

Read Book A Novel Hybrid Imperialist Competitive Algorithm For Pdf For Free

Proportional-integral Control Optimization Using Imperialist Competitive Algorithm 2007 IEEE Congress on Evolutionary Computation Learning Automata and Sigma Imperialist Competitive Algorithm for Optimization of Single and Multi-objective Functions A Fractal Image Compression Algorithm Based on Improved Imperialist Competitive Algorithm Hybridization of Imperialist Competitive Algorithm (ICA) and Multi Layer Perception Neural Network (MLP) for Software Reliability Prediction Advances in Metaheuristic Algorithms for Optimal Design of Structures A Imperialist Competitive Algorithm Approach to Solve a Green Vehicle Routing Problem Advance Metaheuristic Algorithms for Optimal Design of Structures Metaheuristics: Outlines, MATLAB and Examples Advances in Metaheuristic Algorithms for Optimal Design of Structures Optimal Allocation of FACTS Devices in Power Networks Using Imperialist Competitive Algorithm (ICA). Handbook of Test Problems in Local and Global Optimization Computational Science and Its Applications - ICCSA 2008 Multi-Agent Coordination HVDC Grids Proceedings of the 27th International Symposium on Mine Planning and Equipment Selection - MPES 2018 Optimization Hybrid PV-wind-battery Stand-alone System Using Imperialist Competitive Algorithm Innovative Computational Intelligence: A Rough Guide to 134 Clever Algorithms Multi-Agent Coordination Fuzzy Logic: Theory and Applications Applied Computational Intelligence and Mathematical Methods Soft Computing Applications Nature-Inspired Design of Hybrid Intelligent Systems Estimation of Distribution Algorithms Design of Intelligent Systems Based on Fuzzy Logic, Neural Networks and Nature-Inspired Optimization Novel Developments in Uncertainty Representation and Processing Hybrid Intelligent Systems in Control, Pattern Recognition and Medicine Colliding Bodies Optimization Transmission Expansion Planning: The Network Challenges of the Energy Transition Intuitionistic Type-2 Fuzzy Logic Enhancements in Neural and Optimization Algorithms: Theory and Applications Handbook of Research on Hydroinformatics: Technologies, Theories and Applications Integrating Neural Network and Colonial Competitive Algorithm Computational Methods for Application in Industry 4.0 Metaheuristic Optimization: Nature-Inspired Algorithms Swarm and Computational Intelligence, Theory and Applications Fuzzy Techniques: Theory and Applications Intelligent Information and Database Systems Social Manufacturing: Fundamentals and Applications Glow Swarm Optimization Artificial Evolution Computational Intelligence, Networked Systems and Their Applications

Bankruptcy filings are as high today as ever, calling into question the efficacy of existing bankruptcy prediction models. This paper tries to provide an alternative for bankruptcy prediction by integrating Multi Layered Perceptron with Imperialist Competitive Algorithm (MLP-ICA) and Kohonen self-organizing map. Research sample consist of 70 bankrupts and non-bankrupt company in 2001 in listed firms of Tehran Stock Exchange. Results indicate that MLP-ICA model outperform Kohonen self-organizing map. This book describes the latest advances in fuzzy logic, neural networks and optimization algorithms, as well as their hybrid combinations, and their applications in areas such as intelligent control and robotics, pattern recognition, medical diagnosis, time series prediction, optimization of complex problems. The book is divided into five main parts. The first part proposes concepts and algorithms based on type-1 and type-2 fuzzy logic and their applications; the second explores new concepts and algorithms in neural networks and fuzzy logic applied to recognition

