Fuzzy Min Max Neural Networks For Categorical Data

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Individual and Ensemble Pattern Classification Models Using Enhanced Fuzzy Min-max Neural Networks: Fuzzy Neural Network Theory and Application

Neural Networks in Soft Computing Framework: Neural Nets and Advanced Intelligent Computing Theories and Applications Soft Computing and Signal Processing - Fuzzy Logic - Fault Detection and Diagnosis of Induction Motors Using the Fuzzy Min-Max Neural Network and the Classification and Regression Tree


Intelligent Multidimensional Data Clustering and Analysis: Fusion of Neural Networks, Fuzzy Systems and Genetic Algorithms


Computer Vision and Image Processing: Fuzzy Information Processing: Advances in Information and Communication Technology

NEURAL NETWORKS, FUZZY LOGIC AND GENETIC ALGORITHMS: Advances in Computing and Data Sciences - EEIE International Conference on Neural Networks: Fuzzy Logic in Intelligent System Design - Handbook of Fuzzy Computation: Fuzzy Modelling

Pattern Recognition And Big Data: Wavelets in Medicine and Biology: Fuzzy Mathematical Techniques with Applications


Artificial neural networks can mimic the biological information-processing mechanism in - a very limited sense. Fuzzy logic provides a basis for representing uncertain and imprecise knowledge and forms a basis for human reasoning. Neural networks display genuine promise in solving problems, but a definitive theoretical basis does not yet exist for their design. Fusion of Neural Networks, Fuzzy Systems and Genetic Algorithms integrates neural net, fuzzy system, and evolutionary computing in system design that enables its readers to handle complexity - offsetting the demerits of one paradigm by the merits of another. This book presents specific projects where fusion techniques have been applied. The chapters start with the design of a new fuzzy-neural controller. Remaining chapters discuss the application of expert systems, neural networks, fuzzy control, and evolutionary computing techniques in modern engineering systems. These specific applications include: direct frequency converters electro-hydraulic systems motor control toaster control speech recognition vehicle routing fault diagnosis Asynchronous Transfer Mode (ATM) communications networks telephones for hard-of-hearing people control of gas turbine aero-engines telecommunications systems design Fusion of Neural Networks, Fuzzy Systems and Genetic Algorithms covers the spectrum of applications - comprehensively demonstrating the advantages of fusion techniques in industrial applications.

Considerable attention from the international scientific community is currently focused on the wide ranging applications of wavelets. For the first time, the field's leading experts have come together to produce a complete guide to wavelet transform applications in medicine and biology. Wavelets in Medicine and Biology provides accessible, detailed, and comprehensive guidelines for all those interested in learning about wavelets and their applications to biomedical problems.

This book presents the proceedings of the 7th International Conference on Frontiers of Intelligent Computing: Theory and Applications (FICTA 2018), held at Duy Tan University, Da Nang, Vietnam. The event brought together researchers, scientists, engineers, and practitioners to exchange new ideas and experiences in the domain of intelligent computing theories with prospective applications in various engineering disciplines. These proceedings are divided into two volumes. Covering broad areas of information and decision sciences, with papers exploring both the theoretical and practical aspects of data-intensive computing, data mining, evolutionary computation, knowledge management and networks, sensor networks, signal processing, wireless networks, protocols and architectures, this volume is a valuable resource for postgraduate students in various engineering disciplines.

This book presents the proceedings of the 4th International Conference of Reliable Information and Communication Technology 2019 (IRICT 2019), which was held in Pulai Springs Resort, Johor, Malaysia, on September 22-23, 2019. Featuring 109 papers, the book covers hot topics such as artificial intelligence and soft computing, data science and big data analytics, internet of things (IoT), intelligent communication systems, advances in information security, advances in information systems and software engineering.

Initially conceived as a methodology for the representation and manipulation of imprecise and vague information, fuzzy computation has found wide use in problems that fall well beyond its originally intended scope of application. Many scientists and engineers now use the paradigms of fuzzy computation to tackle problems that are either intractable.

