
Engineering Applications Of Neural Networks 11th International Conference Eann 2009 London Uk August 27 29 2009 Proceedings Communications In Computer And Information Science

Proceedings of the 21st EANN (Engineering Applications of Neural Networks) 2020 Conference

Handbook of Neural Network Signal Processing

Artificial Intelligence in the Age of Neural Networks and Brain Computing

Artificial Neural Networks in Hydrology

Artificial Higher Order Neural Networks for Computer Science and Engineering: Trends for Emerging Applications

Neural Networks: Computational Models and Applications

Neural Networks for Applied Sciences and Engineering

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Engineering Applications of Neural Networks

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Proceedings of the 21st EANN (Engineering Applications of Neural Networks) 2020 Conference Academic Press
 Neural networks have received a great deal of attention among scientists and engineers. In chemical engineering, neural computing has moved from pioneering projects toward mainstream industrial applications. This book introduces the fundamental principles of neural computing, and is

the first to focus on its practical applications in bioprocessing and chemical engineering. Examples, problems, and 10 detailed case studies demonstrate how to develop, train, and apply neural networks. A disk containing input data files for all illustrative examples, case studies, and practice problems provides the opportunity for hands-on experience. An important goal of the book is to help the student or practitioner learn and implement neural networks quickly and inexpensively using commercially available, PC-based software tools. Detailed network specifications and training procedures are included for all neural network examples discussed in the book.

Handbook of Neural Network Signal

Processing ASCE Publications
 Differential equations play a vital role in the fields of engineering and science. Problems in engineering and science can be modeled using ordinary or partial differential equations. Analytical solutions of differential equations may not be obtained easily, so numerical methods have been developed to handle them. Machine intelligence methods, such as Artificial Neural Networks (ANN), are being used to solve differential equations, and these methods are presented in *Artificial Neural Networks for Engineers and Scientists: Solving Ordinary Differential Equations*. This book shows how computation of differential equation becomes faster once the ANN model is properly

developed and applied.
Artificial Intelligence in the Age of Neural Networks and Brain Computing Springer Science & Business Media
 This book is designed to enable the reader to design and run a neural network-based project. It presents everything the reader will need to know to ensure the success of such a project. The book contains a free disk with C and C++ programs, which implement many of the techniques discussed in the book.

Artificial Neural Networks in Hydrology IET
 This book constitutes the refereed proceedings of the 25th International Conference on Engineering Applications of Neural Networks, EANN 2024, held in Corfu, Greece, during June 27-30, 2024. The 41 full and 2 short papers included in this book were carefully reviewed and selected from 85 submissions. They deal with reinforcement; natural language; biomedical applications; classification; deep learning; convolutional neural networks.
Artificial Higher Order Neural Networks for Computer Science and Engineering: Trends for Emerging Applications IGI

Global
 In today's modernized market, various disciplines continue to search for universally functional technologies that improve upon traditional processes. Artificial neural networks are a set of statistical modeling tools that are capable of processing nonlinear data with strong accuracy. Due to their complexity, utilizing their potential was previously seen as a challenge. However, with the development of artificial intelligence, this technology has proven to be an effective and efficient problem-solving method. Artificial Neural Network Applications in Business and Engineering is an essential reference source that illustrates recent advancements of artificial neural networks in various professional fields, accompanied by specific case studies and practical examples. Featuring research on topics such as training algorithms, transportation, and computer security, this book is ideally designed for researchers, students, developers, managers, engineers, academicians, industrialists, policymakers, and educators seeking

coverage on modern trends in artificial neural networks and their real-world implementations.
Neural Networks: Computational Models and Applications IGI Global
 This tutorial text provides the reader with an understanding of artificial neural networks (ANNs), and their application, beginning with the biological systems which inspired them, through the learning methods that have been developed, and the data collection processes, to the many ways ANNs are being used today. The material is presented with a minimum of math (although the mathematical details are included in the appendices for interested readers), and with a maximum of hands-on experience. All specialized terms are included in a glossary. The result is a highly readable text that will teach the engineer the guiding principles necessary to use and apply artificial neural networks.
Neural Networks for Applied Sciences and Engineering Springer Science & Business Media
 This book is a follow-up to the IChemE symposium on "Neural Networks and

Other Learning Technologies”, held at Imperial College, UK, in May 1999. The interest shown by the participants, especially those from the industry, has been instrumental in producing the book. The papers have been written by contributors of the symposium and experts in this field from around the world. They present all the important aspects of neural network utilisation as well as show the versatility of neural networks in various aspects of process engineering problems — modelling, estimation, control, optimisation and industrial applications.