third part examines the theory and practice of meta-heuristics in various areas of application, fourth highlights diverse applications of fuzzy logic, neural networks and hybrid intelligent systems in medical contexts. Finally, the fifth part focuses on applications of fuzzy logic, neural networks and meta-heuristics to robotics problems. This book exemplifies how algorithms are developed by mimicking nature. Classical techniques for solving day-to-day problems is time-consuming and cannot address complex problems. Metaheuristic algorithms are nature-inspired optimization techniques for solving real-life complex problems. This book emphasizes the social behaviour of insects, animals and other natural entities, in terms of converging power and benefits. Major nature-inspired algorithms included in this book include the bee colony algorithm, ant colony algorithm, grey wolf optimization algorithm, whale optimization algorithm, firefly algorithm, bat algorithm, ant lion optimization algorithm, grasshopper optimization algorithm, butterfly optimization algorithm and others. The algorithms have been arranged in chapters to help readers gain better insight into nature-inspired systems and artificial intelligence. All the MATLAB codes have been provided in the appendices of the book to enable readers to practice how to solve examples included in all sections. This book is for experts in Engineering, Applied Sciences, Natural and Formal Sciences, Economics, Humanities and Social Sciences. This book describes the latest advances in fuzzy logic, neural networks, and optimization algorithms, as well as their hybrid intelligent combinations, and their applications in the areas such as intelligent control, robotics, pattern recognition, medical diagnosis, time series prediction, and optimization. The book is highly relevant as most current intelligent systems and devices use some form of intelligent fuzzy logic to enhance their performance. The book also presents new and advanced models and algorithms based on fuzzy logic and intuitionistic fuzzy systems, which are of great interest to researchers in these areas. Further, it proposes novel, nature-inspired optimization algorithms and innovative neural models. Featuring contributions on theoretical aspects as well as applications, the book appeals to a wide audience. Discover the latest developments in multi-robot coordination techniques with this innovative and original resource *Multi-Agent Coordination: A Reinforcement Learning Approach* delivers a comprehensive, insightful, and unique treatment of the development of multi-robot coordination algorithms with minimal computational burden and reduced storage requirements when compared to traditional algorithms. The accomplished academics, engineers, and authors provide readers with a high-level introduction to, and overview of, multi-robot coordination, and in-depth analyses of learning-based planning algorithms. You'll learn about how to accelerate the exploration of the search space to reach the goal and alternative approaches to speeding up the convergence of TMAQL by identifying the best joint action for the team. The authors also propose novel approaches to consensus Q-learning to address the equilibrium selection problem and a new way of evaluating the threshold value for multi-agent empires without imposing any significant computation overhead. Finally, the book concludes with an examination of the likely direction of future research in this rapidly developing field. Readers will discover cutting-edge techniques for multi-agent coordination, including: An introduction to multi-agent coordination by reinforcement learning and evolutionary algorithms, including topics like the Nash equilibrium and correlated equilibrium Improving convergence speed of multi-agent Q-learning for cooperative task planning Consensus Q-learning for multi-agent cooperative planning The efficient computing of correlated equilibrium for cooperative q-learning based multi-agent planning A multi-agent imperialist competitive algorithm for multi-agent stick-carrying applications Perfect for academics, engineers, and professionals who regularly work with multi-agent learning algorithms, *Multi-Agent Coordination: A Reinforcement Learning Approach* also belongs on the bookshelves of anyone with an advanced interest in machine learning and artificial intelligence as it applies to the field of cooperative or competitive robotics. This book introduces social manufacturing, the next generation manufacturing paradigm that covers product life cycle activities that deal with Internet-based organizational

interactive mechanisms under the context of socio-technical systems in the fields of industrial production engineering. Like its subject, the book's approach is multi-disciplinary, including manufacturing systems, operations management, computational social sciences and information applications. It reports on the latest research findings regarding the social manufacturing paradigm architecture, configuration and execution of social manufacturing systems and more. Furthermore, it describes the individual technologies enabled by social manufacturing for each topic, supported by case studies. The technologies discussed include manufacturing resource minimalization and their strategic reorganizations, blockchain models in cybersecurity, computing and decision-making, social business relationships and organizational networks, open product design, social sensors and extended digital physical systems, and social factory and inter-connections. This book helps engineers and managers in the industry to practice social manufacturing, as well as offering a systematic reference resource for researchers in manufacturing. Students also benefit from the detailed discussions of the latest trends and technologies that will have been put into practice by the time they graduate. "This book provides relevant theoretical frameworks and empirical research findings in the area hydroinformatics for professionals to improve their understanding of the development and use of decision support systems for support decision making and integrated water management at different organizational levels and domains"--Provided by publisher. This book discusses HVDC grids based on multi-terminal voltage source converters (VSC), which is suitable for the connection of offshore wind farms and a promising solution for a continent wide overlay grid. HVDC Grids: For Offshore and Supergrid of the Future begins by introducing and analyzing the motivations and energy policy drives for developing offshore grids and the European Supergrid. HVDC transmission technology and offshore equipment are described in the second part of the book. The third part of the book discusses how HVDC grids are developed and integrated in the existing power system. The fourth part of the book focuses on DC grid integration, in studies, for different time domains of electric power systems. The book concludes by discussing developments of advanced control methods and control devices for enabling DC grid integration. Presents the technology of the future offshore and HVDC grid Explains how offshore and HVDC grids can be integrated in the existing power system Provides the required models to analyse the different domains of power system studies: from steady-state to electromagnetic transients This book is intended for power system engineers and academics with an interest in HVDC or power systems, and policy makers. The book also provides a solid background for researchers working with VSC-HVDC technologies, power electronic devices, offshore wind farm integration, and DC grid protection.

