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Neural Computing

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An Introduction to Neural Networks

Artificial Intelligence in the Age of Neural Networks and Brain Computing

Self-Organising Neural Networks

Neural Computing for Advanced Applications

An Introduction to Neural Computing
Neural Networks
Second-Order Methods for Neural Networks
Advances in Independent Component Analysis
Massively Parallel, Optical, and Neural Computing in the United States
Neural Computing Research and Applications, Proceedings of the Second Irish Neural Networks Conference, Queen's University, Belfast, Northern Ireland, 25-26 June 1992
Neurocomputers
Theory and Applications of Neural Networks
Quantum Neural Computation
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Advanced Methods in Neural Computing

Neural Computing *OMB No. 9074716205393 edited by*

UNDERWOOD BRADSHAW

Van Nostrand Reinhold Company

Both specialists and laymen will enjoy reading this book. Using a lively, non-technical style and images from everyday life, the authors present the basic principles behind computing and

computers. The focus is on those aspects of computation that concern networks of numerous small computational units, whether biological neural networks or artificial electronic devices.

An Introduction to Neural Networks

World Scientific

Though mathematical ideas underpin the study of neural networks, the author presents the fundamentals without the full mathematical apparatus. All aspects of the field are tackled, including artificial neurons as models of their real counterparts; the geometry of network action in pattern space; gradient descent methods, including back-propagation; associative memory and Hopfield nets; and self-organization and feature maps. The traditionally difficult topic of adaptive resonance theory is clarified within a hierarchical description of its operation. The book also includes several real-world examples to provide a concrete focus. This should enhance its appeal to those involved in the design, construction and management of networks in commercial environments and who wish to improve their understanding of network simulator packages. As a comprehensive and highly accessible introduction to one of the most important topics in cognitive and computer science, this volume should interest a wide range of readers, both students and professionals, in cognitive science, psychology, computer science and electrical engineering.

Artificial Intelligence in the

Age of Neural Networks and Brain Computing

Springer Nature
Organized by application areas, rather than by specific network architectures or learning algorithms, Building Neural Networks shows why certain networks are more suitable than others for solving specific kinds of problems. Skapura also reviews principles of neural information processing and furnishes an operations summary of the most popular neural-network processing models.

Self-Organising Neural Networks

Springer Science & Business Media
PCNNs represent a new advance in imaging technology, allowing images to be refined to levels well beyond that of the original. This volume provides an introduction to the topic by reviewing the theoretical foundations as well as a number of image processing applications, including segmentation, edge extraction, texture extraction, object identification, object isolation, motion processing, noise suppression, and image fusion. This is the first book to cover PCNN technology, an area which will have many applications in medical, military and industrial imaging.

Neural Computing for Advanced Applications

Springer Science & Business Media
This book presents refereed proceedings of the Second International Conference Neural Computing for Advanced

Applications, NCAA 2021, held in Guangzhou, China, in August, 2021. The 54 full papers papers were thorougly reviewed and selected from a total of 144 qualified submissions. The papers are organized in topical sections on neural network theory, cognitive sciences, neuro-system hardware implementations, and NN-based engineering applications; machine learning, data mining, data security and privacy protection, and data-driven applications; neural computing-based fault diagnosis, fault forecasting, prognostic management, and system modeling; computational intelligence, nature-inspired optimizers, and their engineering applications; fuzzy logic, neuro-fuzzy systems, decision making, and their applications in management sciences; control systems, network synchronization, system integration, and industrial artificial intelligence; computer vision, image processing, and their industrial applications; cloud/edge/fog computing, the Internet of Things/Vehicles(IoT/IoV), and their system optimization; spreading dynamics, forecasting, and other intelligent techniques against coronavirus disease (COVID-19).

An Introduction to Neural Computing

Academic Press

This monograph is an outgrowth of the authors' recent research on the de velopment of algorithms for several low-level vision problems using artificial neural networks. Specific problems considered are static and motion stereo, computation of optical flow, and

deblurring an image. From a mathematical point of view, these inverse problems are ill-posed according to Hadamard. Researchers in computer vision have taken the "regularization" approach to these problems, where one comes up with an appropriate energy or cost function and finds a minimum. Additional constraints such as smoothness, integrability of surfaces, and preservation of discontinuities are added to the cost function explicitly or implicitly. Depending on the nature of the inver sion to be performed and the constraints, the cost function could exhibit several minima. Optimization of such nonconvex functions can be quite involved. Although progress has been made in making techniques such as simulated annealing computationally more reasonable, it is our view that one can often find satisfactory solutions using deterministic optimization algorithms.

