Applications Of Artificial Neural Networks In Civil Engineering

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 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.Ø Topics include: Øevaluating new construction technologies; Øusing multi-layeredØartificial neural networkØarchitecture to overcome problems with conventional traffic signal control systems; Øincreasing the computational efficiency of an optimization model; Øpredicting carbonation depth in concrete structures; Ødetecting defects in concrete piles; Øanalyzing pavement systems; Øusing neural network hybrids to select the most appropriate bidders for a construction project; and Øpredicting the Energy Performance Index of residential buildings. ØMany of the ideas and techniques discussed in this book cross across disciplinary boundaries and, therefore, should be of interest to all civil engineers.
Neural networks represent a new generation of information processing paradigms designed to mimic-in a very limited sense-the human brain. They can learn, recall, and generalize from training data, and with their potential applications limited only by the imaginations of scientists and engineers, they are commanding tremendous popularity and research interest. Over the last four decades, researchers have reported a number of neural network paradigms, however, the newest of these have not appeared in book form-until now. Recent Advances in Artificial Neural Networks collects the latest neural network paradigms and reports on their promising new applications. World-renowned experts discuss the use of neural networks in pattern recognition, color induction, classification, cluster detection, and more. Application engineers, scientists, and research students from

all disciplines with an interest in considering neural networks for solving real-world problems will find this collection useful. 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.

Artificial Neural Networks in Hydrology
Geophysical Applications of Artificial Neural Networks and Fuzzy Logic
Artificial Neural Networks and Their Applications
State of the Art in Neural Networks and Their Applications
Artificial Neural Network Applications in Business and Engineering
Computational Ecology

"This book offers an outlook of the most recent works at the field of the Artificial Neural Networks (ANN), including theoretical developments and applications of systems using intelligent characteristics for adaptability"--Provided by publisher. The two volume set LNCS 3696 and LNCS 3697 constitutes the refereed proceedings of the 15th International Conference on Artificial Neural Networks, ICANN 2005, held in Warsaw, Poland in September 2005. The over 600 papers submitted to ICANN 2005 were thoroughly reviewed and carefully selected for presentation. The first volume includes 106 contributions related to Biological Inspirations; topics addressed are modeling the brain and cognitive functions, development of cognitive powers in embodied systems spiking neural networks, associative memory models, models of biological functions, projects in the area of neuroIT, evolutionary and other biological inspirations, self-organizing maps and their applications, computer vision, face recognition and detection, sound and speech recognition, bioinformatics, biomedical applications, and information-theoretic concepts in biomedical data analysis. The second volume contains 162 contributions related to Formal Models and their Applications and deals with new neural network models, supervised learning algorithms, ensemble-based learning, unsupervised learning, recurent neural networks, reinforcement learning, bayesian approaches to learning, learning theory, artificial neural networks for system modeling, decision making, optimalization and control, knowledge extraction from neural networks, temporal data analysis, prediction and forecasting, support vector machines and kernel-based methods, soft computing methods for data

representation, analysis and processing, data fusion for industrial, medical and environmental applications, non-linear predictive models for speech processing, intelligent multimedia and semantics, applications to natural language processing, various applications, computational intelligence in games, and issues in hardware implementation.

Artificial neural network (ANN) has proven to be a universal approximator for any non-linear continuous function with arbitrary accuracy. This book presents how to apply ANN to measure various software reliability indicators: number of failures in a given time, time between successive failures, fault-prone modules and development efforts. The application of machine learning algorithm i.e. artificial neural networks application in software reliability prediction during testing phase as well as early phases of software development process is presented as well. Applications of artificial neural network for the above purposes are discussed with experimental results in this book so that practitioners can easily use ANN models for predicting software reliability indicators.