Volume set LNCS 5072 and 5073 constitutes the refereed proceedings of the International Conference on Computational Science and Its Applications, ICCSA 2008, held in Perugia, Italy in June/July 2008. The two volumes contain papers presenting a wealth of original research results in the field of computational science, from foundational issues in computer science and mathematics to advanced applications in virtually all sciences making use of computational techniques. The topics of the papers are structured according to the five major conference themes: computational methods, algorithms and applications, high performance technical computing and networks, advanced and emerging applications, geometric modelling, graphics and visualization, information systems and information technologies. This book presents a panoramic look at the transformation of the transmission network in the context of the energy transition. It provides readers with basic definitions as well as details on current challenges and emerging technologies. In-depth chapters cover the integration of renewables, the particularities of planning large-scale systems, efficient reduction and solution of the possibilities of HVDC and super grids, distributed generation, smart grids, demand response and new regulatory schemes. The content is complemented with case studies that highlight the importance of the power transmission network as the backbone of modern energy systems. This book will be

comprehensive reference that will be useful to both academics and practitioners. One of the significant extension problems of the vehicle routing problem (VRP) is the heterogeneous fixed vehicle routing problem (HFFVRP), which aims to provide service to a specific customers' group with a limited number of vehicles. This is vital in ensuring if a business can meet customers' demands simultaneously maximizing its profit. The HFFVRP is concerned with determinations of the minimum cost routes for a fleet of vehicles in order to satisfy the demand of the customer population. The composition consists of various types of vehicles, which differ with respect to their maximum load and variable cost per distance unit. This research will take the CO₂ emission as a contributing factor to the green VRP (GVRP). In this thesis, at first a comprehensive introduction of the problem will be discussed. Then recent studies in this area will be reviewed and based on the review the research gap will be clarified. A hybrid meta-heuristic algorithm named imperialist competitive algorithm (ICA) will then be introduced. Uncertainty as an important issue in today's world industry is considered in this thesis. Also in order to solve the problem optimally, the multi-solution approach will be implemented. By enhancing the traditional ICA, a new approach named hybrid ICA (HICA) is developed, which its performance is compared to the traditional ICA and genetic algorithm (GA). Results show that HICA is considerably out performing other algorithms in regard to the objective function value. The impact of changes in each constraint on the objective value is also investigated. These two volumes constitute the Proceedings of the 7th International Workshop on Computing Applications (SOFA 2016), held on 24–26 August 2016 in Arad, Romania. This edition is organized by Aurel Vlaicu University of Arad, Romania, University of Belgrade, Serbia, in conjunction with the Institute of Computer Science, Iasi Branch of the Romanian Academy, IEEE Romanian Chapter, Romanian Society of Control Engineering and Technical Informatics (SRAIT) - Arad Section, German Association of Engineers in Romania - Arad Section, and BTM Resources Arad. The soft computing concept was introduced by Lotfi Zadeh in 1991 and serves to highlight the emergence of computing methodologies in which the accent is on exploiting the tolerance for imprecision and uncertainty to achieve tractability, robustness and lower costs. Soft computing facilitates the combined use of logic, neurocomputing, evolutionary computing and probabilistic computing, leading to the construction of hybrid intelligent systems. The rapid emergence of new tools and applications calls for a synergy of scientific and technological disciplines in order to reveal the great potential of soft computing in various domains. The conference papers included in these proceedings, published post-conference, were grouped into the following areas of research: • Methods and Applications in Electrical Engineering • Knowledge-Based Technologies for Web Applications, Cloud Computing, Security Algorithms and Computer Networks • Biomedical Applications • Image, Text and Signal Processing • Machine Learning and Applications • Business Process Management • Fuzzy Applications, Theory and Fuzzy Control • Computational Intelligence in Education • Soft Computing & Fuzzy Logic in Biometrics (SCFLB) • Soft Computing Algorithms Applied in Economy, Industry and Communication Technology • Modelling and Applications in Textiles The book helps to disseminate advances in selected active research directions in the field of soft computing, along with current issues and applications in various topics. As such, it provides valuable information for professors, researchers and graduate students in the area of soft computing techniques and applications. This book highlights recent advances in the design of hybrid intelligent systems based on nature-inspired optimization and their applications such as intelligent control and robotics, pattern recognition, time series prediction, and optimization of complex problems. The book is divided into seven main parts, the first of which addresses the fundamental aspects of and new concepts and algorithms based on type-2 and intuitionistic fuzzy logic systems. The second part focuses on neural network theory, and explores the applications of neural networks in diverse areas, such as time series prediction and pattern recognition. The book's third part pr

