

Lion Optimization Algorithm Loa A Nature Inspired

This two-volume book presents outcomes of the 7th International Conference on Soft Computing for Problem Solving, SocProS 2017. This conference is a joint technical collaboration between the Soft Computing Research Society, Liverpool Hope University (UK), the Indian Institute of Technology Roorkee, the South Asian University New Delhi and the National Institute of Technology Silchar, and brings together researchers, engineers and practitioners to discuss thought-provoking developments and challenges in order to select potential future directions. The book presents the latest advances and innovations in the interdisciplinary areas of soft computing, including original research papers in the areas including, but not limited to, algorithms (artificial immune systems, artificial neural networks, genetic algorithms, genetic programming, and particle swarm optimization) and applications (control systems, data mining and clustering, finance, weather forecasting, game theory, business and forecasting applications). It is a valuable resource for both young and experienced researchers dealing with complex and intricate real-world problems for which finding a solution by traditional methods is a difficult task.

Swarm Intelligence in Cloud Computing is an invaluable treatise for researchers involved in delivering intelligent optimized solutions for reliable deployment, infrastructural stability, and security issues of cloud-based resources. Starting with a bird's eye view on the prevalent state-of-the-art techniques, this book enriches the readers with the knowledge of evolving swarm intelligent optimized techniques for addressing different cloud computing issues including task scheduling, virtual machine allocation, load balancing and optimization, deadline handling, power-aware profiling, fault resilience, cost-effective design, and energy efficiency. The book offers comprehensive coverage of the most essential topics, including: Role of swarm intelligence on cloud computing services Cloud resource sharing strategies Cloud service provider selection Dynamic task and resource scheduling Data center resource management. Indrajit Pan is an Associate Professor in Information Technology of RCC Institute of Information Technology, India. He received his PhD from Indian Institute of Engineering Science and Technology, Shibpur, India. With an academic experience of 14 years, he has published around 40 research publications in different international journals, edited books, and conference proceedings. Mohamed Abd Elaziz is a Lecturer in the Mathematical Department of Zagazig University, Egypt. He received his PhD from the same university. He is the author of more than 100 articles. His research interests include machine learning, signal processing, image processing, cloud computing, and evolutionary algorithms. Siddhartha Bhattacharyya is a Professor in Computer Science and Engineering of Christ University, Bangalore. He received his PhD from Jadavpur University, India. He has published more than 230 research publications in international journals and conference proceedings in his 20 years of academic experience.

his two-volume set LNCS 12689-12690 constitutes the refereed proceedings of the 12th International Conference on Advances in Swarm Intelligence, ICSI 2021, held in Qingdao, China, in July 2021. The 104 full papers presented in this volume were carefully reviewed and selected from 177 submissions. They 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.

This book constitutes best selected research papers presented at the International Applied Soft Computing and Communication Networks (ACN 2019) held in Trivandrum, Kerala, India during December 18 – 21, 2019. The papers are organized in topical sections on real time and multimedia communications, security and privacy, network management and software-defined networks, Internet of Things (IoT) and cyber-physical systems, intelligent distributed systems, mobile computing and vehicle communications, surveillance networks and visual intelligence, and emerging topics. The book is a reference for researchers and scientists engaged in various fields of intelligent systems.

The volume contains original research findings, exchange of ideas and dissemination of innovative, practical development experiences in different fields of soft and advance computing. It provides insights into the International Conference on Soft Computing in Data Analytics (SCDA). It also concentrates on both theory and practices from around the world in all the areas of related disciplines of soft computing. The book provides rapid dissemination of important results in soft computing technologies, a fusion of research in fuzzy logic, evolutionary computations, neural science and neural network systems and chaos theory and chaotic systems, swarm based algorithms, etc. The book aims to cater the postgraduate students and researchers working in the discipline of computer science and engineering along with other engineering branches.

