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RILEY FINLEY

Pattern Recognition Springer Science & Business Media
This book features a collection of high-quality, peer-reviewed papers presented at the Third International Conference on Intelligent Computing and Communication (ICICC 2019) held at the School of Engineering, Dayananda Sagar University, Bengaluru, India, on 7 – 8 June 2019. Discussing advanced and multi-disciplinary research regarding the design of smart computing and informatics, it focuses on innovation paradigms in system knowledge, intelligence and sustainability that can be applied to provide practical solutions to a number of problems in society, the environment and industry. Further, the book also addresses the deployment of emerging computational and knowledge transfer approaches, optimizing solutions in various disciplines of science, technology and healthcare.
Nonlinear Programming Springer
Fuzzy theory is an interesting name for a method that has been highly effective in a wide variety of significant, real-world applications. A few examples make this readily apparent. As the result of a faulty design the method of computer-programmed trading, the biggest stock market crash in history was triggered by a small fraction of a percent change in the interest rate in a Western European country. A fuzzy theory ap proach would have weighed a number of relevant variables and the ranges of values for each of these variables. Another example, which is rather simple but pervasive, is that of an electronic thermostat that turns on heat or air conditioning at a specific temperature setting. In fact, actual comfort level involves other variables such as humidity and the location of the sun with respect to windows in a home, among others. Because of its great applied significance, fuzzy theory has generated widespread activity internationally. In fact, institutions devoted to research in this area have come into being. As the above

examples suggest, Fuzzy Systems Theory is of fundamen tal importance for the analysis and design of a wide variety of dynamic systems. This clearly manifests the fundamental importance of time con siderations in the Fuzzy Systems design approach in dynamic systems. This textbook by Prof. Dr. Jernej Virant provides what is evidently a uniquely significant and comprehensive treatment of this subject on the international scene.
Process Modelling and Simulation Springer ic ETITE 20 expresses its concern towards the upgrading of research in Information Technology and Engineering It motivates to provide a worldwide platform to researchers far and widespread by exploring their innovations in the field of science and technology The mission is to promote and improve the research and development related to the topics of the conference The essential objective of the conference is to assist the researchers in discovering the global linkage for future joint efforts in their academic outlook
Advances in Self-Organizing Maps, Learning Vector Quantization, Clustering and Data Visualization CRC Press
The LNCS journal Transactions on Rough Sets is devoted to the entire spectrum of rough sets related issues, from logical and mathematical foundations, through all aspects of rough set theory and its applications, such as data mining, knowledge discovery, and intelligent information processing, to relations between rough sets and other approaches to uncertainty, vagueness, and incompleteness, such as fuzzy sets and theory of evidence. This book, which constitutes the eighth volume of the Transactions on Rough Sets series, contains a wide spectrum of contributions to the theory and applications of rough sets. The 17 papers presented explore several research streams and introduce a number of new advances in the foundations and applications of artificial intelligence, engineering, logic, mathematics, and science.
Artificial Neural Networks - ICANN 96 Springer Science & Business Media
Covering theory, algorithms, and methodologies, as well as data mining technologies, Data Mining for Bioinformatics provides a comprehensive discussion of data-intensive computations used in data mining with applications in bioinformatics. It supplies a broad, yet in-depth, overview of the application domains of data mining for bioinformatics to help readers from both biology and computer science backgrounds gain an enhanced understanding of this cross-disciplinary field. The book offers authoritative coverage of data mining techniques, technologies, and frameworks used for storing, analyzing, and extracting knowledge from large databases in the bioinformatics domains, including genomics and proteomics. It begins by describing the evolution of bioinformatics and highlighting the challenges that can be addressed using data mining techniques. Introducing the various data mining techniques that can be employed in biological databases, the text is organized into four sections: Supplies a complete overview of the evolution of the field and its intersection with computational learning Describes the role of data mining in analyzing large biological databases—explaining the breath of the various feature selection and feature extraction techniques that data mining has to offer Focuses on concepts of unsupervised learning using clustering

techniques and its application to large biological data Covers supervised learning using classification techniques most commonly used in bioinformatics—addressing the need for validation and benchmarking of inferences derived using either clustering or classification The book describes the various biological databases prominently referred to in bioinformatics and includes a detailed list of the applications of advanced clustering algorithms used in bioinformatics. Highlighting the challenges encountered during the application of classification on biological databases, it considers systems of both single and ensemble classifiers and shares effort-saving tips for model selection and performance estimation strategies.