enhancements to meta-heuristics based on fuzzy logic techniques and describes new nature-inspired optimization algorithms that employ fuzzy dynamic adaptation of parameters, while the fourth part presents diverse applications of nature-inspired optimization algorithms. In turn, the fifth part investigates applications of fuzzy logic in diverse areas, such as time series prediction and pattern recognition. The sixth part examines new optimization algorithms and their applications. Lastly, the seventh part is dedicated to the design and application of different hybrid intelligent systems and discusses real-world problems and exploratory research in computational intelligence and mathematical models. It brings new approaches and methods to real-world problems and exploratory research that describes novel approaches in the mathematical methods, computational intelligence, methods and software engineering in the scope of the intelligent systems. This book constitutes the refereed proceedings of the Computational Methods in Systems and Software 2017, a conference that provided an international forum for the discussion of the latest high-quality research results related to computational methods, statistics, cybernetics and software engineering. This book presents efficient metaheuristic algorithms for optimal design of structures. Many of these algorithms were developed by the author and his colleagues, consisting of Democratic Particle Swarm Optimization, Charged System Search, Magnetic Charged System Search, Field of Forces Optimization, Dolphin Echolocation Optimization, Colliding Bodies Optimization, Ray Optimization. These are presented together with algorithms which were developed by other authors and have been successfully applied to various optimization problems. These consist of Particle Swarm Optimization, Big Bang-Big Crunch Algorithm, Cuckoo Search Optimization, Imperialist Competitive Algorithm, and Chaos Embedded Metaheuristic Algorithms. Finally a multi-objective optimization method is presented to solve large scale structural problems based on the Charged System Search algorithm. The concepts and algorithms presented in this book are not only applicable to optimization of skeletal structures and finite element models, but can equally be utilized for optimal design of other systems such as hydraulic and electrical networks. Estimation of Distribution Algorithms: A New Tool for Evolutionary Computation is dedicated to a new paradigm for evolutionary computation, named estimation of distribution algorithms (EDAs). This new class of algorithms generalizes genetic algorithms by replacing the crossover and mutation operators with learning and sampling from the probability distribution of the best individuals of the population at each iteration of the algorithm. Working in such a way, the relationships between the variables involved in the problem domain are explicitly and effectively captured and exploited. This book constitutes the first compilation and review of the techniques and applications of this new tool for performing evolutionary computation. Estimation of Distribution Algorithms: A New Tool for Evolutionary Computation is clearly divided into three parts. Part I is dedicated to the foundations of EDAs. In this part, after introducing some probabilistic graphical models - Bayesian and Gaussian networks - a review of existing EDA approaches is presented, as well as some new methods based on more flexible probabilistic graphical models. A mathematical modeling of discrete EDAs is also presented. Part II covers several applications of EDAs in some classical optimization problems: the travelling salesman problem, the job scheduling problem, and the knapsack problem. EDAs are also applied to the optimization of some well-known combinatorial and continuous functions. Part III presents the application of EDAs to solve some problems that arise in the machine learning field: feature subset selection, feature weighting in K-NN classifiers, rule induction, partial abductive inference in Bayesian networks, partitional clustering, and the search for optimal weights in artificial neural networks. Estimation of Distribution Algorithms: A New Tool for Evolutionary Computation is a useful and interesting tool for researchers working in the field of evolutionary computation and engineers who face real-world optimization problems. This book may also be used by graduate students and researchers in computer science. ... I urge those who are interested in EDAs to study this book.