New Materials in Civil Engineering provides engineers and scientists with the tools and methods needed to meet the challenge of designing and constructing more resilient and sustainable infrastructures. This book is a valuable guide to the properties, selection criteria, products, applications, lifecycle and recyclability of advanced materials. It presents an A-to-Z approach to all types of materials, highlighting their key performance properties, principal characteristics and applications. Traditional materials covered include concrete, soil, steel, timber, fly ash, geosynthetic, fiber-reinforced concrete, smart materials, carbon fiber and reinforced polymers. In addition, the book covers nanotechnology and biotechnology in the development of new materials. Covers a variety of materials, including fly ash, geosynthetic, fiber-reinforced concrete, smart materials, carbon fiber reinforced polymer and waste materials Provides a "one-stop resource of information for the latest materials and practical applications Includes a variety of different use case studies

This book addresses the frontier advances in the theory and application of nature-inspired optimization techniques, including solving the quadratic assignment problem, prediction in nature-inspired dynamic optimization, the lion algorithm and its applications, optimizing the operation scheduling of microgrids, PID controllers for two-legged robots, optimizing crane operating times, planning electrical energy distribution systems, automatic design and evaluation of classification pipelines, and optimizing wind-energy power generation plants. The book also presents a variety of nature-inspired methods and illustrates methods of adapting these to said applications. Nature-inspired computation, developed by mimicking natural phenomena, makes a significant contribution toward the solution of non-convex optimization problems that normal mathematical optimizers fail to solve. As such, a wide range of nature-inspired computing approaches has been used in multidisciplinary engineering applications. Written by researchers and developers from a variety of fields, this book presents the latest findings, novel techniques

and pioneering applications.

This book highlights recent research on bio-inspired computing and its various innovative applications in information and communication technologies. It presents 51 high-quality papers from the 11th International Conference on Innovations in Bio-Inspired Computing and Applications (IBICA 2020) and 10th World Congress on Information and Communication Technologies (WICT 2020), which was held online during December 16-18, 2019. As a premier conference, IBICA--ICT brings together researchers, engineers and practitioners whose work involves bio-inspired computing, computational intelligence and their applications in information security, real-world contexts, etc. Including contributions by authors from 25 countries, the book offers a valuable reference guide for all researchers, students and practitioners in the fields of Computer Science and Engineering.

This two-volume set (LNAI 11683 and LNAI 11684) constitutes the refereed proceedings of the 11th International Conference on Computational Collective Intelligence, ICCCI 2019, held in Hendaye France, in September 2019. The 117 full papers presented were carefully reviewed and selected from 204 submissions. The papers are grouped in topical sections on: knowledge engineering and semantic web; social networks and recommender systems; text processing and information retrieval; data mining methods and applications; computer vision techniques; decision support and control systems; cooperative strategies for decision making and optimization; intelligent modeling and simulation approaches for real world systems; and innovations in intelligent systems.

Cognitive Big Data Intelligence with a Metaheuristic Approach presents an exact and compact organization of content relating to the latest metaheuristics methodologies based on new challenging big data application domains and cognitive computing. The combined model of cognitive big data intelligence with metaheuristics methods can be used to analyze emerging patterns, spot business opportunities, and take care of critical process-centric issues in real-time. Various real-time case studies and implemented works are discussed in this book for better understanding and additional clarity. This book presents an essential platform for the use of cognitive technology in the field of Data Science. It covers metaheuristic methodologies that can be successful in a wide variety of problem settings in big data frameworks. Provides a unique opportunity to present the work on the state-of-the-art of metaheuristics approach in the area of big data processing developing automated and intelligent models Explains different, feasible applications and case studies where cognitive computing can be successfully implemented in big data analytics using metaheuristics algorithms Provides a snapshot of the latest advances in the contribution of metaheuristics frameworks in cognitive big data applications to solve optimization problems

This book contains research contributions from leading global scholars in nature-inspired computing. It includes comprehensive coverage of each respective topic, while also highlighting recent and future trends. The contributions provides readers with a snapshot of the state of the art in the field of nature-inspired computing and its application. This book has focus on the current researches while highlighting the empirical results along with theoretical concepts to provide a comprehensive reference for students, researchers, scholars, professionals and practitioners in the field of Advanced Artificial Intelligence, Nature-Inspired Algorithms and Soft Computing.