Neural Networks Springer Science & Business Media

The second edition of this text has been updated and includes material on new developments including neurocontrol, pattern analysis and dynamic systems. The book should be useful for undergraduate students of neural networks.

Second-Order Methods for Neural Networks Oxford University Press, USA

Soft computing comprises various paradigms dedicated to approximately solving real-world problems, e.g. in decision making, classification or learning; among these paradigms are

fuzzy sets, rough sets, neural networks, genetic algorithms, and others. It is well understood now in the soft computing community that hybrid approaches combining various paradigms are very promising approaches for solving complex problems. Exploiting the potential and strength of both neural networks and rough sets, this book is devoted to rough-neuro computing which is also related to the novel aspect of computing based on information granulation, in particular to computing with words. It provides foundational and methodological issues as well as applications in various fields.

Advances in Independent Component Analysis Springer Science & Business Media

The results of current research in a truly wide range of disciplines are detailed in over thirty papers in this volume. The first section includes research on biological and pyschological issues, together with recent results on the design of neural network architectures and algorithms important for further advances in neural network modelling. Those in the second section provide an account of the wide [Bnge of applications for neural nets in industry, commerce, medical diagnosis and psychological modelling, and indicate where future opportunities for their applications exist. This volume will provide a valuable reference source for researchers in the field.

Massively Parallel, Optical, and Neural Computing in the United States Academic Press

The second edition of this text has been updated and includes material on new developments including neurocontrol, pattern analysis and dynamic systems. The book should be useful for undergraduate students of neural networks.

Neural Computing Research and Applications, Proceedings of the Second Irish Neural Networks Conference, Queen's University, Belfast, Northern Ireland, 25-26 June 1992 Springer Science & Business Media

This book focuses on neuro-engineering and neural computing, a multi-disciplinary field of research attracting considerable attention from engineers, neuroscientists, microbiologists and material scientists. It explores a range of topics concerning the design and development of innovative neural and brain interfacing technologies, as well as novel information acquisition and processing algorithms to make sense of the acquired data. The book also highlights emerging trends and advances regarding the applications of neuro-engineering in real-world scenarios, such as neural prostheses, diagnosis of neural degenerative diseases, deep brain stimulation, biosensors, real neural network-inspired artificial neural networks (ANNs) and the predictive modeling of information flows in neuronal networks. The book is broadly divided into three main sections including: current trends in technological developments, neural computation techniques to make sense of the neural

behavioral data, and application of these technologies/techniques in the medical domain in the treatment of neural disorders.

NEUROCOMPUTERS

Kluwer Academic Publishers
This book is the outcome of the International Symposium on Neural Networks for Sensory and Motor Systems (NSMS) held in March 1990 in the FRG. The NSMS symposium assembled 45 invited experts from Europe, America and Japan representing the fields of Neuroinformatics, Computer Science, Computational Neuroscience, and Neuroscience. As a rapidly-published report on the state of the art in Neural Computing it forms a reference book for future research in this highly interdisciplinary field and should prove useful in the endeavor to transfer concepts of brain function and structure to novel neural computers with adaptive, dynamical neural net topologies. A feature of the book is the completeness of the references provided. An alphabetical list of all references quoted in the papers is given, as well as a separate list of general references to help newcomers to the field. A subject index and author index also facilitate access to various details.
Theory and Applications of Neural Networks World Scientific
This book presents a collection of contributions in the field of Artificial Neural Networks (ANNs). The themes addressed are multidisciplinary in nature, and closely connected in their

ultimate aim to identify features from dynamic realistic signal exchanges and invariant machine representations that can be exploited to improve the quality of life of their end users. Mathematical tools like ANNs are currently exploited in many scientific domains because of their solid theoretical background and effectiveness in providing solutions to many demanding tasks such as appropriately processing (both for extracting features and recognizing) mono- and bi-dimensional dynamic signals, solving strong nonlinearities in the data and providing general solutions for deep and fully connected architectures. Given the multidisciplinary nature of their use and the interdisciplinary characterization of the problems they are applied to – which range from medicine to psychology, industrial and social robotics, computer vision, and signal processing (among many others) – ANNs may provide a basis for redefining the concept of information processing. These reflections are supported by theoretical models and applications presented in the chapters of this book. This book is of primary importance for: (a) the academic research community, (b) the ICT market, (c) PhD students and early-stage researchers, (d) schools, hospitals, rehabilitation and assisted-living centers, and (e) representatives of multimedia industries and standardization bodies.