This book constitutes the proceedings of the 17th International Conference on Web Information Systems and Applications, WISA 2020, held in Guangzhou, China, in September 2020. The 42 full papers and 16 short papers presented were carefully reviewed and selected from 163 submissions. The papers are grouped in topical sections on web wide web, recommendation, query processing and algorithm, natural language processing, machine learning, graph query, edge computing and data mining, data privacy and security, and blockchain.

Neural networks and fuzzy techniques are among the most promising approaches to pattern recognition. Neuro-fuzzy systems aim at combining the advantages of the two paradigms. This book is a collection of papers describing state-of-the-art work in this emerging field. It covers topics such as feature selection, classification, classifier training, and clustering. Also included are applications of neuro-fuzzy systems in speech recognition, land mine detection, medical image analysis, and autonomous vehicle control. The intended audience includes graduate students in computer science and related fields, as well as researchers at academic institutions and in industry.

This book provides a unified approach for developing a fuzzy classifier and explains the advantages and disadvantages of different classifiers through extensive performance evaluation of real data sets. It thus offers new learning paradigms for analyzing neural networks.
and fuzzy systems, while training fuzzy classifiers. Function approximation is also treated and function approximators are compared.

The two-volume set LNCS 7367 and 7368 constitutes the refereed proceedings of the 9th International Symposium on Neural Networks, ISNN 2012, held in Shenyang, China, in July 2012. The 147 revised full papers presented were carefully reviewed and selected from numerous submissions. The contributions are structured in topical sections on mathematical modeling; neurodynamics; cognitive neuroscience; learning algorithms; optimization; pattern recognition; vision; image processing; information processing; neurocontrol; and novel applications.

This book provides comprehensive introduction to a consortium of technologies underlying soft computing, an evolving branch of computational intelligence. The constituent technologies discussed comprise neural networks, fuzzy logic, genetic algorithms, and a number of hybrid systems which include classes such as neuro-fuzzy, fuzzy-genetic, and neuro-genetic systems. The hybridization of the technologies is demonstrated on architectures such as Fuzzy-Back-propagation Networks (NN-FL), Simplified Fuzzy ARTMAP (NN-FL), and Fuzzy Associative Memories. The book also gives an exhaustive discussion of FL-GA hybridization. Every architecture has been discussed in detail through illustrative examples and applications. The algorithms have been presented in pseudo-code with a step-by-step illustration of the same in problems. The applications, demonstrating the potential of the architectures, have been chosen from diverse disciplines of science and engineering. This book with a wealth of information that is clearly presented and illustrated by many examples and applications is designed for use as a text for courses in soft computing at both the senior undergraduate and first-year post-graduate engineering levels. It should also be of interest to researchers and technologists desirous of applying soft computing technologies to their respective fields of work.

Fuzzy Modelling: Paradigms and Practice provides an up-to-date and authoritative compendium of fuzzy models, identification algorithms and applications. Chapters in this book have been written by the leading scholars and researchers in their respective subject areas. Several of these chapters include both theoretical material and applications. The editor of this volume has organized and edited the chapters into a coherent and uniform framework. The objective of this book is to provide researchers and practitioners involved in the development of models for complex systems with an understanding of fuzzy modelling, and an appreciation of what makes these models unique. The chapters are organized into three major parts covering relational models, fuzzy neural networks and rule-based models. The material on relational models includes theory along with a large number of implemented case studies, including some on speech recognition, prediction, and ecological systems. The part on fuzzy neural networks covers some fundamentals, such as neurocomputing, fuzzy neurocomputing, etc., identifies the nature of the relationship that exists between fuzzy systems and neural networks, and includes extensive coverage of their architectures. The last part addresses the main design principles governing the development of rule-based models. Fuzzy Modelling: Paradigms and Practice provides a wealth of specific fuzzy modelling paradigms, algorithms and tools used in systems modelling. Also included is a panoply of case studies from various computer, engineering and science disciplines. This should be a primary reference work for researchers and practitioners developing models of complex systems.

This concise but comprehensive textbook reviews the most popular neural-network methods and their associated techniques. Each chapter provides state-of-the-art descriptions of important major research results of the respective neural-network methods. A range of relevant computational intelligence topics, such as fuzzy logic and evolutionary algorithms – powerful tools for neural-network learning – are introduced. The systematic survey of neural-network models and exhaustive references list will point readers toward topics for future research. The algorithms outlined also make this textbook a valuable reference for scientists and practitioners working in pattern recognition, signal processing, speech and image processing, data analysis and artificial intelligence.