This book aims to discuss the core and underlying principles and analysis of the different constraint handling approaches. The main emphasis of the book is on providing an enriched literature on mathematical modelling of the test as well as real-world problems with constraints, and further development of generalized constraint handling techniques. These techniques may be incorporated in suitable metaheuristics providing a solid optimized solution to the problems and applications being addressed. The book comprises original contributions with an aim to develop and discuss generalized constraint handling approaches/techniques for the metaheuristics and/or the applications being addressed. A variety of novel as well as modified and hybridized techniques have been discussed in the book. The conceptual as well as the mathematical level in all the chapters is well within the grasp of the scientists as well as the undergraduate and graduate students from the engineering and computer science streams. The reader is encouraged to have basic knowledge of probability and mathematical analysis and optimization. The book also provides critical review of the contemporary constraint handling approaches. The contributions of the book may further help to explore new avenues leading towards multidisciplinary research discussions. This book is a complete reference for engineers, scientists, and students studying/working in the optimization, artificial intelligence (AI), or computational intelligence arena. .

This book provides a platform for exploring nature-inspired optimization techniques in the context of imaging applications. Optimization has become part and parcel of all computational vision applications, and since the amount of data used in these applications is vast, the need for optimization techniques has increased exponentially. These accuracy and complexity are a major area of concern when it comes to practical applications. However, these optimization techniques have not yet been fully explored in the context of imaging applications. By presenting interdisciplinary concepts, ranging from optimization to image processing, the book appeals to a broad readership, while also encouraging budding engineers to pursue and employ innovative nature-inspired techniques for image processing applications.

This book explains aspects of social networks, varying from development and application of new artificial intelligence and computational intelligence techniques for social networks to understanding the impact of social networks. Chapters 1 and 2 deal with the basic strategies towards social networks such as mining text from such networks and applying social network metrics using a hybrid approach; Chaps. 3 to 8 focus on the prime research areas in social networks: community detection, influence maximization and opinion mining. Chapter 9 to 13 concentrate on studying the impact and use of social networks in society, primarily in education, commerce, and crowd sourcing. The contributions provide a multidimensional approach, and the book will serve graduate students and researchers as a reference in computer science, electronics engineering, communications, and information technology.

The book provides readers with a snapshot of the state of the art in the field of nature-inspired computing and its application in optimization. The approach is mainly practice-oriented: each bio-inspired technique or algorithm is introduced together with one of its possible applications. Applications cover a wide range of real-world optimization problems: from feature selection and image enhancement to scheduling and dynamic resource management, from wireless sensor networks and wiring network diagnosis to sports training planning and gene expression, from topology control and morphological filters to nutritional meal design and antenna array design. There are a few theoretical chapters comparing different existing techniques, exploring the advantages of nature-inspired computing over other methods, and investigating the mixing time of genetic algorithms. The book also introduces a wide range of algorithms, including the ant colony optimization, the bat algorithm, genetic algorithms, the collision-based optimization algorithm, the flower pollination algorithm, multi-agent systems and particle swarm optimization. This timely book is intended as a practice-oriented reference guide for students, researchers and professionals.

This book gathers selected research papers presented at the International Conference on Communication and Intelligent Systems (ICCIS 2020), organized jointly by Birla Institute of Applied Sciences, Uttarakhand, and Soft Computing Research Society during 26-27 December 2020. This book presents a collection of state-of-the-art research work involving cutting-edge technologies for communication and intelligent systems. Over the past few years, advances in artificial intelligence and machine learning have sparked new research efforts around the globe, which explore novel ways of developing intelligent

systems and smart communication technologies. The book presents single- and multi-disciplinary research on these themes in order to make the latest results available in a single, readily accessible source. This self-contained book, written by active researchers, presents up-to-date information on smart maintenance strategies for human–robot interaction (HRI) and the associated applications of novel search algorithms in a single volume, eliminating the need to consult scattered resources. Unlike other books, it addresses maintaining a smart HRI from three dimensions, namely, hardware, cyberware, and hybrid-asset management, covering problems encountered in each through a wide variety of representative examples and elaborated illustrations. Further, the diverse mathematical models and intelligent systems constructions make the book highly practical. It enables readers interested in maintenance, robotics, and intelligent systems but perplexed by myriads of interrelated issues to grasp basic methodologies. At the same time, the referenced literature can be used as a roadmap for conducting deeper researches.

