as are issues relating to distributed generation sizing, allocation problems, scheduling of renewable resources, power reserve problems, efficient use of smart grid capabilities, and protection studies in modern power systems. The book brings together innovative research outcomes, programs, algorithms and approaches that consolidate the present state and future challenges for power. Analyses and compares several aspects of optimization for power systems which has never been addressed in one reference Details real-life industry application examples for each chapter (e.g. energy storage and power reserve problems) Provides practical training on theoretical developments and application of advanced methods for optimum electrical energy for realistic engineering problems

This book comprises the proceedings of the 2nd International Conference on Computer Vision, High-Performance Computing, Smart Devices, and Networks (CHSN 2021). This book highlights the high-quality research articles in machine learning, computer vision, and networks. The content of this volume gives the reader an up-to-date picture of the state-of-the-art connection between computational intelligence, machine learning, and IoT. The papers included in this volume are peer-reviewed by experts in the related areas. The book will serve as a valuable reference resource for academics and researchers across the globe.

This book gathers selected papers presented at the 6th International Conference on Artificial Intelligence and Evolutionary Computations in Engineering Systems, held at the Anna University, Chennai, India, from 20 to 22 April 2020. It covers advances and recent developments in various computational intelligence techniques, with an emphasis on the design of communication systems. In addition, it shares valuable insights into advanced computational methodologies such as neural networks, fuzzy systems, evolutionary algorithms, hybrid intelligent systems, uncertain reasoning techniques, and other machine learning methods and their application to decision-making and problem-solving in mobile and wireless communication networks.

Advances in Smart Communication and Imaging Systems

Modelling, Simulation and Control of Thermal Energy Systems

Proceedings of ICCVBC 2021

Practice Problems, Methods, and Solutions

Particle Swarm Optimization Applied to Economic Load Dispatch Problem

7th International Conference on Intelligent Computing, ICIC 2011, Zhengzhou, China, August 11-14, 2011, Revised Papers

The book is a collection of high-quality peer-reviewed research papers presented in the Proceedings of International Conference on Power Electronics and Renewable Energy Systems (ICPERES 2014) held at Rajalakshmi Engineering College, Chennai, India. These research papers provide the latest developments in the broad area of Power Electronics and Renewable Energy Systems. The book includes: • Applications of intelligent computing in power electronics, engineering and scientific applications of the emerging techniques. It presents invited papers from the inventors/originators of new applications and advanced technologies.

In attempts to reduce greenhouse gas emissions, many alternatives to manufacturing have been recommended from a number of international organizations. Although challenges will arise, remanufacturing has the ability to transform ecological and business value. Computational Intelligence in Remanufacturing introduces various computational intelligence techniques, results, and lessons from specific applications while highlighting future development and research. This book is an essential reference for students, researchers, and practitioners in mechanical, industrial, and electrical engineering.

This book constitutes the refereed proceedings of the 18th EPIA Conference on Artificial Intelligence, EPIA 2017, held in Porto, Portugal, in September 2017. The 69 revised full papers and 2 short papers presented were carefully reviewed and selected from a total of 177 submissions. The papers are organized in 16 tracks devoted to the following topics: agent-based artificial intelligence in cyber-physics and distributed embedded systems (AICPDES), artificial intelligence in games (AIG), artificial intelligence in medicine (AIM), artificial intelligence in power and energy systems (AIPES), artificial intelligence in transportation systems (AITS), artificial life and evolutionary algorithms (ALEA), ambient intelligence and affective environment intelligence (BAI), intelligent robotics (ROBOT), knowledge discovery and business intelligence (KDBI), knowledge representation and reasoning (KRR), multi-agent systems: theory and applications (MASTA), software engineering for autonomous and intelligent systems (SE4AIS), social simulation and modelling (SSM), and text mining and applications (TeMA).

This book presents select and peer-reviewed proceedings of the International Conference on Smart Communication and Imaging Systems (MedCom 2020). The contents explore the recent technological advances in the field of next generation communication systems and latest techniques for image processing, analysis and their related applications. The topics include Futuristic Trends in Network and Communication Technologies, differential evolution, brain storm optimization algorithm, biogeography based optimization, cuckoo search, hybrid methods, multi-objective optimization, multi-agent systems and swarm robotics, Neural networks and fuzzy methods, data mining approaches, information security, automation control, combinatorial optimization algorithms, scheduling and path planning, machine learning, blind source separation, swarm interaction behavior, parameters and system optimization, neural networks, evolutionary and genetic algorithms, fuzzy systems, forecasting algorithms, classification, tracking analysis, simulation, image and texture analysis, dimension reduction, system optimization, segmentation and detection system, machine translation, virtual management and disaster analysis.

The economic load dispatch (ELD) is the process of allocating the forecasted load demand among the committed generating units in electric power system and its primary objective is to minimize the total cost of generation while honoring the operational constraints of the available generation's resource. This thesis concerns with the implementation of group search optimizer (GSO) to find the global solution for nonlinear optimization problems while satisfying equality and inequality constraints in the context of time expansive evaluation of functions. GSO technique implements the animal scanning mechanism metamorphically to design optimum searching strategies for solving optimization problems. Group search algorithm employed in this work is population based algorithm, and resource searching process of animals in nature is analogous to the process of seeking optimum in a search space. The promising results on the benchmark function show the applicability of the group search optimizer for solving economic load dispatch problem. The validity of the proposed method has been demonstrated for three, four and six generator electrical power system.