This book describes recent advances in the use of fuzzy logic for the design of hybrid intelligent systems based on nature-inspired optimization and their applications in areas such as intelligent control and robotics, pattern recognition, medical diagnosis, time series prediction and optimization of complex problems. Based on papers presented at the North American Fuzzy Information Processing Society Annual Conference (NAFIPS 2017), held in Cancun, Mexico from 16 to 18 October 2017, the book is divided into nine main parts, the first of which first addresses theoretical aspects, and proposes new concepts and algorithms based on type-1 fuzzy systems. The second part consists of papers on new concepts and algorithms for type-2 fuzzy systems, and on applications of type-2 fuzzy systems in diverse areas, such as time series prediction and pattern recognition. In turn, the third part contains papers that present enhancements to meta-heuristics based on fuzzy logic techniques describing new nature-inspired optimization algorithms that use fuzzy dynamic adaptation of parameters. The fourth part presents emergent intelligent models, which range from quantum algorithms to cellular automata. The fifth part explores applications of fuzzy logic in diverse areas of medicine, such as the diagnosis of hypertension and heart diseases. The sixth part describes new computational intelligence algorithms and their applications in different areas of intelligent control, while the seventh examines the use of fuzzy logic in different mathematical models. The eight part deals with a diverse range of applications of fuzzy logic, ranging from environmental to autonomous navigation, while the ninth covers theoretical concepts of fuzzy models.

This book constitutes the thoroughly refereed postproceedings of the 14th Italian Workshop on Neural Networks, WIRN VIETRI 2003, held in Vietri sul Mare, Italy in June 2003. The 41 revised papers presented were carefully reviewed and improved during two rounds of selection and refereeing. The papers are organized in topical sections on models for neural computation; architectures and algorithms; image and signal processing; applications; bioinformatics and statistics; and formats of knowledge: words, images, and narratives.

This two-volume set (CCIS 1045 and CCIS 1046) constitutes the refereed proceedings of the Third International Conference on Advances in Computing and Data Sciences, ICACDS 2019, held in Ghaziabad, India, in April 2019. The 112 full papers were carefully reviewed and selected from 621 submissions. The papers are organized into topical sections on neural networks and fuzzy systems, while training fuzzy classifiers. Function approximation is also treated and function approximators are compared.

From its early beginnings in the fifties and sixties, the field of neural networks has been steadily developing to become one of the most interdisciplinary areas of research within computer science. This volume contains selected papers from WIRN Vietri-98, the 10th Italian Workshop on Neural Nets, 21-23 May 1998, Vietri sul Mare, Salerno, Italy. This annual event, sponsored amongst others by the IEEE Neural Network Council and the INNS/SIG Italy, brings together the best of research from all over the world. The papers cover a range of key topics within neural networks, including pattern recognition, signal processing, hybrid systems, mathematical models, hardware and software design, and fuzzy techniques. It also includes two review talks on a Morpho-Functional Model to Describe Variability Found at Hippocampal Synapses and Neural Networks and Speech Processing. By providing the reader with a comprehensive overview of recent research in this area, the volume makes a valuable contribution to the Perspectives in Neural Computing Series.
This book presents selected research papers on current developments in the fields of soft computing and signal processing from the Second International Conference on Soft Computing and Signal Processing (ICSCSP 2019). The respective contributions address topics such as soft sets, rough sets, fuzzy logic, neural networks, genetic algorithms and machine learning, and discuss various aspects of these topics, e.g., technological considerations, product implementation, and application issues.

This volume, in conjunction with the two volumes LNCS 4681 and LNCS 4682, constitutes the refereed proceedings of the Third International Conference on Intelligent Computing held in Qingdao, China, in August 2007. The conference sought to establish contemporary intelligent computing techniques as an integral method that underscores trends in advanced computational intelligence and links theoretical research with applications.