Nature-inspired algorithms have a great popularity in the current scientific community, being the focused scope of many research contributions in the literature year by year. The rationale behind the acquired momentum by this broad family of methods lies on their outstanding performance evinced in hundreds of research fields and problem instances. This book gravitates on the development of nature-inspired methods and their application to stochastic, dynamic and robust optimization. Topics covered by this book include the design and development of evolutionary algorithms, bio-inspired metaheuristics, or memetic methods, with empirical, innovative findings when used in different subfields of mathematical optimization, such as stochastic, dynamic, multimodal and robust optimization, as well as noisy optimization and dynamic and constraint satisfaction problems.

This book is a collection of the most recent approaches that combine metaheuristics and machine learning. Some of the methods considered in this book are evolutionary, swarm, machine learning, and deep learning. The chapters were classified based on the content; then, the sections are thematic. Different applications and implementations are included; in this sense, the book provides theory and practical content with novel machine learning and metaheuristic algorithms. The chapters were compiled using a scientific perspective. Accordingly, the book is primarily intended for undergraduate and postgraduate students of Science, Engineering, and Computational Mathematics and is useful in courses on Artificial Intelligence, Advanced Machine Learning, among others. Likewise, the book is useful for research from the evolutionary computation, artificial intelligence, and image processing communities.

This book gathers recent research works in emerging Artificial Intelligence (AI) methods for the convergence of communication, caching, control, and computing resources in cloud-based Internet of Vehicles (IoV) infrastructures. In this context, the book's major subjects cover the analysis and the development of AI-powered mechanisms in future IoV applications and architectures. It addresses the major new technological developments in the field and reflects current research trends and industry needs. It comprises a good balance between theoretical and practical issues, covering case studies, experience and evaluation reports, and best practices in utilizing AI applications in IoV networks. It also provides technical/scientific information about various aspects of AI technologies, ranging from basic concepts to research-grade material, including future directions. This book is intended for researchers, practitioners, engineers, and scientists involved in designing and developing protocols and AI applications and services for IoV-related devices.

Swarm intelligence algorithms are a form of nature-based optimization algorithms. Their main inspiration is the cooperative behavior of animals within specific communities. This can be described as simple behaviors of individuals along with the mechanisms for sharing knowledge between them, resulting in the complex behavior of the entire community. Examples of such behavior can be found in ant colonies, bee swarms, schools of fish or bird flocks. Swarm intelligence algorithms are used to solve difficult optimization problems for which there are no exact solving methods or the use of such methods is impossible, e.g. due to unacceptable computational time. This set comprises two volumes: *Swarm Intelligence Algorithms: A Tutorial* and *Swarm Intelligence Algorithms: Modifications and Applications*. The first volume thoroughly presents the basics of 24 algorithms selected from the entire family of swarm intelligence algorithms. It contains a detailed explanation of how each algorithm works, along with relevant program codes in Matlab and the C++ programming language, as well as numerical examples illustrating step-by-step how individual algorithms work. The second volume describes selected modifications of these algorithms and presents their practical applications. This book presents 24 swarm algorithms together with their modifications and practical applications. Each chapter is devoted to one algorithm. It contains a short description along with a pseudo-code showing the various stages of its operation. In addition, each chapter contains a description of selected modifications of the algorithm and shows how it can be used to solve a selected practical problem.

This proceeding discuss the latest solutions, scientific findings and methods for solving intriguing problems in the fields of data mining, computational intelligence, big data analytics, and soft computing. This gathers outstanding papers from the fifth International Conference on “Computational Intelligence in Data Mining” (ICCIDM), and offer a “sneak preview” of the strengths and weaknesses of trending applications, together with exciting advances in computational intelligence, data mining, and related fields.

