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Advances in Fuzzy Integral and Differential Equations MDPI

This book offers a systematic overview of the concepts and practical techniques that readers need to get the most out of their large-scale data mining projects and research studies. It guides them through the data-analytical thinking essential to extract useful information and obtain commercial value from the data. Presenting the outcomes of International Conference on Soft Computing and Data Mining (SCDM-2017), held in Johor, Malaysia on February 6–8, 2018, it provides a well-balanced integration of soft computing and data mining techniques. The two constituents are brought together in various combinations of applications and practices. To thrive in these data-driven ecosystems, researchers, engineers, data analysts, practitioners, and managers must understand the design choice and options of soft computing and data mining techniques, and as such this book is a valuable resource, helping readers solve complex benchmark problems and better appreciate the concepts, tools, and techniques employed.

Fuzzy Differential Equations in Various Approaches MDPI

Instrument Engineers' Handbook, Third Edition: Process Control provides information pertinent to control hardware, including transmitters, controllers, control valves, displays, and computer systems. This book presents the control theory and shows how the unit processes of distillation and chemical reaction should be controlled. Organized into eight chapters, this edition begins with an overview of the method needed for the state-of-the-art practice of process control. This text then examines the relative merits of digital and analog displays and computers. Other chapters consider the basic industrial annunciators and other alarm systems, which consist of multiple individual alarm points that are connected to a trouble contact, a logic module, and a visual indicator. This book discusses as well the data loggers available for process control applications. The final chapter deals with the various pump control systems, the features and designs of variable-speed drives, and the metering pumps. This book is a valuable resource for engineers.

An Introduction to Fuzzy Logic Applications Springer Science & Business Media

Mathematical modelling has become an indispensable tool for engineers, scientists, planners, decision makers and many other professionals to make predictions of future scenarios as well as real impending events. As the modelling approach and the model to be used are problem specific, no

single model or approach can be used to solve all problems, and there are constraints in each situation. Modellers therefore need to have a choice when confronted with constraints such as lack of sufficient data, resources, expertise and time. Environmental and Hydrological Systems Modelling provides the tools needed by presenting different approaches to modelling the water environment over a range of spatial and temporal scales. Their applications are shown with a series of case studies, taken mainly from the Asia-Pacific Region. Coverage includes: Population dynamics Reaction kinetics Water quality systems Longitudinal dispersion Time series analysis and forecasting Artificial neural networks Fractals and chaos Dynamical systems Support vector machines Fuzzy logic systems Genetic algorithms and genetic programming This book will be of great value to advanced students, professionals, academics and researchers working in the water environment.

Springer Nature

This book describes different mathematical modeling and soft computing techniques used to solve practical engineering problems. It gives an overview of the current state of soft computing techniques and describes the advantages and disadvantages of soft computing compared to traditional hard computing techniques. Through examples and case studies the editors demonstrate and describe how problems with inherent uncertainty can be addressed and eventually solved through the aid of numerical models and methods. The chapters address several applications and examples in bioengineering science, drug delivery, solving inventory issues, Industry 4.0, augmented reality and weather forecasting. Other examples include solving fuzzy-shortest-path problems by introducing a new distance and ranking functions. Because, in practice, problems arise with uncertain data and most of them cannot be solved exactly and easily, the main objective is to develop models that deliver solutions with the aid of numerical methods. This is the reason behind investigating soft numerical computing in dynamic systems. Having this in mind, the authors and editors have considered error of approximation and have discussed several common types of errors and their propagations. Moreover, they have explained the numerical methods, along with convergence and consistence properties and characteristics, as the main objectives behind this book involve considering, discussing and proving related theorems within the setting of soft computing. This book examines dynamic models, and how time is fundamental to the structure of the model and data as well as the understanding of how a process unfolds • Discusses mathematical modeling with soft computing and the implementations of uncertain mathematical models • Examines how uncertain dynamic systems models include uncertain state, uncertain state space and uncertain

state's transition functions • Assists readers to become familiar with many soft numerical methods to simulate the solution function's behavior This book is intended for system specialists who are interested in dynamic systems that operate at different time scales. The book can be used by engineering students, researchers and professionals in control and finite element fields as well as all engineering, applied mathematics, economics and computer science interested in dynamic and uncertain systems. Ali Ahmadian is a Senior Lecturer at the Institute of IR 4.0, The National University of Malaysia. Soheil Salahshour is an associate professor at Bahcesehir University.

Recent Advances on Soft Computing and Data Mining IGI Global

This book discusses the recent advances in natural computation, fuzzy systems and knowledge discovery. Presenting selected, peer-reviewed papers from the 15th International Conference on Natural Computation, Fuzzy Systems and Knowledge Discovery (ICNC-FSKD 2019), held in Kunming, China, from 20 to 22 July 2019, it is a useful resource for researchers, including professors and graduate students, as well as R&D staff in industry.