This book systematically synthesizes research achievements in the field of fuzzy neural networks in recent years. It also provides a comprehensive presentation of the developments in fuzzy neural networks, with regard to theory as well as their application to system modeling and image restoration. Special emphasis is placed on the fundamental concepts and architecture analysis of fuzzy neural networks. The book is unique in treating all kinds of fuzzy neural networks and their learning algorithms and universal approximations, and employing simulation examples which are carefully designed to help the reader grasp the underlying theory. This is a valuable reference for scientists and engineers working in mathematics, computer science, control or other fields related to information processing. It can also be used as a textbook for graduate courses in applied mathematics, computer science, automatic control and electrical engineering.

There are a myriad of mathematical problems that cannot be solved using traditional methods. The development of fuzzy expert systems has provided new opportunities for problem-solving amidst uncertainties. Fuzzy Systems: Concepts, Methodologies, Tools, and Applications is a comprehensive reference source on the latest scholarly research and developments in fuzzy rule-based methods and examines both theoretical foundations and real-world utilization of these logic sets. Featuring a range of extensive coverage across innovative topics, such as fuzzy logic, rule-based systems, and fuzzy analysis, this is an essential publication for scientists, doctors, engineers, physicians, and researchers interested in emerging perspectives and uses of fuzzy systems in various sectors.

PhD Dissertation of Fault Detection and Diagnosis on Induction Motors using FMM and CART

This book constitutes the thoroughly refereed proceedings of the 37th IFSA Conference, NAIPS 2018, held in Fortaleza, Brazil, in July 2018. The 55 full papers presented were carefully reviewed and selected from 73 submissions. The papers deal with a large spectrum of topics, including theory and applications of fuzzy numbers and sets, fuzzy logic, fuzzy inference systems, fuzzy clustering, fuzzy pattern classification, neuro-fuzzy systems, fuzzy control systems, fuzzy modeling, fuzzy mathematical morphology, fuzzy dynamical systems, time series forecasting, and making decision under uncertainty.

The extensively revised and updated edition provides a logical and easy-to-follow progression through C++ programming for two of the most popular technologies for artificial intelligence--neural and fuzzy programming. The authors cover theory as well as practical examples, giving programmers a solid foundation as well as working examples with reusable code.

This book presents new trends and developments in soft computing techniques. Topics include: neural networks, fuzzy systems, evolutionary computation, knowledge discovery, rough sets, and hybrid methods. It also covers various applications of soft computing techniques in economics, mechanics, medicine, automatics and image processing. The book contains contributions from internationally recognized scientists, such as Zadeh, Bubnicki, Pawlak, Amari, Batyrshin, Hirota, Kocz, Kosinski, Novák, S.-Y. Lee, Pedrycz, Raudys, Setiono, Sincak, Strumillo, Takagi, Usui, Wlamanowski and Zurada. An excellent overview of soft computing methods and their applications.

This book features papers presented at the International Conference on Advances in Information and Communication Technology (ICTA 2016), which was held in Thai Nguyen city, Vietnam, from December 1 to 13, 2016. The conference was jointly organized by Thai Nguyen University of Information and Communication Technology (ICTU), the Institute of Information Technology – Vietnam Academy of Science and Technology (IoIT), Feng Chia University, Taiwan (FCU), the Japan Advanced Institute of Science and Technology (JAIST) and the National Chung Cheng University, Taiwan (CCU) with the aim of bringing together researchers, academics, practitioners and students to not only share research results and practical applications but also to foster collaboration in information and communication technology research and education. The book includes the 66 best peer-reviewed papers, selected from the 150 submissions received.

The three volume set LNCS 4232, LNCS 4233, and LNCS 4234 constitutes the refereed proceedings of the 13th International Conference on Neural Information Processing, ICONIP 2006, held in Hong Kong, China in October 2006. The 386 revised full papers presented were carefully reviewed and selected from 1175 submissions.

