
Neural Network Applications In Electrical Engineering

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Advanced Applications for Artificial Neural Networks

McGraw-Hill College

In this book, highly qualified multidisciplinary scientists grasp their recent researches motivated by the importance of artificial neural networks. It addresses advanced applications and innovative case studies for the next-generation optical networks based on modulation recognition using artificial neural networks, hardware ANN for gait generation of multi-legged robots, production of high-resolution soil property ANN maps, ANN and dynamic factor models to combine forecasts, ANN

parameter recognition of engineering constants in Civil Engineering, ANN electricity consumption and generation forecasting, ANN for advanced process control, ANN breast cancer detection, ANN applications in biofuels, ANN modeling for manufacturing process optimization, spectral interference correction using a large-size spectrometer and ANN-based deep learning, solar radiation ANN prediction using NARX model, and ANN data assimilation for an atmospheric general circulation model.

Devices, Circuits and Applications Institute of Electrical & Electronics Engineers (IEEE)

The NEUREL conferences have been organized as biennial events, to allow scientists, experts, and engineers working in diverse areas related to the field of

neural networks and fuzzy systems Contributions in statistical learning algorithms, text web analysis, biological and machine vision, and man machine interfaces are welcome Topics in speech, image and signal processing, classification, and process control, which are not strictly related to NNs, are of interest too

NEUREL 2008 BoD – Books on Demand

This book is a part of the Proceedings of the Seventh International Symposium on Neural Networks (ISNN 2010), held on June 6-9, 2010 in Shanghai, China. Over the past few years, ISNN has matured into a well-established premier international symposium on neural networks and related fields, with a successful sequence

of ISSN series in Dalian (2004), Chongqing (2005), Chengdu (2006), Nanjing (2007), Beijing (2008), and Wuhan (2009). Following the tradition of ISSN series, ISSN 2010 provided a high-level international forum for scientists, engineers, and educators to present the state-of-the-art research in neural networks and related fields, and also discuss the major opportunities and challenges of future neural network research. Over the past decades, the neural network community has witnessed significant breakthroughs and developments from all aspects of neural network research, including theoretical foundations, architectures, and network organizations, modeling and simulation, empirical studies, as well as a wide range of applications across different domains. The recent developments of science and technology, including neuroscience, computer science, cognitive science, nano-technologies and engineering design, among others, has provided significant new understandings and technological solutions to move the neural network research toward the development of complex, large scale, and networked brain-like intelligent systems. This long-term goals can only be achieved with the continuous efforts from the community to seriously investigate various issues on

neural networks and related topics.

Artificial Neural Networks for Engineering Applications IET Artificial Neural Networks for Engineering Applications presents current trends for the solution of complex engineering problems that cannot be solved through conventional methods. The proposed methodologies can be applied to modeling, pattern recognition, classification, forecasting, estimation, and more. Readers will find different methodologies to solve various problems, including complex nonlinear systems, cellular computational networks, waste water treatment, attack detection on cyber-physical systems, control of UAVs, biomechanical and biomedical systems, time series forecasting, biofuels, and more. Besides the real-time implementations, the book contains all the theory required to use the proposed methodologies for different applications. Presents the current trends for the solution of complex engineering

problems that cannot be solved through conventional methods. Includes real-life scenarios where a wide range of artificial neural network architectures can be used to solve the problems encountered in engineering. Contains all the theory required to use the proposed methodologies for different applications.

Neurel 2002 Springer Science & Business Media

This book is an introduction to some new fields in soft computing with its principal components of fuzzy logic, ANN and EA. The approach in this book is to provide an understanding of the soft computing field and to work through soft computing using examples. It also aims to integrate pseudo-code operational summaries and Matlab codes, to present computer simulation, to include real world applications and to highlight the distinctive work of human consciousness in machine.

2002 6th Seminar on

Neural Network Applications in Electrical Engineering CRC Press The NEUREL conferences have been organized as biennial events, to allow scientists, experts, and engineers working in diverse areas related to the field of neural networks and fuzzy systems Contributions in statistical learning algorithms, text web analysis, biological and machine vision, and man machine interfaces are welcome Topics in speech, image and signal processing, classification, and process control, which are not strictly related to NNs, are of interest too

Neural Network Applications in Electrical Engineering, 2006. NEUREL 2006. 8th Seminar on Springer Science & Business Media Introducing a wide variety of network types, including Kohonen nets, n-tuple nets and radial basis function networks as well as the more useful multilayer perception back-propagation networks, this book aims to give a detailed appreciation of the use of neural nets in these applications.