Quantum Neural Computation

Elsevier

Following the intense research activIties of the last decade, artificial neural

networks have emerged as one of the most promising new technologies for improving the quality of healthcare. Many successful applications of neural networks to biomedical problems have been reported which demonstrate, convincingly, the distinct benefits of neural networks, although many ofthese have only undergone a limited clinical evaluation. Healthcare providers and developers alike have discovered that medicine and healthcare are fertile areas for neural networks: the problems here require expertise and often involve non-trivial pattern recognition tasks - there are genuine difficulties with conventional methods, and data can be plentiful. The intense research activities in medical neural networks, and allied areas of artificial intelligence, have led to a substantial body of knowledge and the introduction of some neural systems into clinical practice. An aim of this book is to provide a coherent framework for some of the most experienced users and developers of medical neural networks in the world to share their knowledge and expertise with readers.

Intro to Neutral Computing Academic Press

This book presents refereed proceedings of the First International Conference on Neural Computing for Advanced Applications, NCAA 2020, held in July, 2020. Due to the COVID-19 pandemic the conference was held online. The 36 full papers and 7 short papers were thorougly reviewed and selected from a total of 113 qualified submissions. The papers present resent research on such

topics as neural network theory, and cognitive sciences, machine learning, data mining, data security & privacy protection, and data-driven applications, computational intelligence, nature-inspired optimizers, and their engineering applications, cloud/edge/fog computing, the Internet of Things/Vehicles (IoT/IoV), and their system optimization, control systems, network synchronization, system integration, and industrial artificial intelligence, fuzzy logic, neuro-fuzzy systems, decision making, and their applications in management sciences, computer vision, image processing, and their industrial applications, and natural language processing, machine translation, knowledge graphs, and their applications.

Neural Computing - An Introduction
Springer Science & Business Media
Neural computing is one of the most interesting and rapidly growing areas of research, attracting researchers from a wide variety of scientific disciplines. Starting from the basics, Neural Computing covers all the major approaches, putting each in perspective in terms of their capabilities, advantages, and disadvantages. The book also highlights the applications of each approach and explores the relationships among models developed and between the brain and its function. A comprehensive and comprehensible introduction to the subject, this book is ideal for undergraduates in computer science, physicists, communications engineers, workers involved in artificial

intelligence, biologists, psychologists, and physiologists.

Neural Computing for Advanced Applications Springer Nature

The theoretical foundations of Neural Networks and Analog Computation conceptualize neural networks as a particular type of computer consisting of multiple assemblies of basic processors interconnected in an intricate structure. Examining these networks under various resource constraints reveals a continuum of computational devices, several of which coincide with well-known classical models. On a mathematical level, the treatment of neural computations enriches the theory of computation but also explicated the computational complexity associated with biological networks, adaptive engineering tools, and related models from the fields of control theory and nonlinear dynamics. The material in this book will be of interest to researchers in a variety of engineering and applied sciences disciplines. In addition, the work may provide the base of a graduate-level seminar in neural networks for computer science students.

Advanced Methods in Neural Computing Springer Science & Business Media

The conception of fresh ideas and the development of new techniques for Blind Source Separation and Independent Component Analysis have been rapid in recent years. It is also encouraging, from the perspective of the many scientists involved in this fascinating area of research, to witness the growing list of

successful applications of these methods to a diverse range of practical everyday problems. This growth has been due, in part, to the number of promising young and enthusiastic researchers who have committed their efforts to expanding the current body of knowledge within this field of research. The author of this book is among one of their number. I trust that the present book by Dr. Mark Girolami will provide a rapid and effective means of communicating some of these new ideas to a wide international audience and that in turn this will expand further the growth of knowledge. In my opinion this book makes an important contribution to the theory of Independent Component Analysis and Blind Source Separation. This opens a range of exciting methods, techniques and algorithms for applied researchers and practitioner engineers, especially from the perspective of artificial neural networks and information theory. It has been interesting to see how rapidly the scientific literature in this area has grown.

Neural Networks and Analog Computation Springer Science & Business Media

A survey of products and research projects in the field of highly parallel, optical and neural computers in the USA. It covers operating systems, language projects and market analysis, as well as optical computing devices and optical connections of electronic parts.

Handbook of Neural Computation Addison-Wesley Professional

A detailed formulation of neural

networks from the information-theoretic viewpoint. The authors show how this perspective provides new insights into the design theory of neural networks. In particular they demonstrate how these methods may be applied to the topics of supervised and unsupervised learning, including feature extraction, linear and non-linear independent component analysis, and Boltzmann machines.

Readers are assumed to have a basic understanding of neural networks, but all the relevant concepts from information theory are carefully introduced and explained. Consequently, readers from varied scientific disciplines, notably cognitive scientists, engineers, physicists, statisticians, and computer scientists, will find this an extremely valuable introduction to this topic.