The 2005 Virtual International Conference on IPROMS took place on the Internet between 4 and 15 July 2005. IPROMS 2005 was an outstanding success. During the Conference, some 4168 registered delegates and guests from 71 countries participated in the Conference, making it a truly global phenomenon. This book contains the Proceedings of IPROMS 2005. The 107 peer-reviewed technical papers presented at the Conference have been grouped into twelve sections, the last three featuring contributions selected for IPROMS 2005 by Special Sessions chairmen: - Collaborative and Responsive Manufacturing Systems - Concurrent Engineering - E-manufacturing - E-business and Virtual Enterprises - Intelligent Automation Systems - Intelligent Decision Support Systems - Intelligent Design Systems - Intelligent Planning and Scheduling Systems - Mechatronics - Reconfigurable Manufacturing Systems - Tangible Acoustic Interfaces (Tai Chi) - Innovative Production Machines and Systems - Intelligent and Competitive Manufacturing Engineering

Data mining analysis techniques have undergone significant developments in recent years. This has led to improved uses throughout numerous functions and applications. Intelligent Multidimensional Data Clustering and Analysis is an authoritative reference source for the latest scholarly research on the advantages and challenges presented by the use of cluster analysis techniques. Highlighting theoretical foundations, computing paradigms, and real-world applications, this book is ideally designed for researchers, practitioners, upper-level students, and professionals interested in the latest developments in cluster analysis for large data sets.

This volume presents an interesting mix of topics on complex systems such as information systems, engineering systems, fuzzy neural systems, image processing, robotics, fuzzy control, genetic algorithms, and fuzzy decision making. The contributions come from 12

This textbook is intended for a first-year graduate course on Artificial Neural Networks. It assumes no prior background in the subject and is directed to MS students in electrical engineering, computer science and related fields, with background in at least one programming language or in a programming tool such as Matlab, and who have taken the basic undergraduate classes in systems or in signal processing.

This book constitutes the refereed proceedings of the First International Conference on Smart Trends in Information Technology and Computer Communications, SmartCom 2016, held in Jaipur, India, in August 2016. The 106 revised papers presented were carefully reviewed and selected from 469 submissions. The papers address issues on smart and secure systems; technologies for digital world; data centric approaches; applications for e-agriculture and e-health; products and IT innovations; research for knowledge computing.

Containing twenty six contributions by experts from all over the world, this book presents both research and review material describing the evolution and recent developments of various pattern recognition methodologies, ranging from statistical, linguistic, fuzzy-set-theoretic, neural, evolutionary computing and rough-set-theoretic to hybrid soft computing, with significant real-life applications. Pattern Recognition and Big Data provides state-of-the-art classical and modern approaches to pattern recognition and mining, with extensive real life applications. The book describes efficient soft and robust machine learning algorithms and granular computing techniques for data mining and knowledge discovery; and the issues associated with handling Big Data. Application domains considered include bioinformatics, cognitive machines (or machine mind developments), biometrics, computer vision, the e-nose, remote sensing and social network analysis.

This two-volume set (CCIS 1147, CCIS 1148) constitutes the refereed proceedings of the 4th International Conference on Computer Vision and Image Processing, held in Jaipur, India, in September 2019. The 73 full papers and 10 short papers were carefully reviewed and selected from 202 submissions. The papers are organized by the topical headings in two parts. Part I: Biometrics; Computer Forensic; Computer Vision; Dimension Reduction; Healthcare Information Systems; Image Processing; Image segmentation; Information Retrieval; Instance based learning; Machine Learning.Part II: Neural Network; Object Detection; Object Recognition; Online Handwriting Recognition; Optical Character Recognition; Security and Privacy; Unsupervised Clustering.

Annotation The three volume set LNCS 4491/4492/4493 constitutes the refereed proceedings of the 4th International Symposium on Neural Networks, ISNN 2007, held in Nanjing, China in June 2007. The 262 revised long papers and 192 revised short papers presented were carefully reviewed and selected from a total of 1,975 submissions. The papers are organized in topical sections on neural fuzzy control, neural networks for control applications, adaptive dynamic programming and reinforcement learning, neural networks for nonlinear systems modeling, robotics, stability analysis of neural networks, learning and approximation, data mining and feature extraction, chaos and synchronization, neural fuzzy systems, training and learning algorithms for neural networks, neural network structures, neural networks for pattern recognition, SOMs, ICA/PCA, biomedical applications, feedforward neural networks, recurrent neural networks, neural networks for optimization, support vector machines, fault diagnosis/detection, communications and signal processing, image/video processing, and applications of neural networks.

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