Functional Networks with Applications Academic Press

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Background and Motivation The basic notion of artificial neural networks (ANNs), as we understand them today, was perhaps first formalized by McCulloch and Pitts (1943) in their model of an artificial neuron. Research in this field remained somewhat dormant in the early years, perhaps because of the limited capabilities of

this method and because there was no clear indication of its potential uses. However, interest in this area picked up momentum in a dramatic fashion with the works of Hopfield (1982) and Rumelhart et al. (1986). Not only did these studies place artificial neural networks on a firmer mathematical footing, but also opened the door to a host of potential applications for this computational tool. Consequently, neural network computing has progressed rapidly along all fronts: theoretical development of different learning algorithms, computing capabilities, and applications to diverse areas from neurophysiology to the stock market. Initial studies on artificial neural networks were prompted by a desire to have computers mimic human learning. As a result, the jargon associated with the technical literature on this subject is replete with expressions such as excitation and inhibition of neurons, strength of synaptic connections, learning rates, training, and network experience. ANNs have also been referred to as neurocomputers by people who want to

preserve this analogy.

Applications of Pulse-Coupled Neural

Networks IGI Global
This book gathers the proceedings of the 21st Engineering Applications of Neural Networks Conference, which is supported by the International Neural Networks Society (INNS). Artificial Intelligence (AI) has been following a unique course, characterized by alternating growth spurts and “AI winters.” Today, AI is an essential component of the fourth industrial revolution and enjoying its heyday. Further, in specific areas, AI is catching up with or even outperforming human beings. This book offers a comprehensive guide to AI in a variety of areas, concentrating on new or hybrid AI algorithmic approaches with robust applications in diverse sectors. One of the advantages of this book is that it includes robust algorithmic approaches and applications in a broad spectrum of scientific fields, namely the use of convolutional neural networks (CNNs), deep learning and LSTM in robotics/machine vision/engineering/image processing/medical

systems/the environment; machine learning and meta learning applied to neurobiological modeling/optimization; state-of-the-art hybrid systems; and the algorithmic foundations of artificial neural networks.

Engineering Applications of Neural Networks

IGI Global
The aim of this book is to handle different application problems of science and engineering using expert Artificial Neural Network (ANN). As such, the book starts with basics of ANN along with different mathematical preliminaries with respect to algebraic equations. Then it addresses ANN based methods for solving different algebraic equations viz. polynomial equations, diophantine equations, transcendental equations, system of linear and nonlinear equations, eigenvalue problems etc. which are the basic equations to handle the application problems mentioned in the content of the book. Although there exist various methods to handle these problems, but sometimes those may be problem dependent and may fail to give a converge solution with particular discretization. Accordingly, ANN based

methods have been addressed here to solve these problems. Detail ANN architecture with step by step procedure and algorithm have been included. Different example problems are solved with respect to various application and mathematical problems. Convergence plots and/or convergence tables of the solutions are depicted to show the efficacy of these methods. It is worth mentioning that various application problems viz. Bakery problem, Power electronics applications, Pole placement, Electrical Network Analysis, Structural engineering problem etc. have been solved using the ANN based methods.

Fuzzy Engineering Expert Systems with Neural Network Applications
Springer Science & Business Media

This book introduces readers to the Artificial Neural Network (ANN) and Hybrid Neural (HN) models: two effective tools, which can be exploited to design and control industrial processes. Different topics including modeling, simulation and process design are covered. More efficient analyses and descriptions of real case studies, ranging from

membrane technology to the obtaining of second-generation biofuels are also provided. One of the major advantages of the described techniques is represented by the possibility of obtaining accurate predictions of complex systems, whose behaviors might be difficult to describe by conventional first-principle models. One of the major impacts of the present book is to show the true interactions and interconnectivities among different topics belonging to chemical, bio-chemical engineering, energy, bio-processes and bio-technique research fields. Some of the main goals are here are to provide a deep and detailed knowledge about the main features of both ANN and HN models, and to iterate possible topologies to integrate in these ANN and mechanistic models; to cover a wide spectrum of different problems as well as innovative and unconventional modeling techniques; to show how various kinds of advanced models can be exploited either to predict the behavior or to optimize the performance of real processes.