crafted book today.' David E. Goldberg, University of Illinois Champaign-Urbana. 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, 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 resources give us with motivation to analyze the existing research for categorizing and synthesizing it in a more systematic manner. The mission of this book is really important since those algorithms are going to be a revolution in computer science. We hope it will stimulate the readers to make novel contributions, and 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 disciplines and philosophies. The second feature of this book is its comprehensiveness: Through an extensive survey of research, there are 134 innovative CI algorithms covered in this book. The three-volume set LNCS 7197 and LNCS 7198 constitutes the refereed proceedings of the 4th Asian Conference on Intelligent Information and Database Systems, ACIIDS 2012, held in Kaohsiung, Taiwan in March 2012. The 161 revised papers presented were carefully reviewed and selected from more than 2000 submissions. The papers included cover the following topics: intelligent database systems, data warehouses and data mining, natural language processing and computational linguistics, semantic web, social networks and recommendation systems, collaborative systems and applications, e-business and commerce systems, e-learning systems, information modeling and requirements engineering, information retrieval systems, intelligent agents and multi-agent systems, intelligent information systems, intelligent internet systems, intelligent optimization techniques, object-relational DBMS, ontologies and knowledge sharing, semi-structured and XML database systems, unified modeling language and unified processes, Web services and semantic Web, computer networks and communication systems. Discover the latest developments in multi-robot coordination techniques in this insightful and original resource *Multi-Agent Coordination: A Reinforcement Learning Approach* delivers a comprehensive, insightful, and unique treatment of the development of multi-robot coordination algorithms with minimal computational burden and reduced storage requirements compared to traditional algorithms. The accomplished academics, engineers, and authors provide readers with both a high-level introduction to, and overview of, multi-robot coordination, and analyses of learning-based planning algorithms. You'll learn about how to accelerate the exploration of the team-goal and alternative approaches to speeding up the convergence of TMAQL by identifying preferred joint action for the team. The authors also propose novel approaches to consensus algorithms that address the equilibrium selection problem and a new way of evaluating the threshold value for uniting empires without imposing any significant computation overhead. Finally, the book concludes with an examination of the likely direction of future research in this rapidly developing field. Readers will discover cutting-edge techniques for multi-agent coordination, including: An introduction to multi-agent coordination by reinforcement learning and evolutionary algorithms, including topics like Nash equilibrium and correlated equilibrium Improving convergence speed of multi-agent Q-learning for cooperative task planning Consensus Q-learning for multi-agent cooperative planning The computation of correlated equilibrium for cooperative q-learning based multi-agent planning A multi-agent imperialist competitive algorithm for multi-agent stick-carrying applications Perfect for academic