The two-volume set LNCS 12415 and 12416 constitutes the refereed proceedings of of the 19th International Conference on Artificial Intelligence and Soft Computing, ICAISC 2020, held in Zakopane, Poland*, in October 2020. The 112 revised full papers presented were carefully reviewed and selected from 265 submissions. The papers included in the first volume are organized in the following six parts: neural networks and their applications; fuzzy systems and their applications; evolutionary algorithms and their applications; pattern classification; bioinformatics, biometrics and medical applications; artificial intelligence in modeling and simulation. The papers included in the second volume are organized in the following four parts: computer vision, image and speech analysis; data mining; various problems of artificial intelligence; agent systems, robotics and control.

*The conference was held virtually due to the COVID-19 pandemic.

This book presents the latest advances and research findings in the fields of computational science and communication presented at the International Conference on Smart Innovations in Communications and Computational Sciences (ICSICCS 2020). The areas covered include smart innovation; systems and technologies; embedded knowledge

and intelligence; innovation and sustainability; advanced computing; networking and informatics. It also focuses on the knowledge-transfer methodologies and the innovation strategies employed to make these effective. This fascinating compilation appeals to researchers, academics and engineers around the globe.

This book highlights recent research advances in unsupervised learning using natural computing techniques such as artificial neural networks, evolutionary algorithms, swarm intelligence, artificial immune systems, artificial life, quantum computing, DNA computing, and others. The book also includes information on the use of natural computing techniques for unsupervised learning tasks. It features several trending topics, such as big data scalability, wireless network analysis, engineering optimization, social media, and complex network analytics. It shows how these applications have triggered a number of new natural computing techniques to improve the performance of unsupervised learning methods. With this book, the readers can easily capture new advances in this area with systematic understanding of the scope in depth. Readers can rapidly explore new methods and new applications at the junction between natural computing and unsupervised learning. Includes advances on unsupervised learning using natural computing techniques Reports on topics in emerging areas such as evolutionary multi-objective unsupervised learning Features natural computing techniques such as evolutionary multi-objective algorithms and many-objective swarm intelligence algorithms

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 constructional management are also included. This algorithm is based on one-dimensional collisions between bodies, with each agent solution being considered as an object or body with mass. After a collision of two 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.

Resource optimization has always been a thrust area of research, and as the Internet of Things (IoT) is the most talked about topic of the current era of technology, it has become the need of the hour. Therefore, the idea behind this book was to simplify the journey of those who aspire to understand resource optimization in the IoT. To this end, included in this book are various real-time/offline applications and algorithms/case studies in the fields of engineering, computer science, information security, and cloud computing, along with the modern tools and various technologies used in systems, leaving the reader with a high level of understanding of various techniques and algorithms used in resource optimization.

This book presents best selected papers presented at the International Conference on Paradigms of Computing, Communication and Data Sciences (PCCDS 2020), organized by National Institute of Technology, Kurukshetra, India, during 1-3 May 2020. It discusses high-quality and cutting-edge research in the areas of advanced computing, communications and data science techniques. The book is a collection of latest research articles in computation algorithm, communication and data sciences, intertwined with each other for efficiency.

This book features a collection of high-quality research papers presented at the International Conference on Intelligent and Cloud Computing (ICICC 2019), held at Siksha 'O' Anusandhan (Deemed to be University), Bhubaneswar, India, on December 20, 2019. Including contributions on system and network design that can support existing and future applications and services, it covers topics such as cloud computing system and network design, optimization for cloud computing, networking, and applications, green cloud system design, cloud storage design and networking, storage security, cloud system models, big data storage, intra-cloud computing, mobile cloud system design, real-time resource reporting and monitoring for cloud management, machine learning, data mining for cloud computing, data-driven methodology and architecture, and networking for machine learning systems.

This volume discusses recent advances in Artificial Intelligence (AI) applications in smart, internet-connected societies, highlighting three key focus areas. The first focus is on intelligent sensing applications. This section details the integration of Wireless Sensing Networks (WSN) and the use of intelligent platforms for WSN applications in urban infrastructures, and discusses AI techniques on hardware and software systems such as machine learning, pattern recognition, expert systems, neural networks, genetic algorithms, and intelligent control in transportation and communications systems. The second focus is on AI-based Internet of Things (IoT) systems, which addresses applications in traffic management, medical health, smart homes and energy. Readers will also learn about how AI can extract useful information from Big Data in IoT systems. The third focus is on crowdsourcing (CS) and computing for smart cities. this section discusses how CS via GPS devices, GIS tools, traffic cameras, smart cards, smart phones and road deceleration devices enables citizens to collect and share data to make cities smart, and how these data can be applied to address urban issues including pollution, traffic congestion, public safety and increased energy consumption. This book will of interest to academics, researchers and students studying AI, cloud computing, IoT and crowdsourcing in urban applications.