Neural Network Applications in Control
Springer

Artificial neural networks have been recognized as a powerful tool to learn and reproduce systems in various fields of applications. Neural networks are inspired by the brain behavior and consist of one or several layers of neurons, or computing units, connected by links. Each artificial neuron receives an input value from the input layer or the neurons in the previous layer. Then it computes a scalar output from a linear combination of the received inputs using a given scalar function (the activation function), which is assumed the same for all neurons. One of the main properties of neural networks is their ability to learn from data. There are two types of learning: structural and parametric. Structural learning consists of learning the topology of the network, that is, the number of layers, the number of neurons in each layer, and what neurons are connected. This process is done by trial and error until a good fit to the data is obtained. Parametric learning consists of learning the weight values for a given topology of the network. Since the neural functions are given, this learning process is achieved by estimating

the connection weights based on the given information. To this aim, an error function is minimized using several well known learning methods, such as the backpropagation algorithm. Unfortunately, for these methods: (a) The function resulting from the learning process has no physical or engineering interpretation. Thus, neural networks are seen as black boxes.

Applying Neural Networks
SPIE Press

This book contains the proceedings of the 22nd EANN "Engineering Applications of Neural Networks" 2021 that comprise of research papers on both theoretical foundations and cutting-edge applications of artificial intelligence. Based on the discussed research areas, emphasis is given in advances of machine learning (ML) focusing on the following algorithms-approaches: Augmented ML, autoencoders, adversarial neural networks, blockchain-adaptive methods, convolutional neural networks, deep learning, ensemble methods, learning-federated learning, neural networks, recurrent - long short-term memory. The

application domains are related to: Anomaly detection, bio-medical AI, cyber-security, data fusion, e-learning, emotion recognition, environment, hyperspectral imaging, fraud detection, image analysis, inverse kinematics, machine vision, natural language, recommendation systems, robotics, sentiment analysis, simulation, stock market prediction.

Proceedings of the 22nd Engineering Applications of Neural Networks Conference

Springer

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.

Engineering Applications of Neural Networks CRC Press

This book constitutes the refereed proceedings of the 24th International Conference on Engineering Applications of Neural Networks, EANN 2023, held in León, Spain, in June 2023. The 41 revised full papers and 8 revised short papers presented were carefully reviewed and selected from 125 submissions. The papers are organized in topical sections on artificial intelligence - computational methods - ethology; classification - filtering - genetic algorithms; complex dynamic networks' optimization/ graph neural networks; convolutional neural networks/spiking

neural networks; deep learning modeling; deep/machine learning in engineering; LEARNING (reinforcement - federated - adversarial - transfer); natural language - recommendation systems.

Advances in Neural Network Research and Applications Morgan Kaufmann

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. *Artificial Neural Networks* Springer Nature
 The high-speed capabilities and learning abilities of neural networks can be applied to quickly solving numerous complex optimization problems in electromagnetics, and this book shows you how. Even if you have no background in neural networks, this book helps you understand the basics of each main network architecture in use today, including its strengths and limitations. Moreover, it gives you the knowledge you need to identify situations when the use of neural networks is the best problem-solving option.

Engineering Applications of Neural Networks World Scientific

Sponsored by the Committee on Expert Systems and Artificial Intelligence of the Technical Council on Computer Practices of ASCE. This report illustrates advanced

methods and new developments in the application of artificial neural networks to solve problems in civil engineering. Topics include: Evaluating new construction technologies; Using multi-layered artificial neural network architecture to overcome problems with conventional traffic signal control systems; Increasing the computational efficiency of an optimization model; Predicting carbonation depth in concrete structures; Detecting defects in concrete piles; Analyzing pavement systems; Using neural network hybrids to select the most appropriate bidders for a construction project; and Predicting the Energy Performance Index of residential buildings. Many of the ideas and techniques discussed in this book cross across disciplinary boundaries and, therefore, should be of interest to all civil engineers.

Biomedical and Business Applications Using Artificial Neural Networks and Machine Learning 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 ISNN series in Dalian (2004), Chongqing (2005), Chengdu (2006), Nanjing (2007), Beijing (2008), and Wuhan (2009). Following the tradition of ISNN series, ISNN 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, nanotechnologies 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.

Engineering Applications of Neural Networks BoD – Books on Demand
Combines the study of neural networks and fuzzy systems with symbolic artificial intelligence (AI) methods to build comprehensive AI systems. Describes major AI problems (pattern recognition, speech recognition, prediction, decision-making, game-playing) and provides illustrative examples. Includes applications in engineering, business and finance.

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