The three-volume set LNCS 6838, LNAI 6839, and LNBI 6840 constitutes the thoroughly refereed post-conference proceedings of the 7th International Conference on Intelligent Computing, ICIC 2011, held in Zhengzhou, China, in August 2011. This volume contains 93 revised full papers, from a total of 281 presentations at the conference – carefully reviewed and selected from 832 initial submissions. The papers address all issues in Advanced Intelligent Computing, especially Methodologies and Applications, including theories, methodologies, and applications in science and technology. They include a range of techniques such as artificial intelligence, pattern recognition, evolutionary computing, informatics theories and applications, computational neuroscience and bioscience, soft computing, human computer interface issues, etc.

Optimization of Power System Operation

6th International Conference, ICSCI 2015, held in conjunction with the Second BRICS Congress, CCI 2015, Beijing, China, June 25-28, 2015, Proceedings, Part I

Advances in Swarm and Computational Intelligence

Power Electronics and Renewable Energy Systems

Swarm, Evolutionary, and Memetic Computing

Classical and Recent Aspects of Power System Optimization

This book embodies principles and applications of advanced soft computing approaches in engineering, healthcare and allied domains directed toward the researchers aspiring to learn and apply intelligent data analytics techniques. The first part covers AI, machine learning and data analytics tools and techniques and their applications to the class of several hospital and health real-life problems. In the later part, the applications of AI, ML and data analytics shall be covered over the wide variety of applications in hospital, health, engineering and/or applied sciences such as the clinical services, medical image analysis, management support, quality analysis, bioinformatics, device analysis and operations. The book presents knowledge of experts in the form of chapters with the objective to introduce the theme of intelligent data analytics and discusses associated theoretical applications. At last, it presents simulation codes for the problems included in the book for better understanding for beginners.

This book focuses on the integration of intelligent communication systems, control systems and devices related to all aspects of engineering and sciences. It includes high-quality research papers from the 4th International Conference on Intelligent Communication, Control and Devices (ICCCD 2020), organized by the Department of Electronics, Instrumentation and Control Engineering at the University of Petroleum and Energy Studies, Dehradun, India during 27–28 November 2020. The topics covered are a range of recent advances in intelligent communication, intelligent control, and intelligent devices.

This book includes selected papers from the 5th International Conference on Computational Vision and Bio Inspired Computing (ICCVBIC 2021), held in Coimbatore, India, during November 2526, 2021. This book presents state-of-the-art research innovations in computational vision and bio-inspired techniques. The book reveals the theoretical and practical aspects of bio-inspired computing techniques, like machine learning, sensor-based models, evolutionary optimization and big data modeling and management that make use of effectual computing processes in the bio-inspired systems. It also contributes to the novel research that focuses on developing bio-inspired computing solutions for various domains, such as human-computer interaction, image processing, sensor-based single processing, recommender systems and facial recognition, which play an indispensable part in smart agriculture, smart city, biomedical and business intelligence applications.

The economic load dispatch plays an important role in the operation of power system, and several models by using different techniques have been used to solve these problems. Several traditional approaches, like lambda-iteration and gradient method are utilized to find out the optimal solution of non-linear problem. More recently, the soft computing techniques have received more attention and were used in a number of successful and practical applications. The purpose of this work is to find out the advantages of application of the evolutionary computing technique and Particle Swarm Optimization (PSO) in particular to the economic load dispatch problem. Here, an attempt has been made to find out the minimum cost by using PSO using the data of three and six generating units. In this work, data has been taken from the published work in which loss coefficients are also given with the max-min power limit and cost function. All the techniques are implemented in MATLAB environment. PSO is applied to find out the minimum cost for different power demand which is finally compared with both lambda-iteration method and GA technique. When the results are compared

Metaheuristic and Evolutionary Computation: Algorithms and Applications

Implementing Modified Particle Swarm Optimization Method to Solve Economic Load Dispatch Problem

Particle Swarm Optimizer: Economic Dispatch with Valve Point Effect Using Various PSO Techniques

Advances in Metaheuristics

Proceedings of 3rd ICMIETE 2019

Intelligent Communication, Control and Devices

This volume constitutes the thoroughly refereed post-conference proceedings of the 6th International Conference on Swarm, Evolutionary, and Memetic Computing, SEMCCO 2015, held in Hyderabad, India, in December 2015. The 23 full papers presented in this volume were carefully reviewed and selected from 40 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.

Energy usage and consumption continue to rise globally each year, with the most efficient and cost-effective energy sources causing huge impacts to the environment. In an effort to mitigate harmful effects to the environment, implementing clean energy resources and utilizing green energy management strategies have become worldwide initiatives, with many countries from all regions quickly becoming leaders in renewable energy usage. Still, not every energy resource is without flaws. Researchers must develop effective and low-cost strategies for clean energy in order to find the balance between production and consumption. The Research Anthology on Clean Energy Management and Solutions provides in-depth research that explores strategies and techniques used in the energy production field to optimize energy efficiency in order to maintain clean and safe use while delivering ample energy coverage. The anthology also seeks solutions to energy that have not yet been optimized or are still produced in a way that is harmful to the environment. Covering topics such as hydrogen fuel cells, renewable energy, solar power, solar systems, cost savings, and climate protection, this text is essential for electrical engineers, nuclear engineers, environmentalists, managers, policymakers, government officials, professionals in the energy industry, researchers, academicians, and students looking for the latest research on clean energy management.

Power System Analysis

An Animal Searching Technique for Power System Optimization

Computational Algorithm for AI Technology, Proceedings of ICAIECES 2020

Progress in Artificial Intelligence