Recent Advances in Intuitionistic Fuzzy Logic Systems IGI Global

These two volumes constitute the Proceedings of the 7th International Workshop on Soft Computing Applications (SOFA 2016), held on 24–26 August 2016 in Arad, Romania. This edition was 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 Section, Romanian Society of Control Engineering and Technical Informatics (SRAIT) - Arad Section, General 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 fuzzy logic, neurocomputing, evolutionary computing and probabilistic computing, leading to the concept 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 all 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 of related topics. As such, it provides valuable information for professors, researchers and graduate students in the area of soft computing techniques and applications.

New Trends in Differential and Difference Equations and Applications Springer Nature

This two-volume book presents the outcomes of the 8th International Conference on Soft Computing for Problem Solving, SocProS 2018. This conference was a joint technical collaboration between the Soft Computing Research Society, Liverpool Hope University (UK), and Vellore Institute of

Technology (India), and brought together researchers, engineers and practitioners to discuss thought-provoking developments and challenges in order to select potential future directions. The book highlights the latest advances and innovations in the interdisciplinary areas of soft computing, including original research papers on 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 offers a valuable resource for both young and experienced researchers dealing with complex and intricate real-world problems that are difficult to solve using traditional methods.

Soft Numerical Computing in Uncertain Dynamic Systems CRC Press

This third edition of the Instrument Engineers' Handbook-most complete and respected work on process instrumentation and control-helps you:

Bridging the Gap John Wiley & Sons

The book serves to be both a textbook and a reference for the theory and laboratory courses offered to undergraduate and graduate engineering students, and for practicing engineers.

Soft Computing Approach for Mathematical Modeling of Engineering Problems CRC Press

Gathering the Proceedings of the 2018 Intelligent Systems Conference (IntelliSys 2018), this book offers a remarkable collection of chapters covering a wide range of topics in intelligent systems and computing, and their real-world applications. The Conference attracted a total of 568 submissions from pioneering researchers, scientists, industrial engineers, and students from all around the world. These submissions underwent a double-blind peer review process, after which 194 (including 13 poster papers) were selected to be included in these proceedings. As intelligent systems continue to replace and sometimes outperform human intelligence in decision-making processes, they have made it possible to tackle many problems more effectively. This branching out of computational intelligence in several directions, and the use of intelligent systems in everyday applications, have created the need for such an international conference, which serves as a venue for reporting on cutting-edge innovations and developments. This book collects both theory and application-based chapters on all aspects of artificial intelligence, from classical to intelligent scope. Readers are sure to find the book both interesting and valuable, as it presents state-of-the-art intelligent methods and techniques for solving real-world problems, along with a vision of future research directions.

Proceedings of the Third International Conference on Soft Computing and Data Mining (SCDM 2018), Johor, Malaysia, February 06-07, 2018 World Scientific Publishing Company

The mathematical combinatorics is a subject that applying combinatorial notions to all mathematics and all sciences for understanding the reality of things in the universe, motivated by CC Conjecture of Dr. Linfan MAO on mathematical sciences. The International J. Mathematical Combinatorics (ISSN 1937-1055) is a fully refereed international journal, sponsored by the MADIS of Chinese Academy of Sciences and published in USA quarterly, which publishes original research papers and survey articles in all aspects of mathematical combinatorics, Smarandache multi-spaces, Smarandache geometries, non-Euclidean geometry, topology and their applications to other sciences.

Emerging Research on Applied Fuzzy Sets and Intuitionistic Fuzzy Matrices IGI Global

Issues in Computer Science and Theory / 2013 Edition is a ScholarlyEditions™ book that delivers

timely, authoritative, and comprehensive information about Soft Computing. The editors have built Issues in Computer Science and Theory: 2013 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Soft Computing in this book to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Computer Science and Theory: 2013 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

Issues in Computer Science and Theory: 2013 Edition Infinite Study

FLINS, originally an acronym for Fuzzy Logic and Intelligent Technologies in Nuclear Science, is now extended to include Computational Intelligence for applied research. The contributions of the FLINS conference cover state-of-the-art research, development, and technology for computational intelligence systems, with special focuses on data science and knowledge engineering for sensing decision support, both from the foundations and the applications points-of-view.

Intelligent Systems and Applications Springer

This three volume set LNAI 9244, 9245, and 9246 constitutes the refereed proceedings of the 8th International Conference on Intelligent Robotics and Applications, ICIRA 2015, held in Portsmouth, UK, in August 2015. The 60 papers included in the first volume are organized in topical sections on analysis and control for complex systems; marine vehicles and oceanic engineering; drives and actuators' modeling; biomechatronics in bionic dexterous hand; robot actuators and sensors; intelligent visual systems; estimation and identification; and adaptive control system.