9th Symposium on Neural Network Applications in

Electrical Engineering, 2008 Elsevier Neural Network Applications in Control IET Neural Network Applications in Electrical Engineering, 2008. NEUREL 2008. 9th Symposium on CRC Press

The use of neural networks is permeating every area of signal processing. They can provide powerful means for solving many problems, especially in nonlinear, real-time, adaptive, and blind signal processing. The Handbook of Neural Network Signal Processing brings together applications that were previously scattered among various publications to provide an up-to-date, detailed treatment of the subject from an engineering point of view. The authors cover basic principles, modeling, algorithms, architectures, implementation procedures, and well-designed simulation examples of audio, video, speech, communication, geophysical, sonar, radar, medical, and many other signals. The subject of neural networks and their application to signal

processing is constantly improving. You need a handy reference that will inform you of current applications in this new area. The Handbook of Neural Network Signal Processing provides this much needed service for all engineers and scientists in the field.

Proceedings of the 5th Seminar on Neural Network Applications in Electrical Engineering

Neural Network Applications in Control Accurate, fast, and reliable fault classification techniques are an important operational requirement in modern-day power transmission systems. Application of Signal Processing Tools and Neural Network in Diagnosis of Power System Faults examines power system faults and conventional techniques of fault analysis. The authors provide insight into artificial neural networks and their applications, with illustrations, for identifying power system faults. Wavelet transform and its application are discussed as well as an

elaborate method of Stockwell transform. The authors also employ probabilistic neural networks (PNN) and back propagation neural networks (BPNN) to identify the different types of faults and determine their corresponding locations, respectively. Both PNN and BPNN are presented in detail, and their applications are illustrated through simple programming in MATLAB®. Furthermore, their applications in fault diagnosis are discussed through multiple case studies. FEATURES Explores methods of fault identification through programming and simulation in MATLAB® Examines signal processing tools and their applications with examples Provides knowledge of artificial neural networks and their application with illustrations Uses PNN and BPNN to identify the different types of faults and obtain their corresponding locations Discusses the programming of signal processing using

wavelet transform and Stockwell transform This book is designed for engineering students and for practitioners. Readers will find methods of programming and simulation of any network in MATLAB® as well as ways to extract features from a signal waveform by using a suitable signal processing toolbox and by application of artificial neural networks. Proceedings of the 5th Seminar on Neural Network Applications in Electrical Engineering Academic Press This volume covers practical and effective implementation techniques, including recurrent methods, Boltzmann machines, constructive learning with methods for the reduction of complexity in neural network systems, modular systems, associative memory, neural network design based on the concept of the Inductive Logic Unit, and a comprehensive treatment of implementations in the area of data classification. Numerous examples enhance the

text. Practitioners, researchers, and students in engineering and computer science will find Implementation Techniques a comprehensive and powerful reference. Key Features * Recurrent methods * Boltzmann machines * Constructive learning with methods for the reduction of complexity in neural network systems * Modular systems * Associative memory * Neural network design based on the concept of the Inductive Logic Unit * Data classification * Integrated neuron model systems that function as programmable rational approximators With numerous examples to enhance the text, practitioners, researchers, and students in engineering and computer science will find Implementation Techniques a uniquely comprehensive and powerful reference source NEUREL 2006 : 2004 Eight [i.e. Eighth] Seminar on Neural Network Applications in Electrical Engineering : September 25-27, 2006, Faculty of Electrical Engineering, University of Belgrade : Proceedings

CRC Press

This volume contains the proceedings of the 5th Seminar on Neural Network Applications in Electrical Engineering (NEUREL '99)

NEUREL-2010 Academic Press

Power Electronics and Motor Drives: Advances and Trends, Second Edition is the perfect resource to keep the electrical engineer up-to-speed on the latest advancements in technologies, equipment and applications. Carefully structured to include both traditional topics for entry-level and more advanced applications for the experienced engineer, this reference sheds light on the rapidly growing field of power electronic operations. New content covers converters, machine models and new control methods such as fuzzy logic and neural network control. This reference will help engineers further understand recent technologies and gain practical understanding with its inclusion of many industrial applications. Further supported by a glossary per chapter, this book gives engineers and researchers a critical reference to learn from real-world examples and make future decisions on power electronic technology and applications. Provides many practical examples of

industrial applications

Updates on the newest electronic topics with content added on fuzzy logic and neural networks Presents information from an expert with decades of research and industrial experience

2010 10th Symposium on Neural Network Applications in Electrical Engineering (NEUREL 2010)

Institute of Electrical & Electronics

Engineers(IEEE)

Applications of Neural Networks gives a detailed description of

13 practical applications of neural networks, selected because the tasks

performed by the neural networks are real and significant.