engineers, and professionals who regularly work with multi-agent learning algorithms, Multi-Agent Coordination: A Reinforcement Learning Approach also belongs on the bookshelves of anyone with an advanced interest in machine learning and artificial intelligence as it applies to the field of coordination or competitive robotics. This volume contains, first of all, the papers presented at the Fourteenth International Workshop on Intuitionistic Fuzzy Sets and Generalized Nets (IWIFSGN-2015) held on October 26-28, 2015 in Cracow, Poland. Moreover, the volume contains some papers of a practical relevance not presented at the Workshop. The Workshop is mainly devoted to the presentation of research results in the broadly perceived fields of intuitionistic fuzzy sets and generalized nets, organized by Professor Krassimir T. Atanassov whose constant inspiration and support is crucial for such widespread growing popularity and recognition of these areas. The Workshop is a next edition in the series of the IWIFSGN Workshops organized for years by the Systems Research Institute, Polish Academy of Sciences, Warsaw, Poland, Institute of Biophysics and Biomedical Engineering, Bulgarian Academy of Sciences, Sofia, Bulgaria, and WIT -- Warsaw School of Information Technology, Warsaw, Poland, and co-organized by: Matej Bel University, Banska Bystrica, Slovakia, Universidad Publica de Navarra, Pamplona, Spain, Universidade de Tras-Os-Montes e Alto Douro, Vila Real, Portugal, Plovdiv University, Asen Zlatarov University, Burgas, Bulgaria, Complutense University, Madrid, Spain, and the University of Westminster, Harrow, UK. This book describes new methods for building intelligent systems using type-2 fuzzy logic and soft computing (SC) techniques. The authors extend the use of fuzzy logic to higher order, which is called type-2 fuzzy logic. Combining type-2 fuzzy logic with traditional soft computing techniques, we can build powerful hybrid intelligent systems that can use the advantages that each technique offers. This book is intended to be a major reference tool and can be used as a textbook. The book presents computational and statistical methods used by intelligent systems within the context of Industry 4.0. The methods include among others evolution-based and swarm intelligence-based methods. Each method is explained in its fundamental aspects, while some notable bibliographic references are provided for further reading. This book describes each methods' principles and compares them. It is intended for researchers who are new in computational and statistical methods but also to experienced users. This book describes the latest findings related to fuzzy techniques, discussing applications in control, economics, education, humor studies, industrial engineering, linguistics, management, marketing, medicine and public health, military engineering, robotics, ship design, sports, transportation, and many other areas. It also presents recent fuzzy-related algorithms and their results that can be used in other application areas. Featuring selected papers from the Joint 2019 Congress of the International Fuzzy Systems Association (IFSA) and the Annual Conference of the North American Fuzzy Information Processing Society (NAFIPS) IFSA-NAFIPS'2019, held in Lafayette, Louisiana, USA, on June 18–21, 2019, the book is of interest to practitioners wanting to use fuzzy techniques to process imprecise expert knowledge. It is also a valuable resource for researchers wanting to extend the ideas from these papers to new application areas, for graduate students and for those else interested in problems involving fuzziness and uncertainty. This book presents efficient metaheuristic algorithms for optimal design of structures. Many of these algorithms are developed by the author and his graduate students, consisting of Particle Swarm Optimization, Charged System Search, Magnetic Charged System Search, Field of Forces Optimization, Democratic Particle Swarm Optimization, Dolphin Echolocation Optimization, Colliding Bodies Optimization, Ray Optimization, etc. These are presented together with algorithms which are developed by other authors and have been successfully applied to various optimization problems. These consist of Particle Swarm Optimization, Big Band Big Crunch algorithm, Cuckoo Search Optimization, Imperialist Competitive Algorithm, etc. Finally a multi-objective Optimization is presented to solve large scale structural problems based on the Charged System Search algorithm, In the second