Applications of Artificial Neural Networks for Nonlinear DataIGI Global

Methods and Applications in Bio-/Neuroinformatics

Business Applications of Neural Networks

Clinical Applications of Artificial Neural Networks

Data Analytics in Bioinformatics

Vol 1: Techniques and Applications

Methods and Applications

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. Processing information and analyzing data efficiently and effectively is crucial for any company that wishes to stay competitive in its respective market. Nonlinear data presents new challenges to organizations, however, due to

its complexity and unpredictability. The only technology that can properly handle this form of data is artificial neural networks. These modeling systems present a high level of benefits in analyzing complex data in a proficient manner, yet considerable research on the specific applications of these intelligent components is significantly deficient. Applications of Artificial Neural Networks for Nonlinear Data is a collection of innovative research on the contemporary nature of artificial neural networks and their specific implementations within data analysis. While highlighting topics including propagation functions, optimization techniques, and learning methodologies, this book is ideally designed for researchers, statisticians, academicians, developers, scientists, practitioners, students, and educators seeking current research on the use of artificial neural networks in diagnosing and solving nonparametric problems.

R. S. GOVINDARAJU and ARAMACHANDRA RAO School of Civil Engineering Purdue University West Lafayette, IN. , USA 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 dOOf 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 adesire 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.

Thorough, compact, and self-contained, this explanation and analysis of a broad range of neural nets is conveniently structured so that readers can first gain a quick global understanding of neural nets -- without the mathematics -- and can then delve into mathematical specifics as necessary. The behavior of neural nets is first explained from an intuitive perspective; the formal analysis is then presented; and the practical implications of the formal analysis are stated separately. Analyzes the behavior of the six main types of neural networks -- The Binary Perceptron, The Continuous Perceptron (Multi-Layer Perceptron), The Bidirectional Memories, The Hopfield Network (Associative Neural Nets), The Self-Organizing Neural Network of Kohonen, and the new Time Sequentional Neural Network. For technically-oriented individuals working with information retrieval, pattern recognition, speech recognition, signal processing, data classification.

15th International Conference, Warsaw, Poland, September 11-15, 2005, Proceedings

20th International Conference, EANN 2019, Xersonisos, Crete, Greece, May 24-26, 2019, Proceedings

1 April 1991, Orlando, Florida, United States

Applications of Artificial Neural Networks III, 1992, Orlando, Florida

Applications of Artficial Neural Networks II

Biomedical and Business Applications Using Artificial Neural Networks and Machine Learning

A piece of a computing system designed to simulate the way the human brain analyzes and processes information is referred to as an artificial neural network. It lays the foundation of artificial intelligence and solves problems that are impossible or difficult by human or statistical standards. Artificial neural networks have self-learning potential that enables them to produce better results as more data becomes available. They are designed like the human brain with neuron nodes interconnected to a web. Some of the major applications of artificial neural networks are text classification and categorization, named entity recognition, part-of-speech tagging, semantic parsing and question answering and paraphrase detection. The ever-growing need for advanced technology is the reason that has fueled the research in the field of artificial neural network in recent times. This book unravels the recent studies in this field. It will provide comprehensive knowledge

to the readers.

Neural Networks: Computational Models and Applications presents important theoretical and practical issues in neural networks, including the learning algorithms of feed-forward neural networks, various dynamical properties of recurrent neural networks, winner-take-all networks and their applications in broad manifolds of computational intelligence: pattern recognition, uniform approximation, constrained optimization, NP-hard problems, and image segmentation. The book offers a compact, insightful understanding of the broad and rapidly growing neural networks domain.

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.