The contributions are from leading

researchers in neural networks and, as a whole, provide a

balanced coverage across a range of

application areas and algorithms. The book is

divided into three sections. Section A is

an introduction to neural networks for nonspecialists. Section

B looks at examples of applications using

'Supervised Training'.

Section C presents a number of examples of

'Unsupervised Training'. For neural network enthusiasts and interested, open-minded sceptics. The book leads the latter through the fundamentals into a convincing and varied series of neural success stories -- described carefully and honestly without over-claiming. Applications of Neural Networks is essential reading for all researchers and designers who are tasked with using neural networks in real life applications.

'Supervised Training'.

Section C presents a number of examples of

'Unsupervised

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series of neural success stories -- described

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tasked with using neural networks in real life

applications.

NEUREL 2008 ; 25 - 27

Sept. 2008, Belgrade IGI Global

Power electronics, which is a rapidly growing area

in terms of research and applications, uses modern

electronics technology to convert electric power

from one form to another, such as ac-dc, dc-dc, dc-

ac, and ac-ac with a variable output magnitude

and frequency. Power electronics has many

applications in our every day life such as air-

conditioners, electric cars, sub-way trains, motor drives, renewable

energy sources and power supplies for computers. This book covers all aspects of switching devices, converter circuit topologies, control techniques, analytical methods and some examples of their applications. * 25% new content * Reorganized and revised into 8 sections comprising 43 chapters * Coverage of numerous applications, including uninterruptable power supplies and automotive electrical systems * New content in power generation and distribution, including solar power, fuel cells, wind turbines, and flexible transmission

NEUREL 2000 Springer Science & Business Media

The first book of its kind, *Power Converters and AC Electrical Drives with Linear Neural Networks* systematically explores the application of neural networks in the field of power electronics, with particular emphasis on the sensorless control of AC drives. It presents the classical theory based on space-vectors in identification, discusses control of electrical drives and power converters, and examines improvements that can be attained when using linear neural networks. The book integrates power

electronics and electrical drives with artificial neural networks (ANN). Organized into four parts, it first deals with voltage source inverters and their control. It then covers AC electrical drive control, focusing on induction and permanent magnet synchronous motor drives. The third part examines theoretical aspects of linear neural networks, particularly the neural EXIN family. The fourth part highlights original applications in electrical drives and power quality, ranging from neural-based parameter estimation and sensorless control to distributed generation systems from renewable sources and active power filters. Simulation and experimental results are provided to validate the theories. Written by experts in the field, this state-of-the-art book requires basic knowledge of electrical machines and power electronics, as well as some familiarity with control systems, signal processing, linear algebra, and numerical analysis. Offering multiple paths through the material, the text is suitable for undergraduate and postgraduate students, theoreticians, practicing engineers, and researchers involved in applications of ANNs.

Neural Network Applications in Electrical Engineering (NEUREL), 2010 10th Symposium on

Tata McGraw-Hill Education

Artificial neural networks (ANNs) present many benefits in analyzing complex data in a proficient manner. As an effective and efficient problem-solving method, ANNs are incredibly useful in many different fields. From education to medicine and banking to engineering, artificial neural networks are a growing phenomenon as more realize the plethora of uses and benefits they provide. Due to their complexity, it is vital for researchers to understand ANN capabilities in various fields. The *Research Anthology on Artificial Neural Network Applications* covers critical topics related to artificial neural networks and their multitude of applications in a number of diverse areas including medicine, finance, operations research, business, social media, security, and more. Covering everything from the applications and uses of artificial neural networks to deep learning and non-linear problems, this book is ideal for computer scientists, IT specialists, data scientists,

technologists, business owners, engineers, government agencies, researchers, academicians, and students, as well as anyone who is interested in learning more about how artificial neural networks can be used across a wide range of fields.

Power Electronics
Handbook

Proceedings of the 6th
Seminar on Neural
Network Applications in
Electrical Engineering

2010 10th Symposium on
Neural Network
Applications in Electrical
Engineering :
Proceedings : Faculty of
Electrical Engineering,
University of Belgrade,
September 23-25, 2010,
Belgrade Serb a