2020 International Conference on Emerging Trends in Information Technology and Engineering (ic ETITE) Springer Science & Business Media

The book includes the Proceedings of the Artificial Intelligence on Fashion and Textiles conference 2018 which provides state-of-the-art techniques and applications of AI in the fashion and textile industries. It is essential reading for scientists, researchers and R&D professionals working in the field of AI with applications in the fashion and textile industry; managers in the fashion and textile enterprises; and anyone with an interest in the applications of AI. Over the last two decades, with the great advancement of computer technology, academic research in artificial intelligence (AI) and its applications in fashion and textile supply chain has been becoming a very hot topic and has received greater attention from both academics and industrialists. A number of AI-related techniques has been successfully employed and proven to handle the problems including fashion sales forecasting, supply chain optimization, planning and scheduling, textile material defect detection, fashion and textile image recognition, fashion image and style retrieval, human body modeling and fitting, etc.

Introduction to Pattern Recognition Springer Science & Business Media

Since process models are nowadays ubiquitous in many applications, the challenges and alternatives related to their development, validation, and efficient use have become more apparent. In addition, the massive amounts of both offline and online data available today open the door for new applications and solutions. However, transforming data into useful models and information in the context of the process industry or of bio-systems requires specific approaches and considerations such as new modelling methodologies incorporating the complex, stochastic, hybrid and distributed nature of many processes in particular. The same can be said about the tools and software environments used to describe, code, and solve such models for their further exploitation. Going well beyond mere simulation tools, these advanced tools offer a software suite built around the models, facilitating tasks such as experiment design, parameter estimation, model initialization, validation, analysis, size reduction, discretization, optimization, distributed computation, co-simulation, etc. This Special Issue collects novel developments in these topics in order to address the challenges brought by the use of models in their different facets, and to reflect state of the art developments in methods, tools and industrial applications.

Introduction to Genetic Algorithms MDPI
Based on hospital clinical trials examining the use of signal and image processing techniques, Surface Imaging for Biomedical Applications bridges the gap between engineers and clinicians. This text offers a thorough analysis of biomedical surface imaging to medical practitioners as it relates to the diagnosis, detection, and monitoring of skin conditions and disease. Written from an engineer's perspective, the book discusses image acquisition methods, image processing, and pattern recognition techniques. It focuses on a variety of techniques used in recent years for image processing and pattern recognition (principal component analysis, independent component analysis, singular value decomposition, texture modeling, inverse model analysis, polynomial surface fitting, and classification techniques), and considers interventional and non-invasive procedures used to diagnose skin-related disease. It examines the biological causation of four skin disorders (psoriasis, vitiligo, ulcer, and acne), provides basic terminologies in surface imaging, and details the outcome of various clinical observations and other research. It also details numerous measurement parameters related to surface imaging (body surface, skin color, tissue characteristic, thickness, roughness, volume of skin, and retinal changes). Discusses the development of a psoriasis severity measurement tool Provides material on assessing segmented repigmentation areas in vitiligo patients via VT-Scan Introduces a volume ulcer assessment using non-invasive 3D imaging Presents an automated system for acne grading that is based on capturing the images of various body parts using the DSLR camera Includes the MATLAB® codes for various pattern recognition techniques applied during the assessment/measurement at the end of each chapter This interdisciplinary reference highlights the importance of disease diagnosis and monitoring, and is suitable for medical practitioners, biomedical engineers, and core image processing researchers.
Dynamic Fuzzy Pattern Recognition with Applications to Finance and Engineering Springer
Structural Analysis of Historical Constructions. Anamnesis, diagnosis, therapy, controls contains the papers presented at the 10th International Conference on Structural Analysis of Historical Constructions (SAHC2016, Leuven, Belgium, 13-15 September 2016). The main theme of the book is "Anamnesis, Diagnosis, Therapy, Controls", which emphasizes the importance of all steps of a restoration process in order to obtain a thorough understanding of the structural behaviour of built cultural heritage. The contributions cover every aspect of the structural analysis of historical constructions, such as material characterization, structural modelling, static and dynamic monitoring, non-destructive techniques for on-site investigation, seismic behaviour, rehabilitation, traditional and innovative repair techniques, and case studies. The knowledge, insights and ideas in Structural Analysis of Historical Constructions. Anamnesis, diagnosis, therapy, controls make this book of abstracts and the corresponding, digital full-colour conference proceedings containing the full papers must-have literature for researchers and practitioners involved in