Artificial Neural Networks for Renewable Energy Systems and Real-World Applications presents current trends for the solution of complex engineering problems in the application, modeling, analysis, and optimization of different energy systems and manufacturing processes. With growing research catering to the applications of neural networks in specific industrial applications, this reference provides a single resource catering to a broader perspective of ANN in renewable energy systems and manufacturing processes. ANN-based methods have attracted the attention of scientists and researchers in different engineering and industrial disciplines, making this book a useful reference for all researchers and engineers interested in artificial networks, renewable energy systems, and manufacturing process analysis. Includes illustrative examples on the design and development of ANNS for renewable and manufacturing applications Features computer-aided simulations presented as algorithms, pseudocodes and flowcharts Covers ANN theory for easy reference in subsequent technology specific sections

The past fifteen years has witnessed an explosive growth in the fundamental research and applications of artificial neural networks (ANNs) and fuzzy logic (FL). The main impetus behind this growth has been the ability of such methods to offer solutions not amenable to conventional techniques, particularly in application domains involving pattern recognition, prediction and control. Although the origins of ANNs and FL may be traced back to the 1940s and 1960s, respectively, the most rapid progress has only been achieved in the last fifteen years. This has been due to significant theoretical advances in our understanding of ANNs and FL, complemented by major technological developments in high-speed computing. In geophysics, ANNs and FL have enjoyed significant success and are now employed routinely in the following areas (amongst others): 1. Exploration Seismology. (a) Seismic data processing (trace editing; first break picking; deconvolution and multiple suppression; wavelet estimation; velocity analysis; noise identification/reduction; statics analysis; dataset matching/prediction, attenuation), (b) AVO analysis, (c) Chimneys, (d) Compression I dimensionality reduction, (e) Shear-wave analysis, (f) Interpretation (event tracking; lithology prediction and well-log analysis; prospect appraisal; hydrocarbon prediction; inversion; reservoir characterisation; quality assessment; tomography). 2. Earthquake Seismology and Subterranean Nuclear Explosions. 3. Mineral Exploration. 4. Electromagnetic I Potential Field Exploration. (a) Electromagnetic methods, (b) Potential field methods, (c) Ground penetrating radar, (d) Remote sensing, (e) inversion.
In this book, international experts report the history of the application of ANN to chemical and biological problems, provide a guide to network architectures, training and the extraction of rules from trained networks, and cover many cutting-edge examples of the application of ANN to chemistry and biology. Methods involving the mapping and interpretation of Infra Red spectra and modelling environmental toxicology are included. This book is an excellent guide to this exciting field.
Due to the complexity and non-linearity of most ecological problems, artificial neural networks (ANNs) have attracted attention from ecologists and environmental scientists. This book provides readers with knowledge on algorithms, programs, and applications of ANNs in

ecology. It proposes computational ecology.

Apply computer vision and machine learning concepts in developing business and industrial applications using a practical, step-by-step approach. The book comprises four main sections starting with setting up your programming environment and configuring your computer with all the prerequisites to run the code examples. Section 1 covers the basics of image and video processing with code examples of how to manipulate and extract useful information from the images. You will mainly use OpenCV with Python to work with examples in this section. Section 2 describes machine learning and neural network concepts as applied to computer vision. You will learn different algorithms of the neural network, such as convolutional neural network (CNN), region-based convolutional neural network (R-CNN), and YOLO. In this section, you will also learn how to train, tune, and manage neural networks for computer vision. Section 3 provides step-by-step examples of developing business and industrial applications, such as facial recognition in video surveillance and surface defect detection in manufacturing. The final section is about training neural networks involving a large number of images on cloud infrastructure, such as Amazon AWS, Google Cloud Platform, and Microsoft Azure. It walks you through the process of training distributed neural networks for computer vision on GPU-based cloud infrastructure. By the time you finish reading Building Computer Vision Applications Using Artificial Neural Networks and working through the code examples, you will have developed some real-world use cases of computer vision with deep learning. What You Will Learn · Employ image processing, manipulation, and feature extraction techniques · Work with various deep learning algorithms for computer vision · Train, manage, and tune hyperparameters of CNNs and object detection models, such as R-CNN, SSD, and YOLO · Build neural network models using Keras and TensorFlow · Discover best practices when implementing computer vision applications in business and industry · Train distributed models on GPU-based cloud infrastructure Who This Book Is For Data scientists, analysts, and machine learning and software engineering professionals with Python programming knowledge.