Modeling and Control of Uncertain Nonlinear Systems with Fuzzy Equations and Z-Number John Wiley & Sons

The rise of intelligence and computation within technology has created an eruption of potential applications in numerous professional industries. Techniques such as data analysis, cloud computing, machine learning, and others have altered the traditional processes of various disciplines including healthcare, economics, transportation, and politics. Information technology in today's world is beginning to uncover opportunities for experts in these fields that they are not yet aware of. The exposure of specific instances in which these devices are being implemented will assist other specialists in how to successfully utilize these transformative tools with the appropriate amount of discretion, safety, and awareness. Considering the level of diverse uses and practices throughout the globe, the fifth edition of the Encyclopedia of Information Science and Technology series continues the enduring legacy set forth by its predecessors as a premier reference that contributes the most cutting-edge concepts and methodologies to the research community. The Encyclopedia of Information Science and Technology, Fifth Edition is a three-volume set that includes 136 original and previously unpublished research chapters that present multidisciplinary research and expert insights into new methods and processes for understanding modern technological tools and their applications as well as emerging theories and ethical controversies surrounding the field of information science. Highlighting a wide range of topics such as natural

language processing, decision support systems, and electronic government, this book offers strategies for implementing smart devices and analytics into various professional disciplines. The techniques discussed in this publication are ideal for IT professionals, developers, computer scientists, practitioners, managers, policymakers, engineers, data analysts, and programmers seeking to understand the latest developments within this field and who are looking to apply new tools and policies in their practice. Additionally, academicians, researchers, and students in fields that include but are not limited to software engineering, cybersecurity, information technology, media and communications, urban planning, computer science, healthcare, economics, environmental science, data management, and political science will benefit from the extensive knowledge compiled within this publication.

Data Science and Knowledge Engineering for Sensing Decision Support - Proceedings of the 13th International Flins Conference Springer

Developments in the areas of biology and bioinformatics are continuously evolving and creating a plethora of data that needs to be analyzed and decrypted. Since it can be difficult to decipher the multitudes of data within these areas, new computational techniques and tools are being employed to assist researchers in their findings. The Handbook of Research on Computational Intelligence Applications in Bioinformatics examines emergent research in handling real-world problems through the application of various computation technologies and techniques. Featuring theoretical concepts and best practices in the areas of computational intelligence, artificial intelligence, big data, and bio-inspired computing, this publication is a critical reference source for graduate students, professionals, academics, and researchers.

MATLAB and Its Applications in Engineering Springer

The Springer Handbook for Computational Intelligence is the first book covering the basics, the state-of-the-art and important applications of the dynamic and rapidly expanding discipline of computational intelligence. This comprehensive handbook makes readers familiar with a broad spectrum of approaches to solve various problems in science and technology. Possible approaches include, for example, those being inspired by biology, living organisms and animate systems. Content is organized in seven parts: foundations; fuzzy logic; rough sets; evolutionary computation; neural networks; swarm intelligence and hybrid computational intelligence systems. Each Part is supervised by its own Part Editor(s) so that high-quality content as well as completeness are assured.

Handbook of Research on Advances and Applications of Fuzzy Sets and Logic Butterworth-Heinemann

Fractional-order Modelling of Dynamic Systems with Applications in Optimization, Signal Processing and Control introduces applications from a design perspective, helping readers plan and design their own applications. The book includes the different techniques employed to design fractional-order systems/devices comprehensively and straightforwardly. Furthermore, mathematics is available in the literature on how to solve fractional-order calculus for system applications. This book introduces the mathematics that has been employed explicitly for fractional-order systems. It will prove an excellent material for students and scholars who want to quickly understand the field of fractional-order systems and contribute to its different domains and applications. Fractional-order systems are

believed to play an essential role in our day-to-day activities. Therefore, several researchers around the globe endeavor to work in the different domains of fractional-order systems. The efforts include developing the mathematics to solve fractional-order calculus/systems and to achieve the feasible designs for various applications of fractional-order systems. Presents a simple and comprehensive understanding of the field of fractional-order systems Offers practical knowledge on the design of fractional-order systems for different applications Exposes users to possible new applications for fractional-order systems

Process Control Springer

Brings mathematics to bear on your real-world, scientific problems Mathematical Methods in Interdisciplinary Sciences provides a practical and usable framework for bringing a mathematical approach to modelling real-life scientific and technological problems. The collection of chapters Dr. Snehashish Chakraverty has provided describe in detail how to bring mathematics, statistics, and computational methods to the fore to solve even the most stubborn problems involving the intersection of multiple fields of study. Graduate students, postgraduate students, researchers, and

professors will all benefit significantly from the author's clear approach to applied mathematics. The book covers a wide range of interdisciplinary topics in which mathematics can be brought to bear on challenging problems requiring creative solutions. Subjects include: Structural static and vibration problems Heat conduction and diffusion problems Fluid dynamics problems The book also covers topics as diverse as soft computing and machine intelligence. It concludes with examinations of various fields of application, like infectious diseases, autonomous car and monotone inclusion problems.

8th International Conference, ICIRA 2015, Portsmouth, UK, August 24-27, 2015, Proceedings, Part I SIAM

This book constitutes the refereed proceedings of the International Conference on Soft Computing in Data Science, SCDS 2015, held in Putrajaya, Malaysia, in September 2015. The 25 revised full papers presented were carefully reviewed and selected from 69 submissions. The papers are organized in topical sections on data mining; fuzzy computing; evolutionary computing and optimization; pattern recognition; human machine interface; hybrid methods.