the structural analysis of historical constructions.
Wavelets and Statistics CRC Press
This book offers a timely overview of fuzzy and rough set theories and methods. Based on selected contributions presented at the International Symposium on Fuzzy and Rough Sets, ISFUROS 2017, held in Varadero, Cuba, on October 24-26, 2017, the book also covers related approaches, such as hybrid rough-fuzzy sets and hybrid fuzzy-rough sets and granular computing, as well as a number of applications, from big data analytics, to business intelligence, security, robotics, logistics, wireless sensor networks and many more. It is intended as a source of inspiration for PhD students and researchers in the field, fostering not only new ideas but also collaboration between young researchers and institutions and established ones.
Pattern Recognition with Fuzzy Objective Function Algorithms CRC Press
Despite its short history, wavelet theory has found applications in a remarkable diversity of disciplines: mathematics, physics, numerical analysis, signal processing, probability theory and statistics. The abundance of intriguing and useful features enjoyed by wavelet and wavelet packed transforms has led to their application to a wide range of statistical and signal processing problems. On November 16-18, 1994, a conference on Wavelets and Statistics was held at Villard de Lans, France, organized by the Institute IMAG-LMC, Grenoble, France. The meeting was the 15th in the series of the Rencontres Pranco-Belges des 8tatisticiens and was attended by 74 mathematicians from 12 different countries. Following tradition, both theoretical statistical results and practical contributions of this active field of statistical research were presented. The editors and the local organizers hope that this volume reflects the broad spectrum of the conference. as it includes 21 articles contributed by specialists in various areas in this field. The material compiled is fairly wide in scope and ranges from the development of new tools for non parametric curve estimation to applied problems, such as detection of transients in signal processing and image segmentation. The articles are arranged in alphabetical order by author rather than subject matter. However, to help the reader, a subjective classification of the articles is provided at the end of the book. Several articles of this volume are directly or indirectly concerned with several as pects of wavelet-based function estimation and signal denoising.
Information Processing and Management of Uncertainty in Knowledge-Based Systems CRC Press
Useful in physics, economics, psychology, and other fields, random matrices play an important role in the study of multivariate statistical methods. Until now, however, most of the material on random matrices could only be found scattered in various statistical journals. Matrix Variate Distributions gathers and systematically presents most of the recent developments in continuous matrix variate distribution theory and includes new results. After a review of the essential background material, the authors investigate the range of matrix variate distributions, including: matrix variate normal distribution Wishart distribution Matrix variate t-distribution Matrix variate beta distribution F-distribution Matrix variate Dirichlet distribution Matrix quadratic forms With its inclusion of new results, Matrix Variate

Distributions promises to stimulate further research and help advance the field of multivariate statistical analysis.

Artificial Intelligence and Evolutionary Computations in Engineering Systems

Springer Science & Business Media

Genetic algorithms are playing an increasingly important role in studies of complex adaptive systems, ranging from adaptive agents in economic theory to the use of machine learning techniques in the design of complex devices such as aircraft turbines and integrated circuits. Adaptation in Natural and Artificial Systems is the book that initiated this field of study, presenting the theoretical foundations and exploring applications. In its most familiar form, adaptation is a biological process, whereby organisms evolve by rearranging genetic material to survive in environments confronting them. In this now classic work, Holland presents a mathematical model that allows for the nonlinearity of such complex interactions. He demonstrates the model's universality by applying it to economics, physiological psychology, game theory, and artificial intelligence and then outlines the way in which this approach modifies the traditional views of mathematical genetics. Initially applying his concepts to simply defined artificial systems with limited numbers of parameters, Holland goes on to explore their use in the study of a wide range of complex, naturally occuring processes, concentrating on systems having multiple factors that interact in nonlinear ways. Along the way he accounts for major effects of coadaptation and coevolution: the emergence of building blocks, or schemata, that are recombined and passed on to succeeding generations to provide, innovations and improvements.

Intelligent Computing and Communication

Springer

This book presents recent research in intelligent and fuzzy techniques. Emerging conditions such as pandemic, wars, natural disasters and various high technologies force people for significant changes in business and social life. The adoption of digital technologies to transform services or businesses, through replacing non-digital or manual processes with digital processes or replacing older digital technology with newer digital technologies through intelligent systems is the main scope of this book. It focuses on revealing the reflection of digital transformation in our business and social life under emerging conditions through intelligent and fuzzy systems. The latest intelligent and fuzzy methods and techniques on digital transformation are introduced by theory and applications. The intended readers are intelligent and fuzzy systems researchers, lecturers, M.Sc. and Ph.D. students studying digital transformation. Usage of ordinary fuzzy sets and their extensions, heuristics and metaheuristics from optimization to machine learning, from quality management to risk management makes the book an excellent source for researchers.