Applications of Artificial Neural Networks 5/Volume 2243
21-24 April 1992, Orlando, Florida
Theory and Applications
Artificial Neural Networks in Real-life Applications
Application of Signal Processing Tools and Artificial Neural Network in Diagnosis of Power System Faults
Applications of Artificial Neural Networks III

The book reports on the latest theories on artificial neural networks, with a special emphasis on bio-

neuroinformatics methods. It includes twenty-three papers selected from among the best contributions on bio-neuroinformatics-related issues, which were presented at the International Conference on Artificial Neural Networks, held in Sofia, Bulgaria, on September 10-13, 2013 (ICANN 2013). The book covers a broad range of topics concerning the theory and applications of artificial neural networks, including recurrent neural networks, super-Turing computation and reservoir computing, double-layer vector perceptrons, nonnegative matrix factorization, bio-inspired models of cell communities, Gestalt laws, embodied theory of language understanding, saccadic gaze shifts and memory formation, and new training algorithms for Deep Boltzmann Machines, as well as dynamic neural networks and kernel machines. It also reports on new approaches to reinforcement learning, optimal control of discrete time-delay systems, new algorithms for prototype selection, and group structure discovering. Moreover, the book discusses one-class support vector machines for pattern recognition, handwritten digit recognition, time series forecasting and classification, and anomaly identification in data analytics and automated data analysis. By presenting the state-of-the-art and discussing the current challenges in the fields of artificial neural networks, bioinformatics and neuroinformatics, the book is intended to promote the implementation of new methods and improvement of existing ones, and to support advanced students, researchers and professionals in their daily efforts to identify, understand and solve a number of open questions in these fields.

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.

During these uncertain and turbulent times, intelligent technologies including artificial neural networks (ANN) and machine learning (ML) have played an incredible role in being able to predict, analyze, and navigate unprecedented circumstances across a number of industries, ranging from healthcare to hospitality. Multi-factor prediction in particular has been especially helpful in dealing with the most current pressing issues such as COVID-19 prediction, pneumonia detection, cardiovascular diagnosis and disease management, automobile accident prediction, and vacation rental listing analysis. To date, there has not been much research content readily available in these areas, especially content written extensively from a user perspective. Biomedical and Business Applications Using Artificial Neural Networks and Machine Learning is designed to cover a brief and focused range of essential topics in the field with perspectives, models, and first-hand experiences shared by prominent researchers, discussing applications of artificial neural networks (ANN) and machine learning (ML) for biomedical and business applications and a listing of current open-source software for neural networks, machine learning, and artificial intelligence. It also presents summaries of currently available open source software that utilize neural networks and machine learning. The book is ideal for professionals, researchers, students, and practitioners who want to more fully understand in a brief and concise format the realm and technologies of artificial neural networks (ANN) and machine learning (ML) and how they have been used for prediction of multi-disciplinary research problems in a multitude of disciplines.

Neural networks are increasingly being used in real-world business applications and, in some cases, such as fraud detection, they have already become the method of choice. Their use for risk assessment is also growing and they have been employed to visualise complex databases for marketing segmentation. This boom in applications covers a wide range of business interests - from finance management, through forecasting, to production. The combination of statistical, neural and fuzzy methods now enables direct quantitative studies to be carried out without the need for rocket-science expertise. This is a review of the state-of-the-art in applications of neural-network methods in three important areas of business analysis. It includes a tutorial chapter to introduce new users to the potential and pitfalls of this new technology.

An Introduction

Analysis and Applications of Artificial Neural Networks

With Step-by-Step Examples in OpenCV and TensorFlow with Python
Neural Network Applications
Applications of Artificial Neural Networks in Image Processing
Advanced Applications for Artificial Neural Networks

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. Artificial neural networks provides a powerful tool to help doctors analyze, model, and make sense of complex clinical data across a broad range of medical applications. Their potential in clinical medicine is reflected in the diversity of topics covered in this cutting-edge volume. In addition to looking at new and forthcoming applications the book looks forward to exciting future prospects on the horizon. The volume also examines ethical and legal concerns about the use of "black-box" systems as decision aids in medicine.