Innovations in Bio-Inspired Computing and Applications Proceedings of the 11th International Conference on Innovations in Bio-Inspired Computing and Applications (IBICA 2020) Held During December 16-18, 2020 Springer Nature

This book discusses the applications of different soft computing techniques for the web-based systems and services. The respective chapters highlight recent developments in the field of soft computing applications, from web-based information retrieval to online marketing and online healthcare. In each chapter author endeavor to explain the basic ideas behind the proposed applications in an accessible format for readers who may not possess a background in these fields. This carefully edited book covers a wide range of new applications of soft computing techniques in Web recommender systems, Online documents classification, Online documents summarization, Online document clustering, Online market intelligence, Web usage profiling, Web data extraction, Social network extraction, Question answering systems, Online health care, Web knowledge management, Multimedia information retrieval, Navigation guides, User profiles extraction, Web-based distributed information systems, Web security applications, Internet of Things Applications and so on. The book is aimed for researchers and practitioner who are engaged in developing and applying intelligent systems principles for solving real-life problems. Further, it has been structured so that each chapter can be read independently of the others.

This book provides a comprehensive, conceptual, and detailed overview of the wide range of applications of Artificial Intelligence, Machine Learning, and Data Science and how these technologies have an impact on various domains such as healthcare, business, industry, security, and how all countries around the world are feeling this impact. The book aims at low-cost solutions which could be implemented even in developing countries. It highlights the significant impact these technologies have on various industries and on us as humans. It provides a virtual picture of forthcoming better human life shadowed by the new technologies and their applications and discusses the impact Data Science has on business applications. The book will also include an overview of the different AI applications and their correlation between each other. The audience is graduate and postgraduate students, researchers, academicians, institutions, and professionals who are interested in exploring key technologies like Artificial Intelligence, Machine Learning, and Data Science.

This is a monumental reference for the theory and practice of computer security. Comprehensive in scope, this text covers applied and practical elements, theory, and the reasons for the design of applications and security techniques. It covers both the management and the engineering issues of computer security. It provides excellent examples of ideas and mechanisms that demonstrate how disparate techniques and principles are combined in widely-used systems. This book is acclaimed for its scope, clear and lucid writing, and its combination of formal and theoretical aspects with real systems, technologies, techniques, and policies.

Hybrid computational intelligent techniques are efficient in dealing with the real-world problems encountered in engineering fields. The primary objective of this book is to provide an exhaustive introduction as well as review of the hybrid computational intelligent paradigm, with supportive case studies. In addition, it aims to provide a gallery of engineering applications where this computing paradigm can be effectively use. Finally, it focuses on the recent quantum inspired hybrid intelligence to develop intelligent solutions for the future. The book also incorporates video demonstrations of each application for better understanding of the subject matter.

Internet of Things (IoT) is a new platform of various physical objects or “things equipped with sensors, electronics, smart devices, software, and network connections. IoT represents a new revolution of the Internet network which is driven by the recent advances of technologies such as sensor networks (wearable and implantable), mobile devices, networking, and cloud computing technologies. IoT permits these the smart devices to collect, store and analyze the collected data with limited storage and processing capacities. Swarm Intelligence for Resource Management in the Internet of Things presents a new approach in Artificial Intelligence that can be used for resources management in IoT, which is considered a critical issue for this network. The authors demonstrate these resource management applications using swarm intelligence techniques. Currently, IoT can be used in many important applications which include healthcare, smart cities, smart homes, smart hospitals, environment monitoring, and video surveillance. IoT devices cannot perform complex on-site data processing due to their limited battery and processing. However, the major processing unit of an application can be transmitted to other nodes, which are more powerful in terms of storage and processing. By applying swarm intelligence algorithms for IoT devices, we can provide major advantages for energy saving in IoT devices. Swarm Intelligence for Resource Management in the Internet of Things shows the reader how to overcome the problems and challenges of creating and implementing swarm intelligence algorithms for each application Examines the development and application of swarm intelligence systems in artificial intelligence as applied to the Internet of Things Discusses intelligent techniques for the implementation of swarm intelligence in IoT Prepared for researchers and specialists who are interested in the use and integration of IoT and cloud computing technologies