Fuzzy Set Theory — and Its Applications

BoD – Books on Demand

Industrial revolutions have impacted both, manufacturing and service. From the steam engine to digital automated production, the industrial revolutions have conduced significant changes in operations and supply chain management (SCM) processes. Swift changes in manufacturing and service systems have led to phenomenal improvements in

productivity. The fast-paced environment brings new challenges and opportunities for the companies that are associated with the adaptation to the new concepts such as Internet of Things (IoT) and Cyber Physical Systems, artificial intelligence (AI), robotics, cyber security, data analytics, block chain and cloud technology. These emerging technologies facilitated and expedited the birth of Logistics 4.0. Industrial Revolution 4.0 initiatives in SCM has attracted stakeholders' attentions due to it is ability to empower using a set of technologies together that helps to execute more efficient production and distribution systems. This initiative has been called Logistics 4.0 of the fourth Industrial Revolution in SCM due to its high potential. Connecting entities, machines, physical items and enterprise resources to each other by using sensors, devices and the internet along the supply chains are the main attributes of Logistics 4.0. IoT enables customers to make more suitable and valuable decisions due to the data-driven structure of the Industry 4.0 paradigm. Besides that, the system's ability of gathering and analyzing information about the environment at any given time and adapting itself to the rapid changes add significant value to the SCM processes. In this peer-reviewed book, experts from all over the world, in the field present a conceptual framework for Logistics 4.0 and provide examples for usage of Industry 4.0 tools in SCM. This book is a work that will be beneficial for both practitioners and students and academicians, as it covers the theoretical framework, on the one hand, and includes examples of practice and real world.

Fuzzy Implications Institute of Electrical & Electronics Engineers(IEEE)

This three-volume set (CCIS 1367-1368) constitutes the refereed proceedings of the 5th International Conference on Computer Vision and Image Processing, CVIP 2020, held in Prayagraj, India, in December 2020. Due to the COVID-19 pandemic the conference was partially held online. The 134 papers papers were carefully reviewed and selected from 352 submissions. The papers present recent research on such topics as biometrics, forensics, content protection, image enhancement/super-resolution/restoration, motion and tracking, image or video retrieval, image, image/video processing for autonomous vehicles, video scene understanding, human-computer interaction, document image analysis, face, iris, emotion, sign language and gesture recognition, 3D image/video processing, action and event detection/recognition, medical image and video analysis, vision-based human GAIT analysis, remote sensing, and more.

Surface Imaging for Biomedical Applications Springer Nature

Introduction to Pattern Recognition: A Matlab Approach is an accompanying manual to Theodoridis/Koutroumbas' Pattern Recognition. It includes Matlab code of the most common methods and algorithms in the book, together with a descriptive summary and solved examples, and including real-life data sets in imaging and audio recognition. This text is designed for electronic engineering, computer science, computer engineering, biomedical engineering and applied mathematics students taking graduate courses on pattern recognition and machine learning as well as R&D engineers and university researchers in image and signal processing/analyisis, and

computer vision. Matlab code and descriptive summary of the most common methods and algorithms in Theodoridis/Koutroumbas, Pattern Recognition, Fourth Edition Solved examples in Matlab, including real-life data sets in imaging and audio recognition Available separately or at a special package price with the main text (ISBN for package: 978-0-12-374491-3)

Applications of Hyperstructure Theory Springer

This book presents some of the numerous applications of hyperstructures, especially those that were found and studied in the last fifteen years. There are applications to the following subjects: 1) geometry; 2) hypergraphs; 3) binary relations; 4) lattices; 5) fuzzy sets and rough sets; 6) automata; 7) cryptography; 8) median algebras, relation algebras; 9) combinatorics; 10) codes; 11) artificial intelligence; 12) probabilities. Audience: Graduate students and researchers.

Fuzzy Systems Springer

This book presents some recent specialized works of theoretical study in the domain of fuzzy systems. Over eight sections and fifteen chapters, the volume addresses fuzzy systems concepts and promotes them in practical applications in the following thematic areas: fuzzy mathematics, decision making, clustering, adaptive neural fuzzy inference systems, control systems, process monitoring, green infrastructure, and medicine. The studies published in the book develop new theoretical concepts that improve the properties and performances of fuzzy systems. This book is a useful resource for specialists, engineers, professors, and students.

Intelligent and Fuzzy Techniques for Emerging Conditions and Digital Transformation CRC Press

Dynamic Fuzzy Pattern Recognition with Applications to Finance and Engineering focuses on fuzzy clustering methods which have proven to be very powerful in pattern recognition and considers the entire process of dynamic pattern recognition. This book sets a general framework for Dynamic Pattern Recognition, describing in detail the monitoring process using fuzzy tools and the adaptation process in which the classifiers have to be adapted, using the observations of the dynamic process. It then focuses on the problem of a changing cluster structure (new clusters, merging of clusters, splitting of clusters and the detection of gradual changes in the cluster structure). Finally, the book integrates these parts into a complete algorithm for dynamic fuzzy classifier design and classification.