This eclectic collection of chapters provides an exciting overview of current and future prospects for harnessing the power of artificial neural networks in the investigation and treatment of disease.
The idea of simulating the brain was the goal of many pioneering works in Artificial Intelligence. The brain has been seen as a neural network, or a set of nodes, or neurons, connected by communication lines. Currently, there has been increasing interest in the use of neural network models. This book contains chapters on basic concepts of artificial neural networks, recent connectionist architectures and several successful applications in various fields of knowledge, from assisted speech therapy to remote sensing of hydrological parameters, from fabric defect classification to application in civil engineering. This is a current book on Artificial Neural Networks and Applications, bringing recent advances in the area to the reader interested in this always-evolving machine learning technique.
This book constitutes the refereed proceedings of the 19th International Conference on Engineering Applications of Neural Networks, EANN 2019, held in Xersonisos, Crete, Greece, in May 2019. The 35 revised full papers and 5 revised short papers presented were carefully reviewed and selected from 72 submissions. The papers are organized in topical sections on AI in energy management - industrial applications; biomedical - bioinformatics modeling; classification - learning; deep learning; deep learning - convolutional ANN; fuzzy - vulnerability - navigation modeling; machine learning modeling - optimization; ML - DL financial modeling; security - anomaly detection; 1st PEINT workshop.
Artificial Neural Networks for Engineering Applications
Research Anthology on Artificial Neural Network Applications Volume 1
Advanced Features and Applications
A Machine Learning Perspective

Decision making arises when we wish to select the best possible course of action from a set of alternatives. With advancements of the digital technologies, it is easy, and almost instantaneous, to gather a large volume of information and/or data pertaining to a problem that we want to solve. For instance, the world-wi- web is perhaps the primary source of information and/or data that we often turn to when we face a

decision making problem. However, the information and/or data that we obtain from the real world often are complex, and comprise various kinds of noise. Besides, real-world information and/or data often are incomplete and ambiguous, owing to uncertainties of the environments. All these make decision making a challenging task. To cope with the challenges of decision making, - searchers have designed and developed a variety of decision support systems to provide assistance in human decision making processes. The main aim of this book is to provide a small collection of techniques stemmed from artificial intelligence, as well as other complementary methodo- gies, that are useful for the design and development of intelligent decision support systems. Application examples of how these intelligent decision support systems can be utilized to help tackle a variety of real-world problems in different - mains, e. g. business, management, manufacturing, transportation and food ind- tries, and biomedicine, are also presented. A total of twenty chapters, which can be broadly divided into two parts, i. e.

This comprehensive tutorial on artifical neural networks covers all the important neural network architectures as well as the most recent theory--e.g., pattern recognition, statistical theory, and other mathematical prerequisites. A broad range of applications is provided for each of the architectures.

State of the Art in Neural Networks and Their Applications presents the latest advances in artificial neural networks and their applications across a wide range of clinical diagnoses. Advances in the role of machine learning, artificial intelligence, deep learning, cognitive image processing and suitable data analytics useful for clinical diagnosis and research applications are covered, including relevant case studies. The application of Neural Network, Artificial Intelligence, and Machine Learning methods in biomedical image analysis have resulted in the development of computer-aided diagnostic (CAD) systems that aim towards the automatic early detection of several severe diseases. State of the Art in Neural Networks and Their Applications is presented in two volumes. Volume 1 covers the state-of-the-art deep learning approaches for the detection of renal, retinal, breast, skin, and dental abnormalities and more. Includes applications of neural networks, AI, machine learning, and deep learning techniques to a variety of imaging technologies Provides in-depth technical coverage of computer-aided diagnosis (CAD), with coverage of computer-aided classification, Unified Deep Learning Frameworks, mammography, fundus imaging, optical coherence tomography, cryo-electron tomography, 3D MRI, CT, and more. Covers deep learning for several medical conditions including renal, retinal, breast, skin, and dental abnormalities, Medical Image Analysis, as well as detection, segmentation, and classification via AI.