seven new chapters are added consisting of Enhanced colliding bodies optimization, Global sensitivity analysis, Tug of War Optimization, Water evaporation optimization, Vibrating System Optimization, Cyclical Parthenogenesis Optimization algorithm. In the third edition, five new chapters are included consisting of the recently developed algorithms. These are Shuffled Shepherd Optimization Algorithm, Set Theoretical Shuffled Shepherd Optimization Algorithm, Set Theoretical Teaching-Learning-Based Optimization Algorithm, Thermal Exchange Metaheuristic Optimization Algorithm, and Water Strider Optimization Algorithm and Its Enhancement. The concepts and algorithm presented in this book are not only applicable to optimization of skeletal structure, finite element models, but can equally be utilized for optimal design of other systems such as hydraulic and electrical networks. This book provides a comprehensive account of the glowworm swarm optimization (GSO) algorithm, including details of the underlying ideas, theoretical foundations, algorithm development, various applications, and MATLAB programs for the basic GSO algorithm. It also discusses several research problems at different levels of sophistication that can be attempted by interested researchers. The generalization of GSO algorithm is evident in its application to diverse problems ranging from optimization to robotics. Examples include computation of multiple optima, annual crop planning, cooperative exploration, distributed search, multiple source localization, contaminant boundary mapping, wireless sensor networks, clustering, knapsack, numerical integration, solving fixed point equations, solving systems of nonlinear equations, and engineering design optimization. The book is a valuable resource for researchers as well as graduate and undergraduate students in the area of swarm intelligence, computational intelligence and working on these topics. This book constitutes selected best papers from the 10th International Conference on Artificial Evolution, EA 2011, held in Angers, France, in October 2011. Initially, 33 full papers and 10 post papers were carefully reviewed and selected from 600 submissions. This book presents the 19 best papers selected from these contributions. The papers are organized in topical sections on ant colony optimization; multi-objective optimization; analysis, implementation and robotics; combinatorial optimization; learning and parameter tuning; new nature-inspired models; probabilistic algorithms; theory and evolutionary search; and applications. The book presents eight well-known and often used algorithms besides nine newly developed algorithms. The first author and his students in a practical implementation framework. Matlab codes and some benchmark structural optimization problems are provided. The aim is to provide an efficient computational framework for experienced researchers or readers not familiar with theory, applications and computational developments of the considered metaheuristics. The information will also be of interest to researchers interested in application of metaheuristics for hard optimization, comparing conceptually different metaheuristics and designing new metaheuristics. This book presents efficient metaheuristic algorithms for optimal design of structures. Many of these algorithms are developed by the author and his colleagues, consisting of Democratic Particle Swarm Optimization, Charged System Search, Modified Charged System Search, Field of Forces Optimization, Dolphin Echolocation Optimization, Colliding Bodies Optimization, Ray Optimization. These are presented together with algorithms which were developed by other authors and have been successfully applied to various optimization problems. They consist of Particle Swarm Optimization, Big Bang-Big Crunch Algorithm, Cuckoo Search Optimization, Imperialist Competitive Algorithm, and Chaos Embedded Metaheuristic Algorithms. Finally a multi-objective optimization method is presented to solve large-scale structural problems based on the Charged System Search algorithm. The concepts and algorithms presented in this book are not only applicable to optimization of skeletal structures and finite element models, but can equally be utilized for optimal design of other systems such as hydraulic and electrical networks. In the second edition, seven new chapters are added consisting of the new developments in the field of optimization. The new chapters consist of the Enhanced Colliding Bodies Optimization, Global Sensitivity Analysis, Tug

Optimization, Water Evaporation Optimization, Vibrating Particle System Optimization and Cyclone Parthenogenesis Optimization algorithms. A chapter is also devoted to optimal design of large structures. This collection of challenging and well-designed test problems arising in literature also contains a wide spectrum of applications, including pooling/blending operations, heat exchanger network synthesis, homogeneous azeotropic separation, and dynamic optimization and optimal control problems. This book presents recent advances on the design of intelligent systems based on neural networks and nature-inspired optimization and their application in areas such as, intelligent control and robotics, pattern recognition, time series prediction and optimization of complex processes. The book is organized in eight main parts, which contain a group of papers around a similar subject. The first part consists of papers with the main theme of theoretical aspects of fuzzy logic, which basically consists of papers that propose new concepts and algorithms based on fuzzy systems. The second part contains papers with the main theme of neural networks theory, which are basically dealing with new concepts and algorithms in neural networks. The third part contains papers on applications of neural networks in diverse areas, such as time series prediction and pattern recognition. The fourth part contains papers describing new nature-inspired optimization algorithms. The fifth part presents diverse applications of nature-inspired optimization algorithms. The sixth part contains papers describing new optimization algorithms. The seventh part contains papers describing applications of fuzzy logic in diverse areas, such as time series prediction and pattern recognition. Finally, the eighth part contains papers that present enhancements to meta-heuristics based on fuzzy logic techniques. This proceedings book presents research papers discussing the latest developments and findings in the field of mining, machinery, automation and environmental protection. It includes contributions from researchers from over 20 countries, with backgrounds in computer science, mining engineering, technology management, and hailing from the government, industry and academia. It is of interest to scientists, engineers, consultants and government staff who are responsible for the development and implementation of innovative approaches, techniques and technologies in the mineral industries. Covering the latest advances in fundamental research, it also appeals to academic researchers. This book presents and applies a novel efficient meta-heuristic optimization algorithm called Colliding Bodies Optimization (CBO) for various optimization problems. The first part of the book introduces the concepts and methods involved, while the second is devoted to the applications. Though optimal design of structures is the main topic, two chapters on optimal analysis and applications in construction management are also included. This algorithm is based on one-dimensional collisions between moving bodies with specified masses and velocities, these bodies again separate, with new velocities. This collision causes the agents to move toward better positions in the search space. The main algorithm (CBO) is internally parameter independent, setting it apart from previously developed meta-heuristics. This algorithm is enhanced (ECBO) for more efficient applications in the optimal design of structures. The algorithms are implemented in standard computer programming languages (MATLAB and C++) and two main codes are provided for ease of use. This book constitutes the second part of the proceedings of the International Conference on Life System Modeling and Simulation, LSMS 2014, of the International Conference on Intelligent Computing for Sustainable Energy and Environment, ICSEE 2014, held in Shanghai, China, in September 2014. The 159 revised full papers presented in the three volumes of CCIS 461-463 were carefully reviewed and selected from 572 submissions. The papers of this volume are organized in topical sections on advanced neural network theory and algorithms, advanced evolutionary computing theory and algorithms, such as particle swarm optimization, differential evolution, ant colonies, artificial life, artificial immune systems and genetic algorithms, neural, and fuzzy-neuro hybrids; intelligent modeling, monitoring, and control of complex nonlinear