Computational intelligence (CI) lies at the interface between engineering and computer science; control engineering, where problems are solved using computer-assisted methods. Thus, it can be regarded as an indispensable basis for all artificial intelligence (AI) activities. This book collects surveys of most recent theoretical approaches focusing on fuzzy systems, neurocomputing, and nature inspired algorithms. It also presents surveys of up-to-date research and application with special focus on fuzzy systems as well as on applications in life sciences and neuronal computing.

This book presents select proceedings of the International Conference on Intelligent Automation and Soft Computing (IASC2021). Various topics covered in this book include AI algorithm, neural networks, pattern recognition, machine learning, blockchain technology, system engineering, computer vision and image processing, adaptive control and robotics, big data and data processing, networking and security. The book is a valuable reference for beginners, researchers, and professionals interested in artificial intelligence, automation, and soft computing. .

This book features high-quality, peer-reviewed papers from the International Conference on Recent Advancement in Computer, Communication and Computational Sciences (RACCCS 2019), held at Aryabhata College of Engineering & Research Center, Ajmer, India, on August 16–17, 2019. Presenting the latest developments and technical solutions in computational sciences, it covers a variety of topics, such as intelligent hardware and software design, advanced communications, intelligent computing technologies, advanced software engineering, the web and informatics, and intelligent image processing. As such it helps those in the computer industry and academia to use the advances in next-generation communication and computational technology to shape real-world applications.

Nature-Inspired Optimization Algorithms provides a systematic introduction to all major nature-inspired algorithms for optimization. The book's unified approach, balancing algorithm introduction, theoretical background and practical implementation, complements extensive literature with well-chosen case studies to illustrate how these algorithms work. Topics include particle swarm optimization, ant and bee algorithms, simulated annealing, cuckoo search, firefly algorithm, bat algorithm, flower algorithm, harmony search, algorithm analysis, constraint handling, hybrid methods, parameter tuning and control, as well as multi-objective optimization. This book can serve as an introductory book for graduates, doctoral students and lecturers in computer science, engineering and natural sciences. It can also serve a source of inspiration for new applications. Researchers and engineers as well as experienced experts will also find it a handy reference. Discusses and summarizes the latest developments in nature-inspired algorithms with comprehensive, timely literature Provides a theoretical understanding as well as practical implementation hints Provides a step-by-step introduction to each algorithm

This book will focus on the involvement of data mining and intelligent computing methods for recent advances in Biomedical applications and algorithms of nature-inspired computing for Biomedical systems. The proposed meta heuristic or nature-inspired techniques should be an enhanced, hybrid, adaptive or improved version of basic algorithms

in terms of performance and convergence metrics. In this exciting and emerging interdisciplinary area a wide range of theory and methodologies are being investigated and developed to tackle complex and challenging problems. Today, analysis and processing of data is one of big focuses among researchers community and information society. Due to evolution and knowledge discovery of natural computing, related meta heuristic or bio-inspired algorithms have gained increasing popularity in the recent decade because of their significant potential to tackle computationally intractable optimization dilemma in medical, engineering, military, space and industry fields. The main reason behind the success rate of nature inspired algorithms is their capability to solve problems. The nature inspired optimization techniques provide adaptive computational tools for the complex optimization problems and diversified engineering applications. Tentative Table of Contents/Topic Coverage: - Neural Computation - Evolutionary Computing Methods - Neuroscience driven AI Inspired Algorithms - Biological System based algorithms - Hybrid and Intelligent Computing Algorithms - Application of Natural Computing - Review and State of art analysis of Optimization algorithms - Molecular and Quantum computing applications - Swarm Intelligence - Population based algorithm and other optimizations

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