Machine learning techniques are increasingly being used to address problems in computational biology and bioinformatics. Novel machine learning computational techniques to analyze high throughput data in the form of sequences, gene and protein expressions, pathways, and images are becoming vital for understanding diseases and future drug

discovery. Machine learning techniques such as Markov models, support vector machines, neural networks, and graphical models have been successful in analyzing life science data because of their capabilities in handling randomness and uncertainty of data noise and in generalization. Machine Learning in Bioinformatics compiles recent approaches in machine learning methods and their applications in addressing contemporary problems in bioinformatics approximating classification and prediction of disease, feature selection, dimensionality reduction, gene selection and classification of microarray data and many more.

Artificial Neural Networks for Civil Engineers
International Joint Conference CISIS'12-ICEUTE ?12-SOCO ?12 Special Sessions
Applications of Artificial Neural Networks
Artificial Neural Networks: Formal Models and Their Applications – ICANN 2OO5
Artificial Neural Networks: Advances and Applications
Composite Materials Technology

This volume of Advances in Intelligent and Soft Computing contains accepted papers presented at CISIS 2012 and ICEUTE 2012, both conferences held in the beautiful and historic city of Ostrava (Czech Republic), in September 2012. CISIS aims to offer a meeting opportunity for academic and industry-related researchers belonging to the various, vast communities of Computational Intelligence, Information Security, and Data Mining. The need for intelligent, flexible behaviour by large, complex systems, especially in mission-critical domains, is intended to be the catalyst and the aggregation stimulus for the overall event. After a through peer-review process, the CISIS 2012 International Program Committee selected 30 papers which are published in these conference proceedings achieving an acceptance rate of 40%. In the case of ICEUTE 2012, the International Program Committee selected 4 papers which are published in these conference proceedings. The selection of papers was extremely rigorous in order to maintain the high quality of the conference and we would like to thank the members of the Program Committees for their hard work in the reviewing process. This is a crucial process to the creation of a high standard conference and the CISIS and ICEUTE conferences would not exist without their help.
Artificial neural networks (ANN) can provide new insight into the study of composite materials and can normally be combined with other artificial intelligence tools such as expert system, genetic algorithm, and fuzzy logic. Because research on this field is very new, there is only a limited amount of published literature on the subject. Compiling information from diverse sources, Composite Materials Technology: Neural Network Applications fills the void in knowledge of these important networks, covering composite mechanics, materials characterization, product design, and other important aspects of polymer matrix composites. Light weight, corrosion resistance, good stiffness and strength properties, and part consolidation are just some of the reasons that composites are useful

in areas including civil engineering and structure, chemical processing, management, agriculture, space study, and manufacturing. ANN has already been used to carry out design prediction, mechanical property prediction, and selection processes in the evolution of composites, but although it has already been used with great success in various branches of scientific and technological research, it is still in the nascent stage of its development. Featuring contributions from leading researchers throughout the world, this book is divided into four parts, starting with an introduction to neural networks and a review of existing literature on the subject. The text then covers structural health monitoring and damage detection in composites, addresses mechanical properties, and discusses design, analysis, and materials selection. Training, testing, and validation of experimental data were carried out to optimize the results presented in the book. This book will be an important aid to researchers as they work on the future implementation of ANN in industries such as aerospace, automotive, marine, sporting goods, furniture, and electronics and communication.
Artificial Neural Networks for Renewable Energy Systems and Real-World Applications
2-5 April 1991, Orlando, Florida
Artificial Neural Network Applications for Software Reliability Prediction
Engineering Applications of Neural Networks
Handbook on Decision Making
Building Computer Vision Applications Using Artificial Neural Networks