systems; intelligent modeling and simulation of climate change; communication and control for distributed networked systems.

- [Proportional integral Control Optimization Using Imperialist Competitive Algorithm](#)
- [2007 IEEE Congress On Evolutionary Computation](#)
- [Learning Automata And Sigma Imperialist Competitive Algorithm For Optimization Of Single And Multi objective Functions](#)
- [A Fractal Image Compression Algorithm Based On Improved Imperialist Competitive Algorithm](#)
- [Hybridization Of Imperialist Competitive Algorithm ICA And Multi Layer Perception Neural Network MLP For Software Reliability Prediction](#)
- [Advances In Metaheuristic Algorithms For Optimal Design Of Structures](#)
- [A Hybrid Imperialist Competitive Algorithm Approach To Solve A Green Vehicle Routing Problem](#)
- [Advances In Metaheuristic Algorithms For Optimal Design Of Structures](#)
- [Metaheuristics Outlines MATLAB Codes And Examples](#)
- [Advances In Metaheuristic Algorithms For Optimal Design Of Structures](#)
- [Optimal Allocation Of FACTS Devices In Power Networks Using Imperialist Competitive Algorithm ICA](#)
- [Handbook Of Test Problems In Local And Global Optimization](#)
- [Computational Science And Its Applications ICCSA 2008](#)
- [Multi Agent Coordination](#)
- [HVDC Grids](#)
- [Proceedings Of The 27th International Symposium On Mine Planning And Equipment Selection MPES 2018](#)
- [Optimization Of A Hybrid PV wind battery Stand alone System Using Imperialist Competitive Algorithm](#)
- [Innovative Computational Intelligence A Rough Guide To 134 Clever Algorithms](#)
- [Multi Agent Coordination](#)
- [Type 2 Fuzzy Logic Theory And Applications](#)
- [Applied Computational Intelligence And Mathematical Methods](#)
- [Soft Computing Applications](#)
- [Nature Inspired Design Of Hybrid Intelligent Systems](#)
- [Estimation Of Distribution Algorithms](#)
- [Design Of Intelligent Systems Based On Fuzzy Logic Neural Networks And Nature Inspired Optimization](#)
- [Novel Developments In Uncertainty Representation And Processing](#)
- [Hybrid Intelligent Systems In Control Pattern Recognition And Medicine](#)
- [Colliding Bodies Optimization](#)
- [Transmission Expansion Planning The Network Challenges Of The Energy Transition](#)
- [Intuitionistic And Type 2 Fuzzy Logic Enhancements In Neural And Optimization Algorithms Theory And Applications](#)

- [Handbook Of Research On Hydroinformatics Technologies Theories And Applications](#)
- [Integrating Neural Network And Colonial Competitive Algorithm](#)
- [Computational Methods For Application In Industry 40](#)
- [Metaheuristic Optimization Nature Inspired Algorithms Swarm And Computational Intelligence Theory And Applications](#)
- [Fuzzy Techniques Theory And Applications](#)
- [Intelligent Information And Database Systems](#)
- [Social Manufacturing Fundamentals And Applications](#)
- [Glowworm Swarm Optimization](#)
- [Artificial Evolution](#)
- [Computational Intelligence Networked Systems And Their Applications](#)